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Analysis of the media discourse about meat and meat substitutes in U.S. media between 2016 and 2021

Master thesis, Faculty of Science, University of Bern

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Abbreviations

GHG	Greenhouse gases
SLCP	Short-lived climate pollutants
LLCP	Long-lived climate pollutants
CH_4	Methane
CO_2	Carbon dioxide
CO_2eq	Carbon dioxide equivalents
USDA	U.S. Department of Agriculture
FDA	U.S. Food and Drug Administration
DNA	Discourse network analysis or Discourse Network Analyzer
SBA	Structural break analysis
SB	Structural breakpoints

1 Research motivation, policy relevance and research objective

Our daily decisions concerning our consumption behaviour and our everyday diet have a big impact on earth's climate (Sievert et al., 2020). The world food system poses major challenges for the nature and the environment and is a major driver for climate change (Fry et al., 2022). Red and processed meat production is the largest source of anthropogenic methane (CH_4) emissions (Sievert et al., 2020). Methane belongs to the category of short-lived climate pollutants (SLCPs) unlike for example CO_2, which belongs to the category of long-lived climate pollutants (LLCPs) (Fesenfeld et al., 2018; Schmale et al., 2014). As the names suggest, the former are active pollutants for centuries, while the effect of the latter varies between days and decades. However, the time indications do not reveal how harmful these substances are. SLCPs are pollutants that decrease the air quality which cause health issues, deaths, and harm the ecosystem as well as the agriculture (Schmale et al., 2014).

Among all food sources, livestock husbandry produces the most greenhouse gas (GHG) emissions, in particular cattle farming (Fry et al., 2022). The production of red and processed meat for example generates between 14 and 30 percent of all human-made GHG-emissions (Sievert et al., 2020). Furthermore, producing animal-based products in general requires a high number of resources: In order to grow animal feed and to provide nourishing grazing land for animals, 56 percent of the water that is globally applied in the agricultural sector, is used (Weindl et al., 2017). Additionally, forests need to be cut down to make room for grazing land, which leads to biodiversity loss and reduces the land surface that helps decompose CO_2 through photosynthesis (Poore & Nemecek, 2018; Fry et al., 2022; Curtis et al., 2018). Despite the high input of resources and the large ecological footprint of animal foods production, nevertheless only 37 percent of the global protein supply and 18 percent of the world calories supply can be traced back to those products (Poore & Nemecek, 2018).

The Intergovernmental Panel on Climate Change (IPCC) pointed out the importance and urgency of a diet change in their report in 2019. The IPCC identified this dietary shift as an important policy measure to reduce GHG emission. Said measure would include reducing consumption of meat and other livestock products and/or eating more locally produced, plant-based foods, such as fruits, vegetables, nuts, or seeds (Shukla et al., 2019; De Coninck et al., 2018). This consumption behaviour change bares big potential for GHG reductions, as

research has shown: In the summary for policymakers of the IPCC special report «Climate Change and Land» (2019) scientists stated that the climate change mitigation potential in changing societies' everyday diet is estimated (with medium confidence) at 0.7 – 8 gigaton CO_2-equivalents[1] per year by 2050 compared to business-as-usual projections (Shukla et al., 2019). Also, Springmann et al. (2016) have calculated that food related GHG emissions can be reduced by 29 up to 70 percent in comparison to the reference scenario, depending on the consumption behaviour in the different scenarios (Springmann et al. 2016).

In order for people to change their behaviour they initially need to be aware of possible harmful consequences of their actions (Neff et al., 2009). Also, they need to receive information, motivating them to change their behaviour (Boyce & Lewis, 2009; Boykoff & Boykoff, 2007; Nolte, 2005). A study by Froggatt et al. (2014) showed, that the participants were not equally as aware of the harmful challenges that the livestock sector poses for the environment compared to other contributing sectors (Froggatt et al., 2014). Since climate change is a global crisis including worldwide correlations and global consequences, it is highly dependent on the world's media to generate awareness. Media is crucial to inform the public about possible threats or current disasters that have already occurred as a result of global warming in certain places in the world. Furthermore, GHG mitigation possibilities can be communicated through media and those actors – who aim at mobilizing forces for change - can be given a voice (Boyce & Lewis, 2009; Boykoff & Boykoff, 2007; Schoenfeld et al., 1979; Spector & Kitsuse, 1977). As an example, awareness for the harmful effects of meat consumption and possible reduction possibilities can be generated (Boyce & Lewis, 2009; Boykoff & Boykoff, 2007). Additionally, the more an issue is communicated through media, the more important it is received to be and the higher are the chances, that the public will take action (Schmidt et al., 2013; Neff et al., 2009; Kristiansen et al 2019; Schäfer, 2015, Stamm et al., 2000; Liu et al., 2011; Sampei & Aoyagi-Usui, 2009).

The media is a very effective communication channel because many people can be reached (Note, 2005). It is not an exact mirror of the reality though (Beck, 2013; Rhomberg, 2008). On one side, journalists only convey a selection of topics or issues, that become news content and

[1] CO_2 equivalent (CO_2eq) a standardised unit of measurement to express the effect of numerous greenhouse gases on climate (Matthews, 2018.; Foundation myclimate, u.d.)

thus get the attention of the readership or audience (Rhomberg, 2008; Nolte, 2005). There are so many newsworthy events happening all over the world and so many interesting topics that could be subject of a news article. Therefore, journalists need to work with a carefully considered selection of information (Rhomberg, 2008; Shoemaker et al., 2009; Protess & McCombs, 2016). On the other side, even if a topic is selected to appear in the media, different accents can then be set within the topic area. Through actor statements different points of views can be elaborated and transported and different perspectives can be highlighted (Happer & Philo, 2013; Gupta et al., 2014; Pfetsch & Adam, 2008). Actors can problematize an issue in a particular way and emphasize on their preferred solution to that problem (Crow & Lawlor, 2016; Ransan et al., 2015). So, depending on whether issues concerning meat or meat substitutes make it onto the media agenda or not and depending on how the issues are presented throughout the media discourses influence the people's perception and awareness of these topics. Subsequently, the knowledge people get from these articles can ultimately affect their decision-making, and in this context, can also affect their diets (Ransan et al., 2015; Crow & Lawlor, 2016). Ultimately, readers or the audience can make better informed consumption decisions based on the information provided by the media (Sexton et al., 2019).

A solution to reduce meat consumption is substituting meat with meat alternatives like plant-based meat alternatives, «in vitro» meat or insect-based foods (Motoki et al., 2022; Hwang et al., 2020). Plant-based meat substitutes consist of plant-based proteins and are often similar to meat products in texture, appearance or taste (Hwang et al., 2020; Vanhonacker et al., 2013; Tziva et al., 2020). «In vitro» meat or cultured meat is biotechnologically grown in a laboratory using cultures of animal muscle cells (Hwang et al., 2020; Mattick & Allenby, 2012; Bonny et al., 2015). Insect-based foods, as the name suggests, are products made of insects and contain high level of protein (De Koning et al., 2020). In a study, Ritchie et al. (2018) have quantified GHG emission savings in different scenarios, where – based on economic demand elasticity – different price reductions would variably produce changes in the consumption of meat substitutes. These calculations broken down into geographical regions state that the United States as well as the EU28 market would dominate global reductions in GHG emissions. For this study, a Quorn™ meat substitute was used (Ritchie et al., 2018).

On the Western markets, meat substitutes are considered rather young products. They were introduced into the Western markets around the 1960s (Wild et al., 2014; Sadler, 2004;

Davies, 1998), while meat mimicry concerning the fibrous structure can be dated back to the 1990s (Wild et al., 2014). According to Choudhury et al. (2020) the number of start-ups in the plant-based meat alternative market has increased tremendously in the last 12 years. Along with these companies, business giants, as well as start-up incubators, retail stores and food chains have entered this market (Choudhury et al., 2020; Chiorando, 2019). In comparison to plant-based or insect-based foods that have existed for a very long time in the history of society, the aim of these novel alternative foods in the Anglophone regions is to improve the food system in the future (Sexton et al., 2019). In 2016, Tyson Foods, a mayor US food company, started to fund the meat substitute processor Beyond Meat with a sum of over 200 million US-dollars until 2018. Between 2017 and 2019, the U.S. plant-based meat alternatives market has grown excessively (Choudhury et al., 2020). Besides the increase of availability, it is also the broad variety of innovative products that has grown rapidly (Formanski et al., 2021). Target groups of these products are not only vegans or vegetarians, but also a large scale of people that are flexitarians, who aim to reduce their meat consumption (Choudhury et al., 2020).

Considering the success story of meat substitutes in the United States, the question arises, whether this economic development affects the way actors talk about meat or meat substitutes in the media. Therefore, this master thesis aims to answer the following explorative research question:

> How did the launches of meat substitutes affect the media discourse around meat and meat substitutes in the U.S. media between 2016 and 2021?

The term «meat substitute launches» in this context refers not only to the development of new substitute products that enter the meat alternatives market, but also to new vegan or vegetarian offerings or dishes that are created through the use or further processing of substitutes, Burger King's «Impossible whopper» for example (Chiorando, 2019).

To answer this thesis' research questions, data was gathered via content analysis. The codebook was inductively developed by a research team of Lukas Fesenfeld for purposes of the Swiss Network for International Studies (SNIS). The method of content analysis was applied on newspaper articles or other forms of media output, thematizing meat or meat

substitutes, published between 01. January 2016 and 31. December 2021 in *The New York Times*, *USA Today*, *The Wall Street Journal*, *New York Post*, *CNN*, and *Fox News*. The gathered data was quantitatively analysed using the method of descriptive statistical analysis and structural break analysis. Since little is known about how the media discourse regarding meat and meat substitutes has manifested itself over time in the United States, the results of the quantitative analysis were used as basis for an in-depth qualitative analysis of randomly selected news content. The main goal of this explorative analysis was to find out whether there were any newsworthy substitute-related events or issues happening at said time, that made it onto the media agenda. An additive goal of this qualitative analysis was to explore and describe how the ongoing discourse around meat and meat substitutes had manifested itself in the selected U.S. media over the defined time period.

2 Theoretical argumentation and working hypotheses

2.1 Theory

In our society, where the spectrum of news offerings is very wide. The mass media are (with a few restrictions) a public good. When issues are covered in the media, it can therefore be assumed that they will receive attention from a very broad public. The attention of the public on the other hand is a very limited good, i.e., only a certain number of issues can be noticed by society. Issues therefore compete for the public's limited attention (Nolte, 2005; Rhomberg, 2008).

But first, it is eminent to define the term *issue*. Rhomberg (2008) defines an issue as a civic concern or social problem that is current and has conflictual character. In other words, different actors can have divergent perspectives on one issue and that issue can be defined or interpreted in various ways (Rhomberg, 2008). Hajer (1993) defines an issue similarly, namely as a social construct of a phenomena, whose perception depends on its representation in a discourse (Hajer, 1993; Berger & Luckmann, 1971; Hajer, 2002). As *discourse* he defines «an ensemble of ideas, concepts and categories […].» (Hajer, 2002: 63). According to O'keeffe (2013), a *media discourse* is a written or spoken form of interaction that is transmitted through

a medium such as a broadcast platform. The interaction addresses a non-present audience or readership which cannot respond immediately to the discourse. In times of the internet, the recipients' possibilities to react are increasing. The media discourse unlike the interpersonal discourse is neither spontaneous nor private, it is public, on-record, planed beforehand, and manufactured. Therefore, a lot of data is available and accessible for possible analyses (O'keeffe, 2013).

This master thesis focuses on discourse transported or displayed by the U.S. media around the issues that appear in context with meat or meat substitute production, consumption, processing etc. The actors involved in the discourses around meat or meat substitutes were individuals either speaking for themselves or as spokespersons of firms, NGOs, foundations, associations, interest groups etc. They have given statements in form of answers in an interview or as paraphrased sentences that journalists have used as information source. In communication theory, Bimber (2003) states, that information communicated by actor statements hardly ever consist of pure facts but rather of a mixture of facts, predispositions, values, and opinions of the person communicating (Bimber, 2003).

2.1.1 Issue attention

How the public's limited attention towards an issue develops over time has been explored by Anthony Downs in 1972, among other authors. He developed the model called *issue-attention cycle*. Using this model, Downs elaborates how the society's attention towards an issue generally develops over time. He distinguishes five stages of issue attention *(see figure 1)* (Downs, 1972; Rhomberg 2008; Nolte, 2016; Anil-Menon, 2023).

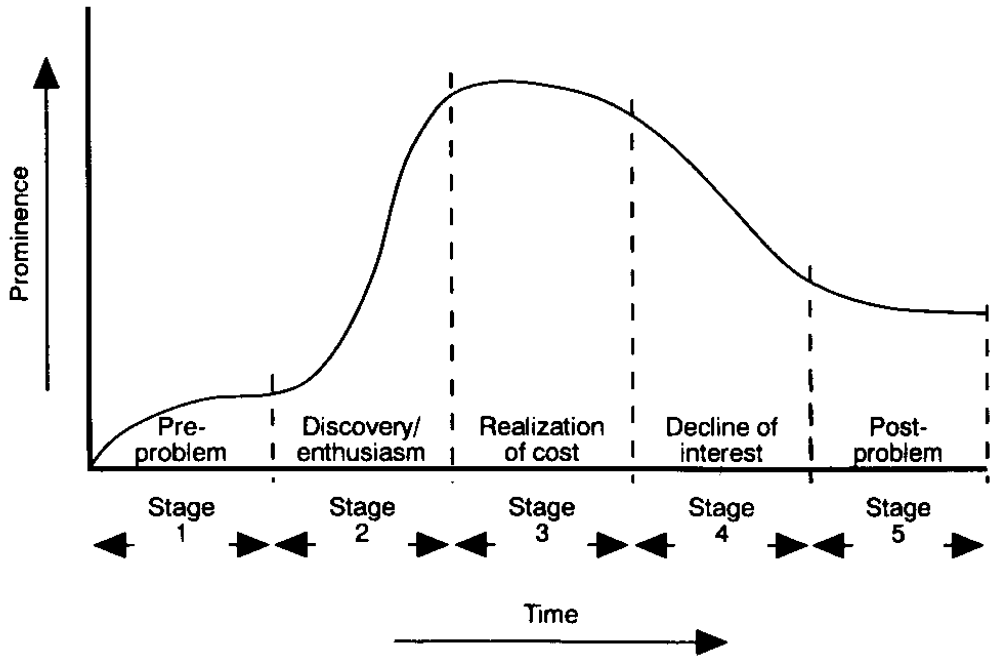

Figure 1: The five stages of the issue attention cycle as described by Anthony Downs in 1972. This modelled curve shows how the prominence of an issue evolves over time (Marchudson.net, u.d.).

In the first phase, the *pre-problem stage*, mostly only experts are concerned with an issue or a minority which is affected by that issue in question (Downs, 1972; Rhomberg 2008; Nolte, 2016; Anil-Menon, 2023). As a result of several dramatic events or situational changes, it comes to the attention of the public throughout the *phase of alarmed discovery and euphoric enthusiasm.* At that point of time, the motivation in society to find a solution to this issue is high (Downs, 1972; Anil-Menon, 2023). According to Rhomberg (2008), during this phase the mass media can strongly influence the success of an issue in competing for attention. When an issue appears in the media, it gains the attention of a broad public and eventually finds its way into domestic concerns (Rhomberg, 2008; Protess & McCombs, 2016; Nolte, 2005). Therefore, public relations and the promotion of pseudo-events become important instruments in this phase in order to actively draw the attention of journalists towards an issue (Rhomberg, 2008). In the third phase, the phase of *realizing the cost of significant progress*, possible solutions are presented and thus also costs and cuts that these solutions would entail. These cost either affect specific social groups or the population as a whole. Partly discouraged by this information or due to emerging boredom or resignation, more and more people lose interest during the fourth phase, *the phase of gradual decline of intense public interest*. In the

last and fifth phase, the *post-problem stage*, the issue shifts out of public focus. Regardless of whether it has been resolved or not. Institutions, policies, or programs, that have been elaborated or developed to solve the issue persist and the issue remains familiar or well-known to the public. It is therefore more likely that such a topic will receive further attention in the future if new information or aspects become available (Rhomberg, 2008; Downs, 1972; Anil-Menon, 2023). Not all issues pass through all these five phases, sudden events for example leave out the first phase (Nolte, 2005).

2.1.2 Issue selection

As already stated above, issue attention is strongly related to media presence (Nolte, 2005). But not all issues are taken up by the media. In a journalist's day-to-day job, there are so many different issues, topics, arguments, or viewpoints that they are confronted with. For this reason, a journalist needs to filter them first. In this context, the media literature uses the term «media agenda». An «agenda» generally describes a hierarchy in issues that was elaborated according to the issues' relevance and importance (Jäckel, 2005). In other words, an agenda purports the order in which issues are supposed to be dealt with (Rhomberg, 2008; Nolte, 2005).

Processes of filtering, prioritizing, and selecting a «small amount of information that becomes news» (Shoemaker et al., 2009: 73) become essential work steps of a journalist's job (Shoemaker et al., 2009; Protess & McCombs, 2016; Nolte, 2005). In this function, a journalist is called a *gatekeeper.* According to Shoemaker et al. (2009) the process of gatekeeping includes not only the selection, but also the writing, editing, positioning, scheduling, repeating, and messaging of information. According to the gatekeeper model, when an issue is selected to be taken up by a journalist, it passes through the gate into a channel and is transmitted to one ore many audiences. On both sides of the channel there are forces that try to influence the gatekeeping processes: both positive forces, that are pushing for items to pass through the gate and negative forces, keeping issues from entering the channel (Shoemaker et al., 2009).

Besides journalists, gatekeepers can take many other forms (Shoemaker et al., 2009). Factors such as publisher's editorial guidelines, company policies, the influence of big media players,

and local social power structures play a role in the selection process (Breed, 1955; Gieber & Johnson, 1961; Rhomberg, 2008; Shoemaker et al.,2009). Bennett (1996) states that media content can also be selected according to private interests or business intentions of a news organisation or journalists (Bennett, 1996). News agencies as sources of information already strongly influence the selection of issues that end up in media content, since they already act as a first filter with their selection or range of offered news (Rhomberg, 2008). This influence is particularly significant in the case of media with limited personnel and limited financial resources (Beck, 2013; Bennett, 1996).

Other theories in the media literature base the selection process on the character of information itself. One of those is the *news values theory* (Wahl-Jorgensen & Hanitzsch, 2009; Boykoff & Boykoff, 2007; Bennett, 2002; Gans, 1979; Rhomberg, 2008). These news values are used to measure how newsworthy information is. The more news values an issue or topic contains, the more newsworthy it is and the higher are the chances for the issue or topic to enter the media agenda. According to this theory, news values influence a journalist's selection and contextualisation of news mostly subconsciously. News values can be manifold. In the media literature especially the aspect of «novelty» has a recurring appearance among the varying lists of news values (Wahl-Jorgensen & Hanitzsch, 2009; Boykoff & Boykoff, 2007; Bennett, 2002; Gans, 1979). The audience or readership is less interested in information that is already known. The information they get from the news should be new, unpublished at best, and succeeds in completing the picture or information they already have (Dijk, 1988; Wahl-Jorgensen & Hanitzsch, 2009). Furthermore, newsworthy media content needs to be recent and up to date. If information is between one and several days old, it gains more attention and interest (Dijk, 1988; Wahl-Jorgensen & Hanitzsch, 2009). From the fact that «negative events such as problems, scandals, conflict, crime, war, or disasters» are popular topics, in the literature another news value is derived: «deviance and negativity». The fascination for such events might be rooted in the phenomenon that such events stand out or that they put our own standards and values to test (Dijk, 1988). On the same basis, also the news value of «exceptionality» is elaborated (Wahl-Jorgensen & Hanitzsch, 2009; Rhomberg, 2008). Rhomberg (2008) uses the term «event character» in this context (Rhomberg, 2008: 121). Another value is «relevance», meaning that the news bears the potential to directly affect the reader's life. This value, however, is not crucial because it bears a downside: The individuals

within an audience are too diverse in most cases. It is therefore nearly impossible to find news relevant for all readers, since they have different backgrounds, interests or expectations. Relevance is therefore mostly defined according to interests of large groups, thereby disregarding minorities (Dijk, 1988).

Strongly related to the «relevance»-value is the selection criterion of «proximity». A higher proximity value increases the relevance of the information (Dijk, 1988). Optimally, information is politically, geographically, ideologically, and culturally close to the reader (Rhomberg, 2008; Dijk, 1988). Also, news is better received as such, when there is already knowledge on the issue, when the new information is a continuation or addition to ongoing or already known information. For better understanding, journalists must repeat already known background facts and must put the news into context with older information. This news value is called «consonance» in the media literature. Also, the news value of «prominence» is described in the media literature: in case a famous person is involved in the news story, the interest of the reader or audience rises. Also, if people from the social elite or elite nations are involved, the news value increases (Rhomberg, 2008; Dijk, 1988). Rhomberg (2008) furthermore describes the importance of good comprehensibility of the news content. The issue cannot be too complex. The easier it is to understand the information, the higher the news value is (Rhomberg, 2008).

2.2 Working hypotheses

In order for an ongoing issue or topic to (re-)gain news relevance and to (re-)enter into focus of the press, this master thesis is based on the premise that a newsworthy actuality in this topic area has to occur, around which newspaper articles then are narrated. The selection process by the media, which puts a spotlight on a certain topic is considered to be a pull factor within the media discourse. I assume that the expansion and development of the U.S. meat alternatives market since 2016 in form of substitute launches can be interpreted as such a newsworthy actuality. I therefore hypothesize that the number of statements concerning meat and meat substitute rises continuously over time from 2016 until 2021 in the selected U.S. news content **(H1)**.

For H1 the focus lies on the meat as well as the meat substitute discourse. The meat and meat substitute discourse in the media are very closely related in some respects: nutrition and lifestyle, climate, health, animal welfare or economy. Nevertheless, both discourses, especially the meat discourse, go beyond these commonalities or points of overlap. Therefore, it is important to take both discourses into consideration.

When newsworthy substitute launches enter the media agenda, this increases the attention of the public towards these products (see stage two of the issue attention cycle in *chapter 2.1.1.*) and generates a window of opportunity for statements concerning the meat substitute market. When emphasising the positive aspects of meat alternatives in comparison to meat, the argumentation can go hand in hand with highlighting negative aspects of the meat consumption and production. I therefore expect that newsworthy events around the launches of novel meat substitute products lead to an increase of statements against meat in the U.S. media discourse over the time of 2016 until 2021 **(H2)**.

Only a selection of actors expresses themselves publicly on a subject in the media, elaborating their point of view (Pfetsch & Adam, 2008). By publicly addressing an issue in a certain way, an actor can pursue the goal of imposing its own issue perception or definition of an issue on others (Berger & Luckmann, 1971; Wahl-Jorgensen & Hanitzsch, 2009; Leifeld, 2017; Hajer, 1993) and they can present the issue in a certain context (Nolte, 2005; Happer & Philo, 2013; Gupta et al., 2014; Crow & Lawlor, 2016). For my second hypothesis, I assume that actors actively want to participate in the media discourse aiming to communicate their definitions, opinions, views or interests related to that issue – a behaviour that is considered to be the push factor within the media discourse.

In the context of this master thesis the focus lies on new interest groups that formed themselves due to the rising economic success of meat alternatives: meat substitute processors and start-ups (Choudhury et al., 2020) as well as investors in the meat alternative market (Sexton et al., 2019), whose aim is to seek a platform for their interests through media. These novel business actors are assumed to support and push the production and consumption of meat substitutes in the media discourse for economic and sustainability-related reasons. Building on the second hypothesis and the assumption that a positive argumentation concerning meat substitutes is accompanied by a negative argumentation in

regard to meat, the third hypothesis reads as follows: I expect that actors of the «Businesses and Associations»-category use more contra meat than pro meat statements in the U.S. media discourse on meat over time **(H3)**.

For the second and third hypotheses, the focus lies only on the meat discourse. In this master thesis it is assumed that launches of new substitute products are an opportunity for actors to enter focus of the press, that provide statements pro or contra meat substitutes. However, it is much more interesting to find out if these launches have an impact on the prevailing tone in the meat discourse - especially because the meat discourse goes far beyond the overlaps of topics with the substitute discourse.

3 Research Design

3.1 Case selection

As stated in the research questions, this research focuses on news content published in newspapers of the United States. There are several reasons for my interest in the U.S. media discourse. The United States are big players, both on the meat market as well as on the market for meat substitutes (OECD & FAO, 2021; De Coninck et al., 2018; Choudhury et al., 2020). According to the statistical data of the Organisation for Economic Co-operation and Development (OECD), the United States are among the five top meat producing countries worldwide. Additionally, the meat consumption of beef, sheep, pork and poultry per capita was the highest in North America between 2016 and 2018, compared to other regions of the world. OECD further predicts that up to 2030 the United States will remain one of the main exporters of meat on the global market and will continue to be the second largest driver of increasing meat production (OECD & FAO, 2021).

On a global level, current trends on the meat market indicate an increasing demand for meat products (De Coninck et al., 2018). On the one hand, this is due to population growth. On the other hand, animal-based food consumption is strongly related to economic growth (Fiala, 2008) and can be associated with income levels (OECD & FAO, 2021). In average, residents in

high income countries consume 1.5 times more animal-based proteins per person per day, than residents of upper middle-income countries and 3.2 times more than in lower middle-income countries (Fry et al., 2022; OECD & FAO, 2021). Humans are required to eat between 47 and 57 grams of protein per day on average. This estimation is strongly dependant on a person's physique and is influenced by many other factors. Nevertheless, the intake of protein in high-income countries is calculated to lie at almost 103 grams per day per person. More than half, approximately 59 grams, are attributable to the consumption of animal products (Fry et al., 2022; OECD & FAO, 2021; Richter et al., 2019). These findings suggest that the average consumption of meat per person is far higher than the human body would actually require. In the United States, the meat consumption, especially processed meat, lies above the optimal level that is considered as healthy, according to a disease study published in «The Lancet» *(see figure 2)*. Compared to other regions, the meat consumption of North America clearly surpasses the global average of 27 grams per day per person (Afshin et al., 2019).

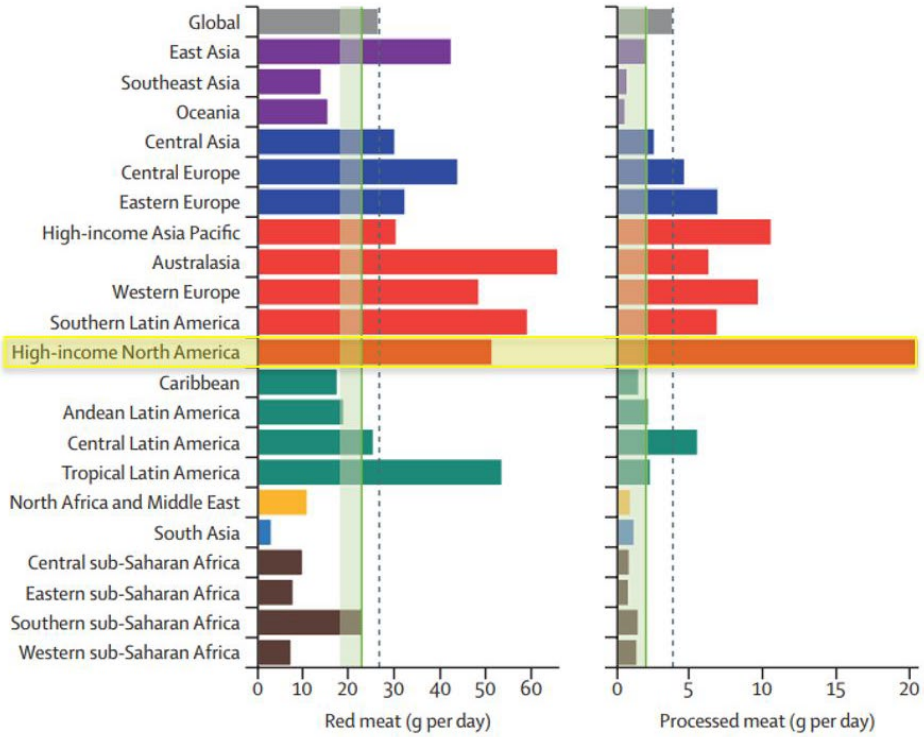

Figure 2: Global overview of the intake of red and processed meat per person (adults of 25 years and older) per day. The green line indicates the optimal intake while the dotted line indicates the global intake in 2017 (Afshin et al., 2019).

Estimations by OECD show that the demand for meat in the United States is expected to keep rising in the future. But so is the demand for meat substitutes (OECD & FAO, 2021; Markets and Markets, 2018; Choudhury et al., 2020). Proponents have stated that the U.S. market for meat substitutes is increasing at an annual growth rate which is approximately twice as high as the increase in U.S. meat consumption (Keefe, 2018). As a logical consequence, the production of these products is also increasing. In 2021, the North American market for plant-based meat alternatives was accountable for 38.8 percent of the global meat substitutes market (Markets and Markets, 2021). A large percentage of the well-established meat alternatives processors are located in the United States, like for example Beyond Meat or Impossible Foods (Choudhury et al., 2020; Impossible Foods, 2022; Beyond Meat, 2022). But it is not only in the field of plant-based meat alternatives that the United States are leading the way. A big part of progress in cultured or lab-grown meat is driven by big tech start-ups based in the Silicon Valley of California (Sexton et al., 2019).

Due to these economic characteristics, the United States are an exceptional case compared to other countries and it is assumed that the analysis of the U.S. media discourse will not be exemplary for others. Therefore, based on this case, it will not be possible to generate general assumptions on other media discourses. However, the U.S. media discourse bears many interesting aspects for research: Within the population of the United States, a broad variety of interest groups exist with divergent interests that are of different sizes and have varying influential possibilities.

As mentioned beforehand, this thesis' research focuses on a time frame between 2016 and 2021. Those years are an interesting period of study, because, according to the Statista Research Department (2022), the market revenue of plant-based meat alternatives worldwide has risen constantly within those six years *(see figure 3)* and is estimated to rise further in the future (Statista Research Department, 2022). It would therefore be interesting to find out if this development is reflected in the U.S. media discourse.

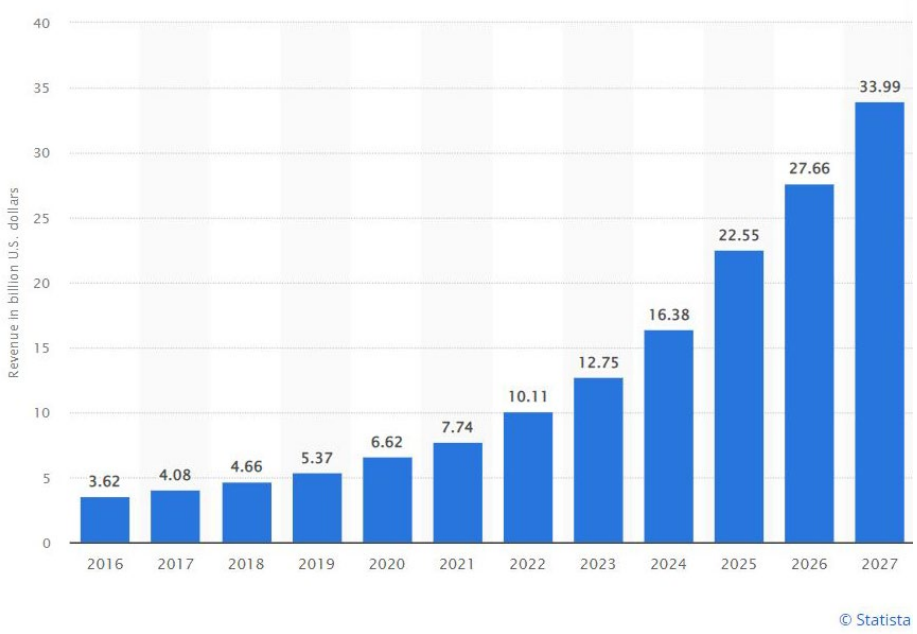

Figure 3: Market revenue of plant-based meat worldwide from 2016 to 2027, in billion U.S. dollars (Statista Research Department, 2022).

Furthermore, in 2018, 2019 and 2021 many major food chains in the United States included meat alternatives in their menus and meat substitute products have become more and more dining mainstream (Cameron et al., 2019; Gaan et al., 2020; Formanski et al., 2021). A change in nutrition can be observed when considering that the share of people that eat vegan has risen 600 percent worldwide between 2016 and 2018 (Markets and Markets, 2021).

3.2 Data gathering

To answer the research questions of this master thesis, data was gathered via content analysis. Content analysis is a nonexperimental, nonintrusive method, which can be used to collect and analyse a wide variety of written texts such as transcripts of discussions and interviews, studies or, as in the case of this master thesis, content of newspapers and transcripts of studio talks (Macnamara, 2005; Diekmann, 2007; Mayring, 2000; Neuman, 1997). The analysis was not only concentrated on written words, but also on visual or spoken messages (Neumann, 1997). Content analysis is applied to precisely describe «what is said on a given subject in a given place at a given time» (Lasswell et al., 1952: 34). Via content analysis data can be gathered systematically and objectively according to aspects defined in a codebook

(Diekmann, 2007; Mayring, 2000). To conduct content analysis, texts are first split up in units of interest, to then be systematically coded according to predefined categories (Dinçer, 2018; Vaismoradi et al., 2013; Sparker, 2005).

Media content analysis is quantitative in the sense that topics, issues, actors, and other units of the texts are quantified according to objective categories. But since there is still some room for interpretation when it comes to understanding and figuring out the meaning of a text passage or fragment, there is also a qualitative aspect to the method (Newbold et al., 2002; Neuendorf, 2002; Neuman, 1997; Macamara, 2005). In order to minimize individual interpretations and to ensure intersubjectivity and objectivity, the categories in the codebook and the correct treatment of certain phenomenons in a text need to be described and clarified as detailed as possible. The goal should be to guarantee a consistent application of the codebook (Babbie, 1986; Neuendorf, 2002; Macamara, 2005).

In this master thesis the method of content analysis was applied on a selection of newspaper articles or other forms of media output, thematizing meat or meat substitutes, published between 01. January 2016 and 31. December 2021. The selected newspapers are *The New York Times, USA Today, The Wall Street Journal, New York Post, CNN,* and *Fox News*. These U.S. newspapers were selected by the above-mentioned research group, based on the media's high reach and the hence resulting impact on public opinion forming, as well as on the political orientation aiming for a balanced left-right newspaper sample. In a next step, keywords were selected, that allowed to find the most relevant newspaper articles within those newspapers reflecting the media discourse of the research topic. Then, the sample was reduced to those keywords with the most Google and Factiva search hits, which were the following: «meat», «meat substitute», «meat alternative», «vegan», «vegetarian», «diet», «animal welfare», «animal husbandry», «animal farming», «food production», and «agriculture». The keyword search was applied on articles and other media formats with relevant news content, for instance captioned videos. These keywords helped filter the media content of above-mentioned newspapers and to batch download the suitable ones as excerpts. An excerpt included all relevant articles that were published on the same day in the same newspaper. To ensure an adequate covering of the research topic, articles with only one keyword or none at all were excluded.

To develop a suitable codebook the team of researchers coordinated by Lukas Fesenfeld had applied an inductive approach: First, the researchers read statements or short reports in election programmes in Germany, which was the first country analysed by this research group. After extracting statements concerning meat, meat substitutes or plant-based diets, these statements were sorted by main topics. Then based on this list, general key statements were aggregated and formulated as fragmented sentences. In the context of this master thesis, this fragmented statement sentences are referred to as «fragmented general key statements». For coding U.S. articles, the codebook was supplemented and applied accordingly. Subsequently, different other variables were added to the codebook, which allowed to clarify the statements in the following manner: If an additional statement was detected, annotations were made and when it turned up more than 5 times, it was discussed whether it makes sense to add an additional fragmented general key statement. The final codebook can be found in the appendix *(see chapter 7.1.)*. The work of coding was carried out by an international research group coordinated by Lukas Fesenfeld under the umbrella of the Swiss Network for International Studies (SNIS, 2021). I joined the group of coders during several months.

In advance, the data had been subdivided into low, medium and high priority months. This division was based on the number of keywords that were searched in google throughout the selected time period. The higher the priority of the month, the more salient meat or meat substitutes were in media discourse during that time and the higher the assumed number of coded statements. For this master thesis only high and medium priority months were used *(see table 1)*. The focus on exclusively high and medium months is due to the lack of quantitative data of several low priority months because of unfinished coding work. Since the low priority months contain less information on the media discourse around meat and meat substitutes, all the low priority months were excluded.

Table 1: Overview of the coded articles, grouped by the month of their publication.

Year	Month	Coded (yes = "x", no = "")	Year	Month	Coded (yes = "x", no = "")	Year	Month	Coded (yes = "x", no = "")
2016	Jan		2018	Jan		2020	Jan	x
	Feb			Feb	x		Feb	x
	Mar			Mar			Mar	x
	Apr	x		Apr			Apr	x
	May			May			May	x
	Jun			Jun	x		Jun	x
	Jul			Jul			Jul	x
	Aug			Aug			Aug	x
	Sep			Sep			Sep	
	Okt	x		Okt	x		Okt	
	Nov			Nov	x		Nov	x
	Dez	x		Dez			Dez	x
2017	Jan		2019	Jan		2021	Jan	x
	Feb			Feb			Feb	x
	Mar			Mar	x		Mar	
	Apr			Apr	x		Apr	
	May			May	x		May	x
	Jun	x		Jun			Jun	x
	Jul	x		Jul			Jul	x
	Aug			Aug			Aug	
	Sep			Sep			Sep	
	Okt			Okt	x		Okt	x
	Nov	x		Nov	x		Nov	x
	Dez	x		Dez			Dez	x

For manual coding the open-source standalone software Discourse Network Analyzer (Version DNA 2.0 Beta 25) was used for this master thesis *(see figure 4 and 5)* (Leifeld et al., 2019). Via codebook, statements were detected and coded in the articles. A statement in this master thesis is defined as a phrase or very short paragraph about anything related to meat or meat substitutes. It can for example be about issues being put into context, about explaining or releasing new or already known information concerning meat or meat substitutes, about highlighting (positive or negative) aspects, or about rephrasing or quoting actors' or interest groups' opinions or views. A sentence or paragraph was then coded, provided it was possible to assign it to a fragmented general key statement. If this was the case, all other variables that could be recognized in the statement, were coded.

After a very detailed explanation of how to interpret and code the statements, once a week a meeting was held, to ensure intercoder reliability. In cases where the statement could not be clearly interpreted and coded accordingly, the team was consulted in plenary and a consistent and stringent solution was found, which was then again applied for further similar cases. If no clear answer to the coding problem could be established, that variable was not coded but left blank. Therefore, not all variables were coded for all statements. In regard to the data analysis,

this means that if the data was analysed in regard to a certain variable, varying number of statements were analysed. The exact number of statements analysed is indicated in the graphs and was taken into consideration when interpreting the results.

3.2.1 Variables

In Leifeld's Discourse Network Analyzer (Leifeld et al., 2019) each excerpt of news content was saved with a title, consisting of the publication date, the name of the newspaper, and the form of the news content, meaning if it was written in form of an article or interview. The information contained in the title was fundamental for the qualitative and the quantitative analysis. When exporting the data coded with Leifeld's Discourse Network Analyzer, every statement was automatically exported with a datetime variable. That variable was eminent when analysing the data with RStudio.

The codebook contained in total 17 variables. In the following paragraph, the ones that were important for this master thesis are being described in detail. All of the following variables are categorical variables in nominal scale.

A fundamental variable was «statement topic». This variable was used to code, whether the statement was made in regard to meat (in general, meat products, meat consumption, meat production or about animal husbandry), concerning any kind of meat alternative or if it was about plant-based diets or plant-based foods. Since this master thesis focuses on the discourse around meat and meat subsitutes, only the first and the second category of the variable were considered. Statements about plant-based foods, not to be confused with plant-based alternatives, were not taken into consideration.

The «statement» variable was one of the most important variables for this master thesis. The coded variables appeared in form of the fragmented general key statements, as already mentioned in *chapter 3.2.*. The final list describing and illustrating all 42 fragmented general key statements with an example, can be found in the appendix in *chapter 7.1.1.*. To describe the type of those fragmented general key statements, the list containes three categories: narratives, policy goals and policy instruments. Those specifications are not relevant for this master thesis, they are just mentioned here for the sake of completeness.

Another crucial categorical variable for this thesis' research was the «statement reference» variable. In the discourse literature by Brown et al. (1983) the term *reference* is very broadly defined as the relationship «between expressions in a text and entities in the world», or as «a set of objects in the world to which the expression can be correctly applied» (Brown et al.,1983: 204). Kibrik (2011) descirbes a reference as a linguisitc phenomenon that is daily used when communicating (Kibrik, 2011). In the context of this master thesis, a statement reference describes the main topic area which was addressed in a statement and helps to specify the content of a single statement. The reference variable also informs about an actors' persued interests and helps to specify which arguments were the most importantant ones throughout the media discourse. Furthermore, it can be used to find out, what topics were in the focus of the media discourse at a certain time. Nineteen different references are distinguished in the codebook: «health», «environment», «climate», «biodiversity», «land usage», «water usage and quality», «deforestation», «animal welfare», «working conditions», «pandemics and epizootic diseases», «antibiotics», «economy», «moral and ethic», «taste and texture», «food security», «highly processed», «social fairness», «oligopoly», and «tradition and culture». The difference between the references «environment» and «climate» lies in the fact, that only topics that talk very generally about the environmnent were coded with the «environment»-reference. The latter is used when the climate or GHG-emissions etc. are thematized specifically. «Food security» is not used in the context of food safety but refers to local or global food supply issues.

In case a statement expresses a positive view on meat or meat substitutes the «topic valence» variable was coded as «pro». In case a statement expressed a negative view on meat or meat substitutes the value «contra» was coded. The «topic valence» was always coded in reference to the current status quo of for example meat production or consumption.

With the variable «actor individual» the name of an individual actor was coded, who was named as source of the statement. If that actor was speaking on behalf of an organisation, then it was additionally coded in the «actor organisation» variable. Sometimes only information on one of the two variables or none at all could be found in the media article. The source sometimes was not named in the sentence but further up or down in the context of the article. In that case, the actor variables were coded, nevertheless. A journalist could be coded as an actor individual if they were explicitly named in relation to a certain statement.

Based on the actor variables, a typology was developed, to categorize the numerous actors. To develop this typology, an inductive approach was applied. Within the coded actor individuals and/or actor organizations, similar interests could be detected. Those similarities could occur in form of occupations, functions, or interests: for example, meat substitute processors, farmers, restaurant owners, university professors, or NGO members. Then these interest groups were bundled into main categories. In case of the examples above meat substitute processors, farmers and restaurant owners were placed into the main category «Businesses and Associations», while university professors were assigned into the main category of «Academics and Thinktanks» together with for example members of scientific panels. NGOs were classified together with foundations into a category, named «NGOs and Foundation». As a next step, these main categories were again divided into more specific subcategories. In case of the «NGOs and Foundation»-main category, those were split up according to their purposes. Actors assigned to the main category «Businesses and Associations» were divided by similarities of goods or services they provided. Throughout the process of inserting coded actor individuals or organisations to the categorial system some shortcomings of the typology were detected. Some actors could either not be assigned to any category or the occupations, functions, or interests were too heterogenous, that bundling them into one category was not possible. According to those shortcomings, the typology was revised repeatedly until there were no more shortcomings to be found. In case, there was still an actor, that could not be assigned clearly to one of the subcategories, a category with «Others» was inserted. This was only done with subcategories since every actor had to be assigned to a specific main category. The final typology can be found in the appendix *(see chapter 7.2.)*.

The codebook furthermore contained the «actor position» variable, that indicates whether the actor (individual or organization) is in favour of the coded statement, neutral towards the coded statement or in disapproval. This categorical variable includes the values «support» and «opposition». In case an actor position was in opposition of the statement, the «topic valence» variable was recoded for analysis in RStudio: «pro» was recoded to «contra» and «contra» to «pro».

3.2.2 Coding example

In *figure 4* an image of the Discourse Network Analyzer surface (DNA 2.0 Beta 25) (Leifeld et al., 2019) is illustrated. The labels explain the different windows and indications. Also, an example of a statement and coded variables can be seen in *figure 4*.

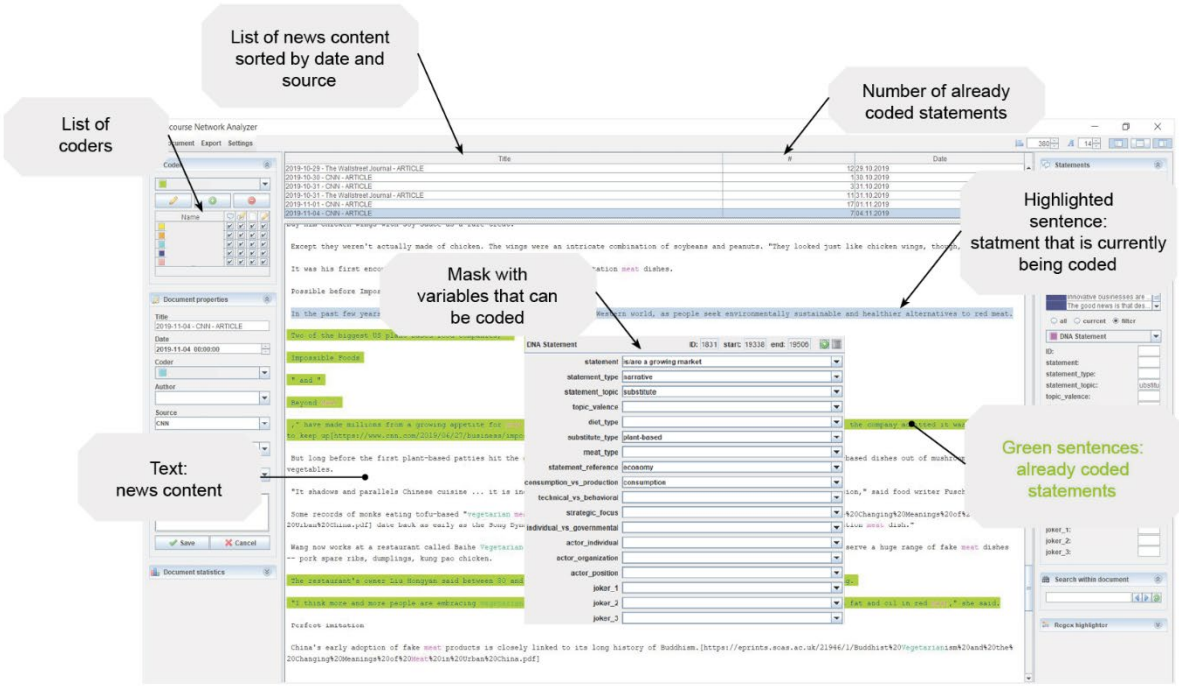

Figure 4: Image of a labelled surface of Leifeld's Discourse Network Analyzer (DNA 2.0 Beta 25) with a window showing the coding mask to code the highlighted statement number 1831.

Each coder used another colour for coding, in order to be able to trace the statements back to the individual research group members. In case of the example in *figure 4* the coder used green. The example sentence that is highlighted in that image was coded as statement number 1831. The statement appeared on CNN the fourth of November in 2019. It reads as follows: «In the past few years, demand for fake meat products has surged in the Western world, as people seek environmentally sustainable and healthier alternatives to red meat» (Westcott & Fang, 2019). In *figure 5* the complete list of existing variables is shown as well as the values, which the coder had filled into the mask.

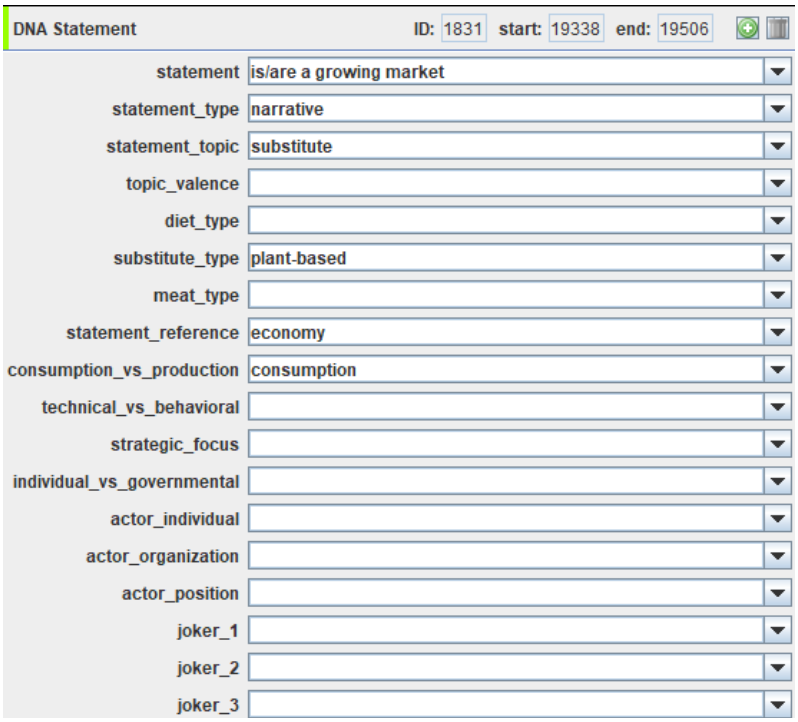

Figure 5: A window within the Discourse Network Analyzer (DNA 2.0 Beta 25) that shows a filled out coding mask of statement number 1831.

In statement number 1831 the fragmented general key statement «is/are a growing market» was coded in context of the statement topic «substitutes». According to the list of fragmented general key statements (*see chapter 7.1.1*.), this fragmented general key statement can be classified as «narrative». Furthermore, it was specified in the sentence, that the demand is rising, which means not «production», but «consumption» is being thematized. The term «fake meat products» and the preceding context makes it clear that the statement is addressing plant-based substitute products, because ingredients such as soybeans and peanuts are mentioned. Furthermore, statement number 1831 was concerning the growing demand on the meat substitute market (Westcott & Fang, 2019). Therefore, the statement was made in reference to the topic area «economy». The blank spaces in the mask indicate, that in the exemplary sentences there were no information on the values for these variables. For example, since no author is named within this article, to which the statement could be traced back to, these variables were not coded. In case of the exemplary sentence, further fragmented general key statements can be coded within the same sentence. Besides the increasing «demand for meat substitutes in the Western world» (Westcott & Fang, 2019), reasons for meat substitute consumption have been thematized as well («[…], *as people seek*

environmentally sustainable and healthier alternatives to red meat.») (Westcott & Fang, 2019). The *cursive* part of the sentence implicates the statements «meat is bad for health» and «meat is bad for the environment», adding all the information to the other variables as well.

3.3 Data analysis

To test the hypotheses for their accuracy and to answer the research question, the data was first analysed quantitatively in order to then conduct qualitative analysis on the basis of the quantitative findings.

3.3.1 Quantitative analysis

For the quantitative part of the analysis the descriptive method of data visualisation through graphical techniques was applied, using RStudio (Marshall & Jonker, 2010). This methodology requires low level of interpretation but aims for exploring knowledge in an area, where more or further detailed information is needed (Vaismoradi et al., 2013; Gbrich, 2017). Data visualisation is a form of descriptive statistics which is useful to interpret, organize, summarize, and describe a data sample and its characteristics (Marshall & Jonker, 2010). For this master thesis mainly stacked bar plots with two or three variables, time series plots and stacked area charts with two variables were generated (Prabhakaran, 2017).

As already elaborated before, only high and medium priority months were part of the data frame. Due to the missing months, the data was summarized in quarterly intervals. For that purpose, the datetime variable was used to assign all statements to the corresponding quarter, in which they were published.

First of all, an overview of the data was provided by generating different barplots. For example, plots showing the number of statements published between 2016 until 2021 concerning meat and /or meat substitutes were generated or the most frequently used fragmented general key were visualized in a barplot. In a next step, more specific graphs for each hypothesis were generated. The goal of those descriptive bar plots was, to find salient peaks over the course of time with respect to different variables or combinations of variables.

Peaks in absolute numbers were relevant for this research, because during these quarters the discourse around meat or meat substitutes was very salient. Issues related to meat respectively meat substitute consumption or production were then ranking high(er) on the media agenda. A large number of statements also suggests a high actor engagement in the media discourse. To answer the research question, it was essential to determine, whether or not those issues were meat substitute launches or not.

Additionally, also *structural break analyses* were conducted in RStudio. This method is used, to detect *structural breakpoints*. Structural breakpoints are points in a time series that indicate changes in trends. To detect changes in trends, estimations for the progression of the time series are made based on the data frame. Those points, where the estimations did not match the actual data, were then determined to be structural breakpoints. To calculate them in RStudio, data had to be converted into time series first. Then an algorithm searchee for patterns or regularities within the time series and bundled those as segments. Using the breakpoint function in R, the points in time where the pattern changed, i.e., where the segments were divided, were defined as breakpoints (Fritzell, K. 2022; Szachowicz & Skórka, 2021).

For the first hypothesis the same data as for the bar plots were used to identify structural breaks: the absolute number of statements concerning meat or meat substitutes. To find structural breakpoints, that helped reject or accept the second hypothesis, an index was calculated. That index indicated, how the proportion of pro meat arguments related to the total number of statements about meat stated in the news over time. For comparison the same was done with contra meat and pro meat substitute arguments, to ensure that the sum of the two indices would equal 1. An index value was calculated for every quarter of a year from 2016 until 2021. Those quarters which did not include any high or medium priority month and were therefore quarters with no coded statements were excluded from the analysis. The reason for the exclusion is, that the index value of those quarters would appear as the value 0, which would falsify the results. A value of 0 would signify that all coded statements of those quarters are pro meat, which would be wrong. Furthermore, in the low priority months which does not include a lot of statements, one statement would receive way too much weight in the index. The excluded quarters are 2016/01, 2016/03, 2017/01, 2018/03, and 2019/03. The quarters of the structural breaks are relevant for this thesis, because they indicate changes in

either the salience of meat or meat substitute topics (H1) or changes in the prevailing opinion transmitted through statements in the media (H2 and H3). To answer the research question, it was eminent to determine, whether or not it were substitute-related events that triggered a change in the course of the media discourse.

Additionally, also peaks and low points in the contra meat index were used as selection criteria. Those were relevant quarters as well, because in those quarters, issues that shed a very negative or positive light on meat production respectively consumption were salient on the media agenda, dominating the media discourse about meat. To answer the research question, it was essential to determine, if those issues were meat substitute launches or not.

3.3.2 Qualitative analysis

In a next step, those quarters detected through quantitative analysis were used to qualitatively analyse the content of the news excerpts. Within the selected quarters – via descriptive analysis – a random sample of articles were selected. The selected news content was then read carefully in an in-depth qualitative analysis, writing down all the newsworthy topics, events, issues or incidents that were object to those articles. By means of this procedure, topics, events, issues or incidents, which were the triggers for this news articles or content to be set on the media agenda, were detected. Also, events influencing the general prevailing tone of the published statements, manifesting a position either pro meat and contra substitutes or contra meat and pro meat substitutes, needed to be found. The number of randomly selected excerpts depended on the total number of excerpts that the dataset contained in that quarter. This was because the random selection had to be in proportion to the total amount of relevant news content published in that quarter, so as not to distort the in-depth analysis. The final goal of this in-depth qualitative analysis was, to find out whether those detected trigger-events, -issues or -incidents could be associated with newsworthy substitute launches.

4 Results and discussion

As already elaborated, the descriptive graphs in this chapter were created using quantitative data gathered via content analysis. The striking characteristics, elements, or patterns that those graphs reveal were decisive for the selection of the quarters, for which a more detailed analysis was carried out. As already elaborated in the method section, this detailed analysis was conducted in form of a qualitative analysis of a random sample of media content. In this chapter, those quantitatively generated graphs are interpreted, and the noticeable characteristics, elements, or patterns are connected to the content of the meat discourse and put into context of newsworthy events. The results and discussion chapter starts with a first overview of the meat and substitute discourses and will then go into the data analysis regarding the three hypotheses.

4.1 Overview of the U.S. media discourse about meat and meat substitutes

This introductory chapter provides an overview of the most salient topics, of the actor involvement and their predominant positions in the discourses. The meat discourse is analysed and discussed first, followed by the substitute discourse. Then a first overview of the actors, that were involved in the media discourse, is provided.

4.1.1 Overview: U.S. meat discourse

During 2016 until 2021, a wide range of topics or issues were covered throughout the meat discourse. This first impression results from the graphs described below.

In *figure 6* the statement references that were thematized throughout the discourse are displayed, and also the frequency, in which those were used in favour or against meat. The 19 different statement references that exist in the codebook were used at least once. At first glance, it is already apparent that the tonality in this discourse was predominantly negative.

When taking a closer look at the absolute number of times those references had been made, the «pandemics and epizootic diseases»-reference (N=353; 87 percent contra meat statements) had the highest number, followed by «health» (N=298; 86 percent contra meat statements), «working conditions» (N=205; 89 percent contra meat statements), «climate»

(N=170; 88 percent contra meat statements), and «food security» (N=133; 87 percent pro meat statements). All of these most frequently used statements, with the exception of «food security», were used in statements against meat. Among the least used statement references were «deforestation» (N=19; 100 percent contra meat statements), «moral and ethics» (N=14; 93 percent contra meat statements), «social fairness» (N=12; 75 percent pro meat statements), and «biodiversity» (N=7; 100 percent contra meat statements) *(see figure 6)*.

Between 2016 and 2021 the only references that were made in favour of meat were «food security», «economy», «taste and texture» (N=29; 93 percent pro meat statements), «tradition and culture» (N=29; 90 percent pro meat statements), and «social fairness» *(see figure 6)*.

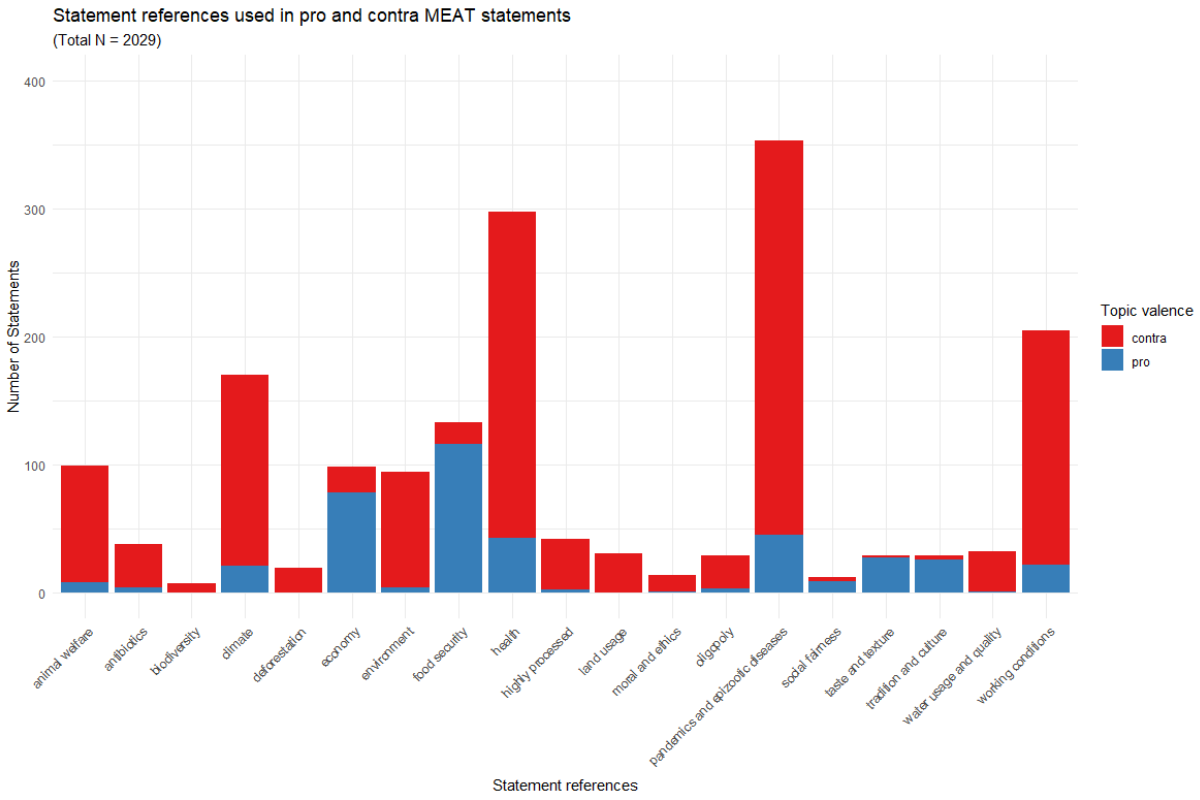

Figure 6: Graph showing the absolute number of con and pro statements, indicated on the basis of statement references, used in the meat discourse published in the selected U.S. media between 2016 until 2021.

In *figure 7*, an overview of the used fragmented general key statements is visualized. The one that was clearly used most frequently was «is/are bad» (N=1348). This accounts for almost

half of the total fragmented general key statements voiced concerning substitute-related issues. Far less frequently used, yet among the most used statements, were «is too low» (N=210), «is/are good» (N=185), «increases the risk for» (N=144) and «should be reduced» (N=135) (see figure 3). These statements are part of a wide range of statements that have been made in connection with meat: 23 different general key statements could be identified using the codebook. These top five fragmented general key statements were formulated as narratives, with exception of the «should be reduced»-statement, which was formulated as a goal.

All the other statements were used less than 100 times between 2016 and 2021. Between 100 and 50 times stated were the following statements: «is/are going to be more expensive» (N=56), «should be improved» (N=55), «is/are too expensive» (N=43), «is/are in short supply» (N=36), «is/are a growing market» (N=34), «is/are a shrinking market» (N=19), «is/are too cheap» (N= 13), «is/are going to be cheaper» (N=11), «is too high» (N=10), and «should be increased» (N=10). The remaining eight statements were used less then five times in these six years: «(indirect) subsidies for meat producers», «is/are responsible for», «should be supported», «VAT on meat products», «mandatory higher animal welfare standards», «meat advertisement», «should be more expensive», and «transformation of EU's agricultural subsidies from area-based support to the support of climate-friendly practices». 19 of the total 42 fragmented general key statements defined in the codebook were never used *(see chapter 7.1.1.)*.

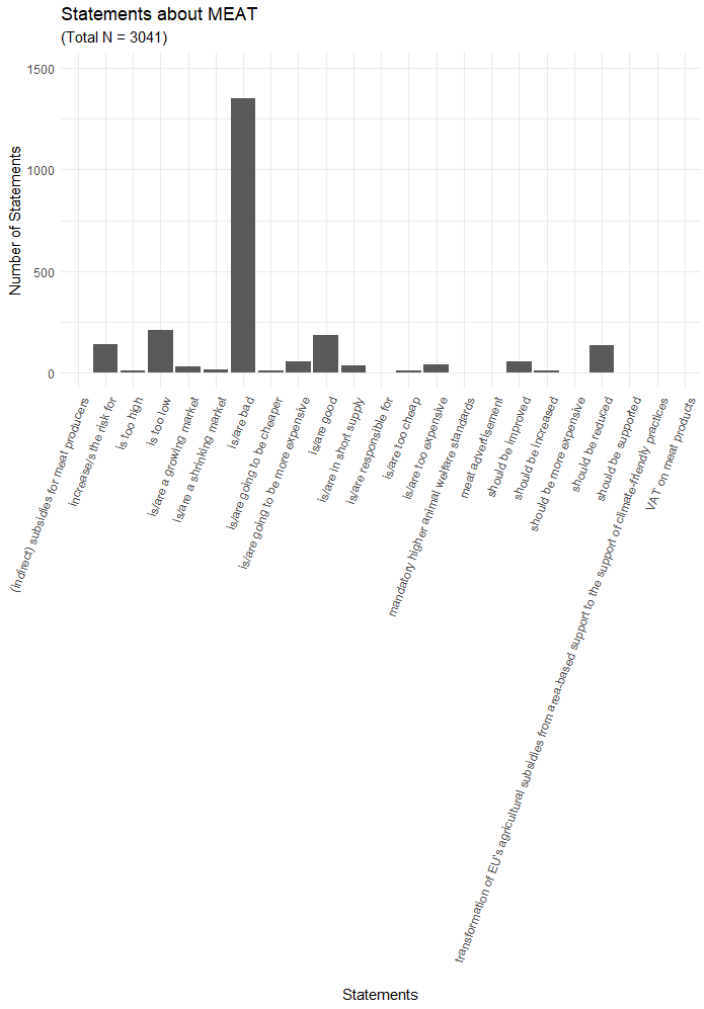

Figure 7: Graph showing the number of fragmented general key statements about meat, formulated as fragmented sentences, that appeared in the selected U.S. media content between 2016 until 2021 – in absolute numbers.

To get a clearer picture of information or opinions regarding meat that had been expressed in the media, the fragmented key statements is considered in combination with the «statement reference» variable (*see figure 8*). Over the entire time analysed the following statements were published most frequently: «working conditions are bad» (N=358), «is/are bad» in relation with «pandemics and epizootic diseases» (N=284), «meat is bad for health» (N=192), «food security is too low» (N=176), «meat is bad for climate»(N=144), «increase/s the risk for» in relation with «pandemics and epizootic diseases» (N=131), and «is/are bad for animal welfare» (N=81). All of these statements were highlighting negative aspects of meat. But there were also statements made, in favour of meat. Among those, the most frequently used ones

were «is/are good for health» (N=41), «is/are good for economy» (N=36), and «is/are a growing market» (N=31).

When looking at the fragmented general key statements «is/are bad», «is/are good», and «should be reduced», one can see that those had been used in many different contexts. Compared to other fragmented general key statements, those were the most heterogenous. (*see figure 8*).

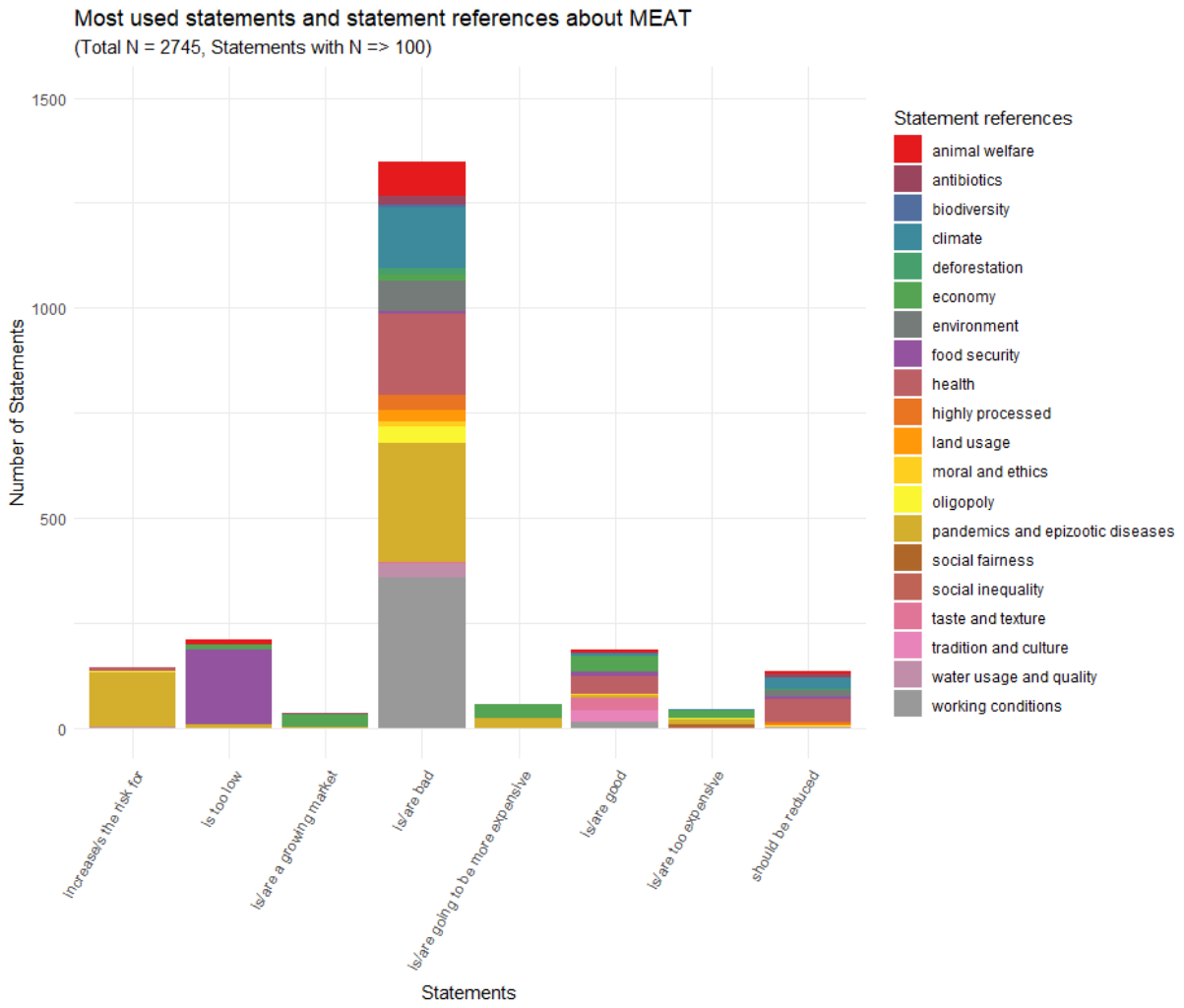

Figure 8: Graph showing the absolute number of fragmented general key statements combined with the statement references used in the meat discourse in the selected U.S. media between 2016 until 2021. The selected general key statements displayed on the x-axis are the ones, that count for 100 statements or more.

4.1.2 Overview: U.S. meat substitute discourse

The focus is now shifted to the substitute discourse. In comparison to the meat discourse, the variety of statements used in the meat substitute discourse was clearly smaller: only 14 of the 19 possible statement reference categories were coded in that context *(see figure 9)*. Lacking were the following references: «biodiversity», «antibiotics», «social fairness», and «oligopoly». It is also important to note that the meat substitute discourse was much smaller in terms of statement quantity than the meat discourse. However, the exact proportions will be discussed in *chapter 4.2.1*..

The most frequently used statement references throughout the meat substitute discourse, as you can see in *figure 9*, were «taste and texture» (N=89; 91 percent pro meat substitute statements), «environment» (N=62; 98 percent pro meat substitute statements), «economy» (N=50; 86 percent pro meat substitute statements), «health» (N=48; 77 percent pro meat substitute statements), and «climate» (N=26; 92 percent pro meat substitute statements). Noticeable is that except for one reference, all the others were used when supporting the consumption or production of meat substitutes. The only statement reference, in which the contra statements overweight the pro statements was «highly processed» (N=17; 100 percent contra meat substitute statements). Based on those results, it can be stated that the substitute discourse was clearly more positive than the meat discourse.

The least frequently used statement references were «food security» (N=6; 100 percent pro meat substitute statements), «moral and ethics» (N=3; 100 percent pro meat substitute statements), «working conditions» (N=2; 100 percent pro meat substitute statements), and «tradition and culture» (N=1; 100 percent pro meat substitute statements).

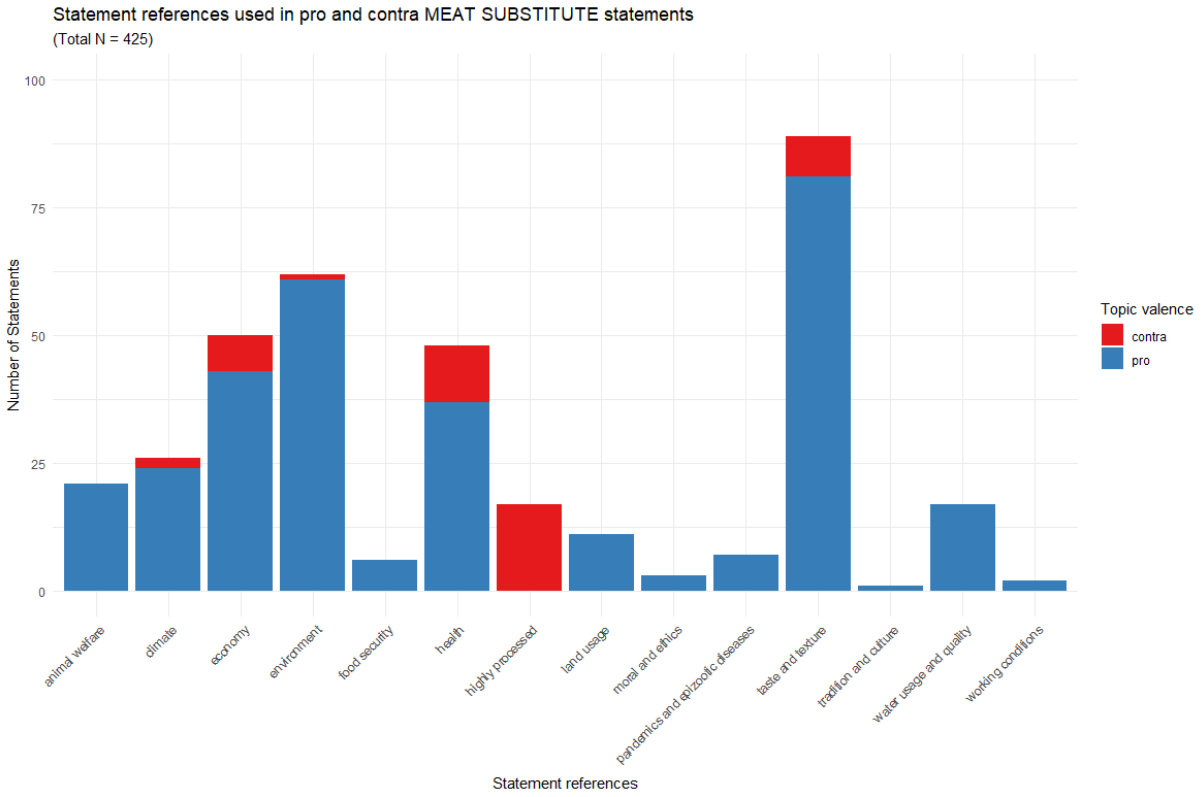

Figure 9: Graph showing the absolute number of contra and pro statements, indicated on the basis of statement references, used in the meat substitute discourse published in the selected U.S. media between 2016 until 2021.

Also, with regard to the fragmented general key statements, it can be said that the discourse was focused on fewer subject areas than meat. While throughout the meat discourse 23 different fragmented general key statements in context with meat were coded, only 9 different ones were used when referring to meat substitutes *(see figure 10)*.

Between 2016 and 2021, the fragmented general key statement that was used the most in the meat substitute discourse was «is/are good» (N=255), followed by « is/are a growing market» (N=102), «is/are bad» (N=49), and «is/are going to be cheaper» (N=6). That the consumption or production of meat alternatives has a positive impact on a variety of things, this statement accounts for more than half of the substitute-discourse. These results show, that in the U.S. media, actors portrayed meat substitutes clearly positively and as a successful product.

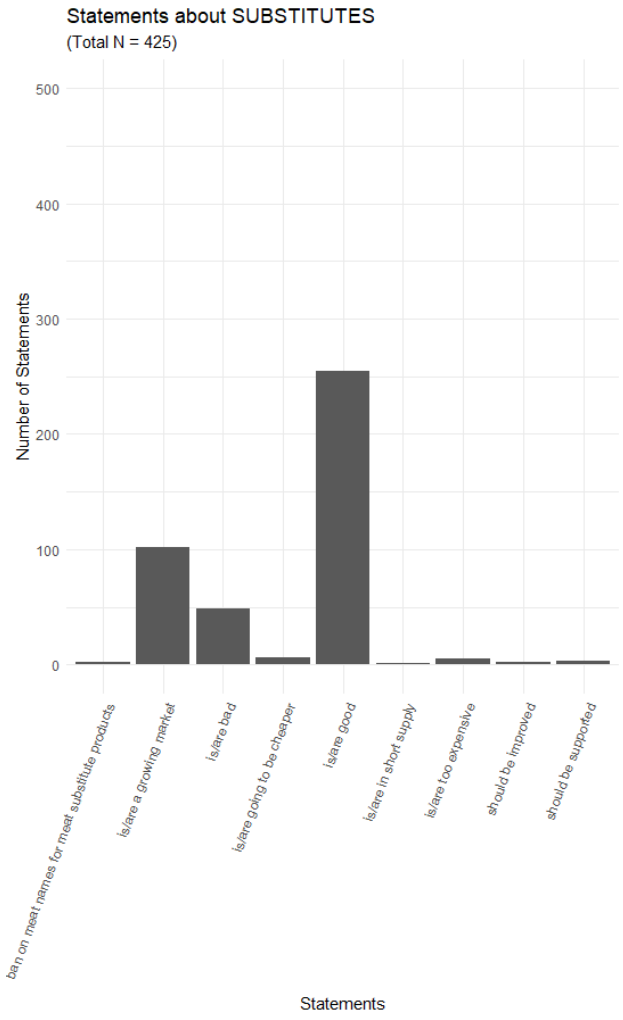

Figure 10: Graph showing the number of fragmented general key statements about meat substitutes, formulated as fragmented sentences, that appeared in the selected U.S. media content between 2016 until 2021 – in absolute numbers.

When looking at what topics these fragmented general key statements were used in reference to, a similar trend is apparent *(see figure 11)*. The most frequently used statements were all highlighting positive aspects of meat substitutes: «meat substitutes are good in taste and texture» (N=77), «meat substitutes are a growing market» (N=70), «meat substitutes are good for the environment» (N=49), «meat substitutes are good for people's health» (N=30), «meat substitutes are good for climate» (N=25) as well as «meat substitutes are good for animal welfare» (N=22). Most of these frequently used key statements could pursue the goal of promoting newly launched substitute products or describe the success of these launches.

Negative key statements in the meat substitute discourse were «is/are bad» with reference to «highly processed» (N=18) and «health» (N=14). The «health» reference was used both in

pro and contra substitute statements, but the positive ones (N=30) outweigh the negative (N=14). Meat substitutes being a highly processed product seems to have been a popular argument among the meat substitute opponents.

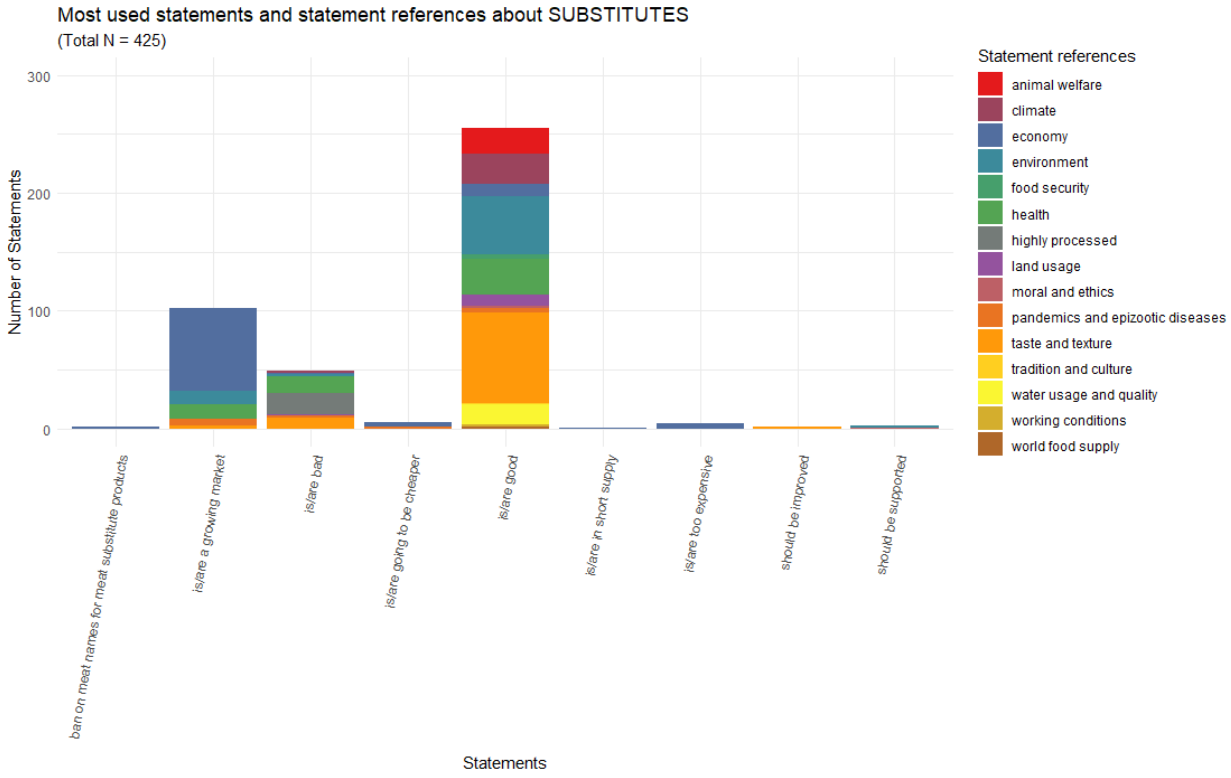

Figure 11: Graph showing the absolute number of fragmented general key statements combined with the statement references used in the meat substitute discourse and published in the selected U.S. media between 2016 until 2021.

4.1.3 Actor involvement

After elaborating, how meat and meat substitutes were commented in the U.S. media between 2016 and 2021, the next step is to elaborate which actors were the sources of those statements. For this purpose, first, the actor categories are examined in more detail.

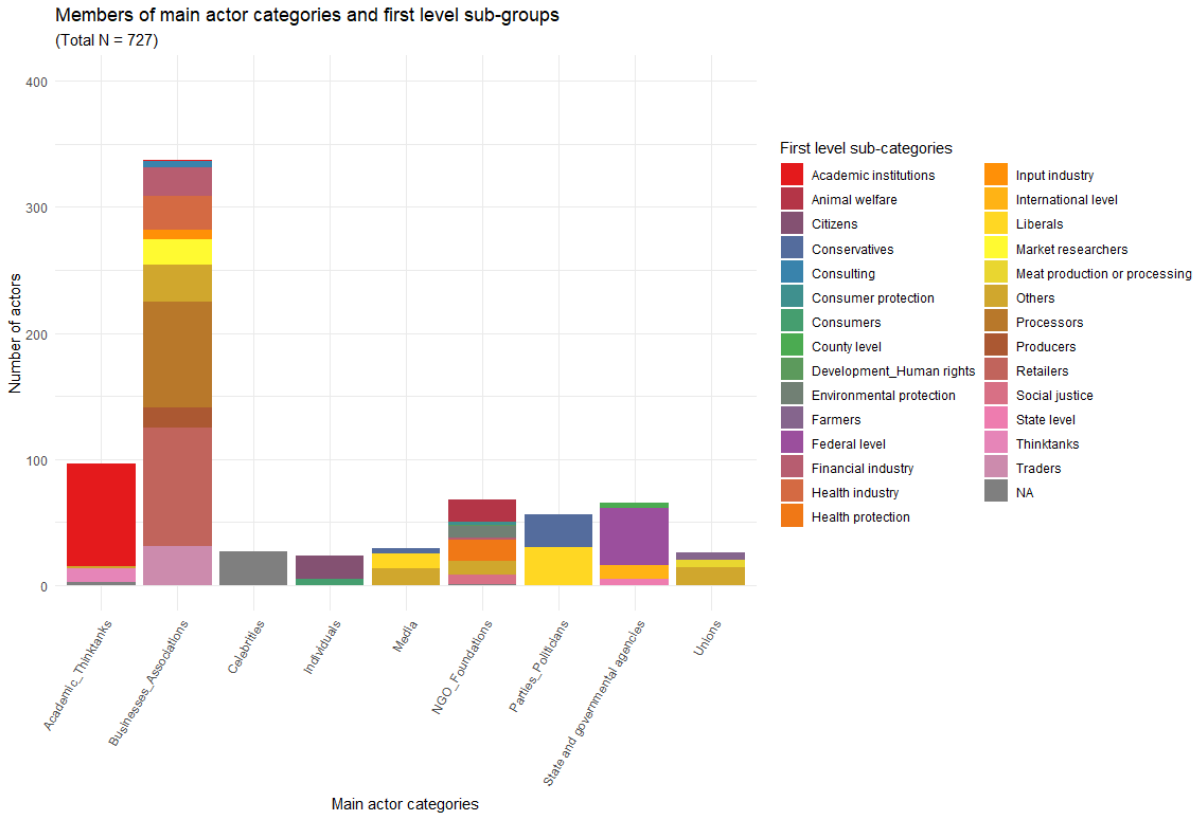

Figure 12:Visualization of the highest two actor typology levels including all actors that had made a statement in the meat or meat substitute discourse between 2016 and 2021. The figure indicates the first actor typology level, the main actor category, and second typology level, the first sub-category.

The x-axis in *figure 12* shows the main actor categories of the highest typology level. The actors voicing statements relevant for this master thesis were divided into nine main interest groups.

With 337 different group members, the main category «Businesses and Associations» accounts for 46 percent the total number of actors. Within this main group, «Retailers» (N=94), «Processors» (N=84), «Traders» (N=31), and «Health industry» (N=27) form the biggest sub-categories. Further sub-categories are the «Financial industry» (N=22), «Market researchers» (N=20), «Producers» (N=16), «Input industry» (N=8), and «Consulting» (N=5). 29 additional actors could not be summarized into a sub-category, since their interests, functions, or occupations were too diverse or did not fit into any existing sub-category. Therefore, they were assigned to the «Others»-category.

The next largest category in terms of member count is «Academic and Thinktanks» (N=96) of which almost 85 percent of the actors represent an academic institution. The remaining 11 actors belong to a think tanks.

68 different actors engaged in the media discourse about meat that could be traced back to NGOs or foundations. Most of those NGOs or foundations were founded to protect or to support animal welfare (N=18). 17 actors are members of organisations founded for health-related purposes, 9 for environmental protection, 7 for social justice, 2 for consumer protection and one actor was a member of an organisation, that protects human rights and furthers development in society. 11 additional actors could not be united in any of those or new sub-categories.

«State and governmental agencies» count 65 different members that stated something throughout the meat or meat substitute discourse. Actors on a federal level were the most involved (N=45), followed by actors on the international level (N=11), state level (N=5), and county level (N=4).

Also, parties and politicians (N=56) expressed their opinion or gave information concerning meat or meat substitutes in the U.S. media. The actors assigned to this main group were grouped according to their party affiliation. The democrats' actors were more diversely represented in the discourse (N=30) than the republicans (N=26). The same division was made among the media actors (N=30). 12 different journalists or employees of media firms that have a predominantly left-wing political orientation have made a personal comment about meat or meat substitutes. 4 journalists or employees of news firms with a predominantly conservative political orientation were involved in the discourses. 13 journalists or employees were engaged in the discourse, which worked for different medias that are not said to have any political orientation (AllSides, 2023).

26 different actors could be assigned to the main category «Unions». Sub-categories involved in the discourses were «Farmers» (N=6), «Meat production or processing» (N=6) and «Others» (N=14). In this thesis' sample of articles, there were no actors engaged in the media discourse that could have been assigned to the category «Meat substitute production or processing».

Celebrities are a main actor group, that is not divided any further. Therefore, all the 27 different members of this group do not belong to any sub-group. Due to the non-existing sub-division, those actors are indicated as «NA»-values in *figure 12*.

People that were interviewed as private individuals were summarized in the actor main category «Individuals» (N=23) and further divided into two sub-categories: citizens (N=18) and

consumers (N=5). The first were considered in terms of their political opinion or their opinion as a voter. The latter were considered in terms of economic interests and in context of their purchasing desires. To which of the sub-groups an individual belongs, was inferred from the content of the statement or the article.

Some of the actors could not be identified, for example because only a first or last name was mentioned and therefore no affiliations could be clarified. Those actors are indicated as «NA»-values in *figure 12*.

4.1.3.1 Positioning of actors in the meat discourse

In this following chapter it is elaborated, how the actors positioned themselves in the discourses. To this end, their usage of the variables «statement reference» and «topic valence» were analysed. In this chapter the meat discourse is analysed. In *chapter 4.1.3.2*. the meat substitute discourse is taken into focus.

It is important to note, that not every statement that was recognized in the media texts and coded as such was coded with information about an actor. Because many statements were published without an indication of who the source of it was. Within the pro or contra meat discourse, 66 percent of the statements were published without a specified actor (N= 1336). Within the statements made in favour or against substitutes the share of statements published in the media without a known source lied at 61 percent (N=427).

Since, due to a lack of information, the variables «statement reference» and «topic valence» (pro/contra) could not always be coded for all statements, the *figures 13 and 14* do not contain the same number of statements. In the following paragraph, the numbers indicated with «(N=*x*)» refer to the «statement reference» variables. The percentages in the brackets are calculated with data of the «topic valance» variable and indicate the share of pro or contra statements in reference to the total number of pro and contra statements.

«Businesses and Associations» (N=286), «State and governmental agencies» (N=127), and «Academic and Thinktanks» (N=113) made the most statement references throughout the time of 2016 until 2021. Actors belonging to the «Businesses and Associations»-category

made statements mostly about «food security», «pandemics and epizootic diseases», «working conditions» and «economy». 67 percent of those references were made in statements supporting meat. «State and governmental agencies» pushed statements about «pandemics and epizootic diseases», «health» and «climate». A big share of their statements contained contra arguments about meat (63 percent of the categories' statements). Academic institutions and/or thinktanks mostly addressed topics such as «health», «climate», and «highly processed» meats. Those actors as a main category mainly stated contra meat statements (70 percent of the categories' statements). Another interest group that made more contra than pro meat statements throughout the meat discourse in the media (83 percent contra meat statements) was the «NGOs and Foundations» category (N=80). In those statements they were most concerned about topics such as «health», «animal welfare», «working conditions», and «pandemics as well as epizootic diseases». «Parties and Politicians» (N=74) were almost as involved in the meat discourse as NGOs and foundations. More than half of the references made by parties and politicians were on the subject of «working conditions» and «food security». This interest group is the most balanced in terms of their contra and pro arguments: 44 percent of their references were used in contra meat statements, 56 in pro meat statements.

Among the smallest and least involved groups are the following: «Media» (N=25) were using «climate»- and «pandemic and epizootic diseases-references», «Individuals» (N=15) pushed mostly «animal welfare»-statements, «Celebrities» (N=14) using references about «pandemics and epizootic diseases», «climate», and «health», and «Unions» (N=12) mainly thematizing «economy». While celebrities and media actors were clearly contra meat (celebrities: 94 percent contra meat statements; media actors: 86 percent contra meat statements), unions were clearly supporters of meat (13 percent contra meat statements). Among the main category of «Individuals», the use of pro and contra statement references was almost even (44 percent contra meat statements).

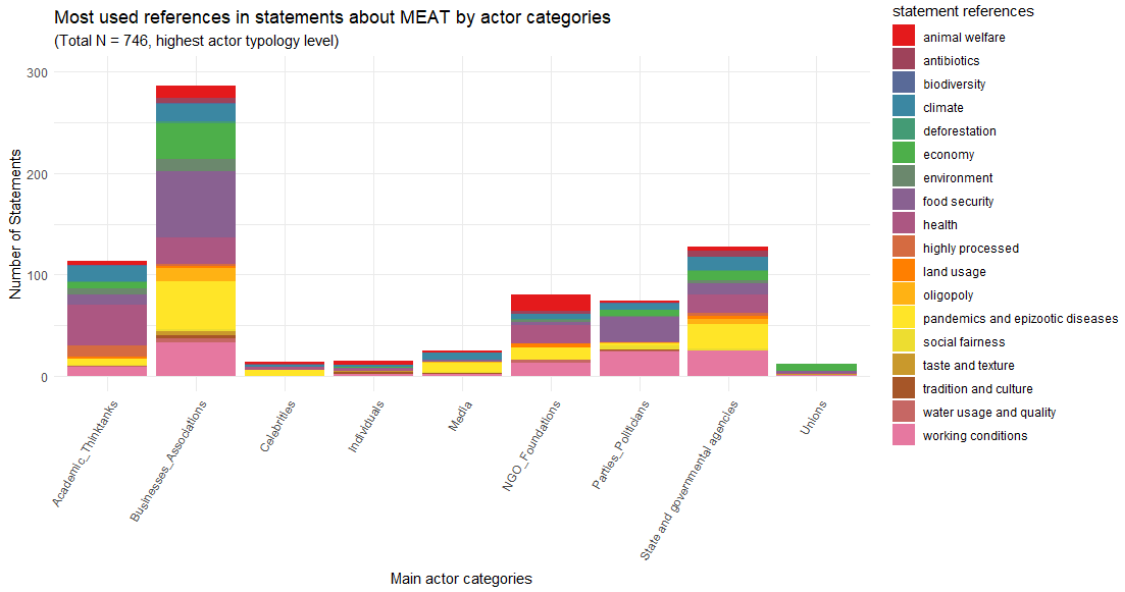

Figure 13: Graph showing the absolute number of statement references communicated by actor groups in the meat discourse in the selected U.S. media between 2016 until 2021. The different colours indicate the different statement references. The x-axis indicates the different actor categories on the highest actor typology level.

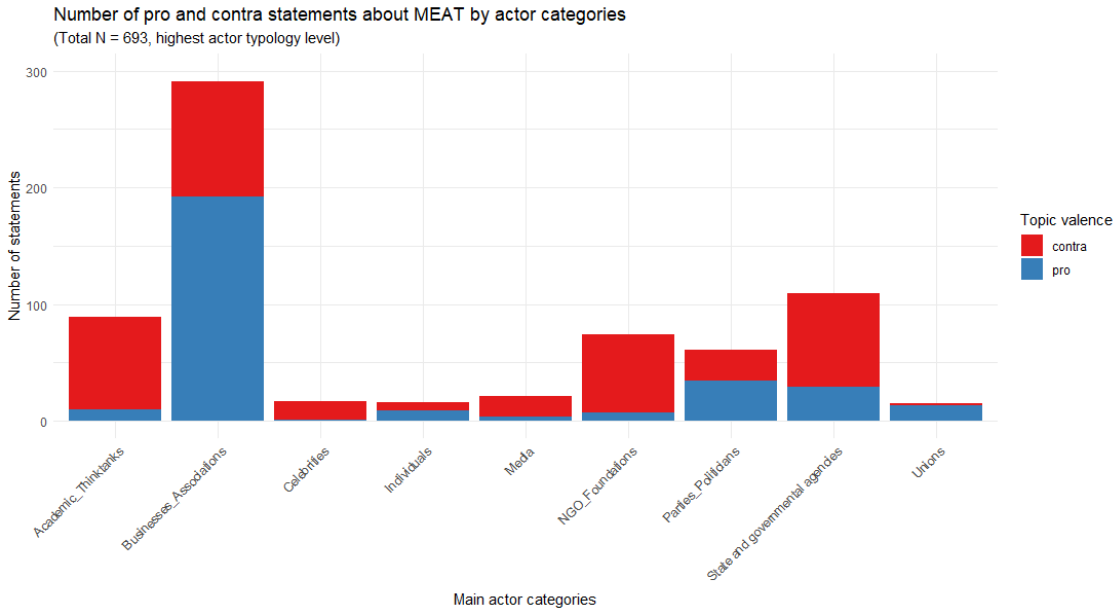

Figure 14: Graph showing the absolute number of contra and pro statements about meat by actor groups published in the selected U.S. media between 2016 until 2021. The x-axis indicates the different actor categories on the highest actor typology level.

4.1.3.2 Positioning of actors in the meat substitute discourse

Exactly as in *chapter 4.1.3.1.*, the *figures 15 and 16* do not show the same number of statements. Therefore, the same method was applied to evaluate the following graphs: The number of statement references is indicated with «(N=*x*)» and the percentages of pro or contra statements is calculated with the total number of pro and contra statements.

The by far most engaged actor category in the media meat substitute discourse were «Businesses and Associations» (N=111). More than three-fourths of all statements can be attributed to this actor group. The second and third most involved groups were «NGOs and Foundations» (N=8) and «Academics and Thinktanks» (N=6).

«Businesses and Associations» most frequently used the «economy»-, the «environment»-, and the «health»-references followed by the «taste and texture», «animal welfare», and «pandemics and epizootic diseases». Most of these statements by businesses and associations were stated in favour of meat substitutes (87 percent of this categories' statements).

The number of statements by the remaining actor groups are comparatively small. «NGOs and Foundations» express themselves exclusively on issues concerning «health», products being highly processed, «climate» and «animal welfare». 63 percent of these statements were expressed as support for meat alternatives. Then, statements by academic institutions and thinktanks were exclusively about «health», «environment», «climate», and «animal welfare». Statements made by those actors were predominantly pro substitutes (97 percent of this categories' statements). With the few substitute statements by «State and governmental agencies» (N=4) several topics were addressed: «health», «climate», «land usage», and «taste and texture». 67 percent were stated in favour of meat substitutes, meaning 4 pro meat substitute statements. «Individuals» (N=3) had only referred to «taste and texture» – predominantly in statements against substitutes (60 percent, 3 contra meat substitute statements) –, «Parties and Politicians» (N=1) only to «economy». When looking at the pro and contra statements, spokesmen of parties or politicians have stated 8 statements, all contra meat substitutes. «Celebrities» referred once to «economy», and once to «environment». 83 percent of the statements were pro substitutes (5 pro meat substitute statements). Actors belonging to the «Media»-category made statements references to «economy» and «taste and texture» (N=2), both statements focusing on pro substitute aspects.

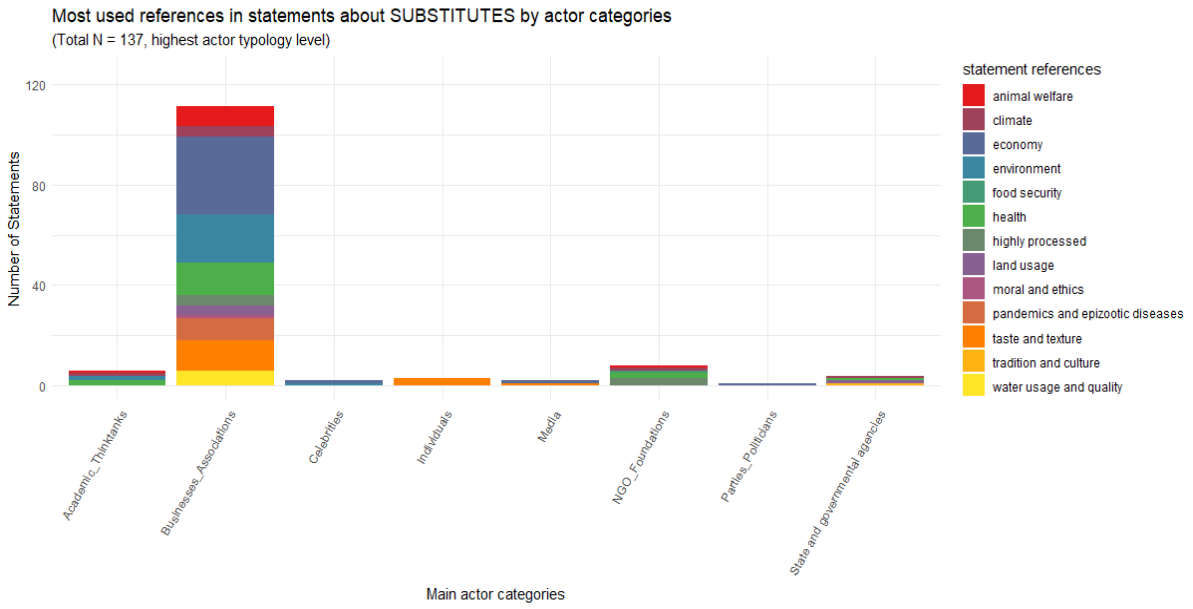

Figure 15: Graph showing the absolute number of statement references communicated by actor groups in the meat substitute discourse in the selected U.S. media between 2016 until 2021. The different colours indicate the different statement references. The x-axis indicates the different actor categories on the highest actor typology level.

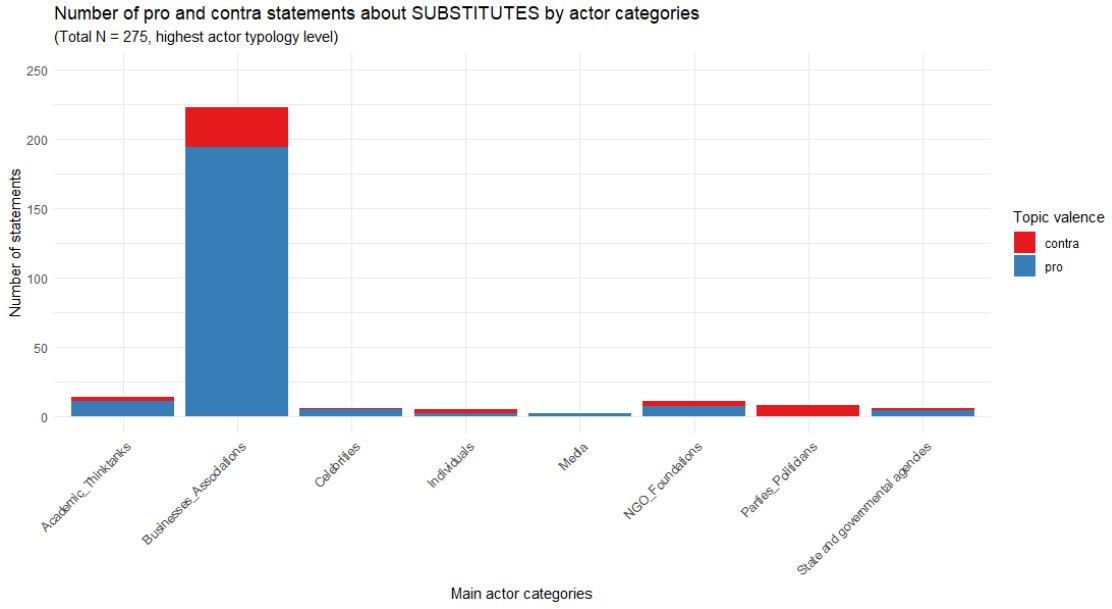

Figure 16: Graph showing the absolute number of contra and pro statements about meat substitutes by actor groups published in the selected U.S. media between 2016 until 2021. The x-axis indicates the different actor categories on the highest actor typology level.

4.2 Quantitative and qualitative analysis of the hypotheses

After this first description of the meat and meat substitute discourses that were published in the U.S. media between 2016 and 2021, the following chapters focus on evaluating the data in regard to the three hypotheses of this master thesis.

4.2.1 Quantitative and qualitative analysis of the first hypothesis

To recall: The first hypothesis claims, that the number of statements concerning meat and meat substitutes rises continuously over the time of 2016 until 2021. As already elaborated, this hypothesis assumes, that, based on the gatekeeper and news value theories, substitute launches attracted the attention of journalists towards the issues of meat and meat alternatives. For H1 both the meat substitute and meat discourses were analysed. As stated in *chapter 3.3*, to find out whether this hypothesis applies to this thesis' sample of data or not, the quantities of statements published between 2016 and 2021 were quantitatively analysed.

The combined discourse, including statements about meat as well as meat substitutes, started in the second quarter of 2016 and lasted until the fourth quarter of 2021. In the following, the quarters are indicated with «year/quarter». Based on *figure 17* it can be stated, that throughout the analysed time period, meat and meat substitutes were consistently among the list of topics on the media agenda in this thesis' selection of newspaper articles.

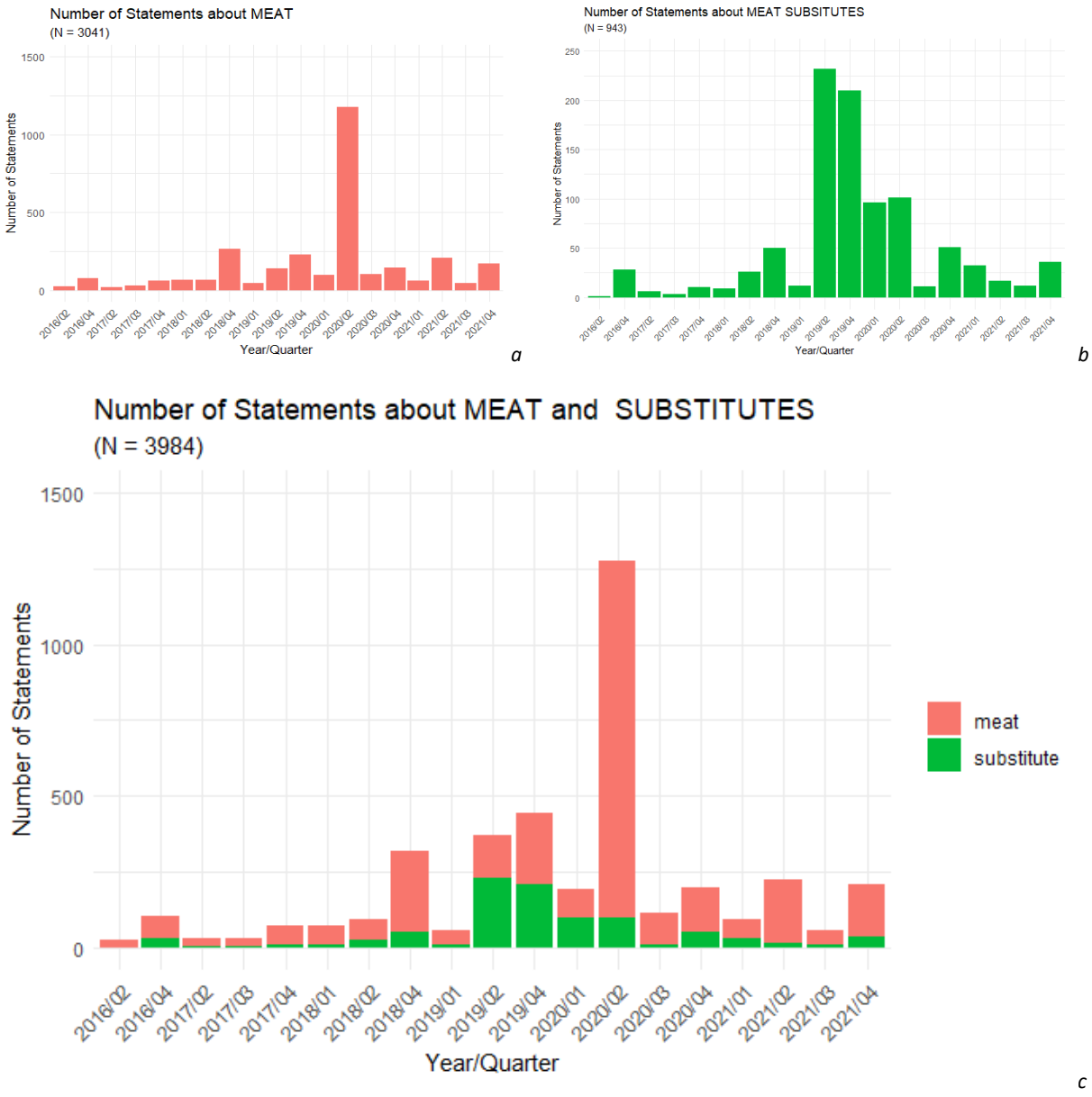

Figure 17: Graphs showing the absolute number of statements about meat or meat substitutes that were published in the selected U.S. media content between 2016 and 2021. Graph a shows only statements concerning meat substitutes, graph b only statements concerning meat and graph c shows the combined meat and meat substitute discourse. Peaks in number of statements can be seen in 2018/4, 2019/2, 2019/4, and 2020/2. The scale of the y axis differs in the graphs

The meat discourse *(see figure 17a)* increased almost continuously from 2016/2 until 2019/4 with 2018/4 being an outlier. Then in 2019 the meat discourse reaches a roughly steady level until the end of 2021, except for the quarter 2020/2. That quarter was the highest peak in the meat discourse and contained approximately five times as many statements.

The meat substitute discourse *(see figure 17b)* compared to the meat discourse contained a smaller number of statements, accounting for approximately 24 percent of the combined discourse. It can be therefore stated that issues concerning meat were clearly more salient topics on the U.S. media agenda. The number of meat substitute statements increased continuously in 2017/3 until 2019/2, where it then once again steadily decreased. 2019/2 and 2019/4 are the quarters that clearly contained the most statements – on average almost three times as many statements as the other quarters. In 2019/1 and 2020/3, the number of statements was noticeably low. Throughout the time from 2019/2 until 2020/2, the discourse was most active. In comparison to the meat and the combined discourse, no high outlier is visible in 2020/2.

The combined discourse *(see figure 17c)* increased almost continuously from 2016/2 until 2020/2. In 2020/2 the graph shows a noticeable peak, which is almost three time as high as the average number of statements. Between 2019 and the beginning of the year 2020 the combined discourse reached a comparatively high level of approximately 300 statements per quarter, except for the quarter 2019/1. After the peak in 2020/2, the discourse about meat and meat substitutes decreased again and fluctuated around a level below approximately 250 statements per quarter. This level is higher than the average number of statements in the first third of the analysed time period. The only quarter, in which the meat substitute discourse surmounted the meat discourse was 2019/2 (substitute statements: N=232; meat statements: N=139). In 2019/4 (substitute statements: N=210; meat statements: N=232) and 2020/1 (substitute statements: N=98; meat statements: N=96), the number of statements about meat or meat substitutes were almost even. The other quarters were dominated by meat related statements.

4.2.1.1 Evaluation of the quarters selected through peaks in absolute numbers

In this sub-chapter a summary of the qualitative in-depth analysis concerning the events in the media in said peak quarters is provided: In *figure 17c*, four peaks are striking: 2018/4, 2019/2, 2019/4, and 2020/2. In 2018/4 and 2020/2 the meat statements were dominating, in 2019/2 and 2019/4 the meat substitute statements were dominating.

4.2.1.1.1 The fourth quarter of 2018

In 2018/4, the only meat substitute product launch that received the attention of the media was the launch of a new «bleeding» plant-based burger produced by the food processor Beyond Meat and launched in the United Kingdom. Years earlier, the same product had already been launched in the United States. What makes this product special is, that the «bleeding» burger is the first meat substitute to contain beet juice. Therefore, it is also the first plant-based meat substitute, that changes colour while cooking, just like real meat or lab grown meat does (Guy, 2018, November 12).

Besides this only meat substitute launch, there were several other substitute-related topics appearing on the media agenda in that quarter. Many important questions surrounding these products have occupied different interest groups. In October, *the New York Times* wrote about how the Orthodox Union, a kosher certifying organization, tried to find out, whether lab-grown meat could be treated like kosher meat or not (Popper, 2018, October 1). At the same time in the United States, the increase of start-ups producing lab-grown meat and the further development of cell culture technology had given rise to a regulatory question. Would the U.S. Department of Agriculture (USDA), who regulates meat produced in traditional manner, or the U.S. Food and Drug Administration (FDA), who for example regulates cell-culture technology in pharmaceuticals, regulate these novel meat substitute products? This was a question that still needed to be answered at the time the article was published (Bunge, 2018, October 2). Nowadays, the regulation is divided as follows: The regulation of plant-based meat alternatives and insect foods is the task of the FDA while lab-grown meat is regulated by both the FDA and the USDA together (Emamian et al., 2020).

The following two meat substitute-related events were thematized in October 2018 as well: The City Council in Berkeley, California, passed a resolution that forbid the serving of meat on Mondays at city events and meetings (Meyer, 2018, October 19). Furthermore, Action on Salt, a group based at Queen Mary University of London, published a study, showing that meat alternative burger patties contain more salt than regular meat, which has negative impacts on people's health (Avramova, 2018, October 23).

Within the context of November being the world vegan month, a study by Global Data was thematized by the media, showing, that in the United States the percentage of Vegans had risen from 1 to 6 percent in the past three years. Also, the social media platform Pinterest

published data, that demonstrate a 200-percent peak in searches for vegan food travel guides since 2017 (Walsh, 2018, November 13). The meat alternative trend of the following year had already become apparent.

Also, meat related topics were on the media agenda in 2018/4. Many studies about the ecological footprint of the meat industry had been published in 2018/4. One of those studies was highly discussed by several U.S. newspapers: it was published in the Nature journal and showed that animal foods and food waste are bad for the environment (Drayer, 2018, October 18). Another study that was covered by the U.S. media was a study released in JAMA Internal Medicine, a French scientific journal, which provided scientific figures on how consumption of organic food, including meat, reduces the risk of cancer (Rabin, 2018, October 23). Furthermore, a report was highlighted by the media, that was prepared by various interest groups, including the Antibiotic Resistance Action Center at the George Washington University School of Public Health and the Center for Food Safety. In that report, U.S. restaurants were rated according to their antibiotics policies. The results showed, that 23 out of 25 major U.S. food chains failed the annual report, as they did not address the antibiotic use in their beef supplies (Thomas, 2018, October 18). A study conducted by the Nuffield Department of Population Health of the Oxford University concluded, that the consumption of red meat could be reduced by implementing a global meat tax. That would additionally lead to a reduction of the incurring health care costs (Guy, 2018, November 7).

Among the randomly selected articles in 2018/4 there were only a few positive headlines concerning meat. One of these was the planned expansion of Tyson Foods, a major meat processing company, to China to increase its sales market (Bunge, 2018, November 8). Then, an increasing trend of eating ethnic cuisine in the U.S. had led to increasing sales of sheep meat (Craymer, 2018, November 18). In October 2018, a series of events regarding contaminated meat dominated the meat discourse. JBS Tolleson had to recall almost 7 million pounds of raw beef due to suspected Salmonella contamination. Risks of undercooking meat was discussed in that context (Meyer, 2018, October 12). A few days later, almost 100 people got sick after eating Salmonella contaminated chicken meat. At that time, the source of the bacteria had not yet been detected (Christensen, 2018, October 17). Later that month, premade food items that were sold in well-established retailers, such as 7-Eleven or Walmart

had to be recalled due to a suspected Salmonella and Listeria bacteria contamination (Snider, 2018, October 23).

4.2.1.1.2 The second and the fourth quarter of 2019

In 2019/2 and 2019/4 various new meat substitute products were launched. In April 2019, the food chain Red Robin started to serve the plant-based Impossible Burger for a limited time in the United States (Tyko, 2019, April 16). Shortly thereafter, with Burger King, an even bigger player among the food chains launched the «Impossible Whopper» in the area of St. Louis, in order to test its success before offering it nationwide. This burger as well was prepared with a plant-based patty from Impossible Foods (Wiener-Bronner, 2019, April 1). Later that month, other food chains followed their lead: Del Taco, Tim Hortons, and Blaze Pizza (Tyko, 2019, April 16; Valinsky, 2019, May 15). In May, due to high consumer demand, McDonald's also started to sell the Big Vegan TS, a vegan burger, that would enter the German market (Wiener-Bronner, 2019, May 8). Even Ikea announced to the development of a meatless meatball alternative (Wiener-Bronner, 2019, May 2). In the fourth quarter of 2019, this trend continued. At the beginning of October 2019, McDonald's added meatless burgers to its menu in North America as well as Nestlé who launched plant-based products on the American market, supplying them to its restaurant and food service clients (Forman, 2019, May 3; Wiener-Bronner, 2019, October 20). In the same month, Dunkin' Donuts launched a Beyond Meat breakfast sandwich and the food chains Little Cesar's and Pizza Hut started to offer pizzas with meat alternative toppings (USA Today, 2019, October 22). After a successful launch of the «Impossible Whopper» in St. Louis, Burger King expanded its sale to all states (Rodriguez, 2019, October 25). In November 2019, Burger King expanded the offer of plant-based burgers on the U.S. market by two new products: «Impossible Whopper Jr.» and a new «Impossible Burger» (Wiener-Bronner, 2019, November 12). When the decision of expanding the sales of «Impossible Whopper» was first communicated by Burger King, the popularity of Impossible Foods increased sharply.

Many famous celebrities invested in the meat substitute processor Impossible Foods. The firm therupon was not able to keep up with the rising demand for its products and announced, that shortages should be expected (Wiener-Bronner, 2019, May 2).

> *« Celebrity investment in Impossible may be another sign that realistic meat alternatives have become incredibly trendy. Some consumers are trying to eat less meat for health reasons and to reduce their impact on the environment, so demand for plant-based protein is on the rise. This year, Impossible Foods has seen such a spike in demand that it has been running out of product. » (Wiener-Bronner, 2019, May 13).*

While in 2018/4 studio talks on environmental impacts of the meat industry were based on newly released studies, in 2019, several studio talks on the same subject were broadcasted on the topic of the meat substitute launches *(see chapter 7.6.4.).* Not all, but many of these articles on meat substitute launches elaborated the advantages of meat substitutes over meat *(see chapter 7.6.4).*

In 2019/2 and 2019/4 various other meat substitute-related topics were also given a platform in the selected U.S. media. Some of described the success of meat substitutes. In May 2019, Beyond Meat publicly sold a share, that increased up to 163 percent of its initial price, a percentage that was called extraordinary by the host Richard Quest on *CNN* (Wiener-Bronner, 2019, May 2). At that time, it was the biggest first day percentage gain of the U.S. initial public offerings (IPO) (Forman, 2019, May 3). Over the course of May 2019, the value of the Beyond Meat shares quadrupled (Back, 2019, May 31). Later in the month of May, *CNN* reported that Impossible Foods hired numerous new employees to keep up with the high demand (Wiener-Bronner, 2019, May 13). Also 2019, lab-grown meat technology reached new milestones as well: In September, the Israeli food company Aleph Farms collaborated with a Russian bioprinting company, to successfully grow meat from cow cells on the international space station using a 3D bioprinter (Yeung, 2018, October 8). Over a month later, a group of Harvard bioengineers succeeded in growing cow and rabbit meat from edible gelatine base, which is closer mimicking the fibrous texture of meat (Andrew, 2019, October 21).

The growing meat substitute market had also produced negative headlines in 2019. In the first few days of April, the agricultural committee of the European parliament had passed a proposal, that banned the use of meat names for meat alternative products (Malkin, 2019, April 6; Wiener-Bronner, 2019, April 1). That issue was ongoing throughout the entire year of 2019 *(see chapter 7.6.)*. However, it had already been an ongoing issue years before: To digress

here, based on the selection of articles of the qualitative analysis, the ban on meat names was already an issue on the media agenda in 2017. At that time, such a policy measure was demanded by the German minister of agriculture, Christian Schmidt, and agreed on by the European Court of Justice (Kanter, 2017, June 21). Then again, the bans were focussed on by the media in June 2018 and during several months in 2019 due to States passing laws and implementing bills as well as interest groups hiring lawyers to represent their interests *(see chapter 7.6.).* In October 2019 *the Wallstreet Journal* concluded, that 45 bills in 27 states had been introduced that demanding different labelling for milk- and meat alternative products (Haddon & Bunge, 2018, October 8).

Another article in the second quarter of 2019 thematized, that «Meatless Mondays» in New York public schools, a proposition made as part of mayor Bill de Blasio's climate-change plan made in March, caused anger among U.S. cattlemen (Marsh, 2019, May 3). The content of the proposition will be discussed in more detail later in the analysis of quarter 2019/1 (*see chapter 4.2.1.2.1.*). In May 2019, the Belgium's Royal Academy of Medicine published a study, that advises against vegan diets for children (Scutti, 2019, May 20). Further studies and expert talks, elaborating possible negative impacts of meat substitutes on health, followed in 2019/4 *(see chapter 7.6.7.)*. In November 2019, a new wave of criticism entered the media agenda: Various political allies, cattle ranchers and the National Cattlemen's Beef Association voiced their demand, not to sell meat substitutes in the same aisle as meat. This demand was rooted in the concern, that consumers might get mislead (Dutkiewicz, 2019, November 21; Bunge & Haddon, 2019, November 29).

Once again, in April 2019, many meat headlines were based on new information from newly published studies. A long-term study that appeared in «the Lancet»-journal stated, that every fifth death worldwide is due to lack of healthy nutrition. According to the study, the cause of death is due to a lack of healthy foods such as whole grains or fruits, rather than the consumption of unhealthy food such as red and processed meats (LaMotte, 2019, April 3). Another study, this time from Cancer Research UK, sees the origin of increased colorectal cancer risk also due to peoples' poor diets. According to them, the consumption of red and processed meat increases the risk by about 20 percent (Avramova, 2019, April 17). A study, claiming to contradict a number of results like the ones from Cancer Research UK or the WHO was published in October 2019. NutriRECS, an independent research group of health and

nutritional experts, concluded, that red meat could not be related to lethal heart diseases or cancer. The reactions to this study were very controversial. The study caused a lot of experts to publicly complain about these findings in the media (LaMotte, 2019, October 1).

An important topic on the meat agenda throughout the year of 2019 was the African swine fever that spread in Chinese farms during that time, killing milions of pigs. A disastrous event, since the Chinese pork market accounts for almost half of the world's pork supply (Auslin, 2019, November 6). Due to the pork meat shortage, China increased its imports from other countries, such as the U.S. which resulted in gaining meat-packer stocks like JBS or Tyson Foods by almost 70 percent, but also contributing to a high increase of consumer prices (Wong, 2019, May 3; Auslin, 2019, November 6). In October 2019, the economic situation caused by the outbreak of the African swine fever led to new trade-discussions between the United States and China which resulted in a lift of Chinas' import ban on U.S. poultry. This new deal caused an increase on meat prices for U.S. citizens (Maltais & Dezember, 2019, October 31). In the same month, milk and meat producers invested in new marketing strategies as an addition to the demanded ban of meat and dairy names for alternative products, to underscore the differences between their products and the substitutes (Haddon & Bunge, 2018, October 8). In November 2019 a fire in one of the major beef plants of Tyson Foods caused a fall in the meat processors profits by almost one third (Maidenberg, 2019, November 12).

4.2.1.1.3 The second quarter of 2020

In the second quarter of 2020, the highest peak of the combined discourse, the one topic that clearly dominated the media agenda was the COVID19-pandemic. The pandemic hit the American meat industry particularly hard. Meatpacking plants were hotspots for COVID19 infections. *USA Today* summarized the reasons as follows:

> *« The same features that allow a steady churn of cheap meat also provide the perfect breeding ground for diseases like the coronavirus: a cramped workplace, a culture of underreporting illnesses, and a cadre of rural, immigrant and undocumented workers who share transportation and close living quarters. » (Chadde et al., 2020).*

At the beginning of April, the infections among employees in the meat industry was rising abruptly, causing workers to hand in complaints about lacking COVID19-protection or to even walk out (Bunge, 2020, April 6). An example of such a complaint was, that the required safety distance of six feet could not be maintained in some plants (Wiener-Bronner, 2020, April 28). Employees used the media attention to generally point out the safety and hazardous health working conditions, including exposure to high noise and dangerous chemicals, frequently handling unsafe equipment causing injuries, slippery floors, and workflows that lead to musculoskeletal disorders (Chadde et al., 2020, May 26; Wiener-Bronner, 2020, April 28). These hazards intensified as a result of the meat industries effort in speeding up production lines to increase the decreasing meat production (Wiener-Bronner, 2020, April 28). While some of the meatpacking plants had to close, the remaining were trying to prevent meat shortages in the United States (Chadde & Bagenstose, 2020, May 6; Meyersohn & Wiener-Bronner, 2020, May 1). At the end of April 2020, Donald Trump invoked the Defense Production Act, ordering beef, pork and poultry plants to remain operating to protect food supply chains (Jackson, 2020, April 28; Restuccia, 2020, April 29). This caused new waves of striking employees (Colwell & McLean, 2020, April 29). At the same time, local and state officials pressured the plants to close (Restuccia, 2020, April 29). Despite Trump's executive order, meat production declined, and meat prices increased (Smith, 2020, May 18; Bunge, 2020, May 13). Research showed, approximately one million less cattle, hogs and sheep were processed in U.S. slaughterhouses in the last week of April 2020 compared to the same week a year ago (Bagenstose, et al.,2020, April 30). Meat shortages in supermarkets lead to grocery stores limiting the purchase of meat per person (Meyersohn & Wiener-Bronner, 2020, May 1). Shareholders started to sell their stocks (La Monica, 2020, May 6). Another problematic COVID19-related issue appeared on the media agenda, when *CNN* reported on the animal-packed farms and ranches (Westwood, 2020, May 7). With the closure of slaughterhouses, livestock accumulated in the barns, causing animal welfare to decline rapidly (Westwood, 2020, May 7, Smith, 2020, May 18). By May the 20th, according to the Midwest Center for Investigative Reporting, 15’300 COVID19 infections were reported in 192 different meatpacking facilities and at least 63 plant workers had died due to the virus (Chadde et al., 2020 May 26). Then, at the end of May, a small turning point was reached: The newspapers reported on reopening meatpacking plants and easing purchasing-limits. However, the meat prices remained high and the supply in grocery stores low (Bunge, 2020, May 31).

In that context, some meat substitute-related issues were taken up in articles as well. The volatile stock of Beyond Meat had increased sharply in the first half of 2020, due to concerns about COVID19-related meat shortages and interruptions of production chains (La Monica, 2020, May 6). Also Impossible Foods and other meat substitute processors engaged in the media discourse, to point out the potential of meat substitutes in times of meat shortages and to communicate, that they increased production to fill the voids in the meat aisles of U.S. supermarkets (Bunge & Haddon, 2020, May 13). In June 2020, food-business reporter Chase Prudy published a review on the first lab-grown burger, that was ceremoniously cooked by Richard McGeown and presented by the researcher Mark Post in 2013 in London. The review carries the title «Billion Dollar Burger» (Estabrook, 2020, June 9). The famous musician Bryan Adams got a platform in the media, by provocatively promoting veganism and by pointing out to a suspected origin of the virus, Asian wet markets (Ali, 2020, May 12).

4.2.1.2 Evaluation of the quarters selected through structural break analysis

In this chapter, the articles published within the quarters of structural breakpoints will be qualitatively analysed. The structural break analysis was conducted with timeseries of data containing the number of meat and/or meat substitute statements over time. The visualizations of those analyses are shown in the *figures 18 a, b,* and *c*.

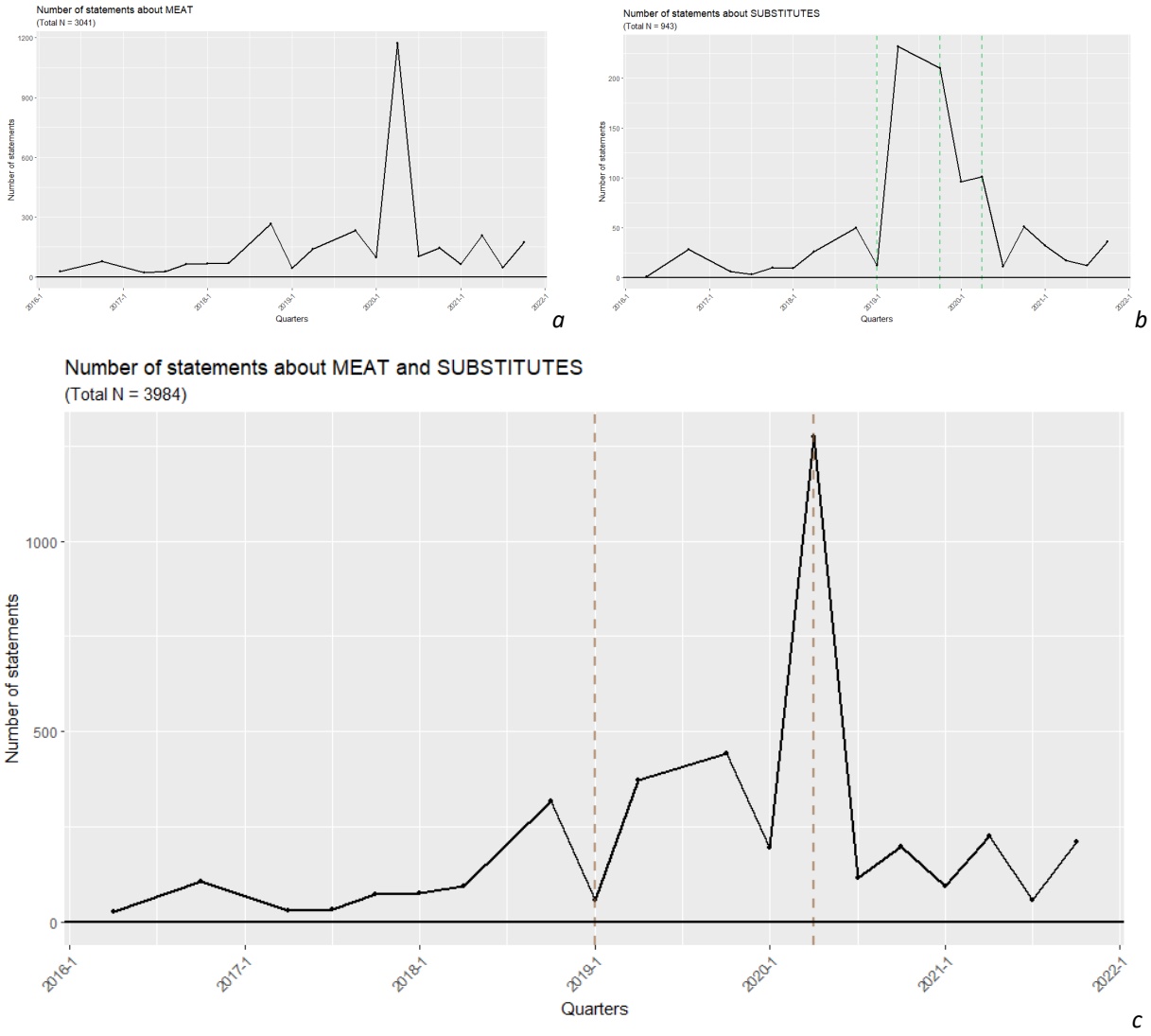

Figure 18: Visualizations of the structural break analyses conducted with the absolute number of statements about meat or meat substitutes that appeared in the selected U.S. media content between 2016 until 2021. The vertical dashed lines indicate the structural breakpoints. Graph a shows the structural break analysis conducted with the number of meat statements and graph b visualises the structural break analysis conducted with the number of meat substitute statements. Graph c is a visualization of the structural break analysis conducted with data from the combined meat and meat substitute discourse. The scaling of the y-axis differs in the graphs.

The structural break analysis of the meat discourse did not produce any structural breaks *(see figure 18a)*. Within the meat substitute discourse the quarters 2019/1, 2019/4 and 2020/2 represent structural breakpoints *(see figure 18b)*. The structural break analysis of the combined media discourse resulted in two breakpoints, the quarters 2019/1 and 2020/2 *(see figure 18c)*. Which newsworthy events happened in the 2019/4 and 2020/2 has just been elaborated *(see chapter 4.2.1.1.2.)*. What events influenced the media agenda in 2019/1 is elaborated in the following paragraph.

4.2.1.2.1 The first quarter of 2019

In March 2019, the food chain Chipotle launched new vegan or vegetarian bowls. These products were introduced to please an increasing customer base: the vegans and vegetarians. Already existing vegan or vegetarian menus had been sold very successfully during 2018, therefore the food chain reacted to this increasing demand with new meat substitute products (Wiener-Bronner, 2019, March 4). This launch was the first of many launches to follow in spring and fall of 2019 as already elaborated.

In addition to ongoing news about the already elaborated ban on meat alternative names (Weissmann & Amy, 2019, March 2), there were many other substitute-related topics appearing among the selected articles in that quarter. A kindergarten in Washington declared to serve only vegan food in school due to environmental reasons. That decision provoked strong reactions from parents, who saw this decision as an intrusion into their private lives (Tomky, 2019, February 27). Furthermore, the negative impact of factory farming on climate was discussed in *the New York Times*. The impetus for this media discussion was a new resolution by Representative Alexandria Ocasio-Cortez and Senator Edward J. Markle proposing various agricultural policies that would require farmers and ranchers to reduce emissions as much as technology allows. Said resolution is called the «New Green Deal» (Berman, 2019, March 8). This proposition led to U.S. cattle ranchers complaining publicly through media outlets until several months later (Marsh, 2019, May 3). Furthermore, Mayor Bill de Blasio announced that as of autumn 2019, all public schools in New York would serve no meat on Mondays due to environmental and health related reasons. This meal program was already trialled in 2018 in 15 schools and was then planned to be expanded (Criss, 2019, March 12). Another topic in the selected articles in 2019/1 was an overview on the Good Food Institute, published in the media, in which the economic success of meat substitute products was elaborated (Popper, 2019, March 14).

The only topic among the selected articles in the first quarter of 2019, that was exclusively meat related was a study supported by the National Institute of Drug Abuse, showing that highly processed foods, such as bacon, contain substances that can make people addicted (Drayer, 2019, March 6).

4.2.1.3 Sub-conclusion of H1

The conclusions I draw from this qualitative analysis regarding the first hypothesis are the following. The number of statements concerning meat and meat substitutes does not evidently rise continuously over the time of 2016 until 2021, as stated in H1. However, as already elaborated, an increasing trend can be observed in the combined discourse until 2020/2 approximately. Also, when looking at the discourses separately, an increase in the number of statements can be observed in both. Based on the qualitative analysis, in 2019, the media agenda was dominated by articles about meat substitute products being launched by food chains. These launches seem to have mainly had a strong increasing influence on the salience of the meat substitute discourse. 2019/2 was also the only quarter where the meat substitute discourse was even more salient than the meat discourse. Those meat substitute launches had also provided a window of opportunity for a variety of actors to focus the discourse on meat, for example by comparing the substitute products to meat. Therefore, the amount of meat statements had also increased in 2019. It can be concluded that meat substitute launches had an increasing effect on the meat discourse at that time too. But over the entire period of time considered, meaning between 2016 and 2021, the influence of newsworthy meat substitute launches on the meat discourse was comparatively small and was surpassed by many other relevant topics or issues.

Unrelated to the hypotheses or the research question, the qualitative analysis also showed that the sudden global crises impacted the media agenda drastically. The COVID19-pandemic overshadowed all the other topics in the meat or meat substitute-related news articles in 2020/2. The news value of the pandemic was very high: It was a very relevant and ongoing event, that affected everyone in society. In terms of its geographical proximity, the nature of this event had catastrophic characteristics attracting a lot of media attention, both emotional and polarizing.

Within the quarters of structural breakpoints, meat substitute launches had hardly been a topic of relevance. The structural changes in the number of articles concerning meat or meat substitutes can therefore not be related to meat substitute launches. Meat substitute launches did not seem to be relevant in those quarters, as they were not a trigger for events in the future, i.e., for events that happened as a result or consequence of the product launches. The meat substitute launches were rather independent events.

4.2.2 Quantitative and qualitative analysis of the second hypothesis

The second hypothesis states, that newsworthy events around the launches of novel meat substitutes lead to an increase of statements against meat in the U.S. media discourse over the time of 2016 until 2021. This hypothesis is based on the assumption, that when emphasising the positive aspects of meat substitutes in comparison to meat, the argument can go hand in hand with highlighting negative aspects of meat consumption and production.

4.2.2.1 Evaluation of the peaks and low points of the contra meat index

When looking at *figure 19*, the contra meat index peaked in the quarters 2019/1, 2019/4, and 2021/1. In 2017/3 the contra meat index reached a low-point. In the following, said quarters are analysed.

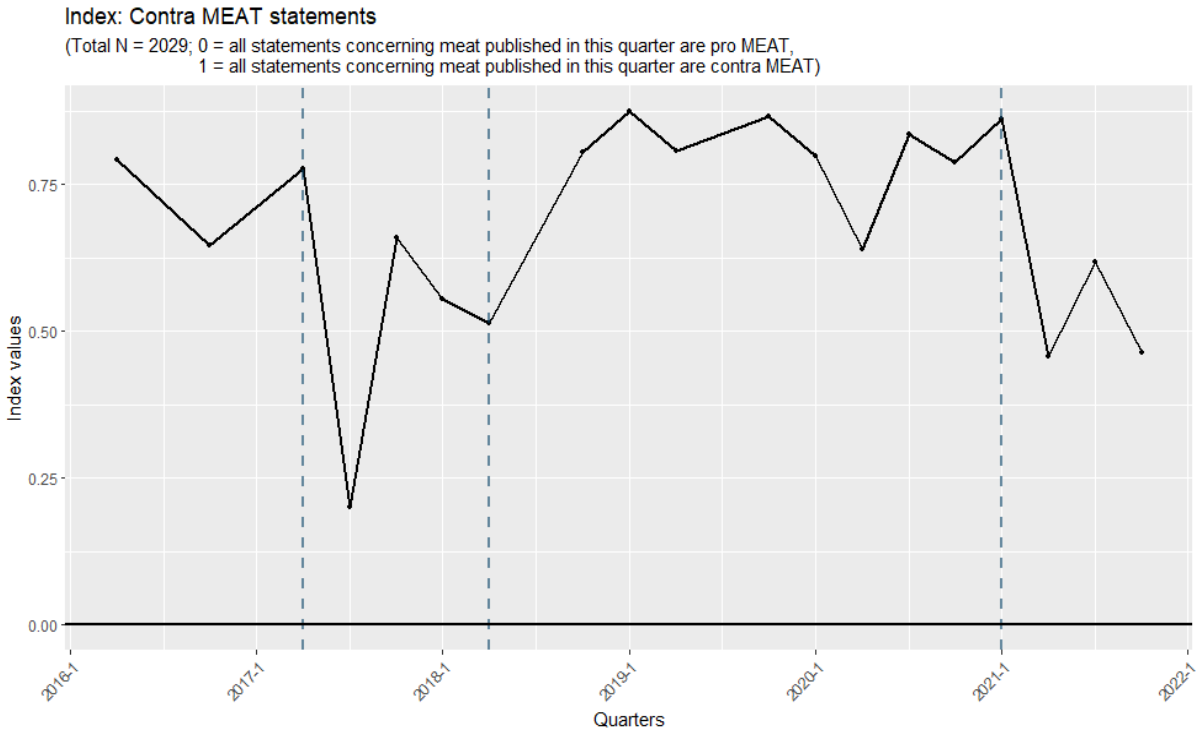

Figure 19: Visualization of the structural break analysis conducted with the index indicating the ratio of contra meat statements in the meat discourse that appeared in the selected U.S. media content between 2016 until 2021 (values between 0 and 1). The vertical dashed lines indicate the structural breakpoints.

The quarters 2019/1 and 2019/4 had already been elaborated in *chapter 4.2.1.1.*. To summarize, in 2019/1, the only event of a meat substitute launch was when Chipotle

introduced new vegan and vegetarian bowls in their menus. This article was mainly a driver for health-related negative aspects concerning meat consumption, which was only mentioned in the margin (Wiener-Bronner, 2019, March 4). More important platforms for contra arguments in this quarter were the study about addictive bacon (Drayer, 2019, March 6) and the new policy resolution including various agricultural policies to mitigate climate in the agricultural sector (Berman, 2019, March 8). Many substitutes related topics were on the media agenda that had increased contra meat arguments: a kindergarten was declared to be entirely vegan (Tomky, 2019, February 27), negative impacts of factory farming on climate was discussed due to propositions of new policy goals (Berman, 2019, March 8), ban on meat names were a topic again in the media (Weissmann & Amy, 2019, March 2), «Meatless Mondays» were announced in New York public schools (Criss, 2019, March 12), and a portrait on the Good Food Institute and the economic success of meat substitute products were elaborated (Popper, 2019, March 14). Those topics were windows of opportunity for contra meat arguments either because of the reasons why the respective protagonists of the news had chosen vegan nutrition or why exactly the production of meat should be addressed through policy goals.

In 2019/4, several big food chains launched a vegetarian or vegan alternative, giving the newspapers a reason to write about the rising popularity and success of meat substitutes, while highlighting the products advantages concerning health aspects, the environment, and animal welfare. In that quarter, many articles that had pushed the contra meat arguments were about substitutes. Only few articles in the random sample of the in-depth analysis were about other topics than substitutes. The majority of them were about the already elaborated outbreak of African swine fewer in China, causing a high number of pig deaths (Maltais, 2019, October 17; Auslin, 2019, November 6).

4.2.2.1.1 The first quarter of 2021

In 2021/1, the third peak-quarter of the contra meat index, there were no launches of meat substitutes. Nevertheless, substitutes were a topic of discussion: At the end of February, Beyond Meat signed a supply deal with McDonald's, after the meat substitute processor had already signed deals with Kentucky Fried Chicken and Pizza hut. Good news for the company after their closed restaurants had reduced their sales due to the COVID19-pandemic (Bunge,

2021, February 25). However, there were no negative arguments concerning meat in this article. In a studio talk, the statements Bill Gates made to Technology Review about synthetic meat, were discussed. In this statement he advocated for clean meat and promoted its advantages (Carlson, 2021, February 19). Earlier in that quarter, a studio talk on *CNN* discussed the race of start-ups to bring lab-grown meat onto the market (Zakaria, 2021, January 3). Those articles did create a window of opportunity to talk about health and environmental aspects of meat consumption and production. Furthermore, a newly released report from a think tank named Chatham House showed, that a dietary shift was urgently necessary, to mitigate climate change. The focus of their study was about the low-cost food production, causing a list of severe damages. Also, the production of animal foods was thematized and the products impact on the climate: land usage, biodiversity loss, and a high level of emissions (Woodyatt, 2021, February 5).

Besides meat substitute-related topics, another big topic on the media agenda that received a lot of attention was an investigation by *USA Today* and Midwest Center. This investigation showed that less than half the COVID19-deaths in meatpacking plants were not reported back to the U.S. Occupational Safety and Health Administration. The standard procedure after such a report would be to investigate the safety of the working conditions and interview other workers. However, these examinations were not carried out due to deaths not being reported back. Therefore the reporting obligation was violated. By January 2021, 45,000 employees were infected with COVID19, and 239 meatpacking had died (Bagenstose et al., 2021, January 11). That issue on the media agenda had produced a lot of negative press for the meat industry.

4.2.2.1.2 The third quarter of 2017

In the quarter of a low share of contra meat statements, in 2017/3 there were no meat substitute launches. Good news in the meat discourse, were the sinking meat prices, especially beef prices, after a 10-year increase (Meyer, 2017, July 3). In that quarter too, there were meat substitute-related news: Impossible Foods had closed a successful round of funding, in which Bill Gates, Horizon Ventures and other big tech industries had participated (Razumovskaya, 2017, July 29).

4.2.2.2 Evaluation of the quarters selected through structural break analysis

In the quarters of the structural breakpoints 2017/2, 2018/2, and 2021/1 *(see figure 19),* only one article was about a newly launched substitute: In 2018/2 Kentucky Fried Chicken entered the meat alternatives market in the United Kingdom (McDougall, 2018, June 8). This article will be addressed more closely in the second succeeding paragraph. First, in accordance with the timeline, the first quarter of 2017 and the second quarter of 2018 will be looked at in more detail. 2021/1 had already been elaborated in *chapter 4.2.2.1.1*.. No meat substitute products were launched throughout that quarter, that made headlines in the selected U.S. newspapers.

4.2.2.2.1 The second quarter of 2017

In 2017/2, the start-up Hampton Creek Foods announced its intention to enter the lab grown meat market, after nine months of research (Razumovskaya, 2017, June 27). Furthermore, among the selected articles was a reader's personal report, who tells the story about how she decided to feed her dog vegan food (McDermott, 2017, June 6). A more relevant article was a newly implemented rating system that helped by grading restaurants according to the animal welfare in their supply chains (Meyer, 2017, June 9). In the first months of 2017 the export of a variety of products to Mexico had decreased noticeably. This decrease was the biggest for over 10 years and was triggered by Mexico's increasing import of Brazilian products (Bunge, 2017, June 16). At the same time, the U.S. trade relationship with China had reached a breaking point: On the 19th of June 2017, the first shipment of U.S. beef arrived in Shanghai in 14 years (Chin, 2017, June 19). That trade deal was held responsible for rising meat prices later that month (Dugan & Fickenscher, 2017, June 27). Among numerous restaurants in the area of New York City a trend emerged which included a lot of meat in their menus – such as steaks and other cuts, which was reflected in the sales of the meat supplier Pat LaFrieda (Cuozzo, 2017, June 20). Later in June 2017, Tyson Food showed video footage of surveillance cameras of their poultry farms to a remote video auditing firm for monitoring purposes. In case of animal cruelty, Tyson Foods demanded a detailed report. With this gesture they wanted to set an example for animal welfare (Meyer, 2017, June 21). As already thematized in *chapter 4.2.1.1*., in 2017/2 the first article called for a ban on meat names in Germany, published within the sample of this thesis's articles (Kanter, 2017, June 21s).

4.2.2.2.2 The second quarter of 2018

In 2018/2, Kentucky Fried Chicken entered the meat alternatives market by testing vegetarian meat alternatives to chicken in the United Kingdom, possibly expanding the sales to the United States in the future. This decision was taken, to be less dependent on the chicken market and to be able to offer menus lower in calories (McDougall, 2018, June 8). Also, experts promoted algae as an alternative protein source to meat, for environmental issues (Crane, 2018, June 1). Tyson Foods announced in June to acquire an organic chicken brand called Smart Chicken due to economic reasons (Bunge, 2018, June 4). The trade dispute between the United States and Mexico had harmful effects on U.S. farmers, after Donald Trump announced that he would impose a tariff on aluminium and steel imports. Mexico reacted by imposing countervailing tariffs on food and farm products from the United States. Also, China and some EU countries reacted in the same way (Swanson, 2018, June 15). Another article highlighted, how French butchers were assaulted by vegan militants, who sprayed graffiti and threw fake blood (Rubin, 2018, June 26).

4.2.2.3 Evaluation of the quarters selected through peaks in absolute numbers of pro and contra arguments about meat

When looking at the salience of contra meat-related statements in the media discourse *(figure 20)*, two noticeable peaks in contra meat statements can be detected in 2018/4 and in 2020/2.

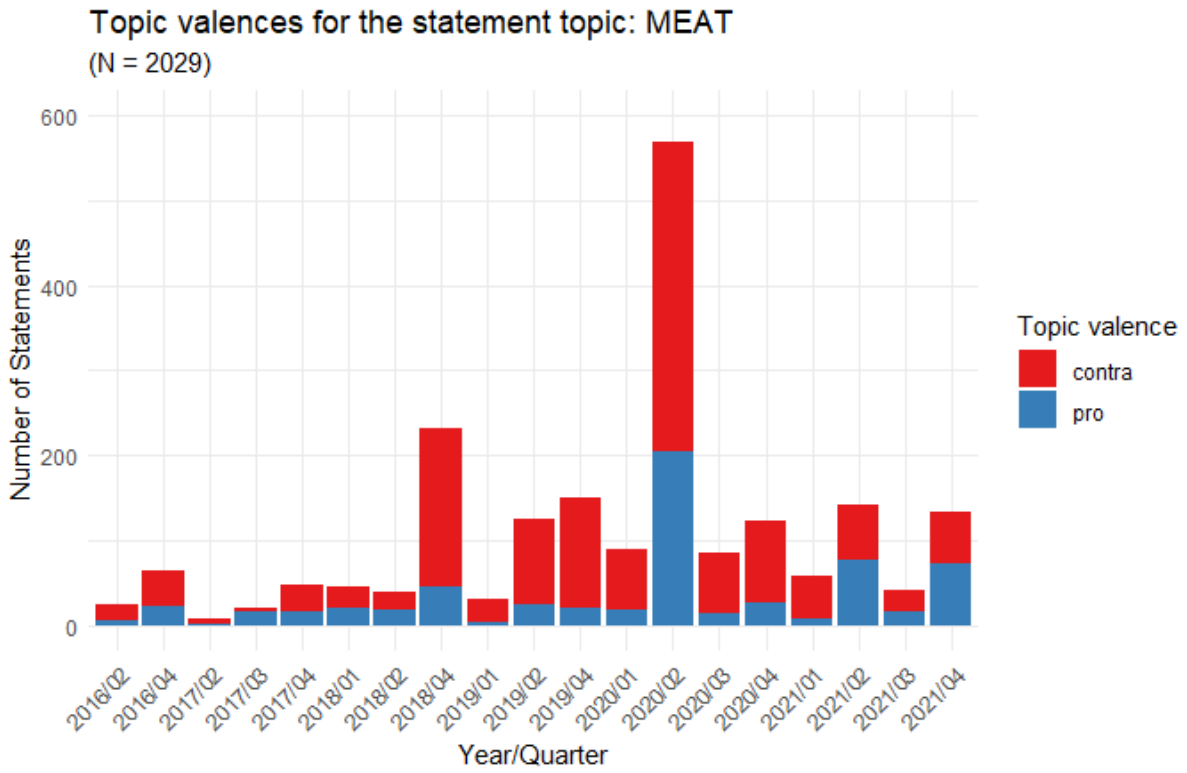

Figure 20: Graph showing the absolute number of contra and pro statements about meat that were published in the selected U.S. media between 2016 until 2021.

As elaborated in *chapter 4.2.1.1.1.*, the only meat substitute product launched in 2018/4 was the «bleeding» plant-based burger by Beyond Meat on the market in the United Kingdom (Guy, 2018, November 12). Issues triggering the most negative statements in this quarter were about the newly released studies showing the negative effects of red and processed meat on our health but also on the environment (Avramova, 2018, October 23), Salmonella and other bacteria that contaminated meat (Christensen, 2018, October 17), and reports about antibiotics abuse in the meat industry (Thomas, 2018, October 18). Also, many articles on the rising consumption or popularity of meat substitutes were published in 2018/4 giving platform to contra meat arguments. But those were not related to launches of new meat substitute products *(see chapter 7.6.4.).*

In 2020/2 *(see chapter 4.2.1.1.3.)* it was mainly pandemic related negative news concerning meatpacking plants that dominated the media agenda *(see chapter 7.6.8.).*

4.2.2.4 Complementary analysis

In order to see how strongly the arguments within the articles from *chapter 4.2.1.1.* and *4.2.1.2.* are weighted in the overall discourse – quantitatively speaking –, the number of statement references was examined more closely.

4.2.2.4.1 Key statement references throughout the meat discourse

Figure 21 shows, that between 2018/4 and 2020/1, when the contra meat index in *figure 19* fluctuates around a high level of approximately 0,8, the «climate», «environment», «health», and «animal welfare» references were used more frequently than before and after that time. In 2018/4 meat substitutes in general were a popular topic in the media, but not due to launches of novel meat substitutes products.

In 2019/2 and 2019/4, when the share of «climate»-references is high, many U.S. food chains implemented new vegan or vegetarian dishes into their menus *(see chapters 7.5.6. and 7.5.7.)*. In a large share of articles of the in-depth qualitative analysis, these launches were a window of opportunity for the «climate» and «health» statement references, since they describe the negative attributes of meat production and consumption, which many consumers or supporters of meat substitute products named as reasons to prefer substitutes over meat. The results in *figure 22* support these findings: The graph shows, that during the time where many meat subsitute products were launched, the negative impact of meat on the «climate» and «health» were the prevailing references of the «meat is bad»- statements. When taking a closer look at the «health» reference during the discourse, it can be noted, that only in few cases meat substitute articles were a window of opportunity. Most of these references were stated in other contexts, for example in 2018/4, when the following topics the media agenda: recalls of meat due to Salmonella contamination, antibiotics abuse in the meat industry and two studies, one about the fact, that taxes on red meat would reduce health care bills and the other showing that organic diets are less carcinogenic *(see chapter 7.6.4.)*.

Between 2020/2 and 2021/1, another sequence of high contra meat index values, was the negative press about meat, mostly stated in reference to bad working conditions, as well as «pandemics and epizootic diseases». In that time, the COVID19-pandemic dominated the media agenda. Interestingly was, that in 2021/1, a high share of meat substitute-related topics

were among the random selection of articles of the qualitative analysis, but even so, actors have been less vocal in that context and pandemic related statement references still dominated the discourse *(see chapter 7.6.)*.

After 2020/2 the«environment» reference is hardly used anymore instead the «climate» reference is a well-used reference within the meat discourse, even if it is not as well used. Largely, there seems to have been a general thematic shift in 2020/2, most likely caused by the COVID- pandemic, which had a major influence the media agenda. In 2020/2, it is interesting to see, that the COVID 19-pandemic had brought attention to the prevailing working conditions in the meat industry, which stayed in the spotlight of the media for almost a year, before disappearing out of the spotlight again *(see chapter 7.6.8.)*. This can also be seen in *figure 22*, displaying statement references in combination with the «is/are bad»-statement.

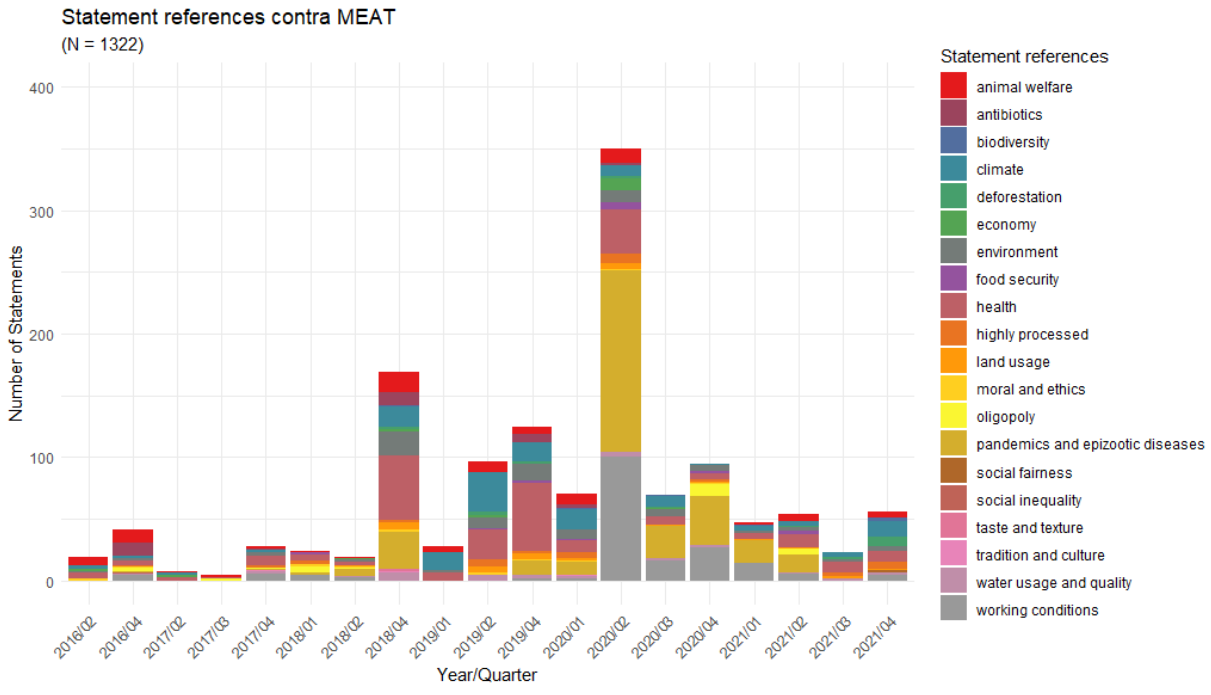

Figure 21: Graph showing the absolute number of statement references used in the contra meat discourse in the selected U.S. media between 2016 until 2021.

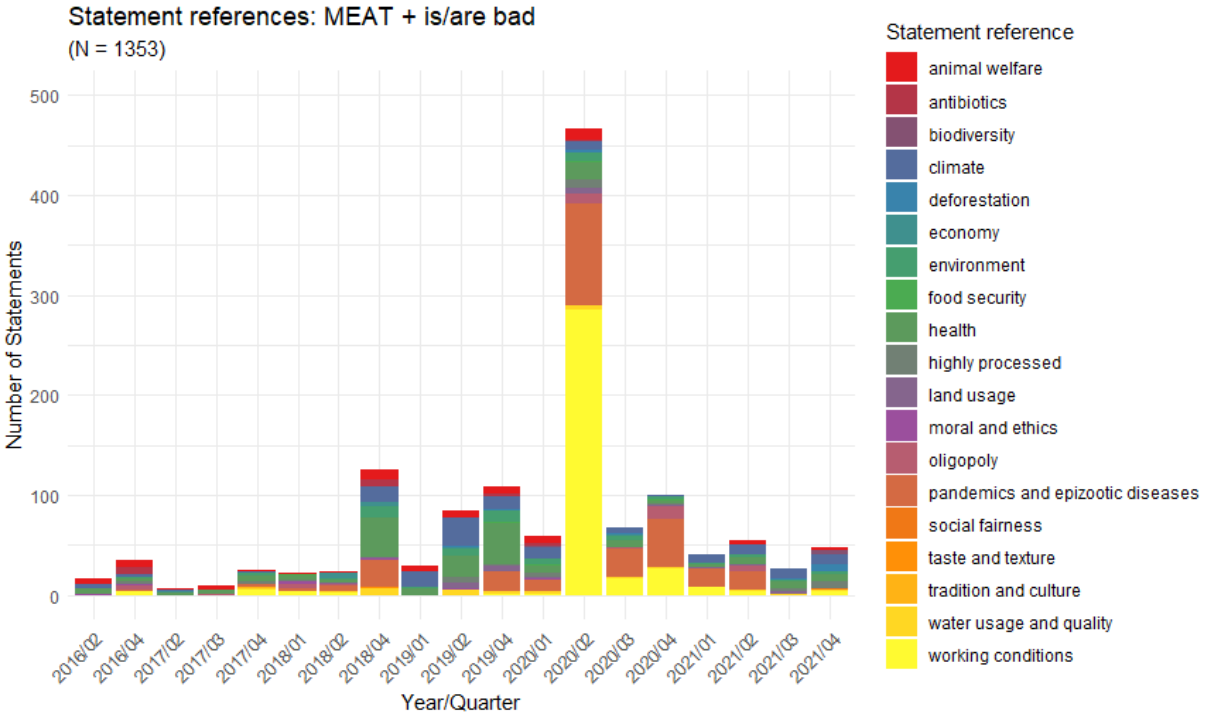

Figure 22: Graph showing the absolute number of statement references, that were stated when using the «meat is bad»-statement throughout the contra meat discourse published in the selected U.S. media between 2016 until 2021.

In order to support the evidence of these results, it is also necessary to look at the pro meat discourse. The references used in favour of meat production or consumption throughout the time of 2016 until 2021 are displayed in the *figures 23 and 24.* The figures show, that the «environment» and «animal welfare» references are hardly ever used in pro meat statements. Up until 2020/2, the «climate» reference was never used in the pro meat discourse. In 2020/3 the high use of the «climate» reference in the pro meat context can be attributed to statements elaborating how GHG emissions can be reduced in the meat industry. For example, in July 2020 Burger King teamed up with scientists, to adapt the feed for cows. Through adding lemongrass to the cows feed, the cows should release less methane (Guy, 2020, July 15).

It is interesting to see in *figure 24*, when the popularity of meat substitute products and the vegan trend increased in 2018/4, the «meat is good in taste and texture» was a very strongly pushed statement. After that time, the economic benefits of meat production or consumption entered the spotlight, while «health»-references increased as well. While «health» was the second most used statement reference within the contra meat discourse (N=255), health aspects were also often mentioned in context of the pro meat discourse: It is the fourth most

often used reference category in the pro meat discourse (N=43). Positive aspects that were mentioned in that context were the high content of proteins and dopamines and low amount of carbs (Fox News, 2021, July 1; Internet Archive, 2021, October 25).

In the quarter 2017/3, when the contra meat index had the lowest value, the most used statement reference in favour of meat was «animal welfare», followed by «tradition and culture» and «health». Among the «meat is good» statements the references «tradition and culture» were pushed in that quarter.

Dominating in the pro meat discourse were the references «food security» (N=116), «economy» (N=78), «pandemics and epizootic diseases» (N=45) as well as «health» (N=43) *(see figure 23)*.

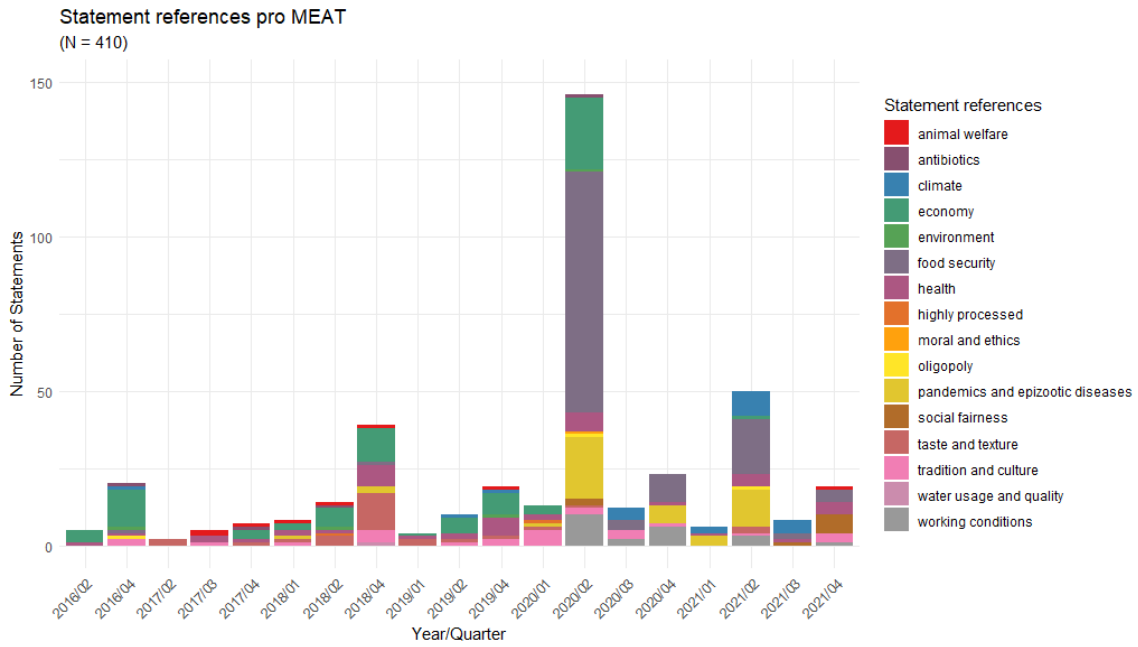

Figure 23: Graph showing the absolute number of statement references used in the pro meat discourse in the selected U.S. media between 2016 until 2021.

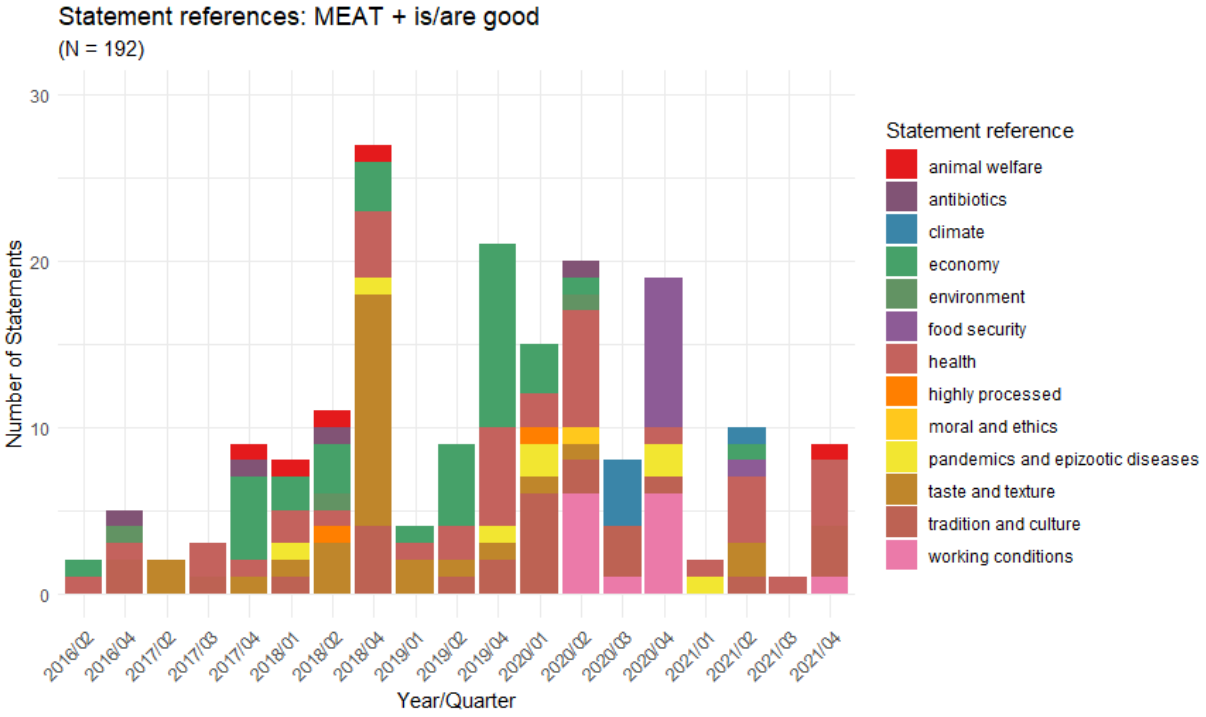

Figure 24: Graph showing the absolute number of statement references, that were stated when using the «meat is good»-key statement throughout the pro meat discourse published in the selected U.S. media between 2016 until 2021.

4.2.2.5 Sub-conclusion of H2

As stated in the second hypothesis, newsworthy events around the launches of novel meat substitutes led to an increase of statements against meat in the U.S. media discourse over the time in 2019. As the in-depth qualitative analysis has shown, the whole year of 2019, when the subsisted launches of several big food chains dominated the media agenda, the overall tone of the meat discourse was predominantly negative. Also, two of the three peak quarters of the contra meat index could be associated with meat substitute launches. Before and after 2019, many other topics that were not related meat substitute launches had influenced the use of pro and contra statements in the meat discourse. In 2018 and 2019 the popularity of meat substitute products in general was a very important topic on the media agenda and had given contra meat statements a platform, being a hook for studio talks and climate related articles concerning meat.

These findings are supported by quantitative analysis of the statement references. During 2018 and 2019 substitute-related topics seemed to have had an impact on the use of

references as well. The «climate» and the «environment» references increased clearly within the meat discourse in 2018/4, in a quarter where the contra meat index value had increased from approximately 0,5 to 0,88 and when substitutes were on the media agenda *(see chapter 7.6.4.)*. Especially during 2019, when numerous meat substitute products were launched, the usage of the «climate» and the «environment» references were popular references. This assumption is also supported by the results showing that during this time, the negative impact of meat on climate and environment were the prevailing references when using the «is/are bad» statement. The usage of «climate» and especially the «environment» reference decreased strongly after 2020/1. The time series shows a decrease in the percentage of contra meat statements in the media at that time as well. The statement reference «animal welfare» experienced an upswing between 2018/4 and 2020/2. An exception was in 2020/2, where animal welfare was used mostly in relation to bad animal husbandry conditions in farms due to COVID19 *(see chapter 7.6.8.)*. The substitute launches could have triggered this development.

Even so, it can not be concluded, that the subsistue launches were the only trigger of contra meat statements. This is also reflected in the results of the qualitative evaluation and the peaks in the salience of contra meat arguments in *figure 20*. These peaks could not be associated with meat subsitute launches. The variety of topics on the media agenda concerning meat were manyfold. Numerous other topics were taken up by the media that shed a negative light on meat. On one hand, many meat substitute-related events were on the media agenda that seemed to have given contra meat statements a platform, which were not related to substitute launches. In that context, the ecological footprint of meat and dairy production was thematized as well as health issues of meat consumption in comparison with the plant-based meat substitute products *(see chapter 7.6.)*. On the other hand, a lot of negative press on meat was published not linked to substitutes either. For example, high meat prices, contaminated meat that caused illness, antibiotics abuse in factory farms and in 2020/2 especially COVID19 were topics on the media agenda during this time *(see chapter 7.6.)*. These findings put the influence of substitute launches into perspective. In accordance with H2, there were no substitute launches happening in the lowest point of the contra meat index. During this time, there was no negative meat press being published.

The structural breakpoints, that indicated a change in the tonality of the meat discourse, meaning a change in the contra meat index, could not be associated with meat substitute launches. Even though, information about the start-up Hampton Creek Foods announcing its intention to enter the lab grown meat market, after nine months of research in 2017/2 (Razumovskaya, 2017, June 27) and Beyond Meat sealing partnership deals with big food chains like McDonald's or Kentucky Fried Chicken in 2021/1 (Bunge, 2021, February 25) made the newspaper headlines, other events had a more important appearance among the news in the structural breakpoint quarters. These included both positive and negative developments in U.S. trade relations with Mexico and China, E-coli bacteria or Salmonella contaminated meat, policy events like progress in the ban of meat names for meat substitutes, or varying reports on animal welfare in the meat industry were prevailing in the breakpoint *quarters (see chapter 7.6.)*. As already elaborated in the sub conclusion of the first hypothesis *(see chapter 4.2.1.3.)*, launches were rather independent events and therefore not necessarily expected to trigger a change in the tonality of the meat discourse.

4.2.3 Quantitative and qualitative analysis of the third hypothesis

The third hypothesis assumes that the growing meat substitute market generates new actor groups that seek a platform for their interests through media. These novel business actors support and push the production and consumption of meat substitutes in the media discourse for economic and sustainability-related reasons. Therefore, as expected in the third hypothesis, within the «Businesses and Associations»-category the usage of contra meat statements surpassed the usage of pro meat statements in the U.S. media discourse over time.

To see whether this expectation is in line with the quantitative analysis of this thesis' data, graphs showing the number of statements concerning meat were generated. For this analysis, only statements were considered of which the source i.e., the actor of the used statements is known. The first graph *(figure 25a)* shows the actor engagements of the highest typology level, followed by the actor engagement of the second *(figure 25b)* and third actor typology level *(figure 25c)*.

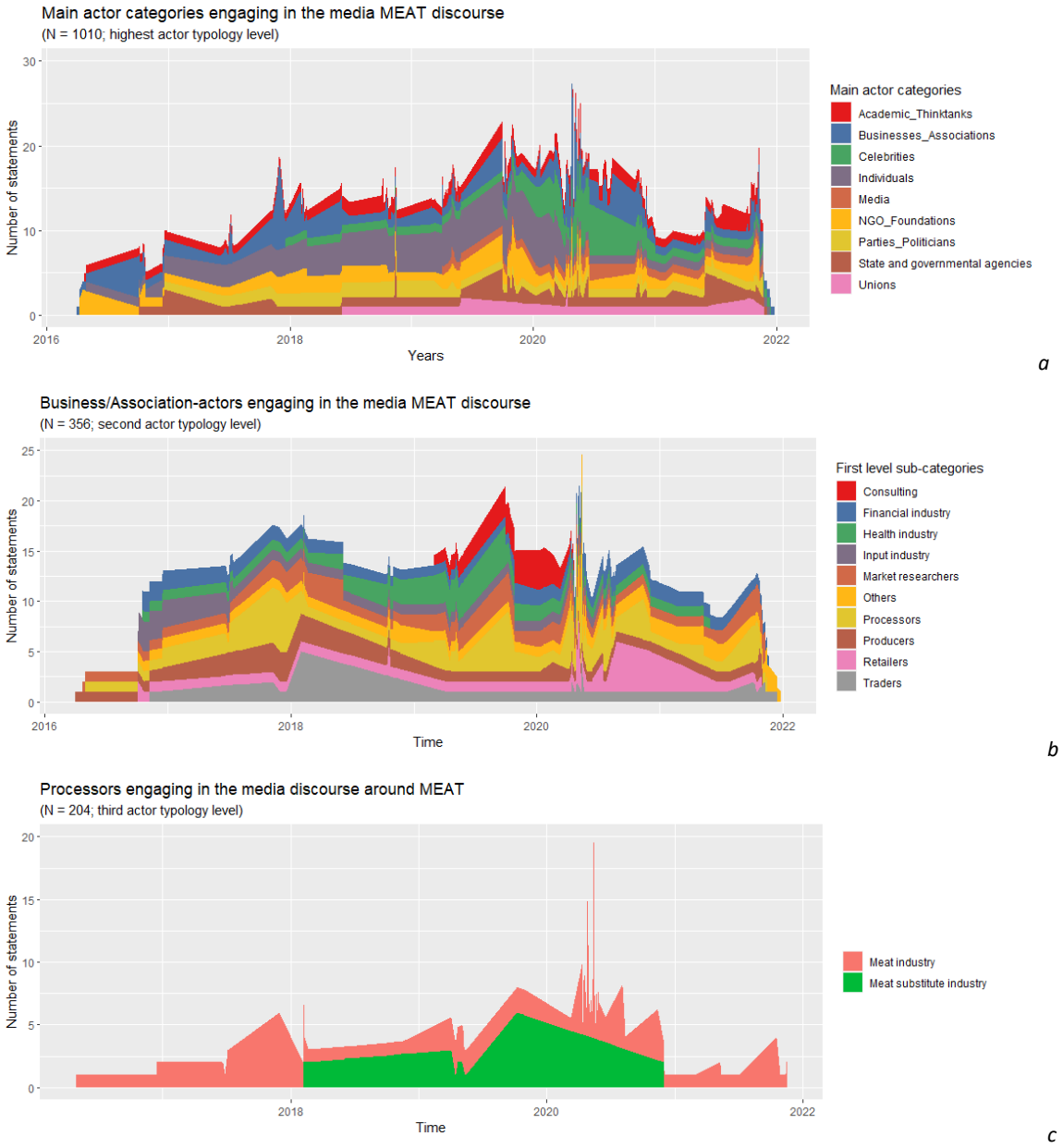

Figure 25: Graphs showing the engagement of different interest groups at different actor typology levels in the U.S. media discourse around meat between 2016 until 2021. a: The first graph shows the engagement of the main actor groups at the highest actor typology level over time. b: The second graph shows the engagement of «Businesses and Associations»-subgroups (second actor typology level) over time. c: The third graph shows the engagement of meat and meat substitute processors, belonging to the «Businesses and Associations» main group (third actor typology level).

In accordance with H3, the sequence between the second and the third structural breakpoint, when the contra meat index value is on a constantly high level (~ 0,6 - 0,8), meat substitute processors had engaged strongly in the media discourse. They were even dominating the discourse of the actor subcategory «processors» in the media *(see figure 25c.)*. Here it must be noted that actors of the meat industry were not represented as strongly in the

«processors» category. Their representation was higher in other «Businesses and Associations» sub-categories like «Unions», «Farmers», or «Restaurants». Therefore, the dominance of the substitute processors among the «processors»-subcategory must be seen in relative terms.

In a next step, the focus lies on the «Businesses and Associations»-category. More precisely on their pro and contra statements that they stated regarding meat throughout time.

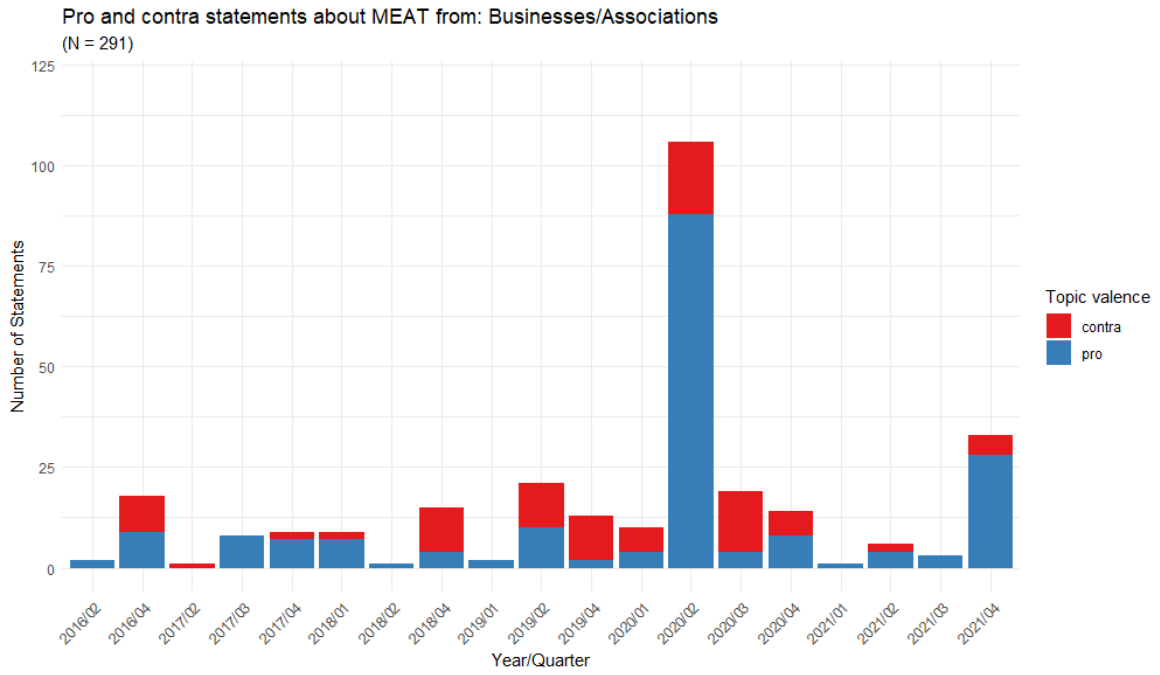

Figure 26: Graph showing the absolute number of contra and pro statement stated by the «Businesses and Associations» actor category over time in the meat discourse in the selected U.S. media between 2016 until 2021.

At first glance, it is apparent that this interest group had voiced more pro than con statements about meat in the media discourse *(see figure 26)*. However, between 2018/4 and 2020/3, the prevailing tonality changed from pro to contra, except for 2020/2. In 2020/2 pro meat statements dominated clearly. Also, the involvement of meat processors in the discourse rose abruptly at that time *(figure 25c)*. This might have been a reaction of meat industry actors to counter the dominant negative image of meat that was given a platform in the media at that time, due to the issues related to the COVID19 pandemic *(see chapter7.6.)*. Statements of

meat processors supporting the meat industry had clearly decreased in 2020/3 in comparison to 2020/2 even though the pandemic was still the main meat-related topic in the media. This resulted in the dominance of contra meat statements, which were made due to the ongoing pandemic.

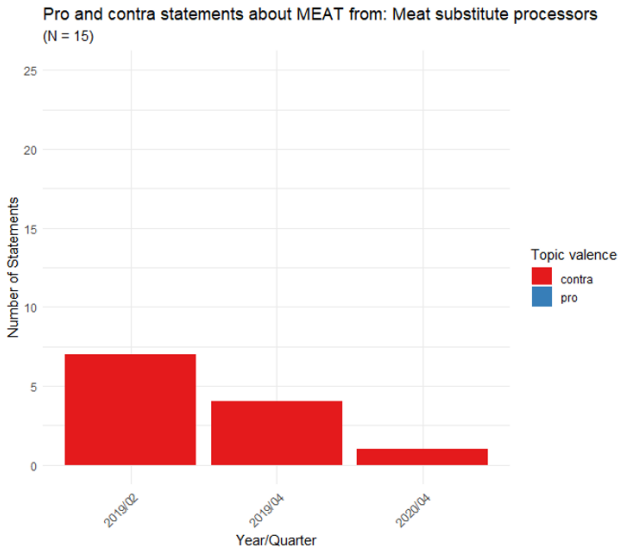

Figure 27: Graph showing the absolute number of contra and pro statements about meat stated by meat processors published in the selected U.S. media between 2016 until 2021. There were no pro statements stated by the meat substitute processors when referring to meat.

In 2018/4 many meat substitute-related topics were on the media agenda and the negative aspects of meat on climate and health were covered by journalists *(see chapter 7.6.4.)*. In 2019, as already elaborated, substitute launches dominated the media agenda, influencing the substitute but also the meat discourse *(see chapter 7.6.)*. As one can see in *figure 27*, meat substitute processors used that window of opportunity. This brought them into the focus of attention and that made them an important source of information: as assumed in H3, meat substitute processors pushed only contra meat statements in the media. In 2019/2 and 2019/4 the statements of the meat substitute processors were accounted for the main part of statements by the «Businesses and Associations»-category. This explains the sudden shift of tonality. In 2018/4 and 2020/3 there were no contra meat statements stated by substitute processors. Nevertheless, the negative statements among the businesses and associations remain the dominating statements *(see figure 26)*. In 2020/3 topics about COVID19-cases in

meatpacking plants were still on the media agenda (Bunge, 2020, July 2), but also news about trade relations due to meat shortages (Cheng, 2020, July 14; Wong, 2020, August 12), substitutes entering retail (Wiener-Bronner, 2020, August 17), and new record high of methane emissions (Guy, 2020, July 15) were published.

When looking at the graphs in the following *figure 28,* one can see, that the references used in context of meat by businesses or associations covered a very broad variety of topics: 18 out of 19 possible statement references were used. Topics that were referred to the most were «food security» (N=55), «health» (N=22), and «pandemics and epizootic diseases» (N=18). «Land usage» (=2), «social fairness» (N= 2) and «biodiversity» (N=1) were hardly issues these actors talked about in the media.

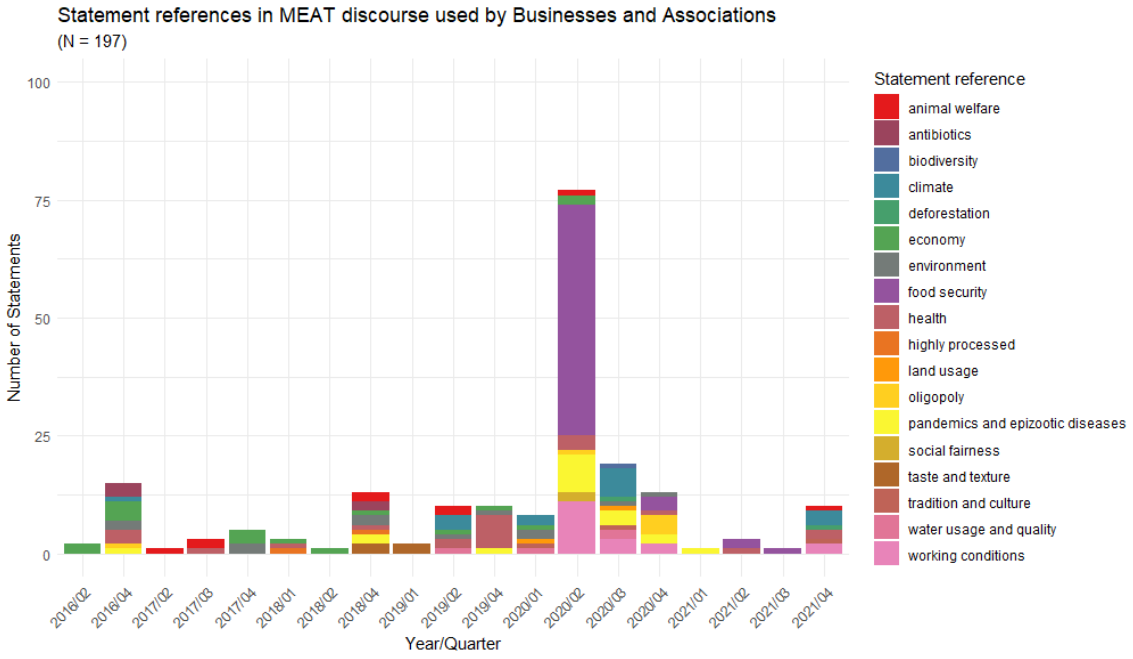

Figure 28: Graph showing the absolute number of statement references stated in the meat discourse by the main actor category «Businesses and Associations», published in the selected U.S. media between 2016 until 2021.

The topics pushed by meat substitute processors on the other hand were clearly the ones, that were thematizing the disadvantages of meat in comparison to meat substitutes: «animal welfare», «climate», «environment», «health» and «water usage and quality» *(see figure 29).*

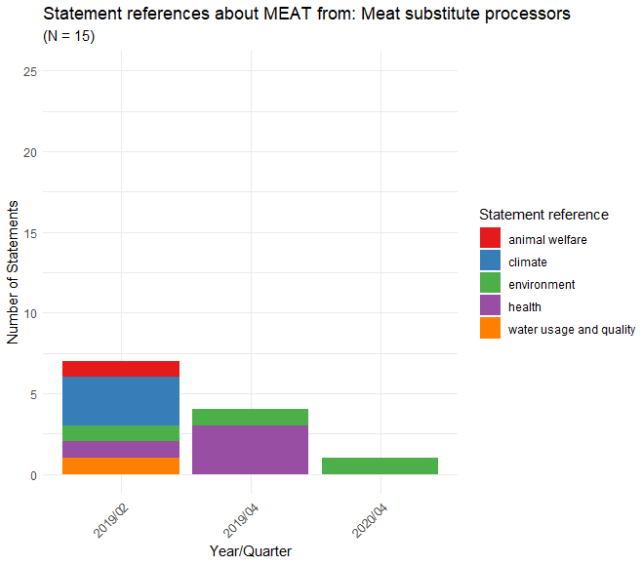

Figure 29: Graph showing the absolute number of statements references used in context with meat and stated by meat substitute processors published in the selected U.S. media between 2016 until 2021.

Throughout time, the «climate» reference became a more relevant statement reference among the «Businesses and Associations» actor category, while the «animal welfare» reference usage decreased *(see figure 28).* The success of meat substitutes gave substitute-supporting or -producing actors a platform in the media discourse to thematize the negative impact of people's everyday diets on climate. This correlation does not imply a causal relationship. It is also possible, that it was the other way around. Meaning, the discourse on the ecological footprint of food that was already a topic of interest in 2018 (Drayer, 2018, October 18) could have led to an increasing media coverage on meat alternative products.

In 2018/4, when the share of meat substitute-related news in the randomly selected articles was very high, the meat discourse was very diverse in topics. «Animal welfare» and «pandemics and epizootic diseases» were the main issues on the agenda of the «Businesses and Associations» actor category. At that time, the environment was a topic that appeared in the meat context, but not specifically in the context of climate. The specific impact of meat on the climate started to be an essential issue in 2019.

In 2020/2, during the first wave of the COVID19-pandemic, the topic that either concerned businesses or associations the most or that their opinion or expertise was asked for the most, were meat shortages and interrupted product chains. This conclusion is based on the big share of «food safety» references that were made at that time. The high share of climate references

later that year, in 2020/3, can be associated with the many articles on more sustainable food production by McDonalds' and various other restaurants (Valinsky,2020, July 9; Gross, 2020, July 17) and the worldwide high level of methane emissions that were especially striking in that quarter (Guy, 2020, July 15).

4.2.3.1 Complementary analysis

To better situate the results just discussed, it is important to take a closer look at the involvement of the other actor categories as well.

When comparing the two graphs in the *figure 30*, one can see that the contra discourse was held by various interest groups to approximately the same extent *(see figure 30b)*, while, as already elaborated, the contra meat discourse is dominated by «Businesses and Associations» *(see figure 30a)*. This actor group was involved most in the pro meat discourse in 10 of the 18 total quarters. The involvement of this group in 2020/2, when the meat discourse peaked, is particularly prominent. The interest groups «State and governmental agencies», «NGOs and Foundations», and «Academics and Thinktanks» were similarly as often represented in the contra meat discourse as businesses and associations. Deducted from the high number of statements between 2018 and 2020, all of these groups were remarkably involved in the contra discourse at this time.

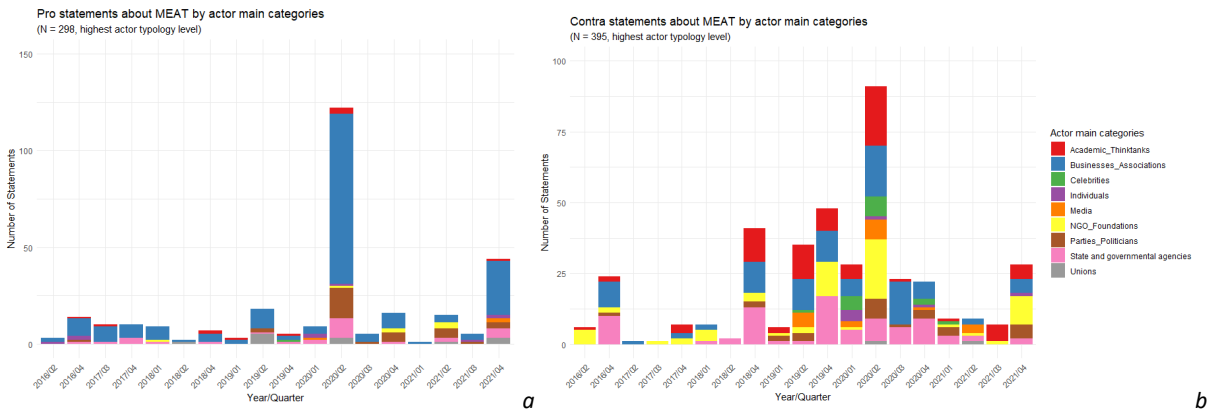

Figure 30: Graphs showing the absolute number of statement references used in the pro and contra meat discourse over time in the selected U.S. media between 2016 until 2021: graph a. containing only pro meat statements, graph b containing only contra meat statements. The different colours indicate the different statement references.

«Celebrities», the «Media», «Unions» and «NGOs and Foundations» hardly positioned themselves in favour of meat throughout 2016 until 2021 *(see figure 30a)*. Taking those actor groups into focus, one can see that, NGOs and foundations appeared in almost all quarters in the contra meat discourse. In the pro meat discourse, they were most involved in 2020. Celebrities were mainly involved in the meat discourse in 2020, stating pro meat statements. The media actors were sporadically represented in the pro meat discourse after 2019, in the contra meat discourse only in the quarter of 2021/4. Individuals were active in both discourses mainly in the first half of the year 2020. Unions stated pro meat statements at the beginning of the years 2018, 2019 and 2020. At the beginning of 2021 they engaged in the contra meat discourse.

The main category actor group «State and governmental agencies» was most involved in the meat discourse in 2019/4– predominantly contra meat–, and in 2020/2 – predominantly pro meat. Also, in 2016/4 and 2018/4 their engagement was high, predominantly negative in both quarters. «State and governmental agencies» have overall stated more contra than pro meat statements. Parties and politicians were most involved in the meat discourse in 2020/2, mainly supporting meat in that quarter.

The same results, but sorted by actor groups, can be seen *in figure 31*. These graphs provide a better understanding of how the positioning of interest groups towards meat has changed over time.

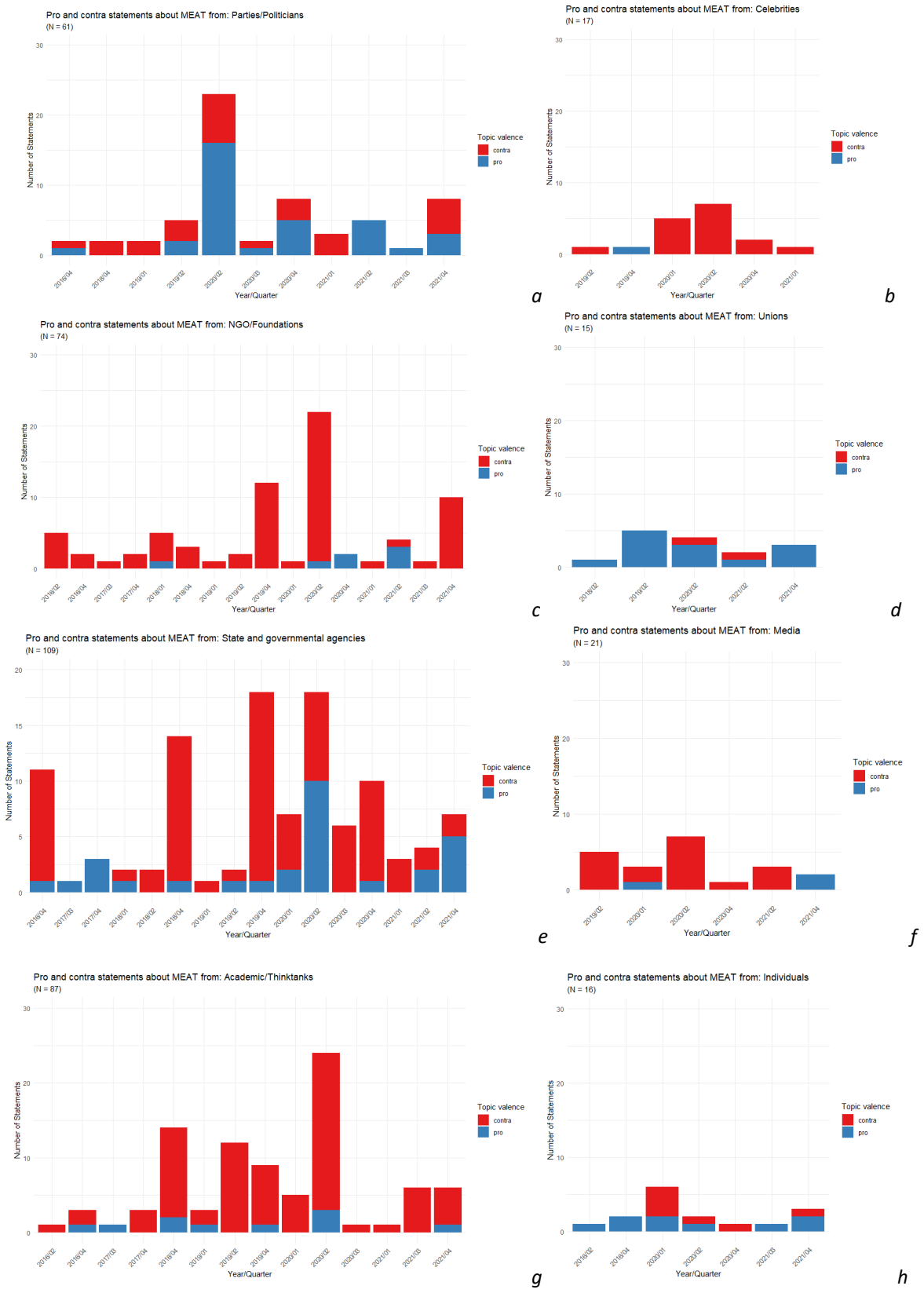

Figure 31: Graphs showing the absolute number of contra (red) and pro (blue) statement used over time in the meat discourse in the selected U.S. media between 2016 until 2021. Every graph shows another main actor category (highest actor typology level), which are indicated in the graphs title.

The predominant tonality of the meat discourse voiced by parties and politicians *(see figure 31a)* has changed a lot over time. In 2018/4 and 2019/2 predominantly contra statements were stated by those actors. Then from 2020/2 until 2021/4, the pro meat statements were slightly more numerous than the contra statements, with the exception of 2021/1. In 2019/2, when many substitute products were launched, the parties and politicians positioned themselves slightly more against meat. In that time period many negative COVID19-related issues concerning meat dominated the media agenda.

Over time, the number of statements by state and governmental agencies as well as the predominant tonality of those statements varied strongly *(see figure 31e)*. In 9 out of 16 quarters the contra meat statements dominated. In 2019/2 the pro and contra statements were approximately even. In 2019/4 the statements were clearly contra meat. Like parties and politicians, also state and governmental agencies did support the meat industry during the peaking quarter 2020/2. At that time, many negative COVID19-related issues concerning meat were thematized.

The predominant tonality in the meat discourse stated by academics and thinktanks *(see figure 31g)* was against meat and did not change over time. Except in 2017/3, where the number of statements voiced by this actor group was very low, the pro meat statements dominated their discourse. Therefore, also in spring and autumn of 2019 – when many substitute products were launched – the most statements by academics and thinktanks were clearly contra meat. In 2020/2 the peak in the meat discourse, the academical institutions as well as thinktanks stated clearly more contra meat statements as well.

Likewise, NGOs and foundations *(see figure 31c)* were mostly expressing statements highlighting negative aspects of meat consumption and production, hardly changing over time. This interest group exclusively stated contra meat statements in 2019/2 and 2019/4, although the number of their statements that were published in spring 2019 were very small. During the peak in 2020/2, NGOs and foundations were most involved in the discourse stating mostly contra meat statements.

The number of statements from «Unions» *(see figure 31d)*, «Individuals» *(see figure 31h)*, «Celebrities» *(see figure 31b),* and «Media» *(see figure 31f)* are rather small. It is not possible to draw conclusions on how the actors evolved over time. However, it can be said, that

«Individuals» and «Unions» have predominantly argued in favour of meat, while «Celebrities» and «Media» have tended to speak out against it. These actor categories were not as active as other groups in the meat substitute discourse between 2016 and 2021 either *(see figure 37, Appendix)*.

4.2.3.2 Sub-conclusion of H3

To be concluded on the quantitative analysis of the actor engagement in the meat discourse, the interest group of substitutes processors promote the positive aspects of meat substitute products. During the quarters in which numerous substitute products were launched, they used the window of opportunity given by the media. As assumed in H3, the main interest concerning meat of those actors was to highlight negative aspects of meat production or consumption.

The same behaviour was also shown by interest groups «NGOs and Foundations», «Academics and Thinktanks» «State and government agencies» and partly also «Parties and Politicians» and «Media». Pro arguments are mostly pushed by the «Businesses and Associations»-category and, sometimes also by «State and governmental agencies». Here, however, the connection to meat substitute launches was only moderate. Also, a change in the predominant tonality was more probable because the statement numbers were comparatively low. The results of the businesses and associations, on the other hand, were more strongly connected to the launches. Meat substitute processors had really made a difference in the tonality of this group, even if the stated prevailing attitude among businesses and associations between 2016 until 2021 was in favour of meat. This impression is also confirmed when looking at the statement references that were made by businesses and associations. References that address the disadvantages of meat in comparison to meat substitutes were pushed by this actor category in 2019.

5 Conclusion

The blooming rise of the meat alternative market in the United States as well as the demand for meat substitutes (Keefe, 2018; Markets and Markets, 2018; Choudhury et al., 2020) was mirrored in the media coverage. In that context reporting has increased and accelerated the statements concerning meat substitutes until approximately 2019. In the second and the fourth quarter of 2019, many meat substitute launches by major food chains in the United States entered the media agenda of the selected newspapers as newsworthy events. Even though occasional launches had been thematized throughout the years 2016 until 2021, most of the coverage was focused on the quarters 2019/2 and 2019/4. As stated in the research question, the influence of those meat substitute launches on the media discourse around meat and meat alternatives between 2016 and 2021 was analysed in context of this master thesis. Through qualitative and quantitative analysis of statements published in media articles of the newspapers *The New York Times, USA Today, The Wall Street Journal, New York Post, CNN,* and *Fox News* an answer for this research question was elaborated. This analysis was built based on the three hypotheses:

- The number of statements concerning meat and meat substitutes rises continuously over the time of 2016 until 2021 in the selected U.S. news content **(H1)**.
- Newsworthy events around the launches of novel meat substitute products lead to an increase of statements against meat in the U.S. media discourse over the time of 2016 until 2021 **(H2)**.
- Actors of the «Businesses and Associations»-category use more contra meat than pro meat statements in the U.S. media discourse on meat over time **(H3)**.

Regarding hypothesis one, it can be concluded that a consequence of these launches is an increasing effect on the number of statements. The increasing number of statements concerning meat substitutes and statements concerning meat could be identified. Also, other meat substitute-related events on the media agenda seem to have given contra meat statements a platform as for example in 2019/1 or 2018/4. In 2018, 2019 and 2021 the success and rising popularity of meat substitute products increased media coverage around these products as well as the vegan or vegetarian lifestyles. The analysis did not show the same increasing effect on the meat discourse as it did on the meat substitute discourse. Justified by the former discourse, including a great diversity of topics that went far beyond the issue of

meat alternatives. Especially a global event like the COVID19-pandemic showed, that sudden crises containing a very high news value dominate the media agenda more, overshadowing other topics in the meat and meat substitute discourse.

During 2019 the substitute launches seem to have had an increasing impact on the use of the «climate», «environment», «health» and «animal welfare» statement references that were used in contra meat statements. Those references suggest, that due to substitute launches, negative aspects of meat production or consumption were thematized in the media. Especially health but also environmental and ethical aspects of animal foods were discussed. These findings are in accordance with the second hypothesis of this master thesis.

The qualitative analysis also supports the third hypothesis. Based on the qualitative analysis, the substitute launches did constitute a window of opportunity for meat substitute processors to make statements highlighting the negative aspects of meat. Meat substitute processors have become important voices of the meat discourse throughout the time of 2018 until 2020. This had an increasing effect on the negative tonality in the meat discourse throughout 2019.

However, the effect of the substitute launches is limited to the year 2019. After 2019, the substitute launches move out of the media-focus, probably because launches were not perceived as newsworthy anymore or other topics bared a higher news value. This conclusion is based on the report of Good Food Institute, listing a large number of meat substitute product launches in 2021 for example, which did not find their way into the selection of news articles read in this master thesis (Formanski et al., 2021). The increasing effect of substitute launches on the meat and meat substitute discourses therefore declined after 2019. Other topics considered as more important or relevant on the media agenda started to dominate the discourse. This finding is consistent with Anthony Downs' issue attention cycle theory (Downs, 1972): After 2019, the attention paid towards meat substitute launches decreases and the final phase, the post-problem stage was reached.

As stated at the beginning of this thesis, it can make a difference if and how journalists thematize certain issues in the media. It rises awareness, informs the reader or audience and in case of dietary changes, it can motivate (Boyce & Lewis, 2009; Boykoff & Boykoff, 2007; Nolte, 2005). The main shortcoming of this thesis is, that those findings are not linked to the

actual consumption behaviour of the U.S. population. Also, survey data, confirming that citizens have taken what they read in the media as a motivation or source of their behaviour, are lacking. As a next step, it would therefore be interesting to find out if and how the media coverage about newly launched substitute products and the published statements of the different involved actors had influenced the U.S. citizens behaviour as well as attitudes towards meat or meat substitutes. To this end, further scientific research is necessary and data on actual consumption behaviour needs to be gathered and analysed accordingly. A further shortcoming of this master thesis are the small numbers of statements in some of the graphs. The results found in those graphics need to be considered with caution and have limited informative value. The small number was due to the small amount of data. To resolve this issue, all high-, medium-, and low priority months need to be included in the analysis. Furthermore, data from additional newspapers needs to be gathered and analysed.

This master thesis serves as a basis for further research in this scientific field. It would be useful to check, whether the results of this thesis would be confirmed by further analysis of additional U.S. newspapers or not, i.e., if a bigger data base would lead to similar conclusions. Additionally, it would be interesting to see, how the meat and meat substitute discourse has evolved during the same period in different countries. Especially in countries, where the market shares of the meat industry or the substitute industry are in a different proportion than they are in the USA. It would also be worth taking a closer look at the countries with fewer food chains, to see if a similar development of a meat alternative trend would be visible in the media.

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7 Appendix

7.1 Codebook

Category	Variable name	Sub-categories	Definition
Fragmented general key statements	statement	Text	*See chapter 7.1.1*.: There you can select between 10 different narratives, 5 policy goals and 21 policy instruments.
Statement type	statement_type	1 = narrative 2 = goal 3 = instrument	1 = a statement expressing an opinion on meat, meat alternatives or plant-based diets e.g., "too much meat is bad for your health" 2= a statement referring to a policy goal, e.g., "meat consumption should be reduced", "meat production should be increasingly regulated" 3 = a statement involving a specific policy instrument, e.g., a tax on meat products
Statement topic	statement_topic	1 = meat 2 = substitute 3 = plant-based	1 = the statement is about meat in general, meat products, meat consumption, meat production or about animal husbandry 2 = the statement is about any kind of meat alternative 3 = the statement is about plant-based diets or plant-based foods
Statement topic valence	topic_valence	1 = pro 2 = contra	1 = the statement expresses a positive view on meat, substitutes, plant-based diets, or foods etc. 2 = the statement expresses a negative view on meat, substitutes, plant-based diets, or foods etc. *The topic valence always refers to the current status quo of meat production/consumption etc.*
Diet type	diet_type	1 = omnivore 2 = pescatarian 3 = flexitarian 4 = vegetarian 5 = vegan	If a specific diet type is mentioned, the diet type mentioned is 1 = omnivore, i.e., diet including meat and fish 2 = pescatarian, i.e., diet without meat but with fish 3 = flexitarian, i.e., diet where meat consumption is consciously being reduced 4 = vegetarian, i.e., diet without fish or meat 5 = vegan, i.e., diet without any animal products
Meat substitute type	substitute_type	1 = plant-based 2 = insect based 3 = in-vitro	If substitutes are mentioned, the substitute type mentioned is 1 = plant-based substitutes 2 = insect-based substitutes 3 = in-vitro meat
Meat type	meat_type	1 = organic 2 = conventional	The statement explicitly refers to meat from 1 = organic production 2 = conventional production
Statement refers to	statement_reference	1 = health 2 = environment 3 = climate 4 = biodiversity 5 = land usage 6 = water usage and quality 7 = deforestation 8 = animal welfare 9 = working conditions 10 = pandemics and epizootic diseases 11 = antibiotics 12 = economy 13 = moral and ethic 14 = taste and texture 15 = food security 16 = highly processed 17 = social fairness 18 = oligopoly 19 = tradition and culture	The statement refers to 1 = health 2 = environment 3 = climate 4 = biodiversity 5 = land usage 6 = water usage and quality 7 = deforestation 8 = animal welfare 9 = working conditions 10 = pandemics and epizootic diseases 11 = antibiotics 12 = economy 13 = moral and ethic 14 = taste and texture 15 = food security 16 = highly processed 17 = social fairness 18 = oligopoly 19 = tradition and culture

Statement about…	consumption_vs_production	1 = consumption 2 = production 3 = mass production 4 = consumption and production 5 = international trade	1 = statement on consumption 2 = statement on production 3 = statement on mass meat production 4 = statement on consumption and production 5 = statement on international trade (incl. import and export)
Statement targeted at …	technical_vs_behavioral	1 = technical 2 = behavioral 3 = both	1 = the statement describes necessary technical changes, e.g., using newer and cleaner farming methods and respective technologies 2 = the statement describes necessary behavioral changes, e.g., reducing meat consumption 3 = the statement describes both, necessary technical and behavioral changes
Strategic focus	strategic_focus	1 = efficiency 2 = substitution 3 = sufficiency	1 = the statement involves some sort of efficiency-oriented measure that incentivizes producers to incrementally lower environmental burdens, e.g., reduce emissions from meat production 2 = the statement involves some sort of substitution-oriented measure aiming at radical technological and behavioral change, e.g., by replacing meat with substitutes 3 = the statement involves some sort of sufficiency-oriented measure with the goal of avoiding unsustainable practices altogether, e.g., by reducing meat consumption.
Individual vs. Governmental Responsibility	individual_vs_governmental	1 = consumer responsibility 2 = producer responsibility 3 = governmental responsibility	1 = Statement that indicates that consumers have the main responsibility to change behaviors and gather information 2 = Statement that indicates that producers have the main responsibility to change technologies and behavior 2= Statement indicating that the government has the main responsibility to set rules to change behaviors and technologies
Name of the individual actor	actor_individual	Text	If the statement involves the position/opinion of a certain individual person, the first + last name of the person should be stated here *Note that the journalist can be used as an actor individual if he/she is explicitly named in relation to a certain statement*
Name of the organization	actor_organisation	Text	If the statement involves the position/opinion of an organization the name of the organization should be stated here
Actor position	actor_position	1 = support 2 = neutral 3 = oppose	1 = the actor supports the statement 2 = the actor is neutral towards the statement 3 = the actor opposes the statements
Joker 1	joker_1	1 = adoption 2 = abolishment 3 = increase 4 = decrease 5 = status quo	1 = statement is about the adoption of a specific policy instrument 2 = statement is about the abolishment of a specific policy instrument 3 = statement is about increasing a certain policy instrument, e.g., the VAT 4 = statement is about decreasing a certain policy instrument, e.g., subsidies 5 = statement is about keeping a specific policy instrument as it is (stick to status quo)
Joker 2	joker_2	1 = reverse causality	1 = statement reverses the “dominant logic” and e.g., states that global warming is bad for animal welfare, pandemics are bad for meat producers etc.

7.1.1 List of all fragmented general key statements

ID	Statement	Example	1 = Narrative 2 = Policy Goal 3 = Policy Instrument
1	is/are bad	Fleisch ist schlecht für die Gesundheit Fleischproduktion ist schlecht fürs Klima. Die Arbeitsbedingungen in der Fleischindustrie sind schlecht. Only use in sentences with specific reference, e.g., climate, biodiversity etc.	1
2	is/are good	Fleischalternativen sind gut fürs Klima. Only use in sentences with specific reference, e.g., climate, biodiversity etc.	1
3	is/are responsible for	Akteur/Organisation ist verantwortlich für XY	1
4	increase/s the risk for	Fleischproduktion erhöht Gesundheitsrisiken durch Pandemien, Antibiotikaresistenzen und Tierseuchen.	1
5	is/are going to be more expensive	Fleisch wird teurer werden.	1
6	is/are going to be cheaper	Fleischalternativen werden billiger.	1
7	is/are too cheap	Fleisch ist zu günstig.	1
8	is/are too expensive	Fleischalternativen sind zu teuer.	1
9	is too high	Fleischkonsum/produktion ist zu hoch. Only use in sentences without specific reference.	1
10	is too low	Fleischalternativenkonsum/produktion ist zu niedrig. Only use in sentences without specific reference.	1
11	is/are a growing market	Der Markt für Fleischalternativen wächst.	1
12	is/are a shrinking market	Die Nachfrage nach Fleisch sinkt.	1
13	should be reduced	Fleischkonsum/produktion sollte reduziert werden.	2
14	should be increased	Die Tierhaltungsstandards sollten erhöht werden. Fleischalternativenkonsum/produktion sollte erhöht werden.	2
15	should be improved	Das Tierwohl sollte verbessert werden.	2
16	should be cheaper	Fleischalternativen sollten günstiger werden.	2
17	should be more expensive	Fleisch sollte teurer werden.	2
18	should be supported	Fleischalternativen sollten gefördert werden	2
19	easier approval of advanced food technologies	"Wir wollen Technologieoffenheit für die nachhaltige Landwirtschaft der Zukunft und setzen uns für die zügige Zulassung von In-vitro-Fleisch in der EU ein. " (FDP 2021, p. 62)	2
20	area-based livestock farming (fixed amount of animal per hectar)	"Bindung der Tierhaltung an die bewirtschaftete Fläche auf den Landwirtschaftsbetrieben." (Greenpeace 2014, p. 5)	3
21	information campaigns on the negative impact of meat consumption	"Um das Ziel eines geringeren Fleischkonsums zu erreichen, muss die Bundesregierung ein Mix politischer Instrumente anwenden in Form von Informationskampagnen, einer Förderung von pflanzlicher Ernährung im Bereich der öffentlichen Verpflegung, eine Reduktion der Mehrwertsteuer auf pflanzliche Produkte, ein Fokus der öffentlichen Beschaffung auf regionale, saisonale und ökologisch erzeugte Produkte und durch eine soziale Ausrichtung der Ernährungspolitik." (BUND 2021a, p. 14)	3

22	CO2 tax on food products	"Die AfD unterstützt das Leitbild des mündigen Verbrauchers. Er soll in seinem Konsumverhalten nicht staatlich bevormundet werden. Deshalb lehnen wir jede Form der gesonderten Lebensmittelbesteuerung, wie eine Fleisch- oder Zuckersteuer, ab." (AfD 2021, p. 204); "Umweltfolgekosten müssen auch im Lebensmittelbereich steuerlich berücksichtigt werden, damit sich auch bei pflanzlichen und tierischen Lebensmitteln der Preis ökologisch und sozial gerecht darstellt" (Grüne 2021, p. 52) ; "Insbesondere Preissignale sind geeignet, um die maßgebliche Änderung im Fleischkonsumverhalten herbeizuführen. " (Greenpeace 2021, p. 29)	3
23	VAT on meat products	"Der Mehrwertsteuersatz für Wurst und Fleisch sollte erhöht werden." (Greenpeace 2013, p. 11)	3
24	nitrogen surplus tax for meat producers	"Insbesondere die Einführung einer Stickstoffüberschussabgabe und die Reform der Mehrwertsteuer wären geeignet, Anreize für ökologisch verträglichere Erzeugungsmethoden zu schaffen, Fleischprodukten einen angemesseneren Preis zu verleihen und auf diese Weise zu einer Mäßigung des Fleischkonsums beizutragen." (Greenpeace 2014, p. 4)	3
25	animal welfare fee	Es sollte eine Tierwohlabgabe eingeführt werden.	3
26	(indirect) subsidies for meat producers	Die Subventionen für Fleischproduzenten sollen reduziert werden.	3
27	mandatory higher animal welfare standards	Es sollten höhere und verpflichtende Tierwohlstandards eingeführt werden.	3
28	voluntary higher animal welfare standards	Aldi verzichtet ab 2030 freiwillig darauf Fleisch der Haltungskategorie 1 anzubieten.	3
29	mandatory animal welfare label	"Unser Ziel ist eine verpflichtende europäische Haltungs-/Tierwohlkennzeichnung und auch auf EU-Ebene eine aussagekräftige, für die Verbraucherinnen und Verbraucher besser erkennbare Herkunftskennzeichnung für mehr Lebensmittel." (CDU/CSU 2021, p. 55)	3
30	voluntary animal welfare label		3
31	meat advertisement		3
32	ban on meat names for meat substitute products	"Klarheit und Wahrheit fordert der DBV vor allem auch für die Kennzeichnung von vegetarischen und veganen Fleischersatzprodukten. Die Verwendung von Fleischbezeichnungen für Ersatzprodukte wird deshalb abgelehnt." (DBV 2017, p. 13)	3
33	offering meat alternatives in public cafeterias	"Die Absatzmärkte für tierische Ersatzprodukte müssen gestärkt werden, auch und inbesondere über die Gemeinschaftsverpflegung." (Greenpeace 2021, p. 28)	3
34	tax on meat alternatives	"Wir wollen vegetarische und vegane Ernährung attraktiver und zugänglich für alle Menschen machen. Die Markteinführung von pflanzlichen Alternativen und Fleischersatzprodukten wollen wir fördern und sie steuerlich besserstellen." (Grüne 2021, p. 52)	3
35	research and development subsidies for meat alternatives		3
36	maximum share of meat dishes to be offered in public cafeterias	"Damit wird unter anderem der Speiseplan mit steigenden Anteilen an pflanzlichen Lebensmitteln zusammengestellt und so das Angebot an Mittagsgerichten mit Fleisch- /Wurstwaren schrittweise reduziert." (BMU 2021, p. 77)	3
37	minimum share of plant-based dishes to be offered in public cafeterias	"Gesteigert werden sollen die Angebotsvielfalt und die Attraktivität pflanzenbetonter (vegetarisch / vegan) bzw. CO2-reduzierter Gerichte, ebenso der Anteil an Produkten aus ökologischer Landwirtschaft, ausdrücklich unter Beibehaltung der Auswahloption von Gerichten mit Fleischanteilen an allen Werktagen." (BMU 2021, p. 77)	3
38	a mandatory day with only plant-based dishes in public cafeterias etc.	"Die Wertschätzung von Lebensmitteln und die Bedeutung einer ausgewogenen Ernährung müssen wieder in den Mittelpunkt unserer Gesellschaft gestellt werden. Einseitige Kampagnen, wie z. B. die Einführung von verpflichtenden „Veggie-Tagen“ in öffentlichen Verpflegungseinrichtungen, tragen nicht dazu bei." (DRV 2013, p. 9); "In öffentlichen Kantinen sollten fleisch- und fischfreie Tage eingeführt werden." (Greenpeace 2013, p. 11)	3
39	a voluntary day with only plant-based dishes at home, in public cafeterias etc.		3

40	social balance for the increasing meat prices due to taxes		3
41	VAT on plant-based products	"Um das Ziel eines geringeren Fleischkonsums zu erreichen, muss die Bundesregierung ein Mix politischer Instrumente anwenden in Form von Informationskampagnen, einer Förderung von pflanzlicher Ernährung im Bereich der öffentlichen Verpflegung, eine Reduktion der Mehrwertsteuer auf pflanzliche Produkte, ein Fokus der öffentlichen Beschaffung auf regionale, saisonale und ökologisch erzeugte Produkte und durch eine soziale Ausrichtung der Ernährungspolitik." (BUND 2021a, p. 14)	3
42	transformation of EU's agricultural subsidies from area-based support to the support of climate-friendly practices	Die EU Agrarsubventionen müssen weg von Flächen- und hin zu mehr Umweltförderung.	3

7.2 Actor typology

- State and governmental agencies
  - International level
  - Federal level
  - State level
  - County level
- Parties/Politicians
  - Liberals
  - Conservatives
- Unions
  - Meat production or processing
  - Farmers
  - Others
- Businesses/Associations
  - Market researchers
  - Financial industry
  - Consulting
  - Input industry
  - Health industry
  - Processors
    - Meat substitute industry
    - Meat industry
  - Producers
    - Farmers
      - Feed producers/Livestock farmers
      - Plant based farmers
  - Traders
  - Retailers
    - Restaurant industry/Cafeterias
      - Vegan
      - Non-Vegan

        - Grocery stores/Markets
    - Others
- Individuals
    - Consumers
    - Citizens
- Academic/Thinktanks
    - Academic institutions
    - Thinktanks
- NGO/Foundation
    - Animal welfare
    - Health protection
    - Environmental protection
    - Development/Human rights
    - Consumer protection
    - Social justice
- Celebrities
- Media
    - Conservatives
    - Liberals
    - Others

7.3 R-Code

```
##.....
## .....
## R Script:
## Master Thesis "Analysis of the media discourse about meat and
## meat substitutes between 2016 and 2021 "
## Created January 2023 by Senta Keller
## Supervisor: Karin Ingold; Advisor: Lukas Fesenfeld
## Oeschger Centre for Climate Change Research
##.....
##.....



##.....
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```

```
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##.....................................................
```

```
#1. Packages ####
##1.1. Installing packages ####

# install.packages("statnet")
# install.packages("cluster")
# install.packages("remotes")
# install.packages("tidyverse")
# install.packages("data.table")
# install.packages("plotly")
# install.packages('xlsx')
```

```
# install.packages('lubridate')
# install.packages("dplyr")
# install.packages("gtrendsR")
# install.packages("strucchange")
# install.packages("patchwork")
# install.packages("ggrepel")
# install.packages("tseries")
# install.packages("ggplot2")



##1.2. Loading Packages #####

library("tidyverse")
library("data.table")
library("plotly")
library("dplyr")
library("tibble")
library("lubridate")
library("xlsx")
library("readxl")
library("ggplot2")
library("RColorBrewer")
library("zoo")
library("gtrendsR")
library("strucchange")
library("patchwork")
library("ggrepel")
library("tseries")
library("ggplot2")



#2. Importing and preparing data #####
##2.1 importing data ####

data_usa <- fread("C:\\Users\\senta\\Documents\\UniBe - Climate Science\\Master Thesis\\SNIS\\Arbeitsdateien Eventlists\\Data_merged and corrected.csv")

str(data_usa) #looking at the data structure



##2.2. Preparing data ####
###2.2.1 Convert time variable to date format ####
data_usa <- data_usa %>% mutate(time_n = as.Date(time, "UTC")) # define time variable as date

data_usa$date_quarters <- paste(format(data_usa$time_n, "%Y"),
                                sprintf("%02i", (as.POSIXlt(data_usa$time_n)$mon) %/% 3L + 1L),
                                sep = "/") # create date variable with quarters


###2.2.2. Re-coding variables ####
####2.2.2.1. Re-code "oppose"-statements ####
```

```
data_usa <- data_usa %>%
  mutate(topic_valence_new = ifelse(actor_position == "oppose" & topic_valence == "pro", "contra",
                                    ifelse(actor_position == "oppose" & topic_valence == "contra", "pro", topic_valence))) # statements of a actors being in opposition of said statement need to be recoded
data_usa$topic_valence_new <- as.factor(data_usa$topic_valence_new)
```

```
####2.2.2.2. Correcting miss-spelled  variables ####
```

```
data_usa <- data_usa %>%
  mutate(statement_reference = ifelse(statement_reference == "social inequality", "social fairness", statement_reference))

data_usa <- data_usa %>%
  mutate(statement_reference = ifelse(statement_reference == "world food supply", "food security", statement_reference))
```

```
###2.2.3. Merge USA-data set with actor typology ####

# Export actors in order to manually assign the typology
data_usa_typo <- subset(data_usa, select=c(actor_individual, actor_organization)) %>% distinct()
write.xlsx(data_usa_typo, "C:\\Users\\senta\\Documents\\UniBe - Climate Science\\Master Thesis\\SNIS\\Arbeitsdateien Eventlists\\Export aus R\\data_usa_typo.xlsx")

data_typology <- read_excel("C:\\Users\\senta\\Documents\\UniBe - Climate Science\\Master Thesis\\SNIS\\Arbeitsdateien Eventlists\\Excel Sheets zur Bearbeitung aus R-Export\\data_usa_typo.xlsx")


#import finished actor typology
data_typology <- read_excel("C:\\Users\\senta\\Documents\\UniBe - Climate Science\\Master Thesis\\SNIS\\Arbeitsdateien Eventlists\\Excel Sheets zur Bearbeitung aus R-Export\\data_usa_typo.xlsx")

# merging actor typology with dataset of coded articles (("data_merged.xlsx"  mit "Data_Typo_240423.xlsx"))

library(dplyr)
data_typology_no_dup <- data_typology %>%
  mutate(actor_individual = ifelse(is.na(actor_individual), "", actor_individual),
       actor_organization = ifelse(is.na(actor_organization), "", actor_organization))
data_typology_no_dup <- data_typology_no_dup %>% distinct()

data_typology_no_dup$ID <- paste(data_typology_no_dup$actor_individual, data_typology_no_dup$actor_organization, sep = "-")
data_usa$ID <- paste(data_usa$actor_individual, data_usa$actor_organization, sep = "-")

data_usa_and_typology <- left_join(data_usa, data_typology_no_dup %>% select(-c(actor_individual, actor_organization)),
                                   by = 'ID')
data_typology_no_dup[duplicated(data_typology_no_dup$ID), "ID"]
```

```
###2.2.4. Prepare data for barplots ####
```

```
# define NAs in order to exclude them in graphs
data_usa[statement_reference == ""] <- NA



#3. Data analysis #####
##3.1. Descriptive Analysis: graphs and plots #####
###3.1.1. Statements about MEAT and/or MEAT SUBSTITUTES in absolute numbers ####

# Number of Statements about MEAT and MEAT SUBSTITUTES

graph_numberofMEATnSUBstatements <- ggplot(data_usa, aes(fill=statement_topic, x=date_quarters)) +
 geom_bar(data=subset(data_usa,statement_topic %in% c('substitute', 'meat'))) +
 ylim(ymin=0, 1500) +
 labs(title = "Number of Statements about MEAT and  SUBSTITUTES",
     subtitle = '(N = 3984)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
     fill = 'Statement topic') +
 theme_minimal() +
 scale_fill_manual(name="",
           values = c("substitute"="#00ba38", "meat"="#f8766d")) +  theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_numberofMEATnSUBstatements # all graphs of this R-script have been exported manually via plot pane

# information for subtitle N = :
table(data_usa$statement_topic)

#      meat plant-based  substitute
#      3041        703        943



df <- data_usa %>%
 filter(statement_topic %in% c("meat", "substitute")) %>%
 group_by(statement_topic, date_quarters) %>%
 count()


# number of statements about MEAT
graph_numberofMEATstatements <- ggplot(data_usa, aes(fill=statement_topic, x=date_quarters)) +
 geom_bar(data=subset(data_usa,statement_topic %in% c('meat'))) +
 ylim(ymin=0, 1500) +
 labs(title = "Number of Statements about MEAT",
     subtitle = '(N = 3041)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
     fill = 'Statement topic') +
 theme_minimal() +
 scale_fill_manual(name="",
           values = c("meat"="#f8766d")) +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_numberofMEATstatements
```

```
# number of statements about SUBSTITUTES
graph_numberofMEATstatements <- ggplot(data_usa, aes(fill=statement_topic, x=date_quarters)) +
 geom_bar(data=subset(data_usa,statement_topic %in% c('substitute'))) +
 ylim(ymin=0, 250) +
 labs(title = "Number of Statements about MEAT SUBSITUTES",
     subtitle = '(N = 943)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
     fill = 'Statement topic') +
 theme_minimal() +
 scale_fill_manual(name="",
                   values = c("substitute"="#00ba38")) +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_numberofMEATstatements


###3.1.2. Topic valence of MEAT and MEAT SUBSTITUTE statements ####


#Topic valences for MEAT
graph_topicvalence_Meat <- ggplot(data_usa, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa,statement_topic=="meat" & topic_valence_new %in% c('contra','pro'))) +
 ylim(ymin=0, 600) +
 labs(title = "Topic valences for the statement topic: MEAT",
     subtitle = '(N = 2029)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
     fill = 'Topic valence') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_topicvalence_Meat
#export graph manually



#Topic valences for MEAT SUBSTITUTES

graph_topicvalence_Substi <- ggplot(data_usa, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa,statement_topic=="substitute" & topic_valence_new %in% c('contra','pro'))) +
 ylim(ymin=0, 200) +
 labs(title = "Topic valences for the statement topic: MEAT SUBSTITUTES",
     subtitle = '(N = 702)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
     fill = 'Topic valence') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))
```

```
graph_topicvalence_Substi



###3.1.3. Most used general key statements ####

#overview of all statements about MEAT
graph_MEATkeystatements_tot <- ggplot(data_usa, aes(x=statement)) +
 geom_bar(data=subset(data_usa,statement_topic=="meat"), na.rm = T) +
 ylim(ymin=0, 1500) +
 labs(title = "Statements about MEAT",
     subtitle = '(Total N = 3041)',
     x = 'Statements',
     y = 'Number of Statements') +
 theme_minimal() +
 theme(axis.text.x = element_text(angle=70, vjust=1, hjust=1))

graph_MEATkeystatements_tot

df <- data_usa %>%
 filter(statement_topic %in% c("meat")) %>%
 group_by(statement) %>%
 count()



#overview of all statements about MEAT SUBSTITUTES
graph_SUBkeystatements_tot <- ggplot(data_usa, aes(x=statement)) +
 geom_bar(data=subset(data_usa,statement_topic=="substitute"), na.rm = T) +
 ylim(ymin=0, 500) +
 labs(title = "Statements about SUBSTITUTES",
     subtitle = '(Total N = 425)',
     x = 'Statements',
     y = 'Number of Statements') +
 theme_minimal() +
 theme(axis.text.x = element_text(angle=70, vjust=1, hjust=1))

graph_SUBkeystatements_tot


#finding out N
      df <- data_usa %>%
        filter(statement_topic %in% c("substitute")) %>%
        group_by() %>%
        count()

      df <- data_usa %>%
        filter(statement_topic %in% c("substitute")) %>%
        group_by(statement) %>%
        count()
```

```
###3.1.4. Key statement references ####

table(data_usa$statement_reference, data_usa$statement_topic) #to get a fist overview


#####3.1.4.1. Key Statements in combination with statement references ####

    # statement_reference %in% c("health", "environment", "climate", "biodiversity", "land usage"," water usage and quality",
    #                  "deforestation", "animal welfare", "working conditions", "pandemics and epizootic diseases",
    #                  "antibiotics", "economy", "moral and ethics", "taste and texture", "food security",
    #                  " highly processed", "social fairness", "oligopoly", "tradition and culture", "social inequality")
    #
    #



# key statements and references about MEAT

table(data_usa$statement_topic, data_usa$statement) #to include only statements with N => 100 in graph
table(data_usa$statement_topic, data_usa$statement_reference) #to get a fist overview



nb.cols <- 20
mycolors1 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette

graph_MEATkeystatementswtreferences <- ggplot(data_usa, aes(fill=statement_reference, x=statement)) +
 geom_bar(data=subset(data_usa,statement_topic=="meat" & statement %in% c('increase/s the risk for','is too low', 'is/are a growing market', 'is/are bad', 'is/are going to be more expensive', 'is/are good', 'is/are too expensive', 'should be reduced'
 )), na.rm = T) +
 ylim(ymin=0, 1500) +
 labs(title = "Most used statements and statement references about MEAT",
     subtitle = '(Total N = 2745, Statements with N => 100)', # only statements included that are N < 100
     x = 'Statements',
     fill = 'Statement references',
     y = 'Number of Statements') +
 theme_minimal() +
 scale_fill_manual(values = mycolors1) +
 theme(axis.text.x = element_text(angle=60, vjust=1, hjust=1))

graph_MEATkeystatementswtreferences


    # finding out N
    dfplot_BA <- data_usa_and_typology %>%
      filter(statement_topic %in% c("meat"), statement %in% c('increase/s the risk for','is too low', 'is/are a growing market', 'is/are bad', 'is/are going to be more expensive', 'is/are good', 'is/are too expensive', 'should be reduced')) %>%
      count()



    df <- data_usa %>%
      filter(statement_topic %in% c("meat"), statement %in% c('increase/s the risk for','is too low', 'is/are a growing market', 'is/are bad', 'is/are going to be more expensive', 'is/are good', 'is/are too expensive', 'should be reduced')) %>%
      group_by(statement_reference, statement) %>%
      count()
```

```
# key statements and references about MEAT SUBSTITUTES

graph_SUBkeystatementswtreferences <- ggplot(data_usa, aes(fill=statement_reference, x=statement)) +
 geom_bar(data=subset(data_usa,statement_topic=="substitute" & statement %in% c('increase/s the risk for','is too low', 'is/are a growing market', 'is/are bad', 'is/are going to be more expensive', 'is/are good', 'is/are too expensive', 'should be reduced'
   )), na.rm = T) +
  ylim(ymin=0, 300) +
  labs(title = "Most used statements and statement references about SUBSTITUTES",
       subtitle = '(Total N = 411, Statements with N => 100 in meat discourse)', # only statements included that are N < 100
       x = 'Statements',
       fill = 'Statement references',
       y = 'Number of Statements') +
  theme_minimal() +
  scale_fill_manual(values = mycolors1) +
  theme(axis.text.x = element_text(angle=60, vjust=1, hjust=1))

graph_SUBkeystatementswtreferences

    # finding out N
    dfplot_BA <- data_usa_and_typology %>%
     filter(statement_topic %in% c("substitute"), statement %in% c('increase/s the risk for','is too low', 'is/are a growing market', 'is/are bad', 'is/are going to be more expensive', 'is/are good', 'is/are too expensive', 'should be reduced')) %>%
     count()

    df <- data_usa %>%
     filter(statement_topic %in% c("substitute"), statement %in% c('increase/s the risk for','is too low', 'is/are a growing market', 'is/are bad', 'is/are going to be more expensive', 'is/are good', 'is/are too expensive', 'should be reduced')) %>%
     group_by(statement_reference, statement) %>%
     count()



# key statements and references about SUBSTITUTES

nb.cols <- 20
mycolors1 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette

graph_SUBSTkeystatementswtreferences <- ggplot(data_usa, aes(fill=statement_reference, x=statement)) +
 geom_bar(data=subset(data_usa,statement_topic=="substitute"), na.rm = T) +
 ylim(ymin=0, 300) +
 labs(title = "Most used statements and statement references about SUBSTITUTES",
     subtitle = '(Total N = 425)',
     x = 'Statements',
     fill = 'Statement references',
     y = 'Number of Statements') +
 theme_minimal() +
 scale_fill_manual(values = mycolors1) +
 theme(axis.text.x = element_text(angle=80, vjust=1, hjust=1))

graph_SUBSTkeystatementswtreferences

    # finding out N
    dfplot_BA <- data_usa_and_typology %>%
     filter(statement_topic %in% c("substitute")) %>%
```

```
        count(statement)



#####3.1.4.2. Statement references of "is/are good" and "is/are bad" statements ####

# barplot MEAT + "is/are good" statements  with statement references
 nb.cols <- 15
 mycolors1 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette

 graph_MEATstatementGOOD_reference <- ggplot(data_usa, aes(fill=statement_reference, x=date_quarters)) +
  geom_bar(data=subset(data_usa,statement_topic=="meat" & statement %in% c('is/are good')), na.rm = T) +
  ylim(ymin=0, 30) +
        labs(title = "Statement references: MEAT + is/are good",
            subtitle = '(N = 192)',
            x = 'Year/Quarter',
            y = 'Number of Statements',
            fill = 'Statement reference') +
  theme_minimal() +
  scale_fill_manual(values = mycolors1) +
  theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

  graph_MEATstatementGOOD_reference



# barplot MEAT + "is/are bad" statements with statement references

 nb.cols <- 30
 mycolors2 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette

 graph_MEATstatementBAD_reference <- ggplot(data_usa, aes(fill=statement_reference, x=date_quarters)) +
  geom_bar(data=subset(data_usa,statement_topic=="meat" & statement %in% c('is/are bad')), na.rm = T) +
  ylim(ymin=0, 500) +
  labs(title = "Statement references: MEAT + is/are bad",
            subtitle = '(N = 1353)',
            x = 'Year/Quarter',
            y = 'Number of Statements',
            fill = 'Statement reference') +
  theme_minimal() +
  scale_fill_manual(values = mycolors2) +
  theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

 graph_MEATstatementBAD_reference



# barplot MEAT SUBSTITUTES + "is/are bad" statements  with statement references
 nb.cols <- 30
 mycolors2 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette

 graph_SUBSTstatementBAD_reference <- ggplot(data_usa, aes(fill=statement_reference, x=date_quarters)) +
  geom_bar(data=subset(data_usa,statement_topic=="substitute" & statement %in% c('is/are bad')), na.rm = T) +
  ylim(ymin=0, 50) +
```

```
  labs(title = "Statement references: SUBSTITUTES + is/are bad",
       subtitle = '(N = 49)',
       x = 'Year/Quarter',
       y = 'Number of Statements',
       fill = 'Statement reference') +
  theme_minimal() +
  scale_fill_brewer(palette = 'Set1') +
  theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

 graph_SUBSTstatementBAD_reference

        # finding out N
        dfplot_act <- data_usa_and_typology %>%
         filter(statement_topic=="substitute" & statement %in% c('is/are bad')) %>%
         count()



# barplot MEAT SUBSTITUTES + "is/are good" statements  with statement references


 nb.cols <- 15
 mycolors1 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette

graph_SUBstatementGOOD_reference <- ggplot(data_usa, aes(fill=statement_reference, x=date_quarters)) +
 geom_bar(data=subset(data_usa,statement_topic=="substitute" & statement %in% c('is/are good')), na.rm = T) +
 ylim(ymin=0, 100) +
 labs(title = "Statement references: SUBSTITUTES + is/are good",
      subtitle = '(N = 255)',
      x = 'Year/Quarter',
      y = 'Number of Statements',
      fill = 'Statement reference') +
  theme_minimal() +
  scale_fill_manual(values = mycolors1) +
  theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

 graph_SUBstatementGOOD_reference


       # finding out N
       dfplot_act <- data_usa_and_typology %>%
        filter(statement_topic=="substitute" & statement %in% c('is/are good')) %>%
        count()




 #####3.1.4.3. Key statement references overview ####

#barplot MEAT statements with reference overview, subset pro contra meat

graph_MEATkeystatementreferences <- ggplot(data_usa, aes(x=statement_reference)) +
 geom_bar(data=subset(data_usa,statement_topic=="meat" & topic_valence_new %in% c('pro', 'contra')), na.rm = T ) +
```

```
 ylim(ymin=0, 400) +
 labs(title = "Statement references used in the MEAT discourse",
     subtitle = '(Total N = 2029)',
     x = 'Statement references',
     y = 'Number of Statements') +
 theme_minimal() +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_MEATkeystatementreferences


        #finding out N
        df <- data_usa %>%
         filter(statement_topic %in% c("meat") & topic_valence_new %in% c('pro', 'contra')) %>%
         group_by() %>%
         count()

        df <- data_usa %>%
         filter(statement_topic %in% c("meat") & topic_valence_new %in% c('pro', 'contra')) %>%
         group_by(statement_reference) %>%
         count()




#barplot MEAT statements with references overview, fill pro contra meat

graph_MEATkeystatementreferences2 <- ggplot(data_usa, aes(fill=topic_valence_new, x=statement_reference)) +
 geom_bar(data=subset(data_usa,statement_topic=="meat" & topic_valence_new %in% c('pro', 'contra')), na.rm = T ) +
 ylim(ymin=0, 400) +
 labs(title = "Statement references used in pro and contra MEAT statements",
     subtitle = '(Total N = 2029)',
     x = 'Statement references',
     fill = 'Topic valence',
     y = 'Number of Statements') +
 theme_minimal () +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_MEATkeystatementreferences2


    #finding out N
    df <- data_usa %>%
     filter(statement_topic %in% c("meat") & topic_valence_new %in% c('pro', 'contra')) %>%
     group_by() %>%
     count()

    df1 <- data_usa %>%
     filter(statement_topic %in% c("meat") & topic_valence_new %in% c('pro', 'contra')) %>%
     group_by(statement_reference, topic_valence_new) %>%
     count()

    df2 <- data_usa %>%
     filter(statement_topic %in% c("meat") & topic_valence_new %in% c('pro', 'contra')) %>%
```

```
    group_by(statement_reference) %>%
    count()



#barplot SUBSTITUTES statements with references overview

graph_SUBSkeystatementreferences <- ggplot(data_usa, aes(x=statement_reference)) +
 geom_bar(data=subset(data_usa,statement_topic=="substitute"), na.rm = T ) +
 ylim(ymin=0, 100) +
 labs(title = "Statement references used in the MEAT SUBSTITUTE discourse",
     subtitle = '(Total N = 425)',
     x = 'Statement references',
     y = 'Number of Statements') +
 theme_minimal() +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_SUBSkeystatementreferences

    # finding out N
    dfplot_BA <- data_usa_and_typology %>%
     filter(statement_topic %in% c("substitute")) %>%
     count()

    df <- data_usa %>%
     filter(statement_topic %in% c("substitute")) %>%
     group_by(statement_reference) %>%
     count()



#barplot MEAT SUBSTITUTE statements with references overview, fill pro contra meat substitutes

graph_SUBkeystatementreferences2 <- ggplot(data_usa, aes(fill=topic_valence_new, x=statement_reference)) +
 geom_bar(data=subset(data_usa,statement_topic=="substitute" & topic_valence_new %in% c('pro', 'contra')), na.rm = T ) +
 ylim(ymin=0, 100) +
 labs(title = "Statement references used in pro and contra MEAT SUBSTITUTE statements",
     subtitle = '(Total N = 425)',
     x = 'Statement references',
     fill = 'Topic valence',
     y = 'Number of Statements') +
 theme_minimal () +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_SUBkeystatementreferences2


   #finding out N
   df <- data_usa %>%
    filter(statement_topic %in% c("substitute") & topic_valence_new %in% c('pro', 'contra')) %>%
    group_by() %>%
    count()
```

```
df1 <- data_usa %>%
  filter(statement_topic %in% c("substitute") & topic_valence_new %in% c('pro', 'contra')) %>%
  group_by(statement_reference, topic_valence_new) %>%
  count()

df2 <- data_usa %>%
  filter(statement_topic %in% c("substitute") & topic_valence_new %in% c('pro', 'contra')) %>%
  group_by(statement_reference) %>%
  count()


#####3.1.4.4. Key statement references over time in different discourses ####

# barplot MEAT statements with statement references over time BOTH DISCOURSES
nb.cols <- 20
mycolors1 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette

graph_MEATstatement_references <- ggplot(data_usa, aes(fill=statement_reference, x=date_quarters)) +
 geom_bar(data=subset(data_usa,statement_topic=="meat" & topic_valence_new %in% c('pro', 'contra')), na.rm = T) +
 ylim(ymin=0, 200) +
 labs(title = "Statement references: pro and contra MEAT",
    subtitle = '(N = 2029)',
    x = 'Year/Quarter',
    y = 'Number of Statements',
    fill = 'Statement reference') +
 theme_minimal() +
 scale_fill_manual(values = mycolors1) +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_MEATstatement_references


## Statement references PRO MEAT discourse

nb.cols <- 20
mycolors1 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette


graph_reference_PROMEATovertime <- ggplot(data_usa_and_typology, aes(fill=statement_reference, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & topic_valence_new %in% c('pro'), na.rm = T)) +
 ylim(ymin=0, 300) +
 labs(title = "Statement references pro MEAT",
    subtitle = '(N = 410)',
    x = 'Year/Quarter',
    y = 'Number of Statements',
    fill = 'Statement references') +
 theme_minimal() +
 scale_fill_manual(values = mycolors1) +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_reference_PROMEATovertime

  # finding out N
  dfplot_BA <- data_usa_and_typology %>%
```

```
    filter(statement_topic %in% c("meat") & topic_valence_new %in% c('pro')) %>%
    group_by(statement_reference) %>%
    count()



## Statement references CONTRA MEAT discourse
nb.cols <- 30
mycolors1 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette


graph_reference_CONMEATovertime <- ggplot(data_usa_and_typology, aes(fill=statement_reference, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & topic_valence_new %in% c('contra'), na.rm = T)) +
 ylim(ymin=0, 600) +
 labs(title = "Statement references contra MEAT",
     subtitle = '(N = 1322)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
     fill = 'Statement references') +
 theme_minimal() +
 scale_fill_manual(values = mycolors1) +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_reference_CONMEATovertime

    # finding out N
    dfplot_BA <- data_usa_and_typology %>%
     filter(statement_topic %in% c("meat") & topic_valence_new %in% c('contra')) %>%
     group_by(statement_reference) %>%
     count()



# barplot MEAT SUBSTITUTE statements with statement references over time BOTH DISCOURSES

nb.cols <- 20
mycolors1 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette

  graph_SUBstatement_references <- ggplot(data_usa, aes(fill=statement_reference, x=date_quarters)) +
    geom_bar(data=subset(data_usa,statement_topic=="substitute" & topic_valence_new %in% c('pro', 'contra')), na.rm = T) +
    ylim(ymin=0, 100) +
    labs(title = "Statement references: pro and contra SUBSTITUTES",
        subtitle = '(N = 360)',
        x = 'Year/Quarter',
        y = 'Number of Statements',
        fill = 'Statement reference') +
    theme_minimal() +
    scale_fill_manual(values = mycolors1) +
    theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

 graph_SUBstatement_references
```

```
        # finding out N
        dfplot_BA <- data_usa %>%
          filter(statement_topic %in% c("substitute"), topic_valence_new %in% c('pro', 'contra')) %>%
          count()



## Statement references PRO SUBSTITUTES discourse

 nb.cols <- 16
 mycolors1 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette


 graph_reference_PROovertime_SUB <- ggplot(data_usa_and_typology, aes(fill=statement_reference, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="substitute" & topic_valence_new %in% c('pro'), na.rm = T)) +
 ylim(ymin=0, 100) +
 labs(title = "Statement references pro SUBSTITUTES",
              subtitle = '(N = 314)',
              x = 'Year/Quarter',
              y = 'Number of Statements',
              fill = 'Statement references') +
    theme_minimal() +
   scale_fill_manual(values = mycolors1) +
   theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

        graph_reference_PROovertime_SUB

        # finding out N
        dfplot_BA <- data_usa_and_typology %>%
          filter(statement_topic %in% c("substitute") & topic_valence_new %in% c('pro')) %>%
          group_by(statement_reference) %>%
          count()



## Statement references CONTRA SUBSTITUTES discourse
nb.cols <- 20
mycolors1 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette


graph_reference_CONovertime_SUB <- ggplot(data_usa_and_typology, aes(fill=statement_reference, x=date_quarters)) +
geom_bar(data=subset(data_usa_and_typology,statement_topic=="substitute" & topic_valence_new %in% c('contra'), na.rm = T)) +
   ylim(ymin=0, 20) +
   labs(title = "Statement references contra SUBSTITUTES",
       subtitle = '(N = 46)',
              x = 'Year/Quarter',
              y = 'Number of Statements',
              fill = 'Statement references') +
   theme_minimal() +
   scale_fill_brewer(palette = 'Set1') +
   theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_reference_CONovertime_SUB

        # finding out N
```

```
dfplot_BA <- data_usa_and_typology %>%
  filter(statement_topic %in% c("substitute") & topic_valence_new %in% c('contra')) %>%
  group_by(statement_reference) %>%
  count()
```

###3.1.5. Actor categories in meat and meat substitute discourses ####

####3.1.5.1. Overall meat and meat substitute members of actor categories ####

```
# number of different actors assigned to main categories

graph_actormain0 <- ggplot(data_typology, aes(x=actor_typology_main)) +
  geom_bar(data=subset(data_typology, actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions'))) +
  ylim(ymin=0, 400) +
  labs(title = "Members of main actor categories",
       subtitle = '(Total N = 727, highest actor typology level)',
       x = 'Main actor categories',
       y = 'Number of actors') +
  theme_minimal() +
  scale_fill_manual(values = mycolors1) +
  theme(axis.text.x = element_text(angle=60, vjust=1, hjust=1))

 graph_actormain0
```

```
# number of different actors assigned to main categories and sub-category levels

table(data_typology$actor_typology_main)

data_typology[actor_typology_main == ""] <- NA
data_typology[actor_typology_sub1 == ""] <- NA

nb.cols <- 30
mycolors1 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette

graph_actormainsub1 <- ggplot(data_typology, aes(fill=actor_typology_sub1, x=actor_typology_main)) +
 geom_bar(data=subset(data_typology, actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions'))) +
 ylim(ymin=0, 400) +
 labs(title = "Members of main actor categories and first level sub-groups",
      subtitle = '(Total N = 727)',
      x = 'Main actor categories',
      fill = 'First level sub-categories',
      y = 'Number of actors') +
 theme_minimal() +
 scale_fill_manual(values = mycolors1) +
```

```
 theme(axis.text.x = element_text(angle=60, vjust=1, hjust=1))


graph_actormainsub1

        # finding out N
        df <- data_typology %>%
         filter(actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions')) %>%
          count()

        df1 <- data_typology %>%
         filter(actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions')) %>%
          count(actor_typology_main)

        df2 <- data_typology %>%
         filter(actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions')) %>%
          group_by(actor_typology_main, actor_typology_sub1) %>%
          count()



####3.1.5.2. Key actor categories using pro and contra statements about MEAT####

table(data_usa_and_typology$actor_typology_main, data_usa_and_typology$statement_topic) # to get an overview

#overview with pro and con
graph_MEATkeyactors_valence <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new,x=actor_typology_main)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions') & topic_valence_new %in% c('pro', 'contra'))) +
 ylim(ymin=0, 300) +
 labs(title = "Number of pro and contra statements about MEAT by actor categories",
     subtitle = '(Total N = 693, highest actor typology level)', # only statements included that are N < 100
     x = 'Main actor categories',
     y = 'Number of statements',
     fill = 'Topic valence') +
 scale_fill_brewer(palette = 'Set1') +
 theme_minimal() +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_MEATkeyactors_valence


    # finding out N
    dfplot_act <- data_usa_and_typology %>%
     filter(statement_topic %in% c("meat") & topic_valence_new %in% c('contra', 'pro'), actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions')) %>%
      count()

    df <- data_usa_and_typology %>%
```

```
    filter(statement_topic %in% c("meat") & topic_valence_new %in% c('contra', 'pro'), actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions')) %>%
     group_by(actor_typology_main, topic_valence_new) %>%
     count()



# Statement of "Academic/Thinktanks" about MEAT
graph_actor_topic1 <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & actor_typology_main %in% c('Academic_Thinktanks') & topic_valence_new %in% c('pro', 'contra'))) +
 ylim(ymin=0, 30) +
 labs(title = "Pro and contra statements about MEAT from: Academic/Thinktanks",
     subtitle = '(N = 87)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
     fill = 'Topic valence') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic1

    # finding out N
    dfplot_act <- data_usa_and_typology %>%
     filter(statement_topic %in% c("meat") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('Academic_Thinktanks')) %>%
     count()



# Statement of "Businesses/Associations" about MEAT

graph_actor_topic2 <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & actor_typology_main %in% c('Businesses_Associations') & topic_valence_new %in% c('pro', 'contra'))) +
 ylim(ymin=0, 120) +
 labs(title = "Pro and contra statements about MEAT from: Businesses/Associations",
     subtitle = '(N = 291)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
     fill = 'Topic valence') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic2

   # finding out N
   dfplot_act <- data_usa_and_typology %>%
    filter(statement_topic %in% c("meat") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('Businesses_Associations')) %>%
    count()
```

```
# Statement of "State and governmental agencies" about MEAT
graph_actor_topic3 <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & actor_typology_main %in% c('State and governmental agencies') & topic_valence_new %in% c('pro', 'contra'))) +
 ylim(ymin=0, 20) +
 labs(title = "Pro and contra statements about MEAT from: State and governmental agencies",
     subtitle = '(N = 109)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
     fill = 'Topic valence') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic3

      # finding out N
      dfplot_act <- data_usa_and_typology %>%
       filter(statement_topic %in% c("meat") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('State and governmental agencies')) %>%
       count()



# Statement of "NGO/Foundations" about MEAT
graph_actor_topic4 <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & actor_typology_main %in% c('NGO_Foundations') & topic_valence_new %in% c('pro', 'contra'))) +
 ylim(ymin=0, 30) +
 labs(title = "Pro and contra statements about MEAT from: NGO/Foundations",
     subtitle = '(N = 74)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
     fill = 'Topic valence') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic4

      # finding out N
      dfplot_act <- data_usa_and_typology %>%
       filter(statement_topic %in% c("meat") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('NGO_Foundations')) %>%
       count()



# Statement of "Parties/Politicians" about MEAT
graph_actor_topic5 <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & actor_typology_main %in% c('Parties_Politicians') & topic_valence_new %in% c('pro', 'contra'))) +
```

```
 ylim(ymin=0, 30) +
 labs(title = "Pro and contra statements about MEAT from: Parties/Politicians",
     subtitle = '(N = 61)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
     fill = 'Topic valence') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic5

      # finding out N
      dfplot_act <- data_usa_and_typology %>%
       filter(statement_topic %in% c("meat") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('Parties_Politicians')) %>%
       count()




# Statement of "Celebrities" about MEAT
graph_actor_topic10 <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
   geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & actor_typology_main %in% c('Celebrities') & topic_valence_new %in% c('pro', 'contra'))) +
    ylim(ymin=0, 30) +
    labs(title = "Pro and contra statements about MEAT from: Celebrities",
         subtitle = '(N = 17)',
        x = 'Year/Quarter',
        y = 'Number of Statements',
         fill = 'Topic valence') +
     theme_minimal() +
     scale_fill_brewer(palette = 'Set1') +
     theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

 graph_actor_topic10


      # finding out N
      dfplot_act <- data_usa_and_typology %>%
       filter(statement_topic %in% c("meat") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('Celebrities')) %>%
       count()




# Statement of "Individuals" about MEAT
graph_actor_topic11 <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
   geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & actor_typology_main %in% c('Individuals') & topic_valence_new %in% c('pro', 'contra'))) +
   ylim(ymin=0, 30) +
   labs(title = "Pro and contra statements about MEAT from: Individuals",
         subtitle = '(N = 16)',
         x = 'Year/Quarter',
```

```
        y = 'Number of Statements',
        fill = 'Topic valence') +
  theme_minimal() +
  scale_fill_brewer(palette = 'Set1') +
  theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic11

    # finding out N
    dfplot_act <- data_usa_and_typology %>%
     filter(statement_topic %in% c("meat") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('Individuals')) %>%
     count()



# Statement of "Unions" about MEAT
graph_actor_topic12 <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & actor_typology_main %in% c('Unions') & topic_valence_new
%in% c('pro', 'contra'))) +
 ylim(ymin=0, 30) +
  labs(title = "Pro and contra statements about MEAT from: Unions",
       subtitle = '(N = 15)',
       x = 'Year/Quarter',
       y = 'Number of Statements',
       fill = 'Topic valence') +
  theme_minimal() +
  scale_fill_brewer(palette = 'Set1') +
  theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic12

     # finding out N
     dfplot_act <- data_usa_and_typology %>%
      filter(statement_topic %in% c("meat") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('Unions')) %>%
      count()



# Statement of "Media" about MEAT
graph_actor_topic13 <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & actor_typology_main %in% c('Media') & topic_valence_new
%in% c('pro', 'contra'))) +
 ylim(ymin=0, 30) +
 labs(title = "Pro and contra statements about MEAT from: Media",
       subtitle = '(N = 21)',
       x = 'Year/Quarter',
       y = 'Number of Statements',
       fill = 'Topic valence') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic13

     # finding out N
```

```
dfplot_act <- data_usa_and_typology %>%
  filter(statement_topic %in% c("meat") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('Media')) %>%
  count()


# Statement of "MEAT SUBSTITUTE PROCESSORS" about MEAT

graph_MEATstatement_references_subprocessors2 <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
  geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & topic_valence_new %in% c('pro', 'contra') & actor_typology_sub2 =="Meat substitute industry" & statement_reference %in% c('animal welfare', 'climate', 'health', 'environment', 'water usage and quality'))) +
  ylim(ymin=0, 25) +
  labs(title = "Pro and contra statements about MEAT from: Meat substitute processors",
       subtitle = '(N = 15)',
       x = 'Year/Quarter',
       y = 'Number of Statements',
       fill = 'Topic valence') +
  theme_minimal() +
  scale_fill_brewer(palette = 'Set1') +
  theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_MEATstatement_references_subprocessors2

  # finding out N
  dfplot_BA <- data_usa_and_typology %>%
  filter(statement_topic %in% c("meat"), topic_valence_new %in% c('pro', 'contra'),actor_typology_sub2 =="Meat substitute industry") %>%
  count()


####3.1.5.3. Key actor categories using pro and contra statements about MEAT SUBSTITUTES ######

#overview with pro and con
graph_SUBkeyactors_valence <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new,x=actor_typology_main)) +
  geom_bar(data=subset(data_usa_and_typology,statement_topic=="substitute" & actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions') & topic_valence_new %in% c('pro', 'contra'))) +
  ylim(ymin=0, 250) +
  labs(title = "Number of pro and contra statements about SUBSTITUTES by actor categories",
       subtitle = '(Total N = 275, highest actor typology level)',
       x = 'Main actor categories',
       y = 'Number of statements',
       fill = 'Topic valence') +
  scale_fill_brewer(palette = 'Set1') +
  theme_minimal() +
  theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_SUBkeyactors_valence


  # finding out N
  dfplot_act <- data_usa_and_typology %>%
  filter(statement_topic %in% c("substitute") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions')) %>%
```

```
    count()

  df <- data_usa_and_typology %>%
    filter(statement_topic %in% c("substitute") & topic_valence_new %in% c('contra', 'pro'), actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions')) %>%
    group_by(actor_typology_main, topic_valence_new) %>%
    count()



# Statement of "Academic/Thinktanks" about SUBSTITUTES
graph_actor_topic1S <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="substitute" & actor_typology_main %in% c('Academic_Thinktanks') & topic_valence_new %in% c('pro', 'contra'))) +
 ylim(ymin=0,10) +
 labs(title = "Pro and contra statements about SUBSTITUTES from: Academic/Thinktanks",
    subtitle = '(N = 6)',
    x = 'Year/Quarter',
    y = 'Number of Statements',
    fill = 'Topic valence') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic1S

    # finding out N
    dfplot_act <- data_usa_and_typology %>%
    filter(statement_topic %in% c("substitute") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('Academic_Thinktanks')) %>%
    count()



# Statement of "Businesses/Associations" about SUBSTITUTES

graph_actor_topic2s <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="substitute" & actor_typology_main %in% c('Businesses_Associations') & topic_valence_new %in% c('pro', 'contra'))) +
 ylim(ymin=0, 20) +
 labs(title = "Pro and contra statements about SUBSTITUTES from: Businesses/Associations",
    subtitle = '(N = 91)',
    x = 'Year/Quarter',
    y = 'Number of Statements',
    fill = 'Topic valence') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic2s

   # finding out N
   dfplot_act <- data_usa_and_typology %>%
```

```
    filter(statement_topic %in% c("substitute") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('Businesses_Associations')) %>%
    count()



# Statement of "State and governmental agencies" about SUBSTITUTES
graph_actor_topic3s <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="substitute" & actor_typology_main %in% c('State and governmental agencies') & topic_valence_new %in% c('pro', 'contra'))) +
 ylim(ymin=0, 5) +
 labs(title = "Pro and contra statements about SUBSTITUTES from: State and governmental agencies",
    subtitle = '(N = 4)',
    x = 'Year/Quarter',
    y = 'Number of Statements',
    fill = 'Topic valence') +
 theme_minimal() +  scale_fill_manual(name="",
                           values = c("pro"="#3366cc")) +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic3s

    # finding out N
    dfplot_act <- data_usa_and_typology %>%
     filter(statement_topic %in% c("substitute") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('State and governmental agencies')) %>%
     count()



# Statement of "NGO/Foundations" about SUBSTITUTES
graph_actor_topic4s <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="substitute" & actor_typology_main %in% c('NGO_Foundations') & topic_valence_new %in% c('pro', 'contra'))) +
 ylim(ymin=0, 5) +
 labs(title = "Pro and contra statements about SUBSTITUTES from: NGO/Foundations",
    subtitle = '(N = 6)',
    x = 'Year/Quarter',
    y = 'Number of Statements',
    fill = 'Topic valence') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic4s

    # finding out N
    dfplot_act <- data_usa_and_typology %>%
     filter(statement_topic %in% c("substitute") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('NGO_Foundations')) %>%
     count()



# Statement of "Parties/Politicians" about SUBSTITUTES
```

```
graph_actor_topic5s <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="substitute" & actor_typology_main %in% c('Parties_Politicians') & topic_valence_new %in% c('pro', 'contra'))) +
 ylim(ymin=0, 30) +
 labs(title = "Pro and contra statements about SUBSTITUTES from: Parties/Politicians",
     subtitle = '(N = 0)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
     fill = 'Topic valence') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic5s


    # finding out N
    dfplot_act <- data_usa_and_typology %>%
     filter(statement_topic %in% c("substitute") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('Parties_Politicians')) %>%
      count()



# Statement of "Celebrities" about SUBSTITUTES
graph_actor_topic10s <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="substitute" & actor_typology_main %in% c('Celebrities') & topic_valence_new %in% c('pro', 'contra'))) +
 ylim(ymin=0, 5) +
 labs(title = "Pro and contra statements about SUBSTITUTES from: Celebrities",
     subtitle = '(N = 2)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
     fill = 'Topic valence') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic10s


     # finding out N
     dfplot_act <- data_usa_and_typology %>%
      filter(statement_topic %in% c("substitute") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('Celebrities')) %>%
       count()



# Statement of "Individuals" about SUBSTITUTES
graph_actor_topic11s <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="substitute" & actor_typology_main %in% c('Individuals') & topic_valence_new %in% c('pro', 'contra'))) +
 ylim(ymin=0, 5) +
 labs(title = "Pro and contra statements about SUBSTITUTES from: Individuals",
     subtitle = '(N = 3)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
```

```
    fill = 'Topic valence') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic11s

   # finding out N
   dfplot_act <- data_usa_and_typology %>%
    filter(statement_topic %in% c("substitute") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('Individuals')) %>%
     count()




# Statement of "Unions" about SUBSTITUTES
graph_actor_topic12s <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="substitute" & actor_typology_main %in% c('Unions') & topic_valence_new %in% c('pro', 'contra'))) +
 ylim(ymin=0, 30) +
 labs(title = "Pro and contra statements about SUBSTITUTES from: Unions",
    subtitle = '(N = 0)',
    x = 'Year/Quarter',
    y = 'Number of Statements',
    fill = 'Topic valence') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic12s

    # finding out N
    dfplot_act <- data_usa_and_typology %>%
     filter(statement_topic %in% c("substitute") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('Unions')) %>%
     count()



# Statement of "Media" about SUBSTITUTES
graph_actor_topic13s <- ggplot(data_usa_and_typology, aes(fill=topic_valence_new, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="substitute" & actor_typology_main %in% c('Media') & topic_valence_new %in% c('pro', 'contra'))) +
 ylim(ymin=0, 5) +
 labs(title = "Pro and contra statements about SUBSTITUTES from: Media",
    subtitle = '(N = 1)',
    x = 'Year/Quarter',
    y = 'Number of Statements',
    fill = 'Topic valence') +
 theme_minimal() +
 theme_minimal() +  scale_fill_manual(name="",
                          values = c("pro"="#3366cc")) +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_topic13s
```

```
        # finding out N
        dfplot_act <- data_usa_and_typology %>%
         filter(statement_topic %in% c("substitute") & topic_valence_new %in% c('contra', 'pro') & actor_typology_main %in% c('Media')) %>%
         count()
```

####3.1.5.4. Key actors engaging in discourses over time ####

#####3.1.5.4.1. Pro or contra MEAT or SUBSTITUTE discourses ####

```
# Pro statements about MEAT by actor main typology
graph_actor_PROovertime <- ggplot(data_usa_and_typology, aes(fill=actor_typology_main, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & topic_valence_new %in% c('pro') & actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions'))) +
 ylim(ymin=0, 150) +
 labs(title = "Pro statements about MEAT by actor main categories",
     subtitle = '(N = 298, highest actor typology level)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
     fill = 'Actor main categories') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_PROovertime

        # finding out N
        dfplot_BA <- data_usa_and_typology %>%
         filter(statement_topic %in% c("meat") &
                topic_valence_new %in% c('pro') &
                actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions')) %>%
         count()


 # Contra statements about MEAT by actor main typology
 graph_actor_CONovertime <- ggplot(data_usa_and_typology, aes(fill=actor_typology_main, x=date_quarters)) +
  geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & topic_valence_new %in% c('contra') & actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions'))) +
  ylim(ymin=0, 100) +
  labs(title = "Contra statements about MEAT by actor main categories",
      subtitle = '(N = 395, highest actor typology level)',
      x = 'Year/Quarter',
      y = 'Number of Statements',
      fill = 'Actor main categories') +
  theme_minimal() +
  scale_fill_brewer(palette = 'Set1') +
  theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

 graph_actor_CONovertime

     # finding out N
```

```
    dfplot_BA <- data_usa_and_typology %>%
     filter(statement_topic %in% c("meat") &
          topic_valence_new %in% c('contra') &
          actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions')) %>%
     count()



# Contra statements about MEAT by actor sub-typology
  nb.cols <- 11
  mycolors3 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette

  graph_actor_CONovertime3 <- ggplot(data_usa_and_typology, aes(fill=actor_typology_sub1, x=date_quarters)) +
  geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & topic_valence_new %in% c('contra') & actor_typology_main %in% c('Businesses_Associations'))) +
  ylim(ymin=0, 25) +
  labs(title = "Contra statements about MEAT by sub-categories of businesses and associations",
      subtitle = '(N = 99, second actor typology level)',
      x = 'Year/Quarter',
      y = 'Number of Statements',
      fill = 'Actor sub-categories') +
  theme_minimal() +
  scale_fill_manual (values = mycolors3) +
  theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_CONovertime3

    # finding out N
    dfplot_BA <- data_usa_and_typology %>%
     filter(statement_topic %in% c("meat") &
          topic_valence_new %in% c('contra') &
          actor_typology_main %in% c('Businesses_Associations')) %>%
     count(actor_typology_sub1)



# Pro statements about MEAT by actor sub-typology

graph_actor_CONovertime4 <- ggplot(data_usa_and_typology, aes(fill=actor_typology_sub1, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & topic_valence_new %in% c('pro') & actor_typology_main %in% c('Businesses_Associations'))) +
 ylim(ymin=0, 100) +
labs(title = "Pro statements about MEAT by sub-categories of businesses and associations",
    subtitle = '(N = 192, second actor typology level)',
    x = 'Year/Quarter',
    y = 'Number of Statements',
    fill = 'Actor sub-categories') +
 theme_minimal() +
 scale_fill_manual (values = mycolors3) +
theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_actor_CONovertime4
```

```
    # finding out N
    dfplot_BA <- data_usa_and_typology %>%
     filter(statement_topic %in% c("meat") &
            topic_valence_new %in% c('pro') &
            actor_typology_main %in% c('Businesses_Associations')) %>%
     count(actor_typology_sub1)

    dfplot_BA <- data_usa_and_typology %>%
     filter(statement_topic %in% c("meat") &
            topic_valence_new %in% c('pro') &
            actor_typology_main %in% c('Businesses_Associations')) %>%
     count()



 # Pro statements about SUBSTITUTES by actor main typology
 graph_actor_PROSUBovertime <- ggplot(data_usa_and_typology, aes(fill=actor_typology_main, x=date_quarters)) +
   geom_bar(data=subset(data_usa_and_typology,statement_topic=="substitute" & topic_valence_new %in% c('pro') & actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions'))) +
   ylim(ymin=0, 75) +
   labs(title = "Pro statements about SUBSTITUTES by actor main categories",
      subtitle = '(N = 225, highest actor typology level)',
      x = 'Year/Quarter',
      y = 'Number of Statements',
      fill = 'Actor main categories') +
   theme_minimal() +
   scale_fill_brewer(palette = 'Set1') +
   theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

 graph_actor_PROSUBovertime


        # finding out N
        dfplot_BA <- data_usa_and_typology %>%
         filter(statement_topic %in% c("substitute") &
                topic_valence_new %in% c('pro') &
                actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions')) %>%
          count()



 # Contra statements about SUBSTITUTES by actor main typology
 graph_actor_CONSUBovertime <- ggplot(data_usa_and_typology, aes(fill=actor_typology_main, x=date_quarters)) +
   geom_bar(data=subset(data_usa_and_typology,statement_topic=="substitute" & topic_valence_new %in% c('contra') & actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions'))) +
   ylim(ymin=0, 25) +
   labs(title = "Contra statements about SUBSTITUTES by actor main categories",
      subtitle = '(N = 15, highest actor typology level)',
      x = 'Year/Quarter',
      y = 'Number of Statements',
      fill = 'Actor main categories') +
   theme_minimal() +
   scale_fill_brewer(palette = 'Set1') +
   theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))
```

```
 graph_actor_CONSUBovertime

       # finding out N
       dfplot_BA <- data_usa_and_typology %>%
        filter(statement_topic %in% c("substitute") &
              topic_valence_new %in% c('contra') &
              actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions')) %>%
         count()




#####3.1.5.4.2. Only MEAT discourse, by actor categories at different levels ####

library(dplyr)

dftyp <- data_usa_and_typology[,c("statement_topic","time_n","actor_typology_main")]
dftyp <- dftyp %>%
 filter(statement_topic %in% c("meat"))


dftyp <- dftyp %>% count(actor_typology_main, time_n)
dftyp <- dftyp %>% drop_na()


nb.cols <- 10
mycolors1 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette

ggplot(dftyp, aes(x=time_n)) +
 geom_area(aes(y=n, fill=actor_typology_main)) +
 labs(title="Main actor categories engaging in the media MEAT discourse",
     subtitle="(N = 1010; highest actor typology level)",
     x="Years",
     y="Number of statements",
     fill='Main actor categories') +  ylim(ymin=0, 30) + scale_fill_manual(values = mycolors1)



# Business/Associations-Subcategories over time
dftyp2 <- data_usa_and_typology %>%
 filter(statement_topic %in% c("meat") & actor_typology_main %in% c("Businesses_Associations"))
dftyp2 <- dftyp2[,c("statement_topic","time_n","actor_typology_sub1")]


dftyp2 <- dftyp2 %>% count(actor_typology_sub1, time_n)
dftyp2 <- dftyp2 %>% drop_na()



ggplot(dftyp2, aes(x=time_n)) +
 geom_area(aes(y=n, fill=actor_typology_sub1)) +
 ylim(ymin=0, 25) +
 labs(title="Business/Association-actors engaging in the media MEAT discourse",
```

```
    subtitle="(N = 356; second actor typology level)",
    x="Time",
    y="Number of statements",
    fill='First level sub-categories') +
 scale_fill_manual(values = mycolors1)



# Processors-Subcategories over time
dftyp3 <- data_usa_and_typology %>%
 filter(statement_topic %in% c("meat") & actor_typology_sub1 %in% c("Processors"))
dftyp3 <- dftyp3[,c("statement_topic","time_n","actor_typology_sub2")]


dftyp3 <- dftyp3 %>% count(actor_typology_sub2, time_n)
dftyp3 <- dftyp3 %>% drop_na()


ggplot(dftyp3, aes(x=time_n)) +
 geom_area(aes(y=n, fill=actor_typology_sub2)) +
 ylim(ymin=0, 20) +
 labs(title="Processors engaging in the media discourse around MEAT",
    subtitle="(N = 204; third actor typology level)",
    x="Time",
    y="Number of statements",
    fill="Processors") +
 scale_fill_manual(name="",
           values = c("Meat substitute industry"="#00ba38", "Meat industry"="#f8766d"))




####3.1.5.5. Key actors using statement references in MEAT discourse ####

data_usa_and_typology[statement_reference == ""] <- NA


#statement references about MEAT by actor main category

nb.cols <- 21
mycolors3 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette

graph_actors_statementreferences2 <- ggplot(data_usa_and_typology, aes(fill=statement_reference, x=actor_typology_main)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic %in% c('meat') & actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions')), na.rm = T) +
 ylim(ymin=0, 500) +
 labs(title = "Most used references in statements about MEAT by actor categories",
    subtitle = '(Total N = 746, highest actor typology level)',
    x = 'Main actor categories',
    y = 'Number of Statements',
    fill = 'statement references') +
 theme_minimal() +
 scale_fill_manual (values = mycolors3) +
```

```
 theme(axis.text.x = element_text(angle=60, vjust=1, hjust=1))

graph_actors_statementreferences2


    # finding out N
    dfplot_BA <- data_usa_and_typology %>%
     filter(statement_topic %in% c("meat"), actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions')) %>%
      count()

    dfplot_BA <- data_usa_and_typology %>%
     filter(statement_topic %in% c("meat"), actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions')) %>%
      count(actor_typology_main, statement_reference)



#statement references about SUBSTITUTES by actor main category

nb.cols <- 21
mycolors3 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette


graph_actors_statementreferences2_SUB <- ggplot(data_usa_and_typology, aes(fill=statement_reference, x=actor_typology_main)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic %in% c('substitute') & actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions'))) +
 ylim(ymin=0, 300) +
 labs(title = "Most used references in statements about SUBSTITUTES by actor categories",
    subtitle = '(Total N = 137, highest actor typology level)',
    x = 'Main actor categories',
    y = 'Number of Statements',
    fill = 'statement references') +
 theme_minimal() +
 scale_fill_manual (values = mycolors3) +
 theme(axis.text.x = element_text(angle=60, vjust=1, hjust=1))

graph_actors_statementreferences2_SUB


   # finding out N
   dfplot_BA <- data_usa_and_typology %>%
    filter(statement_topic %in% c("substitute"), actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions')) %>%
     count()

   # finding out N
   df <- data_usa_and_typology %>%
    filter(statement_topic %in% c("substitute"), actor_typology_main %in% c('Academic_Thinktanks', 'Businesses_Associations', 'Celebrities', 'Individuals', 'Media', 'NGO_Foundations', 'Parties_Politicians', 'State and governmental agencies', 'Unions')) %>%
     count(actor_typology_main, statement_reference)



# barplot MEAT statements with statement references over time by Processors
```

```
graph_MEATstatement_references_subprocessors <- ggplot(data_usa_and_typology, aes(fill=statement_reference, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & topic_valence_new %in% c('pro', 'contra') & actor_typology_sub2 =="Meat substitute industry" & statement_reference %in% c('animal welfare', 'climate', 'health', 'environment', 'water usage and quality'))) +
 ylim(ymin=0, 25) +
 labs(title = "Statement references about MEAT from: Meat substitute processors",
     subtitle = '(N = 15)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
     fill = 'Statement reference') +
 theme_minimal() +
 scale_fill_brewer(palette = 'Set1') +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_MEATstatement_references_subprocessors

      # finding out N
      dfplot_BA <- data_usa_and_typology %>%
       filter(statement_topic %in% c("meat"), topic_valence_new %in% c('pro', 'contra'),actor_typology_sub2 =="Meat substitute industry") %>%
       count()




# barplot MEAT statements with statement references over time by Businesses and Associations
nb.cols <- 20
mycolors1 <- colorRampPalette(brewer.pal(9, "Set1"))(nb.cols) #expand color palette

graph_MEATstatement_references_BA <- ggplot(data_usa_and_typology, aes(fill=statement_reference, x=date_quarters)) +
 geom_bar(data=subset(data_usa_and_typology,statement_topic=="meat" & topic_valence_new %in% c('pro', 'contra') & actor_typology_main =="Businesses_Associations"), na.rm = T) +
 ylim(ymin=0, 100) +
 labs(title = "Statement references in MEAT discourse used by Businesses and Associations",
     subtitle = '(N = 197)',
     x = 'Year/Quarter',
     y = 'Number of Statements',
     fill = 'Statement reference') +
 theme_minimal() +
 scale_fill_manual(values = mycolors1) +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

graph_MEATstatement_references_BA

      # finding out N
      dfplot_BA <- data_usa_and_typology %>%
       filter(statement_topic %in% c("meat"), topic_valence_new %in% c('pro', 'contra'),actor_typology_main =="Businesses_Associations") %>%
       count()

      df <- data_usa_and_typology %>%
       filter(statement_topic %in% c("meat"), topic_valence_new %in% c('pro', 'contra'),actor_typology_main =="Businesses_Associations") %>%
       count(statement_reference)
```

```
####3.1.5.6. Number of statements that can not be attributet to any actor ####


 dfplot_BA <- data_usa_and_typology %>%
   filter(statement_topic %in% c('meat', 'substitute'), topic_valence_new %in% c('pro', 'contra')) %>%
   count(actor_typology_main)


 df <- data_usa_and_typology %>%
   filter(statement_topic %in% c('meat'), topic_valence_new %in% c('pro', 'contra')) %>%
   count(actor_typology_main)

 df2 <- data_usa_and_typology %>%
   filter(statement_topic %in% c('substitute'), topic_valence_new %in% c('pro', 'contra')) %>%
   count(actor_typology_main)


##3.2. Structral Break Analysis ####

# ***************
# this section follows a post on 'RPubs by RStudio' by Fritzell, K. (2022). 'Math 248 Final Write up'; (URL: https://api.rpubs.com/Ken_Fritzell/982102)
# and a blog post by Anirudh (2018). 'Endogenously Detecting Structural Breaks in a Time Series: Implementation in R',
# ***************

###3.2.1. SBA with number of statements about MEAT and SUBSTITUTES####
####3.2.1.1. Create time series with number of MEAT and SUBSTITUTE statements ####


dfSBAInd1 <- data_usa %>%
 filter(statement_topic %in% c("meat", "substitute")) %>%
 group_by(date_quarters) %>%
 count()

# importing and preparing data
sba_number <- read_excel("C:\\Users\\senta\\Documents\\UniBe - Climate Science\\Master Thesis\\SNIS\\Arbeitsdateien Eventlists\\Excel Sheets zur Bearbeitung aus R-Export\\Number of statements SUBSTITUTE und FLEISCH fuer SBA.xlsx")
sba_number$date_quarters <- as.yearqtr (sba_number$date_dates, format = "%Y-%m-%d")

# creating time series
sba_total <- sba_number %>% dplyr::select(date_quarters,n)
sba_total_ts <- ts(sba_total)
plot(sba_total, type = "l")


####3.2.1.2. Test for structural breaks ####

breaks_numb <- breakpoints(sba_total_ts[,2] ~ 1)
summary(breaks_numb)
plot(breaks_numb)
numb_bre <- breaks_numb$breakpoints # extract break point information
```

```
breaks_numb[1] # break points:[1]  9 13


# get date of break points
sba_total$date_quarters_numbers <- seq(1:length(sba_total$date_quarters)) # first, add time to data

numb_bre_date <- as.data.frame(sba_total %>% filter(date_quarters_numbers %in% as.numeric(numb_bre))) %>% # second, save date
  select(date_quarters)
numb_bre_date #quarters of break points:
# date_quarters
# 1      2019 Q1
# 2      2020 Q2



####3.2.1.3. Visualisation of structral breaks ####

fig_tot <- ggplot() +
  geom_point(data =sba_total, aes(date_quarters, as.numeric(n)), size=1) + #, color = stance
  geom_line(data =sba_total, aes(date_quarters, n),size=0.75) + #, color = stance
  geom_vline(xintercept = numb_bre_date$date_quarters,
             color=c("#926238"),linetype="dashed", alpha = 0.6,
             size=0.9) +
  geom_hline(yintercept = 0,
             color=c("#000000"),
             size=0.75) +
  theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

fig_tot + labs(title="Number of statements about MEAT and SUBSTITUTES",
               subtitle = '(Total N = 3984)',
               x="Quarters", y="Number of statements")




###3.2.2. SBA with number of statements about MEAT####
####3.2.2.1. Create time series with number of MEAT statements ####


dfSBAInd2 <- data_usa %>%
  filter(statement_topic %in% c("meat")) %>%
  group_by(date_quarters, statement_topic) %>%
  count()

# importing and preparing data
sba_number_MEAT <- read_excel("C:\\Users\\senta\\Documents\\UniBe - Climate Science\\Master Thesis\\SNIS\\Arbeitsdateien Eventlists\\Excel Sheets zur Bearbeitung aus R-Export\\Number of statements FLEISCH fuer SBA.xlsx")
sba_number_MEAT$date_quarters <- as.yearqtr (sba_number_MEAT$date_dates, format = "%Y-%m-%d")

# creating time series
sba_total_MEAT <- sba_number_MEAT %>% dplyr::select(date_quarters,n)
sba_total_MEAT_ts <- ts(sba_total_MEAT)
plot(sba_total_MEAT, type = "l")
```

```
####3.2.2.2. Test for structural breaks ####

breaks_MEAT_numb <- breakpoints(sba_total_MEAT_ts[,2] ~ 1)
summary(breaks_MEAT_numb)
plot(breaks_MEAT_numb)
MEAT_numb_bre <- breaks_MEAT_numb$breakpoints # extract break point information


breaks_MEAT_numb[1] # break points: [1]  NA


# get date of break points
sba_total_MEAT$date_quarters_numbers <- seq(1:length(sba_total_MEAT$date_quarters)) # first, add time to data

MEAT_numb_bre_date <- as.data.frame(sba_total_MEAT %>% filter(date_quarters_numbers %in% as.numeric(MEAT_numb_bre))) %>% # second, save date
 select(date_quarters)
MEAT_numb_bre_date #quarters of break points: -




####3.2.2.3. Visualisation of structral breaks ####

fig_totMEAT <- ggplot() +
 geom_point(data =sba_total_MEAT, aes(date_quarters, as.numeric(n)), size=1) + #, color = stance
 geom_line(data =sba_total_MEAT, aes(date_quarters, n),size=0.75) + #, color = stance
 geom_vline(xintercept = MEAT_numb_bre_date$date_quarters,
         color=c("#f8766d"),linetype="dashed", alpha = 0.9,
         size=0.6) +
 geom_hline(yintercept = 0,
         color=c("#000000"),
         size=0.75) +
 theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

fig_totMEAT + labs(title="Number of statements about MEAT",
              subtitle = '(Total N = 3041)',
              x="Quarters", y="Number of statements")



###3.2.3. SBA with number of statements about SUBSTITUTES####
#####3.2.3.1. Create time series with number of SUBSTITUTES statements ####


dfSBAInd4 <- data_usa %>%
 filter(statement_topic %in% c("substitute")) %>%
 group_by(date_quarters, statement_topic) %>%
 count()

# importing and preparing data
```

```
sba_number_SUBST <- read_excel("C:\\Users\\senta\\Documents\\UniBe - Climate Science\\Master Thesis\\SNIS\\Arbeitsdateien Eventlists\\Excel Sheets zur Bearbeitung aus R-Export\\Number of statements SUBSTITUTE fuer SBA.xlsx")
sba_number_SUBST$date_quarters <- as.yearqtr (sba_number_SUBST$date_dates, format = "%Y-%m-%d")

# creating time series
sba_total_SUBST <- sba_number_SUBST %>% dplyr::select(date_quarters,n)
sba_total_MEAT_ts <- ts(sba_total_SUBST)
plot(sba_total_SUBST, type = "l")
```

3.2.3.2. Test for structural breaks

```
breaks_SUBST_numb <- breakpoints(sba_total_MEAT_ts[,2] ~ 1)
summary(breaks_SUBST_numb)
plot(breaks_SUBST_numb)
SUBST_numb_bre <- breaks_SUBST_numb$breakpoints # extract break point information

breaks_SUBST_numb[1] # break points: [1]  9 11 13

# get date of break points
sba_total_SUBST$date_quarters_numbers <- seq(1:length(sba_total_SUBST$date_quarters)) # first, add time to data

SUBST_numb_bre_date <- as.data.frame(sba_total_SUBST %>% filter(date_quarters_numbers %in% as.numeric(SUBST_numb_bre))) %>% # second, save date
  select(date_quarters)
SUBST_numb_bre_date #quarters of break points:
# date_quarters
# 1      2019 Q1
# 2      2019 Q4
# 3      2020 Q2
```

3.2.3.3. Visualisation of structral breaks

```
fig_totSUBST <- ggplot() +
  geom_point(data =sba_total_SUBST, aes(date_quarters, as.numeric(n)), size=1) + #, color = stance
  geom_line(data =sba_total_SUBST, aes(date_quarters, n),size=0.75) + #, color = stance
  geom_vline(xintercept = SUBST_numb_bre_date$date_quarters,
             color=c("#00ba38"),linetype="dashed", alpha = 0.6,
             size=0.9) +
  geom_hline(yintercept = 0,
             color=c("#000000"),
             size=0.75) +
  theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

fig_totSUBST + labs(title="Number of statements about SUBSTITUTES",
```

```
        subtitle = '(Total N = 943)',
        x="Quarters", y="Number of statements")
```

```
###3.2.4.SBA with contra-MEAT-index ####
####3.2.4.1. calculation of contra-MEAT-index ####

# finding out the number of pro meat and the number of contra meat statements for every quarter:
dfSBAInd <- data_usa %>%
 filter(statement_topic %in% c("meat"), topic_valence_new %in% c("pro", "contra")) %>%
 group_by(date_quarters, statement_topic, topic_valence_new) %>%
 count()

# finding out the total number of pro + contra meat statements for every quarter:
dfSBAInd2 <- data_usa %>%
 filter(statement_topic %in% c("meat"), topic_valence_new %in% c("pro", "contra")) %>%
 group_by(date_quarters, statement_topic) %>%
 count()

#in an excel I divided for every quarter: contra-MEAT-index = (total N of pro and contra MEAT statements / N of contra MEAT statements)

#importing and preparing calculated index
sba_index_MEAT <- read_excel("C:\\Users\\senta\\Documents\\UniBe - Climate Science\\Master Thesis\\SNIS\\Arbeitsdateien Eventlists\\Excel Sheets zur Bearbeitung aus R-Export\\Index manuell berechnet CONTRA FLEISCH.xlsx")
sba_index_MEAT$date_quarters <- as.yearqtr (sba_index_MEAT$date_dates, format = "%Y-%m-%d")
```

```
####3.2.4.2. Create time series with contra-MEAT-index ####

sba_index_MEAT_con <- sba_index_MEAT %>% dplyr::select(date_quarters,CM_Index)
sba_index_MEAT_con_ts <- ts(sba_index_MEAT_con)
plot(sba_index_MEAT_con, type = "l")
```

```
####3.2.4.3. Test for structural breaks ####

breaks_Meat_con <- breakpoints(sba_index_MEAT_con_ts[,2] ~ 1)
summary(breaks_Meat_con)
plot(breaks_Meat_con)
Meat_con_bre <- breaks_Meat_con$breakpoints # extract break point information

breaks_Meat_con[1] # break points: [1]  3  7 16

# get date of break points
sba_index_MEAT_con$date_quarters_numbers <- seq(1:length(sba_index_MEAT_con$date_quarters)) # first, add time to data
```

```
Meat_con_bre_date <- as.data.frame(sba_index_MEAT_con %>% filter(date_quarters_numbers %in% as.numeric(Meat_con_bre))) %>% # second, save date
  select(date_quarters)
Meat_con_bre_date #quarters of break points:

#3      2017 Q2
#7      2018 Q2
#16     2021 Q1




####3.2.4.4. Visualisation of structral breaks ####

fig_CMindex <- ggplot() +
  geom_point(data =sba_index_MEAT_con, aes(date_quarters, as.numeric(CM_Index)), size=1) + #, color = stance
  geom_line(data =sba_index_MEAT_con, aes(date_quarters, CM_Index),size=0.75) + #, color = stance
  geom_vline(xintercept = Meat_con_bre_date$date_quarters,
             color=c("#094267"),linetype="dashed", alpha = 0.6,
             size=0.9) +
  geom_hline(yintercept = 0,
             color=c("#000000"),
             size=0.75) +
  theme(axis.text.x = element_text(angle=45, vjust=1, hjust=1))

fig_CMindex + labs(title="Index: Contra MEAT statements",
                   subtitle = '(Total N = 2029; 0 = all statements concerning meat published in this quarter are pro MEAT,
                        1 = all statements concerning meat published in this quarter are contra MEAT)',
                   x="Quarters", y="Index values")

##..... END OF R-SCRIPT.....
```

7.4 Graphs showing the meat substitute discourse

Most of the following graphs were not used for this master thesis' analysis. For completeness's sake, they are nevertheless listed here.

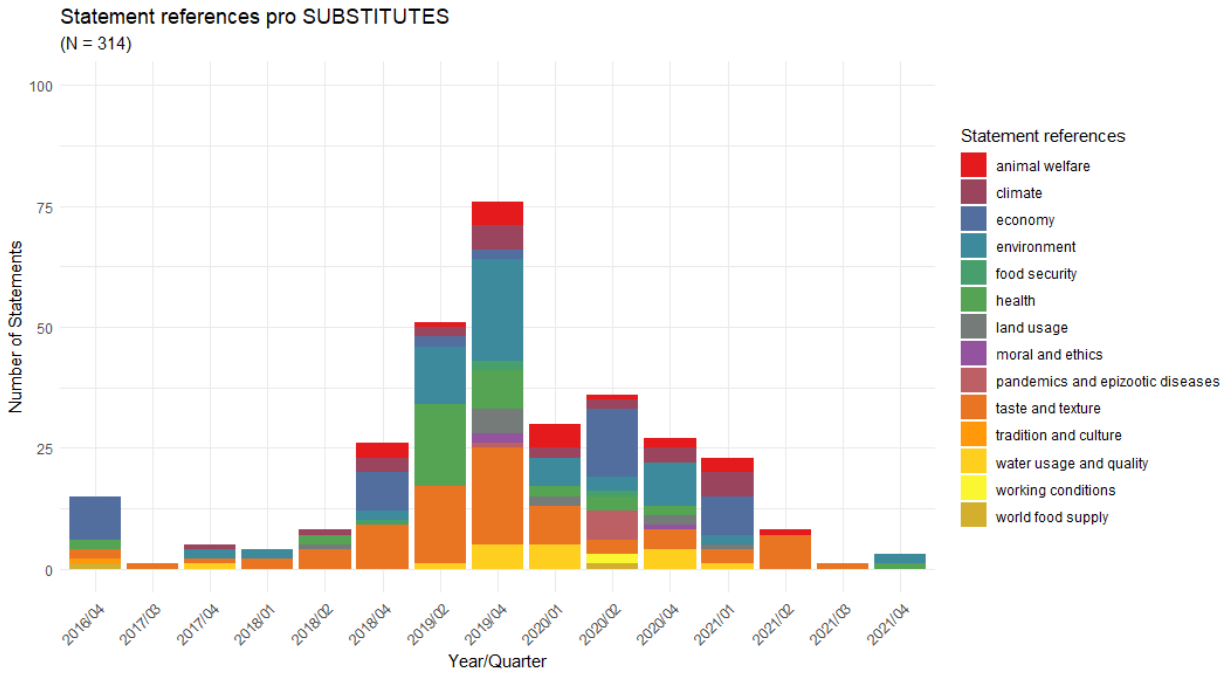


Figure 32: Graphs showing the absolute number of statement references used in the pro meat substitute discourse in the selected U.S. media between 2016 until 2021.

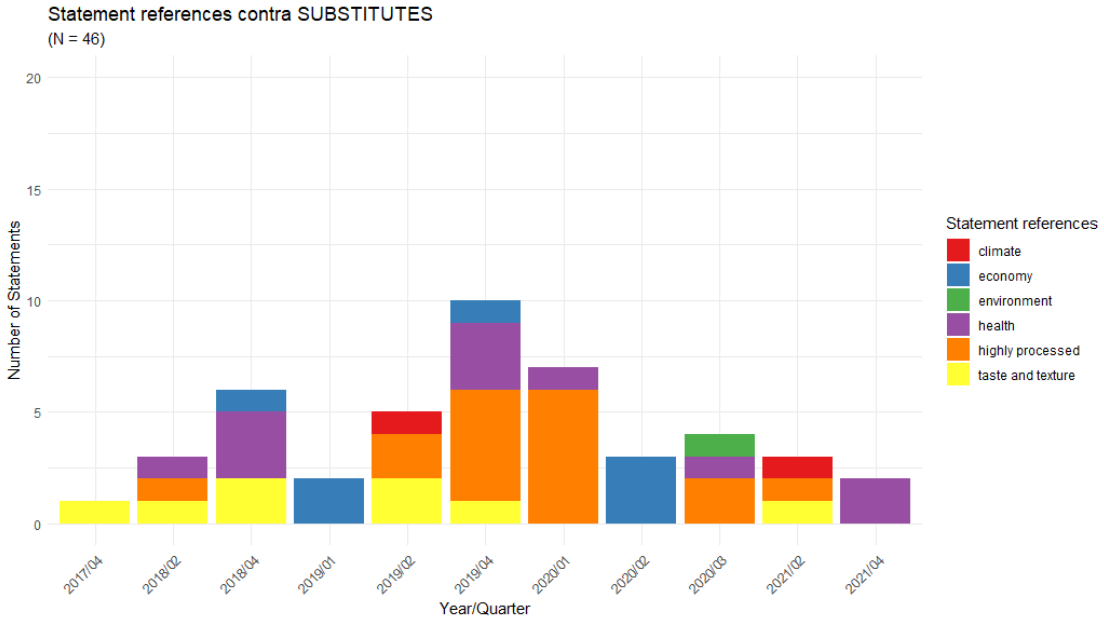


Figure 33: Graph showing the absolute number of statement references used in the contra meat substitute discourse in the selected U.S. media between 2016 until 2021.

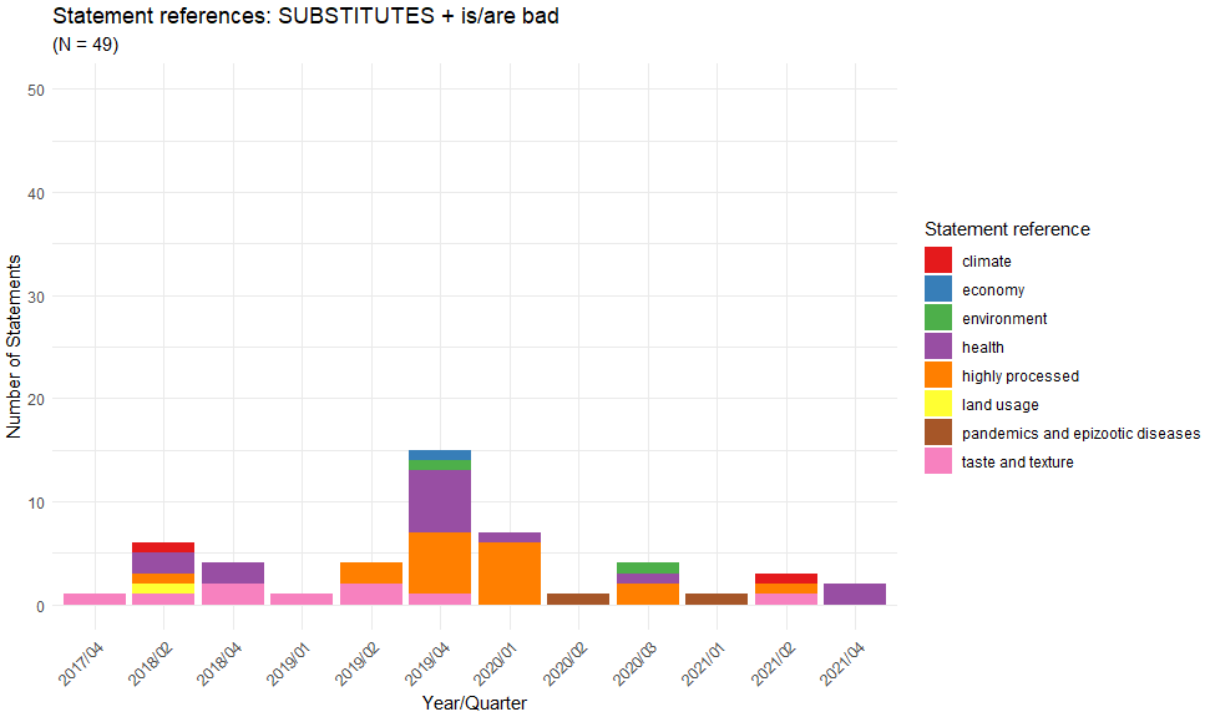


Figure 34: Graph showing the absolute number of statement references stated in combination with the «meat substitutes are bad»-key statement, published in the selected U.S. media between 2016 until 2021.

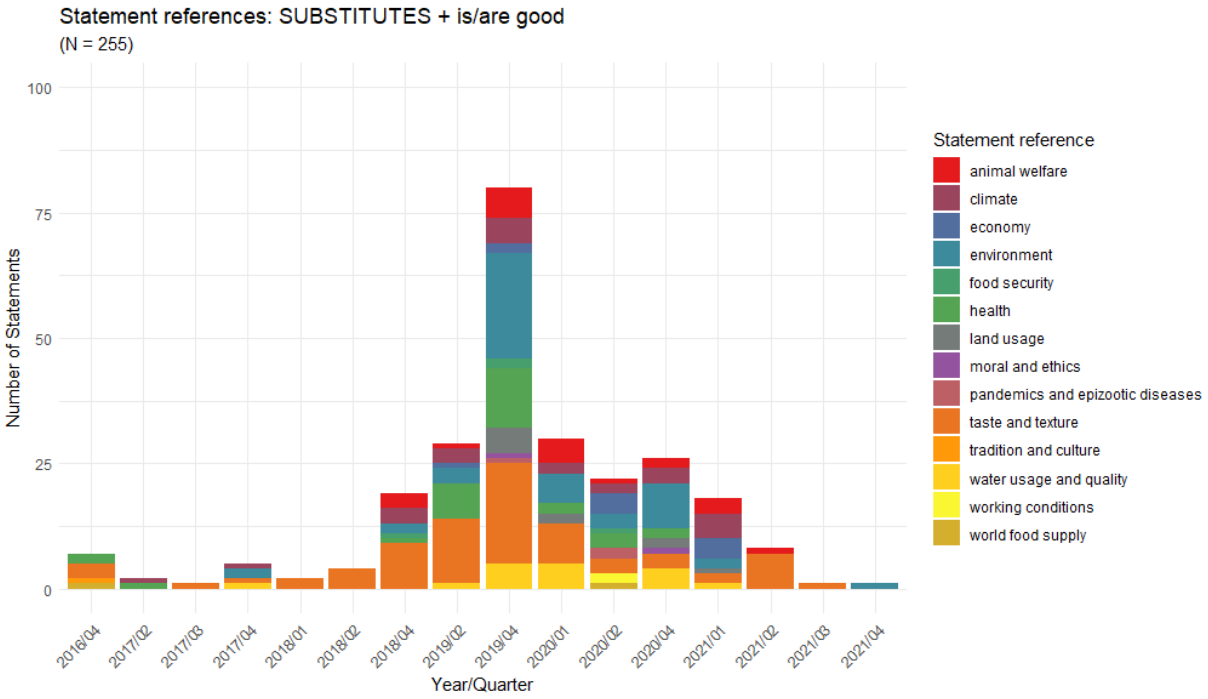


Figure 35: Graph showing the absolute number of statement references stated in combination with the «meat substitutes are good»-key statement, published in the selected U.S. media between 2016 until 2021.

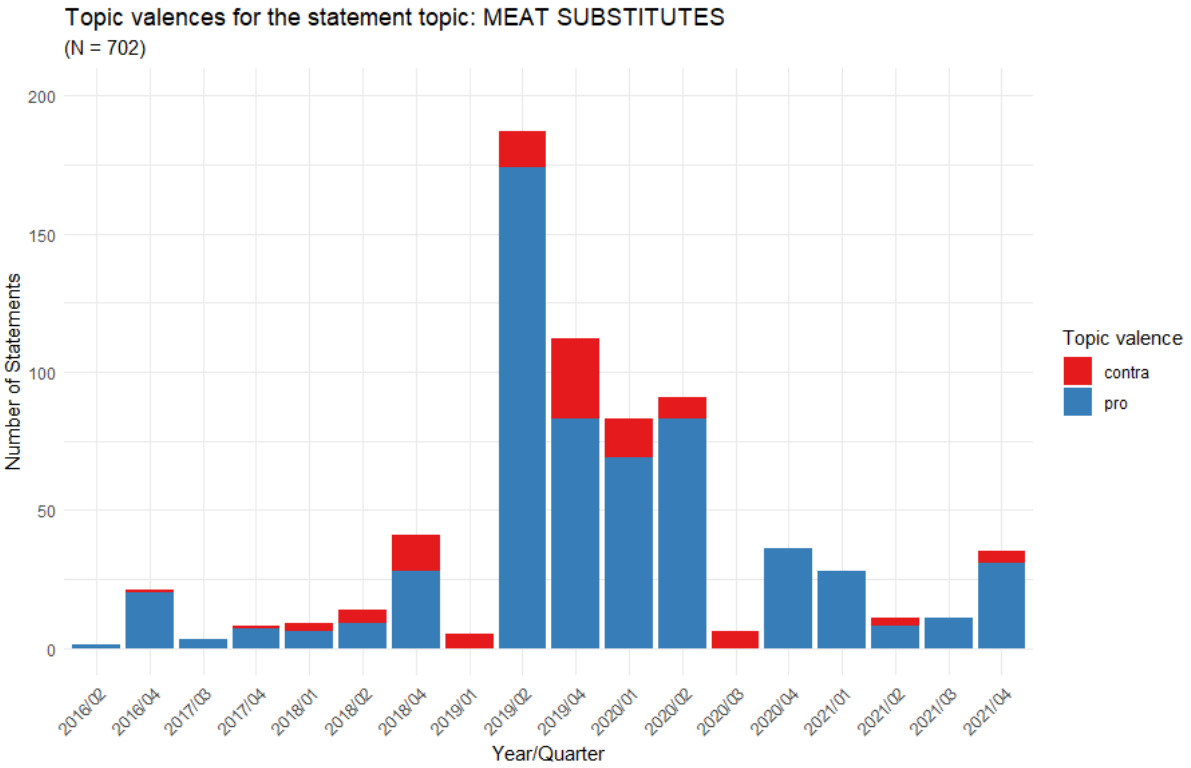
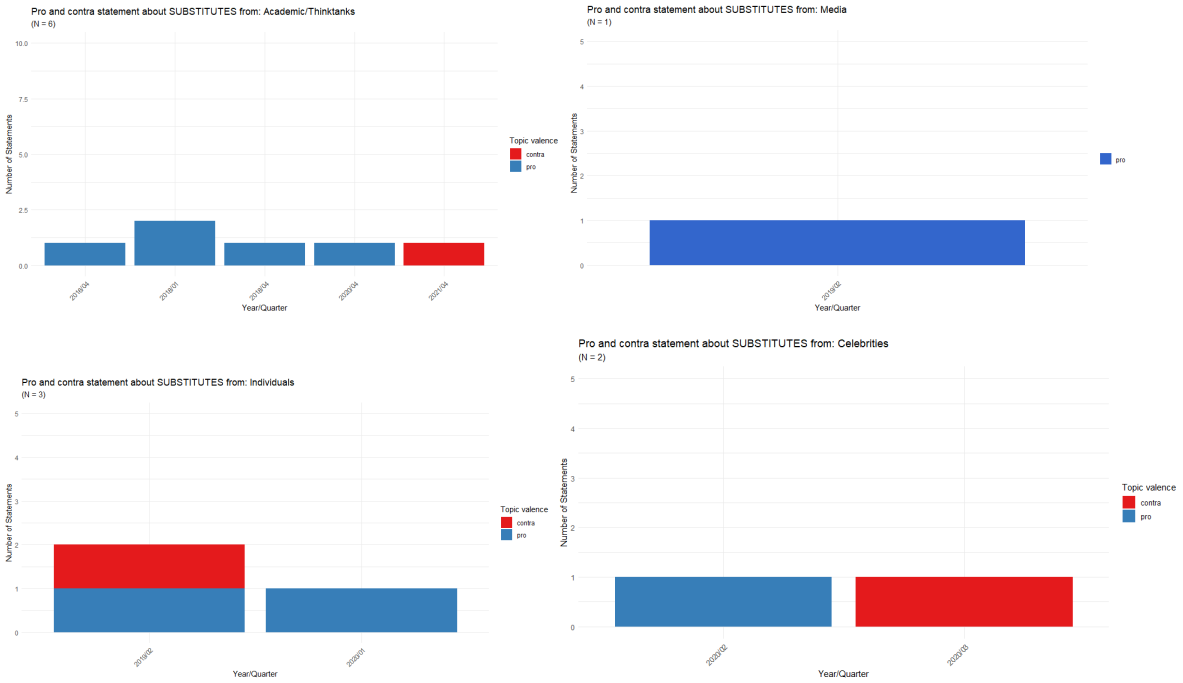


Figure 36: Graph showing the absolute number of contra or pro statements about meat substitutes that appeared in the selected U.S. media content between 2016 until 2021.



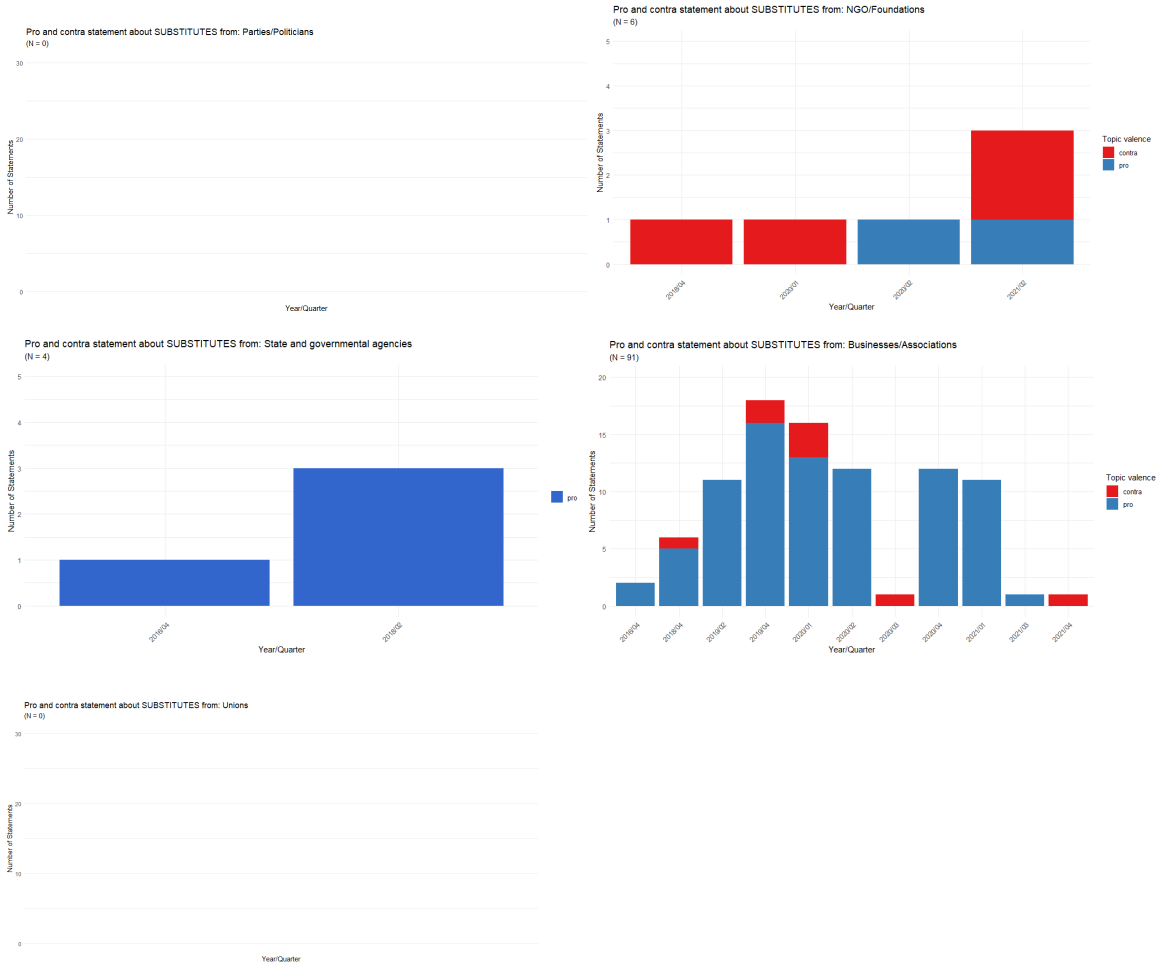
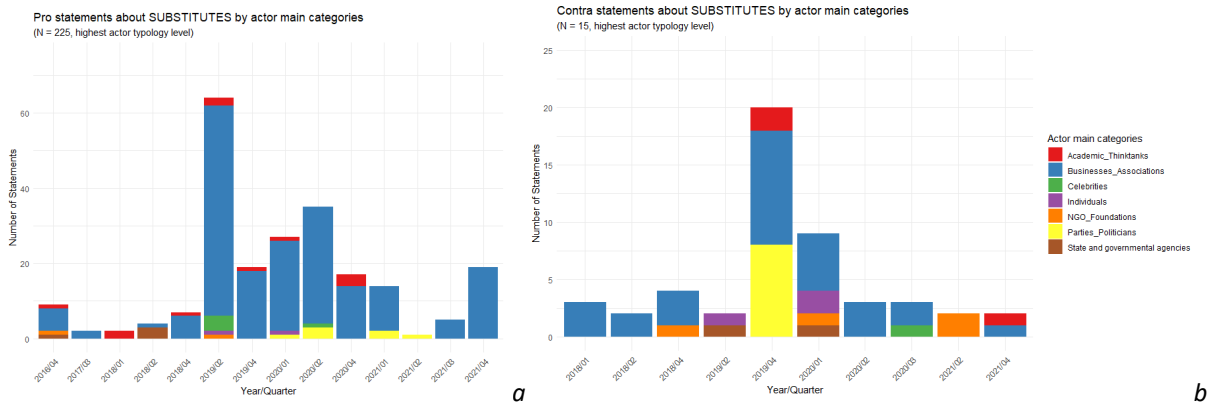


Figure 37: Graphs showing the absolute number of contra and pro statement used over time in the meat substitute discourse in the selected U.S. media between 2016 until 2021. Every graph shows another main actor category (highest actor typology level), indicated in the graph titles.



a *b*

Figure 38: Graphs showing the absolute number of statement references used in the meat substitute discourse over time in the selected U.S. media between 2016 until 2021. Graph a shows the pro meat substitute statements, graph b the contra meat substitute statements. The different colours indicate the different statement references.

7.5 In-depth analysis of randomly selected new content

7.5.1 2017/2

- Vegan dog

2017-06-06 - New York Times – ARTICLE

The Vegan Dog - Kery Shaw is one of many dog owners aligning their pets' lifestyles with their own. Ms. Shaw, a freelance photographer who lives in San Diego, was on medication for irritable bowel syndrome, migraines, allergies and recurring sinus infections when she learned about the health benefits of a plant-based diet. She decided to go vegan, abstaining from meat, fish, eggs, dairy and other foods made from animals.

- Restaurants getting stars for animal welfare

2017-06-09 - USA Today

Does your restaurant get 5 stars for animal welfare? ; Rating system gives extra points for humane treatment of what's on your plate

For diners who want to know what kind of life the animals on their dinner plates had, there's a new source of insight.

An independent program that certifies restaurants, cafeterias and some packaged-goods companies as meeting certain health and nutrition standards now include certification for animal welfare.

The new service is being provided by Eat REAL, a Washington, D.C. non-profit that it says is devoted to improving the healthfulness of restaurant fare and the humane treatment of farm animals. It began partnering with the American Society for the Prevention of Cruelty to Animals (ASPCA) last month to run the program.

- Meat export to Mexico is decreasing, they buy from brazil

2017-06-16 - The Wallstreet Journal - ARTICLE

U.S. Exports to Mexico Fall as Uncertainty Over Nafta Lingers; In first four months of 2017, Mexican imports of U.S. soybean meal dropped 15%, chicken 11% and corn 6% Friction between the U.S. and Mexico over trade is starting to cut into sales for U.S. farmers and agricultural companies, adding uncertainty for an industry struggling with low commodity prices and excess supply. Over the first four months of 2017, Mexican imports of U.S. soybean meal—used to feed poultry and livestock—dropped 15%, the first decrease for the period in four years, according to data from the U.S. Department of Agriculture. Shipments of U.S. chicken meat fell 11%, the biggest decline for the period since 2003. U.S. corn exports to Mexico declined 6%. Mexico is the largest U.S. export market for those commodities.

The numbers reflect how Mexican companies are now increasingly buying grain on a short-term basis and purchasing more chicken from Brazil, troubling some industry officials and analysts. The trade data, which is the latest available, indicates that Mexico is starting to follow

through on aspirations to buy food from a wider range of countries, and reduce reliance on the U.S.

- China US trade relations

2017-06-19 - The Wallstreet Journal - ARTICLE

Chinese and U.S. officials are set to kick off an annual security dialogue on Wednesday that will address an impasse over North Korea's missile development and nuclear program. On the same day, the first shipment of American beef in 14 years is scheduled to arrive in Shanghai, following a breakthrough in trade relations[https://www.wsj.com/articles/china-to-resume-imports-of-u-s-beef-premier-says-1474422767]. Members of a recent Chinese delegation to the U.S. pointed to this and other moves as a relative bright spot in a fraught relationship.

- Meat packed dishes in US Restaurants

2017-06-21 New York Post

MEAT UP! City restaurants raise the steaks with delicious, gut-busting fare HERE'S THE BEEF REFILL your Lipitor prescription. A thundering breed of new restaurants is bucking healthy trends and serving up decadent, meat-packed dishes. "There are more restaurants of all kinds that are selling steak and other rich cuts," says Mark Pastore, president of Pat LaFrieda Meat Purveyors. "Every restaurant now has its 'wow' steak." He notes that LaFrieda's meat business, 80 percent of which is in New York City, has enjoyed 10 to 15 percent growth annually for the past five years.

Despite their often high price tags, Pastore says that big steaks and other giant meat dishes counterintuitively tap into the small-plates sharing craze, because "big cuts let everyone have a taste." The dishes themselves are bite-years away from the repetitive, USDA 28-day, dry-aged rib-eyes of years past. Chefs are pulling out all the stops to maximize flavor, with methods that include extreme aging, laser-focused sourcing and prolonged marination.

- Online cattle auction for reality check on prices

2017-06-21

Thin Trading Hobbles Online Cattle Auction; Exchange meant to bolster opaque futures market battles breakdowns, low participation. An online auction meant to help set prices in the volatile cattle market is in trouble. Superior Livestock Auction LLC launched the Fed Cattle Exchange last year[https://www.wsj.com/articles/live-cattle-auctions-make-a-comeback-online-1481976001] to help guide the often opaque cattle market, where low liquidity can leave participants scrounging for timely price data. But breakdowns and dwindling participation have dogged the weekly online auction. The exchange has crashed multiple times so far this month; last week's auction was called off altogether.

As a result, traders say the auction isn't providing the promised reality check for pricing in the $19 billion cattle-futures market. Without real-time data on the price meatpackers are paying

for the cattle they purchase from feedlots, traders say futures have become too speculative[https://www.wsj.com/articles/welcome-to-the-meat-casino-the-cattle-futures-market-descends-into-chaos-1471475438]. Some believe a market that is meant to provide a hedge against what cattle might cost in the future has become dislocated from the real world, leaving feedlots unsure what their herds are worth.

- Animal cruelty check in Tyson chicken ranches

2017-06-21 - USA Today Online

Tyson's chicken cams will be monitored for animal cruelty Tyson Foods said Wednesday that it will open the video streams of its poultry farms to an outside company to validate that no animal cruelty is taking place. Cameras are already in action to monitor all 33 of the food giants' poultry facilities around the U. S. , but they haven't been available for viewing by outsiders.

Now, Arrowsight, a remote video auditing firm, will monitor each site's eight to 15 cameras, which are on a several-minute delay, according to Tyson. The videoing chronicles the chickens' arrivals on trucks until right before they're slaughtered. If the monitors see a breach of the company's policy on humane treatment -- say, someone removing chickens from their coops by their wings -- they'll report it to Tyson. The Springdale, Ark. -based company declined to say why the video feeds aren't being made available for viewing by the public. Tyson started installing video cameras more than a decade ago to monitor animal handling in its plants, the company said.

Tyson Foods is taking significant steps towards living out its purpose and being an industry leader in animal welfare practice," said Justin Whitmore, the company's chief sustainability officer. "This is all part of our broader sustainability approach that covers economic, social and ecological factors. "

According to the food and beverage consulting firm the Hartman Group, 47% of consumers say it is very important that companies avoid inhumane treatment of animals.

- Ban on meat names in D

2017-06-22 - New York Times - ARTICLE

Vegan Food: It’s Not Butter

Plant-based meat and dairy substitutes often use the names of the animal-based products they purport to replace.

But in Germany, this has caused consternation. Christian Schmidt, the German agriculture minister, has called for a ban[http://www.zeit.de/gesellschaft/zeitgeschehen/2016-12/agrarminister-christian-schmidt-kennzeichnung-vegetarische-produkte] on terms like “vegan currywurst,” a plant-based version of a popular and piquant pork sausage snack, arguing that they confuse consumers.

The Verband Sozialer Wettbewerb[http://www.vsw.info/], a German advocacy group that promotes fair competition, is not fond of the practice either.

It sued TofuTown, a major German producer of dairy alternatives, for violating European rules by marketing “Soyatoo tofu butter” and “veggie cheese.”

This month, the European Court of Justice agreed with [http://curia.europa.eu/juris/document/document.jsf?text=&docid=191704&pageIndex=0&doclang=EN&mode=req&dir=&occ=first&part=1&cid=281690] the German association.

Makers of coconut milk, peanut butter and cream soda, however, can rest easy: They are among the exceptions already listed[http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2010:336:FULL&from=EN] in the bloc’s Official Journal.

- Hampton creek enters lab grown meat market

2017-06-27 - The Wallstreet Journal – ARTICLE

Hampton Creek Aims at New Market: Growing Meat; Eggless mayo startup aims to make meat that is grown in a lab

Hampton Creek Aims at New Market: Growing Meat; Eggless mayo startup aims to make meat that is grown in a lab Hampton Creek Foods Inc ., the company that has made its name selling eggless mayonnaise, is carving a new niche for itself: lab-grown meat. The company known for selling plant-based food alternatives such as mayonnaise, salad dressing, cookies and cookie dough believes it can also make cheaper, healthier meat that is grown in a lab. Hampton Creek has been quietly working on a manufacturing method involves feeding plant material to animal cells, Chief Executive Josh Tetrick said. The skunk works project has been kept secret even from many employees not directly involved in the product. The approach to so-called clean meat, in development for the last nine months, sets the startup apart from its established competitors, he said. Hampton Creek says it has a "plant library" with species from more than 51 countries, which skilled technicians and robots test in a lab. The plants are tested to create the "media" that helps the meat cells grow in a controlled environment. "If you can't solve the media problem, you cannot figure out a way to make it sustainable meat and seafood [that's affordable], if not more affordable," Mr. Tetrick said. "There are a lot of challenges. The most significant challenge out of the many challenges is how do you figure out a way for the cells to grow economically and sustainably."

The San Francisco company, currently valued at $1.1 billion, according to Mr. Tetrick, has raised more than $200 million from investors such as Khosla Ventures , Founders Fund, Powerplant Ventures and Gates Ventures, including $10 million in the last nine months. Rival meat makers such as Memphis Meats Inc. and Mosa Meat B.V. use serum from unborn calves' and chicks' blood to grow cells. But Mr. Tetrick said that process is tedious, expensive and gruesome, and is hampering competitors' business growth.

Several competitors say, however, that they are close to rolling out a similar new approach. Memphis Meats CEO Uma Valeti said that the company plans to replace its animal-based serum with a plant-based alternative "as soon as possible," and he also expects to eliminate the animal-based approach altogether.

"We're about 80% there," Peter Verstrate, CEO of Netherlands-based Mosa Meat, said about its efforts to replace animal-based serum with plants. "We have tried 400 different media compositions that are non-animal-based," he said.

Producing clean meat is expensive. Memphis Meats, which in March unveiled what it called the first chicken strips grown from self-reproducing cells, estimates that its can grow a pound of chicken for less than $3,000. Both Memphis Meats and Mosa Meat CEO's said that it will take them about three to five years until they can produce cultured meat for sale. Hampton Creek aims to release its meat product by the end of 2018, Mr. Tetrick said. He declined to say what kind of meat the new product would be made out of, but he said it would cost at most 30% more than the same product from major food manufacturers. Hampton Creek's goal is simple: aim for a product more affordable and tastier than the animal protein you can find on shelves. Hampton Creek has been dogged with questions about its existing businesses, including a Bloomberg report that the company had employees buy its own product at stores to artificially boost sales. The company denied wrongdoing.

- Very high prices on meat

2017-06-28 - New York Post

NY BEEF GRIEF Steakhouses seared by soaring price increases

These are lean times for America's steakhouses. Prime cuts of beef have skyrocketed in price since May, with some meat sellers blaming a new trade deal with China - and that's eating into the bottom line at high-dollar chophouses.

Steak mongers are seeing red over price hikes of as much as 30 percent during the past month alone from meat distributors. They're already feeling more pressure to absorb the costs as the steak season enters its annual summer slowdown. "We're absorbing it right now," said Bobby Van's Steakhouse owner Rick Passarelli. "It's hard to pass along."

Bobby Van's, which charges $59 for a bone-in rib eye at its Central Park South location, has lately been buying its steak for about $13.50 a pound - up from $10 at the beginning of the year, Passarelli said. His restaurants buy about 50,000 pounds of beef a month.

Accordingly, Passarelli lately has been encouraging waitstaff to push more pasta and chicken, which carry better margins despite the fact they're lower-ticket dishes.

Some business owners blamed a trade deal with China that the Trump administration announced last month, which immediately opened up US beef, poultry and natural gas to China's exploding middle class.

7.5.2 2017/3

- Famous chef (Michelin star winner) opens vegetarian restaurant, but already in February. Now they write a experience report of an evening in this restaurant

2017-07-02 - The New York Times

A Vegetarian Restaurant for Those Who Aren't

There are chefs who can fill seats based on reputation alone -- lead actors whose legion admirers eagerly attend every opening. In Stockholm, that describes Mathias Dahlgren, a founder of the New Nordic Food Manifesto and a Bocuse d'Or winner who has earned a cumulative four Michelin stars at three restaurants to date. His new restaurant, Rutabaga, which opened in February, has garnered particular interest not only for its location -- in the space occupied for a decade by his two-starred dining room, Matsalen, which he closed last December -- but also for its concept, to which its unusual name nods: 100 percent vegetarian. ''After 10 years, I feel like it's time for me to do something new,'' said Mr. Dahlgren, seated in the renovated dining room, now a bright, welcoming space with cream-colored walls and sunlight streaming through large windows.

- Animal welfare group use virtual reality “videos” to show deficits in factory farming

2017-07-06 - New York Times - ARTICLE16:48

Animal Welfare Groups Have a New Tool: Virtual Reality, For years, animal-rights advocates trying to expose bad practices in the meat industry have surreptitiously shot grainy photographs and hand-held video. Now they have a more sophisticated weapon in their arsenal: the virtual-reality camera. Animal Equality, an animal rights group with branches in eight countries, was the first to use virtual-reality video technology last year to highlight the treatment of farm animals. That video has been viewed by more than 63 million people around the world, according to the group, and other animal advocacy groups are exploring the technology.

On Thursday, Animal Equality[http://www.animalequality.net/] released its third iAnimal[http://ianimal360.com/], as it calls its 3D films, a virtual-reality tour of conditions in dairy farms in Mexico, Germany and Britain. The VR technology allows viewers to “stand” in a barn and look all around, not just at the spot an advocate wishes to highlight. “I had always wished I could bring people into the facilities with me, so they could see them with their own eyes,” said Jose Valle, a founder of the group. “The experience is just not the same with traditional video.”

Wayne Hsiung, a founder of Direct Action Everywhere[http://www.directactioneverywhere.com/], which also fights for animal welfare, called the technology “a game changer for animal advocates.” “The meat industry always complains that we’re using selective footage, narrow vantage points and editing to make things seem worse,” he said. “But with VR, you’re seeing exactly what we saw and hearing exactly what we heard.”

- Meat sales and consumption rise, due to sinking meat prices after almost 10 years of recession due to sinking costs for commodities. Meat popularity is expected to rise

2017-07-06 - USA Today – ARTICLE

Beef is back on the grill- As backyard grills fire up this summer, one thing is clear: Americans no longer have a beef with beef. Thanks to lower prices, more disposable income and a guarded thumbs-up from the wellness community, the once-maligned meat is now seen by many shoppers and diners as an ingredient in a well- balanced and even trendy diet.

Americans ate an average 55.6 pounds of beef in 2016, up from 54 pounds in 2015, according to the Department of Agriculture. This comes after a decade during which U.S. beef consumption plummeted 15%.

For much of the decade, consumption sank as costs rose. Beef prices soared 50% between 2006 and 2016. Competing meats, such as chicken and pork, rose in price, too, but not by as much. Now, the golden age of meat has arrived. "We're in a much better place now than we were 10 years ago when we had the recession," said Altin Kalo, an economist with Steiner Consulting in Manchester, N.H. The big reason is producers' costs have fallen dramatically for commodities such as oil, needed to transport livestock, and corn, for feed. Meat's popularity is expected to keep rising, with U.S. sales seen just shy of the $100 billion mark in four years, according to market research firm Packaged Facts.

- Impossible foods has closed a round of funding getting financial support of the tech industry's biggest names, for example bill gates

2017-07-29 - The Wallstreet Journal – ARTICLE

Impossible Foods Tastes $75 Million for Its Meatless Burger; The maker of the plant-based "Impossible Burger" has closed a round of funding dished up by some of the tech industry's biggest names.Impossible Foods Inc . is beefing up its financial profile.

The maker of the plant-based "Impossible Burger" has closed a $75 million round of funding dished up by some of the tech industry's biggest names. Microsoft co-founder Bill Gates, Khosla Ventures and Horizons Ventures returned to participate in the round that snagged new support from Facebook co-founder Dustin Moskovitz's Open Philanthropy Project. Singapore state-investment firm Temasek Holdings , a new investor in Impossible Foods , led the round. Redwood City, Calif.-based Impossible Foods , which raised a $108 million Series D in 2015, said the financing round isn't a Series E. The company doesn't need additional financing but decided to raise capital, said David Lee, the company's chief financial officer and chief operating officer.

7.5.3 2018/2

- Algae as protein alternative to meat, environmental issues of meat

2018-06-01 - CNN – ARTICLE (13 Statements)

Experts say algae is the food of the future. Here's why.

NEW YORK (CNNMoney) -- I have commitment issues -- with my diet. Name the diet, and I've tried it. I'm currently a pescatarian with fish as my main protein source. But I've been a carnivore, vegetarian and vegan, too. Oh, and I dabble in "menu of the future" items such as algae and bugs.

In the last month, I've had algae smoothies, algae protein bars and algae chips. It's not because I'm a particularly adventurous eater or that I love the taste. I actually loathe the mossy

flavor of algae. I eat it because I'm a worry wart when it comes to our environment. We've gotten ourselves into some trouble. Our dining habits are a big part of the problem.

- Salmonella case with Californian chicken

A total of 634 persons in 29 states and Puerto Rico were infected. US Department of Agriculture issues an alert about illnesses caused by strains of Salmonella Heidelberg that are associated with raw chicken products produced by Foster Farms in California.

Live Poultry - March 2013 Multistate outbreak of Salmonella Typhimurium infections linked to contact with live poultry purchased from feed stores and mail-order hatcheries.

- Release of vegetarian cookbook

The Wall Street Journal Online - A Cookbook Packed With Red-Blooded Vegetarian Fare; The 'Superiority Burger Cookbook" is full of wit, smart technique and the sort of deeply satisfying food you'll find yourself craving at 2 a.m

IT'S A UNIVERSAL truth that the best vegetarian food is the kind that doesn't even try to mimic meat. Tofurky, soy bacon and textured-vegetable-protein "burger patties" always turn out to be pale, industrialized imitations of the red-blooded originals. But groundbreaking cookbooks like Deborah Madison's "Vegetarian Cooking for Everyone" have helped meatless meals move beyond those fake foods, reminding everyone how delicious actual vegetables (and beans and grains) really are.

- E-coli bacteria in beef burger meat

ConAgra Beef Co. (E. coli O157:H7) July 19, 2002 - Nineteen million pounds of meat produced at the ConAgra Beef Co.'s Greeley, Colorado, plant is recalled. At least 35 people become ill due to this meat contamination and one person dies. The contaminated meat is shipped to at least 21 states.

- Tyson expands in organic chicken

2018-06-05 - The Wallstreet Journal – ARTICLE (12 Statements)

Tyson Expands in Organic Chicken. TF is making a push into organic chicken, striking a deal to acquire the Smart Chicken brand, the company said Monday.

Buying the Nebraska-based maker of organic fresh chicken and chicken sausages broadens Tyson's organic offerings, as rival meat companies pursue their own deals and shift more of their poultry toward a market where sales are growing faster than conventional chicken.

Tyson, the largest U.S. meatpacker by sales, has been migrating toward higher-profit, brand-name products, aiming to reduce its reliance on selling commodity meat, a business that tends to be less predictable and prone to market swings.

- Pork export harmed due to dispute with Mexico, high tariffs on pork

2018-06-15 - New York Times - ARTICLE

NEW YORK (CNNMoney) -- The US trade dispute with Mexico is heating up.

Farmers; Mexico joins China in imposing tariffs on imports of U.S. food and farm goods as Canada, Europe consider similar moves U.S. farmers, already losing sales to China, are facing new threats to sales in other big overseas markets as trade tensions spread globally. In retaliation for the Trump administration announcing tariffs on steel and aluminum imports from Mexico and much of the rest of the world, Mexico Tuesday imposed a series of tariffs against US exports to its market valued at $3 billion. They'll hike the price of products including pork, apples, potatoes, bourbon as well as different types of cheese. The tariffs range between 15% and 25%, and could raise the price of US goods by that amount, cutting deeply into US exports to its neighbor.

- Kentucky fried chicken enters meat alternatives market

2018-06-08 - CNN - ARTICLE

KFC has announced that it will break with its meat-loving tradition and begin testing a vegetarian alternative to chicken later this year in the United Kingdom. They're not just winging it: The US fast food chain said the move is in line with its UK commitment to reduce calories per serving by 20% by 2025. "We always look to respond to the latest changes in lifestyle and dining habits of our customers," said a company spokesperson. "That's why we're looking into vegetarian options."

- Ban on meat names, some states are passing laws, both sides are lawyering up

2018-06-10 - The Wallstreet Journal – ARTICLE (9 Statements)

A Stampede of Meatless Products Overrun Grocery Store Meat Cases; Furious cattlemen see the meat section as their turf, a private reserve of steaks and chops with one thing in common—a butchered animal carcass

Staring at the pink, prepackaged burger patties in the meat case of a Kansas grocery store this spring, Larry Kendig felt disgust. Mr. Kendig, 68 years, was so bothered he took the department manager aside to explain his beef with U.S. food labeling rules: Do shoppers really know what goes into those burgers? Nothing from a cow. The " Beyond Meat " patties that offended Mr. Kendig were made with pea protein, canola oil, coconut oil, potato starch and "natural flavor." They're part of a posse of look-alikes invading meat country—from plant-based burgers that ooze "blood" at first bite to chicken strips grown in a tank from poultry cells.

Furious cattlemen see the meat section as their turf, a private reserve of steaks and chops with one thing in common—a butchered animal carcass. Missouri this month passed a similar law, and the Good Food Institute, which promotes meat alternatives, plans a legal challenge. Dairy farmers, meantime, are lobbying the Food and Drug Administration , which supervises

milk labels. The milk producers federation is pushing a bill, the "Dairy Pride Act," to enforce rules that the word "milk" on labels only refer to the output of lactating animals.

- French butchers get assaulted

2018-06-27 - The New York Times

In France, Meat Inspires An Ugly Row

PARIS -- French butchers say they've had enough. Not only must they confront media coverage of the ''vegan way of life,'' now they say they are under assault. After a series of small but unprecedented incidents, the butchers federation says its members need protection from militants who have broken windows, thrown fake blood and sprayed graffiti on their shops.

- More and more chicken patties for burger, concerning beef burgers

Chicken, Turkey and Tuna Have a Beef With Your Burger; Fueling the battle is a record supply of meat in the U.S., pressuring prices and spurring meat producers to seek out new markets

Beef, which has long fulfilled America's hunger for hamburgers, faces fresh competition from poultry producers pushing their own patties onto U.S. grills. Fueling the battle is a record supply of meat in the U.S.,[https://www.wsj.com/articles/growing-appetites-fuel-record-u-s-meat-production-1515782021] pressuring prices and spurring meat producers to seek out new markets.

Hormel Foods Corp ., one of the largest U.S. turkey suppliers, in June launched a campaign urging consumers to "make the switch" from ground beef to ground turkey.

7.5.4 2018/4

- Rhabis are teaming up with Israel based meat substitute processors to invent kosher meat substitutes that taste like meat

2018-10-01 - New York Times - ARTICLE

Pursuing a Once-Impossible Goal: Kosher Bacon - BERKELEY, Calif. -- Rabbi Gavriel Price has thousands of years of Jewish religious law to draw on when he is on the job, determining whether a new food item can get a kosher certification from his organization, the Orthodox Union. But all the rules about meat and milk, and the prohibitions on eating pork and sciatic nerves, are of limited use for Rabbi Price's latest assignment.

The rabbi is in charge of figuring out how the Orthodox Union, the largest kosher certifying organization in the world, should deal with what is known as clean meat -- meat that is grown in laboratories from animal cells. This brings him in touch with a possibility for Jewish cuisine that had previously seemed impossible: kosher bacon.

Clean meat is still not available in stores, but start-ups working on it say it could be by next year. When it is, they want a kosher stamp on their product, which indicates it adheres to

quality and preparation standards and follows a set of biblical laws. That brought Rabbi Price, a tall, lanky father of eight, to Berkeley recently, to meet with companies in the business.

Jewish authorities have been studying this because several synthetic meat start-ups are based in Israel. A number of Israeli rabbis told one start-up, SuperMeat, that previous rulings in religious law might allow clean meat to be categorized as pareve, a religious label that is applied to things that are kosher but not derived from animals. A pareve label would mean that observant Jews could eat it with dairy products, like cheese, which cannot be eaten with traditional meat. In other words, a kosher cheeseburger might be possible.

- Systematic study by Harvard school of health processed leads to increased risk of breast cancer

2018-10-03 - CNN - ARTICLE

Processed meats linked to breast cancer, says study Eating processed meats like bacon, sausages and ham could increase the risk of breast cancer, a study has said. Regularly consuming the foods was linked with a 9% higher risk of breast cancer, according to an analysis of previous studies looking at over 1.2 million women. The findings follow previous research from the World Health Organization, which categorized processed meat as a carcinogen after finding that its consumption can cause various types of cancer[https://money.cnn.com/2015/10/26/news/red-meat-processed-cancer-world-health-organization/index.html].

Processed meats are those that have been preserved by smoking, curing or salting. "This systematic review and meta-analysis study reports significant positive associations between processed meat consumption with risk of breast cancer," the authors wrote. "Cutting down processed meat seems beneficial for the prevention of breast cancer," added lead author Dr. Maryam Farvid, of the Harvard T.H. Chan School of Public Health.

- Lab-Grown Meat Raises Regulatory Question, about who oversees it: the USDA or the FDA, no answer yet

2018-10-03 - The Wall Street Journal

The Future of Food (A Special Report) --- Lab-Grown Meat Raises Regulatory Questions: Specifically, who is overseeing it: the USDA or the FDA? Startups say the uncertainty creates a challenge.

Who decides whether meat developed in a laboratory is safe to eat and, if it is, how it can be marketed? That's the question regulators face as scientists develop new meats grown from animal cells. This cell-culture technology, developers say, is a way to make burger patties without slaughtering bovines, and chicken strips without ruffling a feather. Cell-cultured meats are likely still years away from appearing in supermarkets and restaurants. But a clear regulatory framework is crucial for startups like Memphis Meats Inc., Mosa Meat and Finless Foods Inc. to avoid any costly missteps during development. "The biggest challenge for any new technology is regulatory uncertainty," says Brian Sylvester, special counsel with Wiley Rein LLP, who previously worked as a regulatory lawyer for the U.S. Department of Agriculture.

He isn't currently representing any meat companies, but he has been discussing representation of the cell-culture startups. Some startups believe the Food and Drug Administration , which regulates cell-culture technology in pharmaceuticals, would look more favorably on their technology than the USDA , which oversees the network of slaughterhouses and processing plants that produce meat the traditional way. Cattlemen and hog and poultry farmers want the new meats to be regulated by the USDA , which they say would ensure a level playing field.

- JBS recalles almost 7 mio. Pounds of raw beef due to salmonella contamination

2018-10-12 - USA Today - ARTICLE

JBS Tolleson recalled close to 7 million pounds of raw beef last week due to possible Salmonella Newport contamination, while in mid-September, Cargill recalled an estimated 132,000 pounds due to concerns about E. coli O26, according to the U. S. Department of Agriculture . August saw the supermarket chain Publix recall an undetermined amount of ground beef potentially contaminated with E. coli in Florida. "Cooking food thoroughly and handling it correctly is critically important," said Carmen Rottenberg, acting deputy undersecretary for the USDA's Office for Food Safety. "The food produced is not sterile . . . People want to cook raw food and prepare it at home. If you prepare it at home, you have to know there are some risks associated with it. "

- Lab grown meat testing – Erlebnisbericht

2018-10-16 - The Wallstreet Journal - ARTICLE

Is Lab-Grown Meat Ready for Dinner?Startups are cultivating cuts of chicken, beef and duck from clusters of animal cells. The tech is impressive. But how does it taste?

Corrections & Amplifications - With his beard, backward ball cap and bar towel dangling from the waist tie of a fine-looking bib apron, Thomas Bowman could be expediting at a trendy San Francisco restaurant. But today, in an old industrial space at the edge of the city's Mission District, he's frying a small mass of terra-cotta-colored chicken in a nonstick pan. The mass is as unruly as loose oatmeal—a decidedly un-poultry-like texture. After a few dabs with a spatula, Bowman, a veteran of several Michelin-starred kitchens, tamps it back into shape.

- Many US burger chains fail on annual antibiotics report, that grades their antibiotic restaurant policies, only two of 25 serve antibiotic free beef.

2018-10-18 - CNN - ARTICLE

Twenty-five of the top US burger chains were graded on their antibiotic policies in a collaborative report[https://www.nrdc.org/resources/chain-reaction-how-top-restaurants-rate-reducing-antibiotics-their-meat-supply] released Wednesday. Only two chains received As, Shake Shack[https://www.shakeshack.com/] and BurgerFi[https://burgerfi.com/]; the other 23 got a D minus or F.

Brook said that after seeing positive changes in poultry used by fast food restaurants from the group's past reports[https://www.cnn.com/2017/09/27/health/fast-food-antibiotics-grades/index.html], it made the decision to focus on beef and burger chains for its fourth annual report.

Fast food restaurants were ranked by total US sales to get the top 25. The report grades the restaurants in three areas, according to Brook. The first is whether these companies are making pledges or policies to end the routine use of antibiotics, the second is how the companies are implementing the policies, and the third is verifying whether the claims being made by the companies are true. The report identified Shake Shack and BurgerFi as the only two chains to serve antibiotic-free beef.

- New study published by Nature journal shows that animal foods and food waste are bad for the environment and cause climate change

2018-10-18 - CNN - ARTICLE

By filling your plate with plant foods instead of animal foods, you can help save the planet.

The study, published last week[https://www.nature.com/articles/s41586-018-0594-0] in the journal Nature, found that as a result of population growth and the continued consumption of Western diets high in red meats and processed foods, the environmental pressures of the food system could increase by up to 90% by 2050, "exceeding key planetary boundaries that define a safe operating space for humanity beyond which Earth's vital ecosystems could become unstable," according to study author Marco Springmann of the Oxford Martin Programme on the Future of Food at the University of Oxford.

Sustaining a healthier planet will require halving the amount of food loss and waste, and improving farming practices and technologies. But it will also require a shift toward more plant-based diets, according to Springmann.

As Palmer noted, "research consistently shows that drastically reducing animal food intake and mostly eating plant foods is one of the most powerful things you can do to reduce your impact on the planet over your lifetime, in terms of energy required, land used, greenhouse gas emissions, water used and pollutants produced." How a meat-based diet negatively affects the environment It might come as a surprise, but Springmann's study found that the production of animal products generates the majority of food-related greenhouse-gas emissions -- specifically, up to 78% of total agricultural emissions.

This, he explained, is due to manure-related emissions, to their "low feed-conversion efficiencies" (meaning cows and other animals are not efficient in converting what they eat into body weight) and to enteric fermentation in ruminants, a process that takes place in a cow's stomach when it digests food that leads to methane emissions.

- People getting sick due to salmonella infection after eating raw chicken; this salmonella strain is resistant to multiple antibiotics

2018-10-18 - CNN - ARTICLE

Drug-resistant salmonella from chicken sickens nearly 100

At least 92 people in 29 states have been infected with a strain of multidrug-resistant[https://www.cnn.com/2013/06/28/health/salmonella-fast-facts/index.html] salmonella after coming into contact with a variety of raw chicken products, the US Centers for Disease Control and Prevention[https://www.cdc.gov/salmonella/infantis-10-18/index.html] said Wednesday. Twenty-one of the sick patients have been hospitalized, though no deaths have been reported.

The source of the raw chicken is unclear from lab tests, and no single common supplier has been identified. The strain has shown up in samples from a variety of raw chicken products including pet food, chicken pieces, ground pieces and whole chickens. The bacteria have also been found in live chickens. The US Department of Agriculture's[https://www.fsis.usda.gov/wps/portal/fsis/topics/regulatory-compliance/!ut/p/a1/04_Sj9CPykssy0xPLMnMz0vMAfGjzOINAg3MDC2dDbwMDIHQ08842MTDy8_YwMgYqCASWYG_paEbUEFYoL-3s7OBhZ8xkfpxAEcDQvrD9aPwKvE3QVeAxYkQBbjdUJAbGmGQ6akIAOaGScM!/?1dmy¤t=true&urile=wcm%3Apath%3A%2Ffsis-content%2Finternet%2Fmain%2Ftopics%2Ffood-safety-education%2Fget-answers%2Ffood-safety-fact-sheets%2Ffoodborne-illness-and-disease%2Fsalmonella] Food Safety and Inspection Service is monitoring the outbreak, and the CDC's investigation is ongoing.

This particular salmonella strain is resistant to multiple antibiotics[https://www.cdc.gov/salmonella/infantis-10-18/advice.html], the most common form of treatment. People sick with this strain have experienced stomach pain, cramps, diarrhea and fever 12 to 72 hours after exposure to the bacteria.

- Berkeley’s (Californian City) City council passes resolution to serve only meatless meals on mondays

2018-10-19 - USA Today - ARTICLE

California sits at the forefront of edgy laws. Rest of nation often scoffs but eventually follows suit. City events and meetings held in Berkeley, California, on Mondays are required to serve no meat - yes, mandated meatless Mondays. The City Council passed the resolution last month, requiring vegan menus one day a week. Big Brother is now telling you to eat your vegetables. Or else.This government move to reshape societal norms under the guise of knowing what its citizens really need quickly became a national punchline.But Berkeley out-Berkeleying itself is hardly the first time Californians have made a move that caused the other 49 states to snicker.In the past month alone, the Golden State has crafted several food-related rules that inspire people more than 20 yards away from a surfboard to wonder, "What are those guys smoking?"

- Burgers made from meat substitutes contain more salt than regular meat, a study shows, which is bad for peoples health (UK)

2018-10-23 - CNN - ARTICLE

Meat-free burgers contain more salt than real burgers, survey shows - Meat-free burgers contain high levels of salt -- exceeding recommended limits, finds a new survey into the salt content of vegetarian and vegan alternatives to meat.

The UK group Action on Salt[http://www.actiononsalt.org.uk/salt-surveys/2018/meat-alternatives-survey/] found that burgers made from meat substitutes contained an average of 0.89 grams of salt per serving -- real beef burgers' averaged 0.75 grams per portion -- 0.14 grams less.

The group, based at Queen Mary University of London, studied 157 meat-free products from major retailers and found that more than a quarter -- 28% -- of meat-free products had higher salt levels than guideline targets set by Public Health England.

High salt diets can increase blood pressure and are linked to strokes and cardiovascular diseases. UK guidelines[https://www.nice.org.uk/guidance/ph25/chapter/1-Recommendations] recommend a maximum daily salt intake for adults of 3 grams to be reached by 2025 to tackle cardiovascular problems in the population.

- Controversial French study shows, people who eat organic foods, have a lower risk of getting cancer

2018-10-23 - New York Times - ARTICLE

Can Eating Organic Food Lower Your Cancer Risk? - People who buy organic food are usually convinced it’s better for their health, and they’re willing to pay dearly for it. But until now, evidence of the benefits of eating organic has been lacking. Now a new French study that followed 70,000 adults, most of them women, for five years has reported that the most frequent consumers of organic food had 25 percent fewer cancers over all than those who never ate organic. Those who ate the most organic fruits, vegetables, dairy products, meat and other foods had a particularly steep drop in the incidence of lymphomas, and a significant reduction in postmenopausal breast cancers.

The magnitude of protection surprised the study authors. “We did expect to find a reduction, but the extent of the reduction is quite important,” said Julia Baudry, the study’s lead author and a researcher with the Center of Research in Epidemiology and Statistics Sorbonne Paris Cité of the French National Institute of Health and Medical Research

The study, published Monday in JAMA Internal Medicine[https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2707948], was paid for entirely by public and government funds. Nutrition experts from Harvard who wrote a commentary accompanying the study[https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2707943] expressed caution, however, criticizing the researchers’ failure to test pesticide residue levels in participants in order to validate exposure levels.

- McCain Foods recalls million pounds of food from all over the world, who might be contaminated with salmonella and listeria.

2018-10-23 - USA Today - ARTICLE

Recall hits millions of pounds of food from Harris Teeter, 7-Eleven, Kroger and more

You may want to think twice about those grab-and-go-food items. Millions of pounds of ready-to-eat salads and premade food items including entrees, burritos, wraps and pizzas at several big name retailers such as Harris Teeter , Kroger , Whole Foods, 7-Eleven, Trader Joe's and Walmart have been recalled due to the potential risk of listeria and salmonella contamination.

The recalls stem from those issued by a dozen food manufacturers including Bakkavor Foods , Envolve Foods and Ruiz Food Products. The food makers notified the U. S. Department of Agriculture about products they shipped that could include ingredients such as corn, diced onions and other vegetables possibly tainted with bacteria – all provided from a single company, McCain Foods , the USDA says.

- Waitrose Food's food editor steps down from he's position, due to an offensive Email about vegans even though the food retailer, which recently announced an exclusive range of vegan products; Veganism is widely accepted as mainstream

2018-11-02 - The New York Times

Email About 'Killing Vegans' Costs British Food Magazine Editor - LONDON -- It seemed like the perfect pitch to a popular British food magazine that had recently reported on an increase in sales of plant-based food: a new series about veganism.

But the editor of the magazine, Waitrose Food, was not at all impressed by the idea put forward last week by the freelance writer, and he responded with a proposal of his own that led to howls of outrage and his swift resignation from the magazine. ''How about a series on killing vegans one by one,'' the editor, William Sitwell, wrote in an email seen by The New York Times . ''Ways to trap them? How to interrogate them properly? Expose their hypocrisy? Force-feed them meat? Make them eat steak and drink red wine? Selene Nelson, the vegan food writer who had sent the pitch to the upscale grocery store's magazine ahead of World Vegan Day on Thursday, said that while she frequently came across people with hostile attitudes toward veganism, she had ''never seen anything like this.'' ''I've written about many divisive topics, like capital punishment and murder cases and domestic violence, and I've never had a response like that to any of my articles or pitches,'' she said in an interview with Buzzfeed News.

But Waitrose said in a statement, ''Even though this was a private email, William's gone too far, and his words are extremely inappropriate, insensitive and absolutely do not represent our views.'' The spat came at an awkward time for the food retailer, which recently announced an exclusive range of vegan products after reporting that it sales of vegan and vegetarian products had risen 85 percent since last year. Mr. Sitwell's comments, said in jest or not, appear to be out of touch with shifting attitudes of the British public. Britons are increasingly substituting meat with plant-based products.

In Britain, which had a population of 66 million in 2017, about 600,000 people identify as vegan, up from 540,000 in 2016, according to the Vegan Society, though some groups put the figure higher. (A widely reported statistic of more than 3.5 million vegans in Britain sprang from the comparison website Compare the Market. Published this year, it was based on a survey of 2,000 people.)

''Just the fact that the Brits have made vegan fish and chips show that veganism is being accepted by the mainstream,'' said Dan Butler, a vegan who traveled an hour across London to try the city's first Vegan fish and chips shop.

- Study by the Oxford University found out, that taxes on red meat would reduce health care bills

2018-11-07 - CNN - ARTICLE

'Meat taxes' would save many lives and cut health care costs, study says

It would drive up the price of your barbecue but a global "meat tax" could save 220,000 lives and cut health care bills by $41 billion each year, according to a new study[https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0204139]. The numbers are based on evidence that links meat consumption to increased risk of heart disease, cancer, stroke and diabetes. Three years ago, the World Health Organization declared red meat such as beef, lamb and pork to be carcinogenic when eaten in processed forms, including sausages, bacon and beef jerky.

Health officials have also declared that unprocessed red meat like steak and burgers are "probably" carcinogenic. Other carcinogens such as cigarettes and alcohol are regulated in order to reduce cases of chronic disease. A team of researchers led by Dr. Marco Springmann, from the Nuffield Department of Population Health at Oxford University , estimated the rate of tax that would be necessary to offset health care costs related to red meat consumption. "The least intrusive form of regulation is a tax to raise prices and reduce consumption," Springmann told CNN . Researchers concluded that the UK government should introduce a tax of 79% on processed meat such as bacon, and 14% on unprocessed meat such as steak.

- Tyson Foods Inc . is looking to expand to China to be less reliant on US meat market; Meat market rose to record levels in 2018

2018-11-08 - The Wallstreet Journal - ARTICLE

Tyson Foods Inc . is looking to expand internationally to help stabilize its business and reduce exposure to U.S. agricultural-market swings, its chief executive said.

The Arkansas-based company is considering acquisitions in new markets and revamping its strategy in China, where earlier investments in company-run poultry-farming complexes have struggled, said Noel White, who took over as Tyson's chief executive officer at the end of September. Tyson's effort to rebuild its overseas presence is a way for the top U.S. meat company by sales to harness growing protein demand in developing countries as well as in established markets for meat, Mr. White said in his first interview since taking over.

A broader international presence would make Tyson less reliant on the ups and downs of the U.S. meat sector, where processors like Tyson, Pilgrim's Pride Corp . and Hormel Foods Corp . are grappling with low prices and growing meat supplies. "It is in fact spreading the risk if you do have operations in countries outside the United States," Mr. White said. The U.S. meat industry faces challenges as chicken and pork production rise to record levels this year, according to U.S. Agriculture Department projections. Cheap and abundant meat has

sharpened the competition between low-cost goods like hamburgers and chicken nuggets and has cut into chicken demand for suppliers like Tyson. Tariffs on some U.S. meat products from top meat-importing countries like Mexico and China also have pressured prices.

Mr. White, who previously oversaw Tyson's international business and traveled to Asia last summer, said Tyson is exploring potential acquisitions of meat-processing or food companies outside the U.S. He declined to discuss specific companies.

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- High demand for newly launched “bleeding” plant-based burger from Beyond meat, that changes colour while cooking, in UK

2018-11-12 - CNN - ARTICLE

'Bleeding' plant-based burger hits growing UK vegan market - It sold out in the US, and now the delayed launch of a "bleeding" vegan burger is causing huge excitement among UK vegetarians and vegans. On November 12 the Beyond Burger, a soy-free, gluten-free vegan patty that "changes color as you cook it," just like a traditional beef burger, hit the shelves at the UK's largest supermarket chain Tesco . The burger is the brainchild of California-based vegan protein brand Beyond Meat , who say they added beet juice to the product to give it "a red-meat appearance."

It is made completely from plants, unlike "lab-grown" meats [https://edition.cnn.com/2018/03/01/health/clean-in-vitro-meat-food/index.html] in development elsewhere, and contains 20g of pea protein, potato starch and coconut oil. Massive demand saw the burgers sell out in stores following the US launch in May 2016, and UK consumers have been keen to try them.

Massive demand saw the burgers sell out in stores following the US launch in May 2016, and UK consumers have been keen to try them. "We see the growing global demand for delicious, plant-based proteins and are excited to serve that demand in the UK with the revolutionary Beyond Burger," said Seth Goldman, Beyond Meat's Executive Chair, in a statement.

- World vegan month: Study shows, Percentage of vegans in US population rose from 1 to 6 %.

2018-11-13 - New York Times - ARTICLE

Vegan or Vegetarian? You Have More Travel and Dining Options Than Ever - November is World Vegan Month, and with an increasing number of places catering to all types of vegan travelers, there’s a lot to celebrate. (And perhaps not much to make fun of: The editor of a British food magazine recently lost his job over an email in which he ridiculed vegans[https://www.nytimes.com/2018/11/01/world/europe/uk-vegan-food-editor-

resigns.html].) According to a report published by Global Data[https://www.reportbuyer.com/product/4959853/top-trends-in-prepared-foods-2017-exploring-trends-in-meat-fish-and-seafood-pasta-noodles-and-rice-prepared-meals-savory-deli-food-soup-and-meat-substitutes.html], the percentage of vegans in the United States has risen to 6 percent from 1 percent in the past three years and Pinterest says it has seen a near-200 percent spike in searches for vegan food travel guides since last year. Whether it's for health, religious, or environmental concerns, one thing is certain, the vegan community is growing and businesses are responding to its needs.

- Sheep meat breaks new selling records in the US; high popularity in restaurants and private housholds

2018-11-18 - The Wallstreet Journal - ARTICLE

All Sheeps and Sizes: Mutton Prices Soar as More Diners Dig In; Rise of ethnic cuisine in the U.S. has introduced a new generation to sheep meat; chefs aim to get past its 'tough' and 'gamy' reputation

Prices of mutton and other sheep meat are hovering near record highs as more people around the world gain a taste for the strong-flavored red meat. The growing popularity of ethnic cuisine in the U.S. has introduced a new generation to sheep meat through the likes of kebab platters and mutton biryani, an Indian rice dish with meat and spices. American and British TV chefs in recent years have showcased burger and stew recipes using mutton, which comes from sheep that are more than a year old. Some casual and fine-dining restaurants are also adding mutton dishes to their menus.

7.5.5 2019/1

- Kindergarten goes vegan due to environmental reasons, parents complain

2019-03-03 - the New York Times

When Your Kindergarten Goes Vegan

''It's been on my mind since Day 1,'' she said: taking the school vegan. The school always served organic, from-scratch meals for breakfast, lunch and snacks each day to its pupils, who range in age from 6 weeks to 5 years old. Lauri McCloud's older child started at Our Beginning just after it first opened in 2010, and she and her husband chose it specifically for this chef-led food program. The couple want to raise ''kids that ate everything,'' she said.

But Ms. Jones's announcement at a parent council meeting on Aug. 16, 2018, said Noa Guter, whose two kids attend the school, seemed to be fast and final. As of Sept. 11, Ms. Jones told the crowd, Our Beginning would not serve any more meat, dairy or egg products, except for milk, which is required by Washington state law to be part of meals in child care centers.

''We had to be very clear on our 'why' -- environmentalism,'' Mr. King said. The school's mission is sustainability, and they focused solely on veganism as an ecological choice. But, Mr.

King said, they still ran into a fair number of parents who didn't like being told what their kid was or wasn't allowed to eat.

- Chipotle introduces new vegan and vegetarian bowls into menus, due to health reasons

CNN Library - 2019-03-04

Chipotle introduces vegan and vegetarian bowls - After targeting keto and paleo dieters, Chipotle is courting vegetarians.

The fast casual chain on Monday expanded its new line of diet-based bowls to include vegan and vegetarian options. "Lifestyle bowls" launched earlier this year[https://www.cnn.com/2019/01/02/business/chipotle-diet-bowls-keto-paleo-whole30/index.html] with Whole30 and double protein meals in addition to the keto and paleo bowls.

The lifestyle bowls are a way for Chipotle to market itself to a wide variety of customers focused on health, especially as it rebounds from E. coli and norovirus scares from a few years ago. And the vegetarian and vegan options could help raise awareness among an increasingly important customer base.

Chipotle first introduced its vegan protein option, Sofritas, in **2014**. Demand for Sofritas has continued to grow, the company said. Last year, it cooked 7.5 million pounds of Sofritas. Vegetarian and vegan meals made up roughly 12% of all the meals Chipotle sold in 2018.

- The new green deal (climate policy proposal also addressng factory farming) and agricultural emissions

2019-03-08 - New York Times - ARTICLE

Supporters of the Green New Deal, according to a Republican talking point, are anti-patty. “They want to take away your hamburgers,” Sebastian Gorka, a former adviser to President Trump, said last week at the Conservative Political Action Conference.

Other Republicans, including Mr. Trump [https://twitter.com/realdonaldtrump/status/1094375749279248385?lang=en], have made similar claims. But the Green New Deal, a broad **climate policy proposal**, makes no mention of hamburgers, cows or beef.

Cows have been a focus of some agriculture policy discussions because they release methane, a powerful planet-warming gas. A fact sheet[https://www.nytimes.com/2019/02/11/climate/green-new-deal-faq.html] about the Green New Deal that Ms. Ocasio-Cortez’s office published last month, then withdrew, said it would be hard to “get rid of farting cows.” But some critics of the plan saw that as a suggestion that getting rid of cows entirely would be a good thing.

“It’s not to say you get rid of agriculture,” Ms. Ocasio-Cortez later clarified on the Showtime show “Desus and Mero.” “It’s not to say you are going to force everybody to go vegan or

anything crazy like that. But it's to say, listen, we've got to address factory farming, maybe we shouldn't be eating a hamburger for breakfast, lunch and dinner."

- Recent study shows high ranking of bacon being addictive due to good taste

2019-03-02 - CNN – ARTICLE

Why is bacon so addictive?

If foods were granted awards, bacon wouldn't rank high for healthfulness, but it might win top prize in the favorite foods category. Full disclosure: I don't eat bacon. But apparently, I'm in the minority.

"Bacon is too perfect for words," said Gail Vance Civille, founder and president of Sensory Spectrum, a consulting firm that helps companies learn how sensory cues drive consumer perceptions of products. "I actually have a friend who is a vegetarian, and she eats only vegetarian food except for bacon. And the reason is because it tastes so good."

In one recent study[https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4334652/], bacon ranked in the middle range of foods that were self-reported as associated with indicators of "food addiction."

- Bills are introduced all over the USA on banning meat or diary names for alternative or substitute products

2019-03-02 - USA Today Online

From almond milk to veggie burgers, does anyone really have trouble knowing what these products are?

Across the country, state governments are cracking down on companies' ability to use accurate words to describe their products. Missouri started the trend last year by enacting a law that makes it illegal to "misrepresent" a product as meat if it is not "derived from harvested production livestock or poultry. " This year, more than a dozen states — from North Dakota to New Mexico — have introduced similar bills. This metastasizing war on plant-based proteins needs to be stopped before it hurts entrepreneurial companies, diet-conscious consumers and even the Constitution itself. Often times these laws directly forbid alternative meat companies from using words like "meat" or "burger" at all on their packaging — even if the words are accompanied with a qualifier, such as "plant-based" meat or "veggie" burger. This means that companies such as Gardein (which makes "meatless meatballs") and "Tofurky" could be forced to either rename their products or withdraw them from the market entirely.

- New York public schools introduce 'Meatless Mondays' in school lunches, due to health and environmental reasons

CNN - 2019-03-12

New York public schools to have 'Meatless Mondays' starting this fall: Students often joke about the "mystery meat" in their school lunches. Well for kids in New York City, there won't be any mystery at all, at least on Mondays.

That's because all public schools in New York will have "Meatless Mondays" in the 2019-2020 school year. New York Mayor Bill de Blasio introduced the new meal program Monday. Meatless Mondays, which will provide students with all-vegetarian breakfast and lunch offerings, is being expanded citywide from a pilot program that was tried out last spring in 15 schools.

"Cutting back on meat a little will improve New Yorkers' health and reduce greenhouse gas emissions," de Blasio said at a news conference. "We're expanding Meatless Mondays to all public schools to keep our lunch and planet green for generations to come."

- Portrait on goals of Good food institute, the economic progress of substitutes and the GFI financial help for substitute start-ups

2019-03-14 - New York Times - ARTICLE

The organization Mr. Friedrich founded in 2015, the Good Food Institute[https://www.gfi.org/], is at the center of a new industry searching for alternatives to meat that make no sacrifices on taste or price. His organization, which is based in Washington, does everything from starting venture capital funds to making matches between investors and start-ups.

“I don’t care much if vegetarians or vegans are supportive,” he said. “We don’t want people to think differently about their food. We want to change the food.”

The work has turned Mr. Friedrich, 49, into a spokesman of sorts for people who came to realize that making others feel bad about eating meat does not make them consume less of it.

7.5.6 2019/2

- Burger King serves Burger with beyond meat, promoting health and economic benefits. Also other food chains are going for vegetarian menus

2019-04-01 - CNN – ARTICLE

Burger King is testing out an Impossible Whopper. This is why Burger King has a plan to bring in new customers and encourage existing ones to buy more often: Vegetarian Whoppers.

The burger chain announced on Monday that it is testing out Impossible Whoppers, made with plant-based patties from Impossible Foods , in 59 locations in and around St. Louis. If all goes well, Burger King will roll out the Impossible Whopper nationally. With the Impossible Whopper, Burger King hopes to "give somebody who wants to eat a burger every day, but doesn't necessarily want to eat beef everyday, permission to come into the restaurants more frequently," Chris Finazzo, president of Burger King North America, told CNN Business. It's also

a way to encourage vegan and vegetarian eaters to check out Burger King. Going meatless provides health benefits. The Impossible Whopper has slightly fewer calories than the original, beef-based Whopper, and is very low in cholesterol and has zero trans fats.

Other fast food and fast casual items are also appealing to eaters with dietary restrictions or preferences. Taco Bell said in January that it's testing out a vegetarian menu board [https://www.cnn.com/2019/01/10/business/taco-bell-vegetarian-menu/index.html] in stores, and Chipotle recently expanded its line[https://www.cnn.com/2019/03/04/business/chipotle-vegan-vegetarian/index.html] of diet-based bowls to include vegan and vegetarian options. "Lifestyle bowls" launched earlier this year with Whole30 and double protein meals in addition to the keto and paleo bowls.

- Global study finds, poor diets including red meat and sugar are very unhealthy and also cause to death

2019-04-04 - CNN - ARTICLE

What we aren't eating is killing us, global study finds: Which risk factor is responsible for more deaths around the world than any other? Not smoking. Not even high blood pressure. It's a poor diet[https://www.cnn.com/specials/health/food-diet].

"In many countries, poor diet now causes more deaths than tobacco smoking and high blood pressure," said Ashkan Afshin, an assistant professor at the Institute for Health Metrics and Evaluation at the University of Washington.

And it's not just that people are choosing unhealthy options such as red meat and sugary sodas. Just as critical, said Afshin, the lead author of a 27-year global diet analysis published Wednesday in the journal the Lancet[https://urldefense.proofpoint.com/v2/url?u=http-3A__www.thelancet.com_journals_lancet_article_PIIS0140-2D6736-2819-2930041-2D8_fulltext&d=DwIGaQ&c=W8uiIUydLnv14aAum3Oieg&r=eBiGgXECL5TyZF9gR9BlqdKJx8U4imeJ9qFasPBXfo8&m=Tokpmv4wF9gq44u5CX4d1RWGQv4daSsRUlWnkJBmI40&s=bEsmF8MrPtjsW4qCbi8HZNLqq1jEY2PaZxidq4gjEXI&e=], is the lack of healthy foods in our diets, along with high levels of salt.

"While traditionally all the conversation about healthy diet has been focused on lowering the intake of unhealthy food, in this study, we have shown that, at the population level, a low intake of healthy foods is the more important factor, rather than the high intake of unhealthy foods," he said.

One in five deaths globally -- that's about 11 million people -- in 2017 occurred because of too much sodium and a lack of whole grains, fruit and nuts and seeds, the study found, rather than from diets packed with trans fats, sugar-sweetened drinks and high levels of red and processed meats.

- proposed amendment for meat name ban was passed by the agricultural committee of the European Parliament

2019-04-06 - New York Times - ARTICLE

'Veggie Discs' Could Replace Burgers Under European Food Labeling Proposal: What's in a mushroom burger? Or a veggie sausage?

Perhaps worried that you may be confused, some epicures at the European Parliament have proposed a new rule: If a product does not contain meat, it cannot be called a burger or a sausage or a steak. The proposed amendment was passed by the body's agricultural committee this week as part of a voluminous revision of the European Union's Common Agricultural Policy. Eric Andrieu[http://www.europarl.europa.eu/meps/en/113892/ERIC_ANDRIEU/home], a French Socialist member of the European Parliament , introduced the proposal, but suspicions remained that the meat lobby was behind the idea. Environmentalists said the suggested labeling rules were an effort to undermine the growing demand for plant-based foods.

"We didn't support the proposal," said Molly Scott Cato, a British member of the European Parliament from the Green Party. "We don't see any problem with calling a veggie burger a veggie burger."

- Del Taco and Blaze Pizza announce to serve plant-based meat alternatives, joining the plant-based food movement - Chipotle, Burger King KFC etc. already joined.

2019-04-16 - USA Today – ARTICLE

Vegan and meat-free fast-food options are growing. Here's where to find them.

Plant-based protein continues to go more mainstream, making it easier to maintain a vegan or meat-free lifestyle. Two weeks after Red Robin became the largest restaurant chain to serve The Impossible Burger and Burger King announced the pilot of the Impossible Whopper in St. Louis, two more restaurants announced Monday that they are joining the growing plant-based foods movement.

Blaze Pizza is adding a vegan Spicy Chorizo topping at its 300-plus restaurants nationwide Tuesday. Then on April 25, Del Taco will become the first national Mexican fast-food chain to offer plant-based meat across all 580 locations with two new meatless tacos, officials told USA TODAY.

In an exclusive interview with USA TODAY, Del Taco President and CEO John Cappasola said the California-based company partnered with Beyond Meat to develop the protein that includes the restaurant's signature seasoning.

- Study partly paid by Cancer Research UK found out: higher colorectal cancer risk due to daily consumption of red and processed meat

2019-04-17 - CNN - ARTICLE

Eating just one slice of bacon a day linked to higher risk of colorectal cancer, says study

Eating even a moderate amount of red or processed meat is linked with an increased risk of colorectal (bowel) cancer, according to a new study[https://academic.oup.com/ije/advance-article/doi/10.1093/ije/dyz064/5470096#133824902] published Wednesday.

People who ate 76 grams of red and processed meat per day -- that's in line with current guidelines and roughly the same as a quarter-pound beef burge[https://www.nhs.uk/live-well/eat-well/red-meat-and-the-risk-of-bowel-cancer/]r -- had a 20% higher chance of developing colorectal cancer compared to others, who ate about 21 grams a day, the equivalent to one slice of ham[https://www.nhs.uk/live-well/eat-well/red-meat-and-the-risk-of-bowel-cancer/], according to the research.

The study also found that processed meat, like sausages or bacon, posed a bigger risk than red meat, with the risk of colorectal cancer rising 20% with every 25 grams of processed meat (roughly equivalent to a thin slice of bacon) people ate per day, and by 19% with every 50 grams of red meat (a thick slice of roast beef or the edible bit of a lamb chop).

- Burger Kind had launched vegetarian wopper with impossible foods patty this month. Health, environmental and ethical costs of meat being discussed in article. Other meat substitute processors teaming up with food chains.

2019-04-23 - New York Times - ARTICLE

Learning With: ‘Behold the Beefless ‘Impossible Whopper’’

If you love burgers, you are not alone. Americans consume approximately 50 billion burgers a year[https://www.pbs.org/newshour/science/the-hidden-costs-of-hamburgers], and the average American eats three hamburgers a week.

If you lined up all those burgers up side by side — the line would go around the world 32 times[https://www.msn.com/en-gb/foodanddrink/simply-entertaining/you-wont-believe-how-many-burgers-americans-eat/ss-BBjALjL#image=2]!

However, hamburgers have many health, environmental and ethical costs. Burgers are high in dietary cholesterol and saturated fat[https://healthyeating.sfgate.com/bad-effects-burgers-11402.html] and the production of meat for hamburgers is one of the biggest single contributors[https://www.nytimes.com/2014/07/16/opinion/the-true-cost-of-a-burger.html] to climate change. Further, critics argue that the treatment of animals on factory farms is inhumane[https://www.nytimes.com/2018/06/14/movies/eating-animals-review.html], and, for some people, eating animals is unethical[https://www.nytimes.com/2009/10/11/magazine/11foer-t.html].

This month, Burger King rolled out a version of the Whopper with a vegetarian patty. Will it change the future of how Americans eat burgers?

- Ikea works on meatless meatballs, Beyond meat trades shares at 163% of IPO price (there are **many** articles this month about that!), and impossible foods is struggling with high demand for products

2019-05-02 - CNN - ARTICLE

Ikea is working on a new meatless meatball

Ikea is jumping on the plant-based protein trend. The furniture retailer known for its Swedish meatballs is working on a new version of the food that "looks and tastes like meat but is made

from plant based alternative proteins," it said Thursday. Ultimately, Ikea wants to sell the plant-based meatball at all of its restaurants worldwide. Demand for plant-based protein alternatives is heating up as consumers seek out healthier diets and more ways to reduce their environmental footprints.

This week has shown just how popular the trend has become, among both consumers and investors.

On Thursday, Beyond Meat , which makes meatless alternatives to beef, pork and poultry, began publicly trading at $46 a share[https://www.cnn.com/2019/05/02/business/beyond-meat-trading/index.html], an 84% increase over its IPO price of $25 — which was already higher than the $19-$21 range the company was targeting last week. Since then, the price has soared. It closed at $65.75-- up 163% from its IPO price. Meanwhile, Impossible Foods , which sells plant-based protein designed to taste and look like meat when cooked to restaurants, is struggling to keep up with increased demand[https://www.cnn.com/2019/04/30/business/impossible-meat-shortage/index.html] for its product. Earlier this week — soon after Burger King said it plans to roll out an Impossible Whopper nationwide — the company said it was experiencing a shortage because of increased interest.

And the plant-based protein company, Beyond Meat made its debut on the NASDAQ today. The shares -- look at the numbers. The shares are up over 150%. That's extraordinary. $39.00. it clearly shows they mispriced or for whatever weird reason, they priced that under, but you see 157 percent. It's backed by celebrities like Bill Gates and Leonardo DiCaprio.

Now, let me show you what we are talking about here. This is the Beyond -- forgive my fingers. But then this is what it looks like. So it looks pretty much like -- well, it looks like a burger. And its main competitor that you will want to know about is of course

- Negative impact of factory farming on climate change, Studiogespräch aufgehängt an Burger King's Impossible Whopper

2019-05-03 - Fox News – INTERVIEW

BAIA: And it does -- I mean, the Beyond Meat product is actually so good that it gives -- it simulates grease. It simulates the smell. My wife is a vegan, and she's actually so almost scared to have it...

CAVUTO: It's down to how rare and all, right?

TAYLOR: To add to that, so there's the ethical, and then there's the environmental sense, right?

RUBY: Right.

TAYLOR: So I mean, if you look at factory farming, that's the largest...

CAVUTO: What's in it, though?

TAYLOR: The most powerful source of methane emissions.

- Biggest first day percentage gain of U.S. IPO from Beyond Meat Inc.

2019-05-03 - The Wallstreet Journal - ARTICLE

Beyond Meat Inc . just posted the biggest first-day percentage gain for a U.S. IPO this year, according to Dealogic. For IPOs raising more than $200 million, it was the best open since 2000.

* Shares of the plant-based meat substitute company, which went public at $25, opened on the Nasdaq on Thursday at $46 and surged as high as $73, putting its market capitalization at $3.7 billion. The stock closed at $65.75, up 163%.

* Says Chief Executive Ethan Brown: "What we are seeing with investors is representative of the same thing we have been seeing with the consumer." WSJ Pro's Heather Mack and Brian Gormley have more [https://www.wsj.com/articles/beyond-meat-doubles-share-price-in-early-trading-11556814585?].

* In other meat-alternative news, the WSJ's Future of Everything magazine has a story on startups trying to mimic the fanciest kinds of meat to justify juicy prices.

- The plant-based protein trend is growing more rapidly than most people anticipated, where to find meat alternatives

2019-05-04 - CNN - ARTICLE

Just this week, Beyond Meat , which makes meatless alternatives to beef, pork and poultry, went public[https://www.cnn.com/2019/05/02/business/beyond-meat-trading/index.html]. Its main competitor, Impossible Foods , reported that demand is so high it's causing a shortage[https://www.cnn.com/2019/04/30/business/impossible-meat-shortage/index.html].

- US Cattle industry is against MayorBill de Blasios “meatless Mondays” on NY public schools, claiming due to economic and health reasons

2019-05-04 - New York Post

Cattlemen rip 'eat less beef' Bill's 'bum steer' The US cattle industry has got a major beef with Mayor de Blasio.

Hizzoner has vowed to cut the purchase of red meat for public schools, prisons and hospitals by 50 percent as part of his climate-change plan.

"We think that the mayor's attempt, while maybe having the best intentions, is pretty misguided to single out beef as something that can have a significant impact," Jennifer Houston, the president of the National Cattlemen's Beef Association , told CNBC. The mayor launched his war on red meat last month, announcing that 1,800 public schools would switch to "Meatless Mondays" by serving vegetarian meals at the start of the week.

"Cheer if you like hummus!" the mayor, whose two children are vegetarians, said at a March 11 press conference. But Texas rancher Zachary Yanta told CNBC, "The mayor has missed the point on the purpose of these lunches, and that's a nutritious meal for the people."

- Imported meat prices gains due to swine fever in china, US meat industry stocks rise

2019-05-04 - The Wallstreet Journal - ARTICLE

Gains in meat-packer stocks have been mouthwatering: Tyson Foods, the largest U.S. meat producer, has surged 40% since the beginning of the year. Brazilian producer JBS and its listed chicken subsidiary, Pilgrim's Pride , have both rocketed around 70%. The reason? A looming pig shortage in China due to African swine fever, which is deadly to the animals, could push up prices not just of pork, but also of other meats and other imported meats.

- Mc Donalds sells vegan burger in Germany due to rising consumer demand

2019-05-07 - CNN - ARTICLE

McDonald's joins the meatless burger trend in one of its biggest markets

McDonald's is inching closer to getting fully on board the meatless burger bandwagon with a new version in one of its biggest international markets.

The burger chain is now selling a vegan burger, the Big Vegan TS, in Germany, one of its five leading international markets. Nestle is making the meatless patty for McDonald's , which first started selling the burger late last month.

McDonald's plans to "stay close to consumer demand."

- Impossible foods hire new employees since demand and Celebrity investments have rose

2019-05-13 - CNN - ARTICLE

Celebrity investment in Impossible may be another sign that realistic meat alternatives have become incredibly trendy. Some consumers are trying to eat less meat for health reasons and to reduce their impact on the environment, so demand for plant-based protein is on the rise. This year, Impossible Foods has seen such a spike in demand that it has been running out of product.

To keep up, Impossible plans to hire at least 50 new employees at its Oakland, California, factory, which currently employs about 70 full-time employees. It's also looking to open more manufacturing facilities, CFO David Lee told CNN Business last week.

- Tom Hortens (Canada) converts to meat substitutes, studio talk

2019-05-15 - CNN - ARTICLE

Beyond Meat , the vegan burger company has been up as much as 14 percent today and 250 percent since its IPO earlier this month. The latest converter is Tim Hortons . The Canadian fast food chain will add Beyond Meat sausages to its menu.

- Belgium's Royal Academy of Medicine recommendeds no vegan diet for children, teens or pregnant/nursing women. Other academies do not agree

2019-05-20 - CNN - ARTICLE

Is vegan diet healthy for kids? Belgian doctors say no.Belgium's Royal Academy of Medicine recommended last week that children, teens, pregnant women and nursing mothers do not follow a vegan diet.

An estimated 3% of Belgian children follow this type of vegetarianism that excludes meat, eggs, dairy products and all other animal-derived ingredients, according to the academy's statement[https://updlf-asbl.be/assets/uploads/_ARMB_-_Communique_de_presse-_Enfants_vegans.pdf]. The eating plan is "restrictive," creates "unavoidable" nutritional shortcomings and, if not properly monitored, could lead to deficiencies and stunted development, the academy said.

Not everyone agrees with the academy's statement. The British Dietetic Association [https://www.bda.uk.com/]stated that "well-planned plant-based, vegan-friendly diets can be devised to support healthy living at every age and life-stage." Great Britain has about 600,000 vegans, roughly 1.2% of the population in 2018, according to the nonprofit Vegan Society[https://www.vegansociety.com/about-us/further-information/key-facts]

- Protesters want McDonalds to serve meat alternatives, annual sherholder meeting of Mc Donalds was being hold

2019-05-23 - CNN - ARTICLE

With protesters at the gates, McDonald's talks up its success story

McDonald's annual shareholder meeting on Thursday was short and controlled, and made little mention of the criticism [https://www.cnn.com/2019/05/22/business/mcdonalds-shareholder-meeting/index.html] the chain has faced this week.

Business continued as usual inside the meeting room at a hotel in Dallas, even as tension mounted elsewhere. Fight for $15, a workers advocacy group, organized a series of protests across several US cities. As part of the movement, Senator Bernie Sanders, who is running for president, pressured the company to raise its minimum wage during a digital town hall Thursday. And workers rights advocates in Durham, North Carolina — joined by presidential candidate Julian Castro — called for better protections for McDonald's employees.

Leadership also addressed two questions from the crowd, which had been written down and were read out by Robert Gibbs, the company's chief communications officer. One was about whether McDonald's will add meat substitutes like Impossible or Beyond Meat patties to its menu (the company is interested in the space, but isn't sharing any plans at this point, it said). The other was about chicken welfare. A McDonald's representative said that it made a commitment in 2017 [https://news.mcdonalds.com/stories/our-food-details/advancements-in-chicken-welfare] to improve the living conditions of its chickens, and that it is doing so with technology and by improving housing and lighting for the birds. Some activists were disappointed by the meeting. Michael Jones, Change.org 's managing director of campaigns,

attended the meeting to ask about the company's plans to add more vegan options on the menu; a Change.Org petition asking for more meatless options has over 215,000 signatures.

- Meat industries influence on climate change: Studio talk

2019-05-29 - CNN - ARTICLE

". And Tim, you know, I want to know the (INAUDIBLE) really when we talk about the meat industry and the impact it has, you know, in an environmental sense on the planet. If we can wean ourselves away from that then that has an environmental impact on everything from water (INAUDIBLE) to carbon emissions.

TIM CARMAN, " WASHINGTON POST ": This is true I mean I think, you know, the meat industry has put a lot of effort, a lot of money into countering these arguments. I'm sure you've heard some of it but I think that they will claim that meat and cattle production in particular is such a such a small percentage of greenhouse gases. but you think about that, There are other issues that are involved with cattle production, meat production. You've got everything from animal wildlife habitat; from animals suffering for water use to a wildlife habitat use. So I think, you know, there's a lot of reasons why people decide to go for me alternatives other than just greenhouse gases.

- The Food Giants Are Coming for Beyond Meat; plenty of established players want to profit from the meatless revolution: shares have nearly quadrupled since their initial public offering

2019-05-31 - The Wallstreet Journal - ARTICLE

Investors love the company—famous for its especially beef-like burgers—and its shares have nearly quadrupled since their initial public offering[https://www.wsj.com/articles/beyond-meat-doubles-share-price-in-early-trading-11556814585]in early May. But they are overlooking meat-alternative brands owned by major food groups like Kellogg and Conagra Brands , which could be a mistake.

Beyond Meat 's valuation of 66 times 2018 sales may not withstand the coming onslaught. Nonetheless, the trend towards meat substitutes clearly has legs.

- Meat alternative trend is assumed to rise in future say market researchers

2019-05-30 - CNN - ARTICLE

Consumers are increasingly interested in eating plant-based protein for health [https://www.cnn.com/2018/08/16/health/vegan-diet-change-body-food-partner/index.html] and environmental[https://www.cnn.com/2018/10/18/health/plant-based-diet-climate-change-food-drayer/index.html] reasons, and the market for meat-like protein is growing. By 2023, the US meat-substitute retail market could reach $2.5 billion, compared to $1.4 billion last year, according to the research firm Euromonitor International. Globally, the market could grow from about $18.7 billion in 2018 to $23 billion in 2023, according to Euromonitor International. If plant-based poultry "gets more and more

mainstream and we think it's right for our customers, we certainly would test it," Hochman said.

7.5.7 2019/4

- NutriRECS publishes new guidelines and 5 studies showing red meat is not bad for health contradicting guidelines published by the WHO, experts are furious (Many articles about that!)

2019-10-01 - CNN – ARTICLE

Red and processed meat are OK to eat, controversial new guidelines claim. Don't believe it, leading experts say - Leading nutritional experts in the United States and the UK are fired up about new dietary recommendations claiming there's no need to reduce your red and processed meat intake for good health. "This is a very irresponsible public health recommendation," said Dr. Frank Hu, who chairs the nutrition department at the Harvard T.H. Chan School of Public Health.

The new guidelines and five corresponding studies are part of a systematic analysis of existing research done by NutriRECS, [https://nutrirecs.com/]a recently formed international group of nutritionists and health researchers. NutriRECS says its mission is to "produce trustworthy nutritional guideline recommendations based on the values, attitudes and preferences of patients and community members."

The study it concluded that red meat itself mainly unprocessed red meat does not correlate with life--threatening heart disease or cancer, except in a very weak tie.

- Due to rising popularity and availability of meat substitutes, nutritional experts checked healthiness of substitutes and state, that they use different saturated fats then red meat but they are still bad for health.

2019-10-02 - New York Post - ARTICLE

EATING RIGHT - The latest dish on healthy foods and delicious living; Cover Story FATTY FAKES Sure, fake meat is all the rage. Sometimes, it even tastes decent. But that doesn't mean it's any good for you NOTHING BURGER

HEALTH experts have a beef with fake meat. - Plant-based meats - lab-grown alternatives that look, smell and taste like the real deal - have never been bigger. Grocery stores and upscale restaurants now stock shockingly realistic riffs on beef, sausage and chicken, made by cutting-edge companies like Impossible Foods and Beyond Meat .

For some brands, that means leaning on coconut oil, which is heavy in saturated fats, a "major driver of high LDL cholesterol," says Heffron. "As a cardiologist, LDL cholesterol is our enemy." In fact, saturated fats are the reason he tells patients to avoid red meat to begin with. Eating too much of it, he explains, can lead to plaque buildup in your arteries. Plaque can prevent

blood from reaching the heart and, in worst-case scenarios, can cause a heart attack. Nutritional numbers suggest that plant-based burgers simply swap one kind of saturated fat for another - and sometimes they wind up having even more bad fat than animal meat.

- Scientific community discusses substitutes controversially, economically they are very successful

2019-10-02 - The Wall Street Journal

On Wall Street, meat substitutes are all the rage. But in the world of dietary science, meat may be making a comeback. This was underscored by the publication Tuesday of findings by a team of researchers in the Annals of Internal Medicine. The team conducted four reviews of various studies examining links between red or processed meat and cardiovascular health, cancer risk and other health outcomes. They concluded that the evidence isn't strong enough to recommend people reduce their consumption of red meat or processed meats. That is something for Beyond Meat shareholders to chew on. The maker of plant-based burgers has seen its market value rise more than fourfold since listing earlier this year, to $8.9 billion, on expectations that the trend toward meat substitutes has legs.

The findings are controversial and already have been criticized by other experts. What seems clear is the scientific community remains divided on this and other dietary issues. The result is consumer confusion and market fragmentation: Some consumers avoid meat, others carbohydrates, and still others want organic, unprocessed foods.

In this landscape, meat substitutes have a role to play. Investors banking on a huge shift away from meat consumption may be disappointed, though.

- Nestle and finally also McDonalds have launched plant-based burgers in North America, after a lot of food chains have done the same in spring. KKR uses trend to reinvent unpopular margarine products

2019-10-03 - The Wallstreet Journal - ARTICLE

If new food trends help buyout firm KKR to reinvent unpopular margarine products like Flora as vegan butter, investors may wonder why the brands' previous owner Unilever didn't spot the opportunity first. Vegan alternatives to meat and dairy products have become a major investment theme in 2019. Global companies including McDonald's and Nestle are rushing out new products to cater to changing consumer tastes. Within the past two weeks, both businesses have launched plant-based burgers in North America.

- Beyond Meat's CEO Ethan Brown explains, that plant based food is good for farmers, due to reduced land usage

2019-10-04 - CNN - ARTICLE 19:09

Beyond Meat's CEO says fake meat is good for farmers. The reality is complicated

Beyond Meat[https://www.cnn.com/2019/09/26/investing/beyond-meat-stock-mcdonalds-canada/index.html] can do more than save the planet[https://www.cnn.com/2018/10/18/health/plant-based-diet-climate-change-food-drayer/index.html] and improve people's health. It can help American farmers, too. At least, that's what CEO Ethan Brown says.

"This is an opportunity to bring disruptive technology back to the American farmer," Brown told CNN Business's Chief Business Correspondent Christine Romans during a private event[https://www.cnn.com/2019/09/27/business/chipotle-breakfast-the-table/index.html] in Los Angeles. "They can start making more rather than less money." Brown bristles at the notion that his company, which makes plant-based meat substitutes, is hurting farmers. "People always talk about, 'Oh, are you disrupting American agriculture? Are you putting the farmer out of business?'" he said. "That's completely wrong."

Brown, whose father is an academic who had a dairy farm as a side business while Brown was a child, believes the plant-based trend is an entry point for people who have traditionally been excluded from the tech revolution. He may be right, but it's complicated. "The digital economy did a lot of stuff for Silicon Valley, for the tech corridor in Boston, for the tech corridor in Virginia," Brown said. "It left rural America out and I know that because I've lived in those communities, in Appalachia." Brown sees it this way: Beyond Meat 's ingredients, like pea-protein and other plant-based elements, require significantly less land than cattle. So if they switch from cattle to plants, farmers will have more land to use at their discretion.

- Shark tank offers a million dollar for vegan chicken firm, offer was turned down by entrepreneurs

2019-10-07 - USA Today - ARTICLE

'Shark Tank': Mark Cuban rejected by vegan fried-chicken entrepreneurs - On Sunday's "Shark Tank," there was no winner winner, chicken dinner for two fried-chicken entrepreneurs. They turned down a dream of a lifetime. Jonathan and Deborah Torres are the creators of Atlas Monroe, a product that may taste a lot like chicken but isn't. Made with wheat, it's a vegan twist on the fried chicken formula that left the sharks surprised. "This batter is extremely tasty," shark Lori Greiner said. "It's got some zip to it. " After Deborah's father was diagnosed with type 2 diabetes, the whole family decided to switch to a raw vegan diet. Ninety days later, they were in the kitchen trying to develop better-tasting food.

- Israli food company has successfully grown meat from cow cell on the international space station using a 3D bioprinter; negative impact of beef on climate

2019-10-08 - CNN - ARTICLE

This company just grew meat in space for the first time, You may one day be able to eat burgers grown in space.

Aleph Farms, an Israeli food company that engineers beef steaks from cow cells, announced Monday[https://twitter.com/AlephFarms/status/1181192709647818752] it had successfully

grown meat on the International Space Station for the first time -- a step forward in the company's goal to create slaughter-free eco-friendly meat. Here's how it works: researchers take cells from a cow, give them nutrients, and put them in an environment mimicking the inside of a cow's body. The cells then multiply and grow connective muscle tissue -- eventually becoming a full-sized steak.

Aleph Farms[https://www.aleph-farms.com/] collaborated with a Russian bioprinting company to successfully carry out the process on September 26. They assembled "a small-scale muscle tissue in a 3D bioprinter developed by 3D Bioprinting Solutions, under micro-gravity conditions," Aleph Farms said in a press release[https://www.prnewswire.com/il/news-releases/aleph-farms-successfully-completed-the-first-slaughter-free-meat-experiment-in-space-300932806.html]. "This cutting-edge research in some of the most extreme environments imaginable, serves as an essential growth indicator of sustainable food production methods that don't exacerbate land waste, water waste, and pollution," the release said.

- Ban on meat and dairy names for alternatives and substitutes, trade groups representing meat and milk producers want to highlight of the products with new marketing strategy

2019-10-08 - The Wallstreet Journal - ARTICLE

Trade groups representing meat and milk producers said Monday they are ramping up marketing to underscore the difference between their cattle-made products and new rivals made from soy, almonds and peas. Plant-based replacements make up just 1% of the U.S. meat market by volume, Nielsen said. "We want to be out there telling the truth," Jennifer Houston, president of the National Cattlemen's Beef Association, said at The Wall Street Journal Global Food Forum in New York.

That association and other groups also want legal limits on the ability of plant-based producers to call their products milk or meat. This year 45 bills have been introduced in 27 states that seek to police the labeling of plant-based products and cell-cultured meats, according to the National Conference of State Legislatures.

- Nestle launches vegan alternatives to bacon and cheese

2019-10-10 - CNN - ARTICLE

Nestle is leaning into the plant-based trend[https://www.cnn.com/2019/09/26/business/beyond-meat-mcdonalds-test/index.html] with vegan alternatives to bacon and cheddar cheese. The global food company said on Wednesday that it will start selling the products to its restaurant and food service clients in the United States and Europe next year. The announcement follows the launch of Nestle's Awesome Burger[https://www.cnn.com/2019/09/24/business/nestle-awesome-burger-plant-based-meat/index.html], a plant-based patty that looks and tastes like meat. is leaning into the plant-based trend[https://www.cnn.com/2019/09/26/business/beyond-meat-mcdonalds-test/index.html] with vegan alternatives to bacon and cheddar cheese.

- Costco sells the double of chicken then in the last decade due to very cheep prices, chicken processors can not keep up with demand

2019-10-14 - CNN - ARTICLE

Costco is willing to go to extreme lengths to keep its prized rotisserie chickens [https://www.cnn.com/2019/10/11/business/costco-5-dollar-chicken/index.html] at $4.99. Costco is so determined to keep its rotisserie chickens at $4.99 that it's been willing to lose money selling them in the past. Even as competitors increased their rotisserie chickens to $5.99 in recent years, Costco held its price steady. Costco has been having challenges finding birds weighing six pounds Americans are eating more chicken than ever before and bird weights are climbing to keep up with demand.

- Meat export to china rises due to rising consumer-price index, therfore US meat gets more expensive for US consumers too

2019-10-15 - The Wallstreet Journal - ARTICLE

Chinese Inflation Surges as Pig Prices Fly High; Beijing has new impetus to buy American farm goods after consumer-price index rose 3% in September

BEIJING—Surging pork prices[https://www.wsj.com/articles/china-is-hungry-for-protein-and-the-global-steaks-are-high-1156] pushed China's consumer inflation to a near six-year high in September, complicating Beijing's effort to stimulate growth but also giving it an incentive to buy more agricultural goods[https://www.wsj.com/articles/china-emerges-with-wins-from-u-s-trade-truce-11570912439] from the U.S. The consumer-price index rose 3% in September from a year earlier, according to data released by the National Bureau of Statistics on Tuesday, bumping up against Beijing's inflation target of "around 3%" this year. The rise in consumer prices accelerated fromAugust's 2.8% expansion[https://www.wsj.com/articles/chinese-consumer-prices-fattened-by-precious-pork-11568097179] and topped a median forecast for 2.9% growth from economists polled by The Wall Street Journal.

The main factor was surging pork prices, up 69% from a year earlier—the fastest rise in 12 years—and contributing to more than half of the headline CPI's September increase, the statistics bureau said. Outbreaks of African swine fever[https://www.wsj.com/articles/chinas-swine-fever-outbreak-spreads-1535034211], a highly infectious virus that is fatal to pigs but not contagious to humans, has severely hurt pig output in China, the world's largest pork producer and consumer. The quick rise in pork prices and the CPI have already made Beijing more willing to buy pork and related farm goods from overseas markets such as the U.S.

2019-10-17 - The Wallstreet Journal - ARTICLE

Beef Is Getting Pricier and You Can Blame Asia for That; Livestock futures and prices for many beef cuts have climbed since September Cattle prices in the U.S. have risen since September, as a protein shortage in Asia drives bets that livestock will be in increasingly high demand[https://www.wsj.com/articles/china-is-hungry-for-protein-and-the-global-steaks-

are-high-11569236529]. Live cattle futures on the CME are up 14% from the start of a rally on Sept. 10 to nearly $1.14 a pound.

- Historical review of philosophers and cultures that have become vegetarians by choice due to different reasons, growing alternative meat market nowadays pushes reasons like health, animal welfare and environmental protection

2019-10-19 - The Wallstreet Journal – ARTICLE

REVIEW --- Historically Speaking: The Many Roads to Vegetarianism

The claim that today's ingeniously engineered fake meat tastes like the real thing and helps the planet is winning over consumers from the carnivore side of the food aisle. According to Barclays , the alt-meat market could be worth $140 billion a year a decade from now. But the argument over the merits of vegetarianism is nothing new; it's been going on since ancient times.

Meat played a pivotal role in the evolution of the human brain, providing the necessary calories and protein to enable it to increase in size. Nonetheless, meat-eating remained a luxury in the diets of most early civilizations. It wasn't much of a personal sacrifice, therefore, when the Greek philosopher Pythagoras (ca. 570-495 B.C.), author of the famous theorem, became what many consider the first vegetarian by choice. Pythagoreans believed that humans could be reincarnated as animals and vice versa, meaning that if you ate meat, Aunt Lydia could end up on your plate.

- Harvard researchers grew meat in a lab from cow and rabbit cells for the first time on a gelatin base, imitating the muscle fibre structure has succeeded for the first time with a new technique

2019-10-21 - CNN - ARTICLE

It looks a lot like the real thing - A team of Harvard bioengineers took a major step in taking cultured meat from lab to table. Researchers successfully grew cow and rabbit meat from an edible gelatin base for the first time, creating a substance that successfully mimicked the texture of natural meat, according to a new study published in the npj Science of Food[https://www.nature.com/articles/s41538-019-0054-8#Abs1] journal. Engineers have tinkered with bioengineered meat for years[https://www.cnn.com/2012/08/13/tech/innovation/lab-grown-meat/index.html], taking stem cells from animals and growing and multiplying them until they divide and form new muscle tissues. But previous attempts to grow environmentally friendly meat found it difficult to recreate the long, stringy muscle fibers that make up meat.

- Little cesears pizza wants to be more sustainable, implementing reusable boxes and making pizzas with meat substitutes toppings

  2019-10-22 - USA Today - ARTICLE

Another effort toward sustainability is the use of plant-based meat substitutes for toppings on the pizza. Other large chains have recently made the effort to provide a plant-based meat option, such as Burger King 's Impossible Whopper, Dunkin's new Beyond Meat breakfast sandwich and in the pizza category, Little Cesar's Impossible Italian sausage pizza. Pizza Hut's new Garden Specialty Pizza will be topped with Incogmeato Italian sausage, onions, mushrooms and banana peppers and will be available at the Phoenix location until supplies run out. In further efforts at supporting sustainability, Pizza Hut will donate all proceeds from Wednesday sales of Garden Specialty Pizzas and round boxes, a $10 combo, to Arizona Forward, a Phoenix-based environmental advocacy and sustainability organization.

- Burger King is now selling impossible burgers nationwide, Beyond Meat vs. Impossible Burger vs. traditional beef: which one is the healthiest? Sodium and heme iron and saturated fats in impossible burgers are not healthy

2019-10-25 - USA Today – ARTICLE

Impossible Foods was able to re-create that essential nutrient by taking the DNA from soybean plants, where heme is found in the root nodules, and inserting it into a genetically engineered yeast, according to its website.

The Food and Drug Administration approved the genetically modified heme as “generally recognized as safe,” or GRAS, in July 2018.

Beyond Meat vs. Impossible Burger vs. traditional beef : Nutrition experts are divided on how meatless burgers fit into daily, balanced diets due to the lack of research surrounding the genetically modified heme iron created by Impossible Foods. Beyond Meat does not include heme iron in its burger and instead, relies on plant-based iron. Heme iron is more absorbable to the body than plant-based iron, but a company spokesperson says Vitamin C is added to increase that absorbability. When comparing the nutrition labels, the Beyond Burger has less saturated fat, more protein and fewer carbohydrates than the Impossible Burger.

- Expectations on Beyond meat profit are very high, (sales grew 9.2% shich is high!), BM posts its first profit which had only been slightly higher profit than estimated, investors not satistied. Reason might be the rising competition on meat substitute market

2019-10-28 - CNN - ARTICLE

Beyond Meat posts a profit, but it's not enough to satisfy investors - Beyond Meat posted strong earnings and eked out its first quarterly profit, but investors were unimpressed. While the company's earnings and sales topped analysts forecasts Monday, shares of Beyond Meat fell 7% in after hours trading.

The stock made its Wall Street debut in May at $25 a share, and soared as high as nearly $240 before pulling back to its current price of around $100. That is quadruple the company's initial public offering price, but many Beyond Meat skeptics think the stock is grossly overvalued.Beyond Meat did report a strong quarter. Sales surged 250% from a year ago to

$92 million, and the company had net income of $4.1 million, compared to a loss of $9.3 million a year ago.

The company also raised its outlook, but investors may have been disappointed because Beyond Meat 's new sales guidance of $265 million to $275 million for 2019 is only slightly higher than Wall Street's current estimate of $264 million.

But Beyond Meat is feeling the heat from more competition, despite having a leg up on rivals due to distribution agreements with big food retailers Walmart, Target and Sprouts as well as partnerships with restaurants Dunkin', Denny's and Del Taco.

The maker of plant-based meat substitutes said revenue in the third quarter more than tripled from a year earlier to $92 million. It also swung to a $4.1 million net profit from a $9.3 million loss a year earlier. Both numbers were ahead of expectations, yet the stock fell in after-hours trading.

Beyond Meat Inc is doubling down on marketing the nutritional value and environmentally friendly production of its meat alternatives in the face of growing competition to sell plant-based burgers, including from some of the biggest food companies.

The new products have made the meatless niche one of the hottest-growing corners of the food business: Meat-alternative sales grew 9.2% over the 52 weeks ended Aug. 24 to $925 million, according to Nielsen, while traditional meat sales grew 1.9% to about $95 billion.

- Share prices of chicken producers have risen up, due to china lifting up import ban on US poultry shipment after 5 years

2019-10-31 - The Wallstreet Journal - ARTICLE

Poultry Stocks Take Wing With Lifting of China Import Ban; Prices for chicken in the U.S. are expected to rise alongside shipments to China - Share prices of chicken producers have taken flight following China's lifting of a four-year old ban on importing poultry from the U.S. The gains came after Chinese officials said over the weekend that they and U.S. counterparts reached a deal in which the U.S. would allow imports of Chinese cooked chicken and seafood products in exchange for China scrapping the ban on U.S. poultry shipments. The pact, reached amid the broader trade dispute between the countries, caused poultry stocks to pop. The ban was instituted in 2015 in response to outbreaks of avian influenza in the U.S. Lately, however, China has struggled with an outbreak of African swine fever that has cost the country roughly 40% of its hog herd and initiated a scramble for alternative proteins.

- World vegan day, reasons to become a vegan

2019-11-01 - CNN - ARTICLE

As we mark World Vegan Day, here are four great reasons to give animal products a miss

Happy World Vegan[https://cnn.com/2019/09/09/health/sw-vegan-athlete-diet-wellness/index.html] Day! Friday, November 1 marks 75 years since the founding of The Vegan Society by English animal rights advocate Donald Watson and his associates, who defined and popularized modern veganism. Vegans follow a plant-based

diet[https://cnn.com/2019/08/09/health/plant-based-diet-heart-disease-study/index.html], which means they don't eat meat, and don't use or consume animal products. Celebrities like Lewis Hamilton[https://cnn.com/2019/10/16/sport/formula-one-lewis-hamilton-vegan-spt-intl/index.html], Miley Cyrus, Ariana Grande and Venus Williams all stick to a plant-based diet.

- China perfected fake meat centuries before the US-based firms

2019-11-04 - CNN - ARTICLE

When 29-year-old Wang Jianguang was growing up in a poor neighborhood in China's[https://www.cnn.com/travel/destinations/china] northern Shanxi province, his family would buy him chicken wings with soy sauce as a rare treat. Except they weren't actually made of chicken. The wings were an intricate combination of soybeans and peanuts. "They looked just like chicken wings, though," Wang said. It was his first encounter with China's centuries-old tradition of imitation meat dishes.

Possible before Impossible - In the past few years, demand for fake meat products has surged in the Western world, as people seek environmentally sustainable and healthier alternatives to red meat. Two of the biggest US plant-based food companies, " Impossible Foods " and "Beyond Meat ," have made millions from a growing appetite for meat-free burgers. By mid-2019, there were so many orders for "Impossible Meat" the company admitted it was struggling to keep up[https://www.cnn.com/2019/06/27/business/impossible-burgers-beyond-meat/index.html].

- Pork prices keep rising in china due to african swine fever, Canada sold neary 600 million meat products to china

2019-11-06 - The Wallstreet Journal – ARTICLE & 2019-11-06 - The Wallstreet Journal - ARTICLE

Beijing Can't Bring Home the Bacon; Along with slow growth and high-tech oppression, pork shortages may make the Chinese masses squeal.

It might look as though the Communist Party is in complete control of mainland China, but there's a new threat to social stability: African swine fever is devastating the pig population. With pork prices skyrocketing and the virus spreading across the globe, the specter of a crippling pork shortage looms. That has Beijing worried. Pork makes up about 60% of Chinese meat consumption, which accounts for nearly half the world's pork market. Shortages and price spikes, combined with dissatisfaction over slowing economic growth and increasing repression, could produce political unrest. That's the last thing Beijing wants. Food riots have been a cause of major political crises in the past. They've even sparked revolution, as in France in 1789 and Russia in 1917. While the modern global agricultural system is more resilient than in past centuries and the modern diet often more varied, China remains vulnerable to an exogenous shock to food prices. It's hard to know the real feelings of China's heavily oppressed populace, but there are signs that they are beginning to blame the government for slow action, much as they did after the 2002-2003 SARS epidemic. The prices for other protein, such as beef, are also rising, while pig farmers are angry at government delay in compensating them for their losses.

In 2018, Canada sold nearly 600 million Canadian dollars ($456 million) of meat products to China, most of which was pork. Officials in the meat industry said China was facing pork shortages from an outbreak of African swine fever, contributing to demand for Canadian products.

- Plant burgers are better for the environment than meat, UN report calls meat industry a big source of environmental problems

2019-11-05 - USA Today

There are many compelling reasons people choose the Beyond Burger and the Impossible Burger, including the fact that the burgers have no cholesterol or trans fats, while providing important fiber. But the environmental benefits of these burgers are even more overwhelming.

A United Nations report found that raising and killing animals for food is "one of the top two or three most significant contributors to the most serious environmental problems." By eating plant-based meat, we go a long way to building a sustainable world for future generations. I've never known anyone who eats meat because they want an animal to suffer. By making meat from plants, we can avoid many harms of industrial animal agriculture.

- Burger King sells meatless burger now also in Europe and tests new meatless menu's on US market

2019-11-12 - CNN - ARTICLE

Burger King launches meatless burger across Europe and tests new US options - Burger King is going big on plant-based meat. In August, the burger chain started selling the Impossible Whopper throughout the United States[https://www.cnn.com/2019/08/01/business/impossible-whopper-national/index.html]. The meatless version of its signature burger has been so successful that Burger King is launching a plant-based "Rebel" Whopper across Europe, and it's testing more plant-based options, including the Impossible Whopper Jr. and a new Impossible Burger, in the United States.

- Tyson Foods profit fell by almost one-third in its latest quarter after Fire at Beef Plant; Meatpacker's quarterly sales rise 9%;

2019-11-12 - The Wallstreet Journal - ARTICLE

Tyson Posts Weaker Profit After Fire at Beef Plant; Meatpacker's quarterly sales rise 9%; adjusted earnings miss expectations

Tyson Foods Inc . said profit fell by almost one-third in its latest quarter, in part because a fire forced it to temporarily close a major beef-processing plant. The company on Tuesday reported quarterly earnings of $369 million, or $1.01 a share, down from $537 million, or $1.47 a share, a year earlier. Earnings of $1.21 a share, following adjustments, fell short of forecasts from analysts polled by FactSet.

In September, Tyson warned of what it calledshort-term challenges[https://www.wsj.com/articles/tyson-cuts-fy2019-guidance-on-issues-including-commodity-market-volatility-11567544298], including volatile commodity prices and the fire at a Kansas beef plant, and cut its profit outlook. The company said Tuesday the fire created $31 million in added costs in the quarter.

Sales rose 9% from a year earlier to $10.88 billion, roughly in line with forecasts from analysts, who predicted almost $11 billion in sales for the period. Tyson shares rose 7.4% to $88.88 Tuesday after executives projected better performance from the company's chicken business and the potential for African swine fever to boost meat prices and demand. Tyson reported $3.86 billion in beef sales for the quarter, down about 1% compared with last year. Sales volumes for beef were lower, but the company was able to raise prices for the meat.

- Studio talk about meat substitutes and it's environmental impact

2019-11-20 - CNN - ARTICLE

UNIDENTIFIED MALE: But I wanted to see if we could use science to essentially sidestep the ethical debate, sidestep all the environmental issues and allow consumers to continue to do what they love which is eat meat.

UNIDENTIFIED MALE: The visual cues are exactly the same and responds the same and you can use it for much more than a burger.

CRANE: It`s worth noting though that traditional vegan and vegetarian products are still generally the healthier option and consumers looking for an all natural food choice might be turned off by these products long list of ingredients. A concern that certainly isn`t new.

UNIDENTIFIED MALE: But there should be some kind of law that would keep people from selling bad food especially meat.

CRANE: Now experts believe that the popularity of fake meat is likely here to stay. Analysts predict that alternatives to real meat will grow so much that by 2040, 60 percent of the world`s meat likely won`t even come from slaughtered animals. To make sense of that, let`s look at the problems that plant-based meat could help to solve. The amount of food that we`re currently growing will only feed half of the world`s projected 9.8 billion people in 2050. By then, the demand for animal products is expected to increase by 70 percent. This means that if the world is to have enough food, we`ll need more land for crops and livestock. Now take a look at Beyond Meats plant-based burger patty compared to a quarter pound of real beef, Beyond Meats burger has 99 percent less impact on water scarcity and 93 percent less impact on land use. Forty-six percent less energy and emits 90 percent less greenhouse gases and the company claims that those benefits come without sacrificing much in taste, texture or even appearance of your food.

- New bill to ban meat names for meat alternatives introduced, meat industry criticize the sale of substitutes in the meat isle in super market, which can be missleading for costumers; substitute industry argues with freedom of speech

2019-11-21 - The Wallstreet Journal - ARTICLE

The Modern Meaning of Meat; Ranchers and their political allies want to brand plant-based foods like the Impossible Burger as inferior imitations, but consumers shouldn't have their choices limited

Would a burger by any other name taste as meaty? American ranchers and the politicians who represent them are betting that it wouldn't—and moving to restrict the language that can be used to describe new foodstuffs.

Last month, Reps. Anthony Brindisi (a New York Democrat) and Roger Marshall (a Kansas Republican) introduced a bill that would legally restrict the use of the words "meat" and "beef" to products derived from farmed and slaughtered animals. It would also brand any pretender—whether made from soy or grown in a petri dish—an "imitation." Several similar laws have already been passed by state legislatures, including in Missouri and Arkansas, and such measures have been proposed in more than 20 others. Meanwhile, countersuits spearheaded by the American Civil Liberties Union and the veteran alternative-meat company Tofurky argue that such measures infringe on free speech.

Companies such as Beyond Meat and Impossible Foods make plant-based burgers out of soy and peas that taste and look virtually indistinguishable from beef patties. Cellular agriculture (meat grown directly from animal cells) complicates things further by producing a genetic analog for conventional meat—one that just happens to bypass unpleasant stops at the factory farm and the slaughterhouse. Technological advances have a habit of disrupting not only production processes but also language, pushing and pulling at long-established definitions of everyday items. And they are often fiercely opposed by entrenched interests. The meat lobby argues that all this lacks transparency and fairness. "A growing number of fake meat products are clearly trying to mislead consumers about what they're trying to get them to buy," warns Jennifer Houston, president of the National Cattlemen's Beef Association

- Demand for vegan thanksgiving dinner recepies has risen

2019-11-27 - USA Today - ARTICLE

While strictly vegan Thanksgivings probably won’t slow the demand for turkey anytime soon, interest in plant-based foods and Thanksgiving recipes has grown in recent years, and companies are responding to demand. Krissi Vandenberg is the executive director at the Vegan Awareness Foundation, an organization that offers certification for a range of vegan products. To receive certification, a manufacturer must prove that their product contains absolutely no animal-based ingredients and that it does not use animal products in processing. For example, sugar manufacturers often use cow bone char to remove impurities from raw sugar. While it may be sparkly white, and perfect for an omnivore’s cranberry sauce, such sugar cannot be considered vegan by the Vegan Awareness Foundation.

- cattle ranchers complain about health risks to the North Dakota Department of Health due to mixing meat and meat alternatives in the same supermarket shelfs

2019-11-30 - The Wallstreet Journal - ARTICLE

America's cattle ranchers are rounding up their allies to fight back against the rising popularity of plant-based meat alternatives; 'the best alternative to beef is more beef'

On a rainy September morning, a pair of cattle ranchers browsed the refrigerated meat cases at a Walmart Inc. . store in Mandan, N.D., snapping cellphone photos of an unwelcome invader among the shrink-wrapped ground beef: Beyond Meat Inc . patties, made from pea protein and coconut oil. After a separate check at a nearby local supermarket, the ranchers headed to the North Dakota Department of Health . They showed officials the photos and warned of food-safety risks from mixing plant burgers with the traditional beef kind. Their message: Meatless burgers don't belong on beef's turf. The impromptu inspection by the ranchers -- one of whom was Kenny Graner, president of the U.S. Cattlemen's Association -- is just one front in a growing war against their plant-based rivals. Cattle ranchers and their allies are pushing regulators to scrutinize alternative meat-makers, recruiting food scientists to test plant-based products for potential health risks, and ramping up countercampaigns to highlight beef's nutritional benefits while comparing their rivals to dog food. They've even created a digital assistant, available on voice-activated Google and Amazon devices, that can answer consumers' questions about beef and, when pressed, beef alternatives.

7.5.8 2020/2

- Beef processing plants close due to COVID-19 pandemics

2020-04-06 - The Wallstreet Journal – ARTICLE

Coronavirus Hits Meat Plants as Some Workers Get Sick, Others Stay Home; Beef, chicken and pork operations are affected in several states, though overall U.S. meat supply has been high

The coronavirus pandemic is hitting U.S. meat operations, slowing and temporarily halting production at some plants as sickness and fear keep workers home.

Meat plant employees, working by the hundreds in plants, with many standing side by side on processing lines, play a critical role in replenishing supermarkets. But workers' concerns that they could contract the coronavirus have prompted walkouts and complaints, while a growing number of positive cases prompts some meat companies to scale back operations.

- Meat plant workers walk off due to health concern due to lacking corona virus prevention, no paid sick leave and also to much work since meat demand has risen

2020-04-02 - The Wallstreet Journal - ARTICLE

The Coronavirus Pandemic: Workplace-Safety Issues Are Intensifying

Tensions are breaking out between employers and workers across the U.S. as some companies push to keep producing during the coronavirus pandemic and some employees push back over health concerns and other issues. In recent days, plant workers have walked off the job at companies ranging from poultry producer Perdue Farms Inc. to soda maker Refresco BV. At Tyson Foods Inc., workers petitioned for more paid sick leave. Some want more protective equipment. Others have reported to regulators unsafe conditions.

Warnings about social distancing and exposure have also surfaced new concerns, especially when doing business in close quarters seems to conflict with guidance. "The next phase of concern is safety in the workplace," said William Schaffner, an infectious-disease specialist at Vanderbilt University.

Protections like physical spacing of employees are particularly important, said Mr. Schaffner, because the virus spreads even from those who aren't symptomatic. Meatpacking, which is seeing increased demand as Americans batten down at home, is one industry where workers have become concerned about being in proximity while cutting carcasses and trimming meat. Some companies have spaced workers farther apart and staggered shift starts and break times. Tyson and others have begun offering employees masks and gloves, and taking their temperatures.

Earlier this week, the League of United Latin American Citizens , a Hispanic civil-rights group, asked the federal Occupational Safety and Health Administration for broader guidance on safety equipment, paid sick leave and regular health checks for plant employees. A significant share of meatpacking-plant employees are immigrants. Last week, about two dozen workers at a Perdue Farms chicken plant walked off their jobs in Georgia, saying the company wasn't doing enough to prevent coronavirus infection, and not paying them enough

- Smithfield foods had to shut down production because hundreds of employees were tested positive for coronavirus, threating nation wide supply chain of meat

2020-04-13 - CNN - ARTICLE

Now one of the U.S.'s largest pork producers has shut down production indefinitely because of the pandemic. The CEO of Smithfield Foods is warning entire meat supply in America in the U.S. is at risk because of such plant closures. Hundreds of employees at the Smithfield facility in South Dakota have tested positive for coronavirus -- for COVID-19, that's only in the meat industry in the United States. Across the world, supply chains are taking a hit. CNN's John Defterios, of course in Abu Dhabi with this report on the food supply chain.

- Meat plants are closing due to high rate of corona infected workers, Farmers can’t sell their livestock to processors; Pork and beef producers ask USDA to buy meat with fund of stimulus bill (bill helping to solidify the supply chain from producers/farmers to consumers) (many articles)

2020-04-14 - CNN - ARTICLE

Meat plants are closing. But you don't have to panic shop just yet

Across the country, meat processors are temporarily shutting down as workers are getting infected with Covid-19[https://www.cnn.com/2020/04/08/business/meat-plant-closures-coronavirus/index.html]. But that doesn't mean America is about to run out of meat. The closures are devastating to meat producers. Without processing facilities, livestock farmers are having a hard time selling their meat.

But US consumers don't have to worry about shortages in supermarkets, experts say. At least not yet. "I don't think the shutdowns so far have been enough to be noticeable" to consumers,

said Steve Meyer, an economist with commodity firm Kerns and Associates. "We have a lot of pork, we have a lot of chicken, we have a lot of beef in cold storage," he said. "We can draw on that should we have some shortages." Some of the plants that have shut down are working to divert supply to other locations. Tyson, one of the world's largest meat processors, suspended operations at its Columbus Junction, Iowa, pork plant last week. But it is sending livestock that was headed to Columbus Junction to other pork plants in the region to minimize impact on production. If other plants follow the same tactic, they could help mitigate the losses in production as well, Meyer noted. Plus, livestock that is not diverted will still need to processed when plants open up, Meyer said.

2020-04-15 - CNN - ARTICLE

Pork and beef producers ask USDA to buy meat and speed up stimulus money

With meat-processing plants across the country shuttering due to the coronavirus pandemic[https://www.cnn.com/2020/04/14/politics/pandemic-preparedness-trump-invs/index.html], pork producers are asking the Trump administration to consider buying large quantities of meat, and other livestock farmers are seeking answers about the kind of support they can expect to receive from the latest stimulus bill. The closure of several major facilities -- including one of the largest pork-processing facilities[http://www.cnn.com/2020/04/12/business/meat-plant-closures-smithfield/index.html] in the US and a major beef plant in Colorado[https://www.cnn.com/2020/04/10/us/colorado-meat-packing-plant-coronavirus/index.html] -- has put pressure both on the supply of popular proteins for sale across the country and on the farmers who raise livestock for slaughter. Meat-processing plant closures are threatening more than just the supply of meat on the market[https://www.cnn.com/2020/04/14/politics/what-matters-april-13/index.html]; experts say they are also threatening the farmers who could soon have more cows, pigs or other animals on their hands than they can afford to feed or house. What the Agriculture Department will do with the $9.5 billion for agriculture producers that Congress included in the stimulus bill [https://www.cnn.com/2020/03/25/politics/senate-stimulus-preserve-supply-chain/index.html]passed late last month is an open question.

Agriculture Secretary Sonny Perdue tweeted [https://twitter.com/SecretarySonny/status/1248420385386721281] last week that his agency is "using all financial resources we have been given to develop a program that will include direct payments to farmers & ranchers hurt by COVID-19 & other procurement methods to help solidify the supply chain from producers to consumers." The program, however, has not yet been finalized. "Details on the program will be forthcoming shortly," a USDA spokesperson said Tuesday.

2020-04-22 - CNN - ARTICLE

Breaking news just in to CNN, we've just learned that Tyson is shutting down a pork processing plant in Waterloo, Iowa, this is a plant that's been linked to nearly 200 coronavirus cases. Protesters rallied outside that plant earlier this week, it's been linked now to nearly half of the known COVID-19 cases in that county there alone.

2020-04-17 - USA Today – ARTICLE

Empty shelves a sign of gaps in supply chain

We have too much milk, may not have enough meat and could eventually run short on soup. Let's just say America's food supply chain is getting out of whack due to the coronavirus pandemic.

The sudden shift from restaurant dining to at-home eating, coupled with panic buying at grocery stores, is causing major disruption in the manufacturing, distribution and sales of food products. Dairy farmers are dumping excess raw milk, while meat companies are scrambling to meet demand.

Meat plant infections could rise A rash of coronavirus outbreaks at dozens of meatpacking plants across the nation is far more extensive than previously thought, according to an exclusive review of cases by

- Strongly speeding up production lines in meat plants to keep up with meat demand makes corona situation in meat plants even worse ; meat processors warn about meat shortages

2020-04-23 - USA Today – ARTICLE

and the Midwest Center for Investigative Reporting. Tyson to close Iowa plant Company says it will offer COVID-19 testing to all its 2,800 employees at pork processing facility. 3B And it could get worse. More than 150 of America's largest meat processing plants operate in counties where the rate of coronavirus infection is already among the nation's highest, based on the media outlets' analysis of slaughterhouse locations and county-level COVID-19 infection rates.

2020-04-27 - CNN - ARTICLE

Tyson Foods is warning there could be meat shortages in grocery stores across America. The company's blaming Coronavirus that forced it to shut other meat -- to shut -- to force the company and other meat processing plants to shut down. With plants offline, farmers have no place to sell their livestock.

- Coronavirus pandemic shines a light on the risks and other bad working conditions of meatpackers, that are mainly immigrants

2020-04-24 - USA Today - ARTICLE

Coronavirus pandemic shines a light on the risks meatpackers are facing

Precarity. It defines refugees' and economic migrants' lives. Violence, trauma and poverty caused them to flee their countries, and they live in rural communities, areas most Americans dub "flyover country. " Workers from around the world toil in the most dangerous profession

in the United States: meatpacking. COVID-19 in U. S. packing plants now stalks migrants. More than 2,000 meatpacking workers have been diagnosed with the new coronavirus. From Sioux Falls, South Dakota, to Columbus Junction, Iowa, to Camilla, Georgia, the majority refugee and economic migrant workforce is getting sick. Some have died.

As an anthropologist of religion and migration, I have spent the past eight years researching meatpacking in Iowa and have observed the inner workings of the plants. The predominantly African and Central American workers slaughter, slice and package the meat, working elbow to elbow in extremely tight quarters. They work in a hyper-efficient industry, processing, in the case of hogs, anywhere from 7,000 to 20,000 animals a day. To accomplish this feat of mass slaughter, companies require them to adhere to strict movement guidelines, lest they injure themselves on the swiftly moving blades of their coworkers. Mere inches separate line workers, a necessary distance in order to meet the global demand for meat.

Most consumers would be heartened to know that the required hygienic and sanitary conditions of the Food Safety and Inspection Service have made many of today's packing plants specimens of disease control. Even so, diseases such as COVID-19 spread easily because of the intensely close quarters of the plants. Most meatpackers are immigrants Today's meatpackers, employees of the vast protein industry, are victims of trauma and dislocation, and they hail from some of the most troubled places in the world.

- Safety and health hazards of meat packaging industry, especially problematic in pandemic times; crowded plants with lack of corona protection

2020-04-28 - CNN - ARTICLE

For years, major meat processors have been ruthlessly tamping down on costs and increasing efficiencies. That has contributed to dangerous working conditions even before the coronavirus hit.

"There are many serious safety and health hazards in the meat packing industry," the Occupational Safety and Health Administration says on its website. "**These hazards include exposure to high noise levels, dangerous equipment, slippery floors, musculoskeletal disorders, and hazardous chemicals,"** among others.

Over the years, meat processing companies have been speeding up production lines to process more meat in each facility, explained Ben Lilliston, interim co-executive director at the Institute for Agriculture and Trade Policy. Faster lines require more workers who have to stand closer together.

Why meat plants are different - Some factory workers don't interact with the food they make directly. Instead, they may operate machinery that packages, shapes or produces food. But meat factory employees are often closely involved with the meat itself. Many are responsible for a specific job along an assembly line, like removing bone or muscle as meat passes by on a conveyor belt.

There's "no question" that people who work in meat processing facilities are stationed more closely together than most workers at other food manufacturers, said Steve Meyer, an economist with commodity firm Kerns and Associates. He estimated that many stand about three or four feet apart from each other while working.

Officials say that people should stand about six feet apart[https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/prevention.html] in order to maintain social distancing practices that could help prevent the spread of Covid-19.

Meat companies say they're trying to balance protecting workers with ensuring that Americans don't face meat shortages. Major meat processors like Smithfield, Tyson and others say they've put measures in place, like temperature checks and plexiglass to encourage social distancing in some areas and to help keep their workers safe. Some workers say their employers are doing far from enough[https://www.cnn.com/2020/04/22/us/tyson-waterloo-iowa-plant-employees-coronavirus/index.html] to protect them.

- Defense Production Act: Trump orders meat and poultry processing plants to stay open during coronavirus and offers to shield plants from sueing employees

2020-04-28 - USA Today Online

WASHINGTON – Faced with worries of a meat shortage caused by the coronavirus, President Donald Trump on Tuesday ordered beef, pork and poultry processing plants to remain open despite safety concerns. Citing his authority under the Defense Production Act, Trump declared in an executive order that "it is important that processors of beef, pork, and poultry ('meat and poultry') in the food supply chain continue operating and fulfilling orders to ensure a continued supply of protein for Americans. " Critics said the forced openings – some plants have closed because so many employees contracted the coronavirus – threaten the safety of workers who remain vulnerable to the disease.

Trump also told reporters he would seek to shield meat plants from legal liability if they are sued by employees who contract coronavirus while on the job. While Trump only mentioned Tyson Foods specifically, he suggested his plan would protect other businesses from liability as well.

2020-04-29 - The Wallstreet Journal - ARTICLE

Trump Takes Executive Action to Keep Meat-Processing Plants Open; President invokes Defense Production Act to keep plants open amid coronavirus pandemic. President Trump signed an executive order on Tuesday paving the way for meat-processing plants to remain open during the coronavirus pandemic, as hundreds of workers have fallen ill and concerns mount about food-supply shortages.

The move is expected to relieve pressure on meatpackers and farmers, who have struggled with food-supply upheavals following pressure from local and state officials to close plants. It is likely to draw fire from unions and worker advocates, who have said such closures are a necessary step to stem the virus's spread through communities. The president invoked the Defense Production Act, a Korean War-era law, to keep the facilities open, designating the plants as critical infrastructure under the law. The administration is also planning to take steps to improve safety for employees at the facilities, administration officials said. The president's order comes after administration officials had private conversations with executives of major meat-processing companies to discuss concerns about food shortages.

- Meat plant workers react to trumps order, not showing up at work: Town in Iowa is very concerned

2020-04-29 - CNN – ARTICLE

Meat plant workers to Trump: Employees aren't going to show up - Meat-processing plant workers are concerned about President Donald Trump's executive order [https://www.cnn.com/2020/04/28/politics/defense-production-act-executive-order-food-supply/index.html] that compels plants to remain open during the coronavirus pandemic. Meat plant employees are among America's most vulnerable workers, and some say they expect staff will refuse to come to work.

2020-04-29 - USA Today - ARTICLE

DES MOINES, Iowa – Local officials worry that President Donald Trump's executive order requiring meatpacking plants to remain open could threaten the health of 2,800 workers at the Tyson plant that closed last week because of a COVID-19 outbreak. But pork producers say the president's action provides "hope and relief" for farmers who face destroying thousands of pigs backed up on farms as the novel coronavirus has both slowed and closed meatpacking processing plants across the country.

- New numbers show, that American slaughterhouses processed nearly a million fewer cattle, hogs and sheep in the past week than they did during the same time a year ago; meat shortages are expected

2020-04-30 - USA Today - ARTICLE

Meat shortages expected as coronavirus disrupts production, despite executive order. American slaughterhouses processed nearly a million fewer cattle, hogs and sheep in the past week than they did during the same time a year ago, marking a new low that experts say will likely increase “spot” shortages of meat at some grocery stores. “I wouldn’t say the food system is breaking, but at least the meat sector is in real serious, critical condition at the moment,” said Jayson Lusk, head of the Department of Agricultural Economics at Purdue University . “The chances of there being limited availability have risen, and it’s going to depend a lot on where you live. ”

- Kroger supermarket chain is limiting ground beef and pork purchases in it’s stores

2020-05-01 - CNN - ARTICLE

The slowdown at meat processing plants [https://www.cnn.com/2020/04/26/business/meat-processing-plants-coronavirus/index.html]from the coronavirus pandemic has led to a new wave of panic-shopping at supermarkets. Some grocery stores are now imposing limits on meat purchases to prevent barren refrigerator displays. Kroger , this country's largest supermarket chain, said it is adding purchase limits on ground beef and fresh pork in some stores. Other large grocers say they expect to be out of stock on different types of cuts very

soon. In recent weeks, top meat suppliers have announced temporary closures as their workers fall ill with coronavirus. The United Food and Commercial Workers International Union estimated Tuesday that 20 meatpacking and food processing workers have died so far. The union said last week the closures have resulted in a 25% reduction in pork slaughter capacity and 10% reduction in beef slaughter. President Donald Trump signed an executive order Tuesday to compel meat plants[https://www.cnn.com/2020/04/28/politics/defense-production-act-executive-order-food-supply/index.html] to stay open during the crisis.

Adding to the challenge, meat sales are up around 40% in recent weeks, according to data shared by grocery industry trade group FMI. "The demand for product also makes it difficult to keep the store shelves stocked as they were at pre-pandemic levels," said a spokesperson for the group.

- Beyond meat's quarterly profit shows sales have more than doubled, probably due to concerns about meat safety

2020-05-06 - CNN - ARTICLE

The pullback in the stock market is a clear sign that investors are worried about Covid-19's impact on the global economy. They are shunning risk by selling stocks and rushing into bonds and cash. Or are they? Strange as it may seem, several of last year's 159 initial public offering -- highly volatile stocks like Slack, Beyond Meat and Zoom are up sharply this year.

Sure, these three companies all have been doing well despite the coronavirus outbreak. Their strength is also notable considering that demand for new initial public offerings [http://www.cnn.com/2020/03/19/investing/ipo-outlook-coronavirus/index.html] is expected to slow dramatically.

Only 35 companies went public in the first quarter of 2020, according to FactSet. That's down 15% from the same time a year ago and a 35% drop from the fourth quarter of 2019. Slack and Zoom have benefited from more people working at home. And demand for

Beyond Meat 's plant-based products could increase due to concerns about meat safety [http://www.cnn.com/2020/05/04/business/tyson-meat-plant-closures/index.html] and the availability of beef, pork and chicken since workers at companies like food giant Tyson have contracted Covid-19. Beyond Meat actually posted a quarterly profit Tuesday as sales more than doubled. [https://www.cnn.com/business/live-news/stock-market-news-050520/h_6fd1d99444768d8c4084ecd344704c8f] actually posted a quarterly profit Tuesday as And many other newcomers from 2019 are doing well too. Richard Branson's Virgin Galactic, Peloton and Chewy have all soared this year. And the Renaissance IPO ETF , which includes many of the top new offerings of 2019, is flat this year while the S&P 500 has fallen 11%.

- Meatpacking industry hits milestone of 10,000 coronavirus cases linked to plants

2020-05-06 - USA Today - ARTICLE

The meatpacking industry hit a grim milestone this week when the number of coronavirus cases tied to outbreaks at its beleaguered plants passed 10,000, according to USA TODAY and Midwest Center for Investigative Reporting tracking.

At least 170 plants in 29 states have had one or more workers test positive for the coronavirus. Some of those workers also have infected others, which is included in the count. At least 45 workers have died.

The outbreaks have prompted at least 40 meat slaughtering and processing plant closures – lasting anywhere from one day to several weeks – since the start of the pandemic.

The shutdowns sparked meat shortages in some parts of the country and triggered an executive order by President Donald Trump to keep plants open. But more than a week after Trump's order, closures have continued unabated, the media outlets found.

- An animal welfare crisis due to packed farmes that can not sell their livestock to processors, since a lot of them are closed

2020-05-07 - CNN - ARTICLE

Candace Croney, director of the Center for Animal Welfare Science at Purdue University, said all livestock-based industries will face pressure from coronavirus-related plant closures -- but some will suffer more significantly than others.

"The difference is how much time people have as a function of the different types of animal groups they're working with," Croney said.

"If you look at chickens, it takes six weeks to get them to market, so you've got a really short window of time in order to get those birds out the door. And if you are trying to hold onto them for a little bit extra, your wiggle room is much less than, for instance, people that are working with beef cattle." Croney said farmers have virtually no alternatives to euthanization, in many cases, because of the welfare problems created by overcrowding. Those include the inability of animals to access food or water in packed barns, where they may not even have space to lie down or rest, and the possibility that animals competing for resources in such close quarters could become aggressive with each other.

"Just from a practical standpoint, this is such a devastating decision to make emotionally, forget financially," Croney said. "It goes against the ethics that anybody involved with farming on any level has." Meanwhile meat-packing plants, which will need to reopen broadly for the overcrowding problems to subside, are walking a tightrope balancing worker safety with pressure to process food. With a workforce that often labors in close proximity to each other, the meat-processing industry has been pummeled by Covid-19 across dozens of facilities. At the JBS beef plant in Greeley, Colorado, which reopened on April 24 after a temporary closure, seven employees have died and 280 have tested positive for the virus. Nearly 400 workers have tested positive for coronavirus at the Triumph Foods

- Vegan cooking chanel has almost 450,000 subscribers; Annual U.S. sales of plant-based foods have grown according to plant-based foods association

2020-05-08 - The Wallstreet Journal - ARTICLE

How Eating Vegan Got Easy: Recipes That Resonate Now; Meatless eating is easier to pull off—and truly enjoy—than ever before. Anything but restrictive, these fresh, accessible recipes invite all eaters to the table.

NEARLY 450,000 FANS subscribe to Rachel Ama's vegan cooking channel on YouTube . It's not hard to see why. Appearing in her family kitchen, the Londoner makes up dances, punctuates her jokes with sound effects and cooks brightly colored, approachable food that ranges from vegetable pastas to Caribbean rice and peas. Many of the viewers who email her tell her they're not vegan. They just like the look of the food.

Ms. Ama's success—and that of a generation of vegan cookbook authors, social media stars and restaurant chefs—reflects a flourishing of this kind of cooking unimaginable even 20 years ago. The food is visually striking, global and farm-to-table. Its appeal is clear to omnivores. When so many of us are immobilized in our houses, cookbooks like "Rachel Ama's Vegan Eats," Bryant Terry's "Vegetable Kingdom" and Joy Yonan's "Cool Beans" are top sellers. Perhaps we're all a little vegan now.

A Gallup poll from September 2019 found that one quarter of respondents had cut back on eating meat in the last year. Among women and nonwhite subjects, the figure was closer to one third. And while the overall proportion of Americans who consider themselves vegan or vegetarian has held steady at around 5% for decades, according to the 2018 results of a recurring Gallup poll, within that figure, 9% of people of color now call themselves vegetarian, compared to 3% of white respondents.

Annual U.S. sales of plant-based foods have grown from $3.9 billion to $5 billion in just two years, according to a report from the Plant-Based Foods Association, and milk alternatives now make up 14% of the overall dairy market.

- Bryan Adams promotes veganism on basis of animal cruelty in Asian wet-markets being the possible source of the virus

2020-05-12 - USA Today Online

Bryan Adams apologizes after expletive-ridden coronavirus rant calling out 'bat eating' people

Bryan Adams is apologizing following his expletive-ridden rant about the coronavirus canceling his concert series at London's Royal Albert Hall. On Monday, the Canadian singer shared a video to Instagram of him playing guitar and singing "Cuts Like a Knife" accompanied with a caption sarcastically thanking the "bat eating, wet market animal selling, virus making greedy (expletives)" for putting the world on hold.

"The whole world is now on hold, not to mention the thousands that have suffered or died from this virus. My message to them other than 'thanks a (expletive) lot' is go vegan," Adams wrote. "To all the people missing out on our shows, I wish I could be there more than you know. "It’s been great hanging out in isolation with my children and family, but I miss my other family, my band, my crew and my fans. "

On Tuesday, Adams issued a statement on Instagram in the same fashion: He shared a video singing "Into the Fire," alongside a caption apologizing for his previous post.

"Apologies to any and all that took offence to my posting yesterday. No excuse, I just wanted to have a rant about the horrible animal cruelty in these wet-markets being the possible source of the virus, and promote veganism," Adams wrote. "I have love for all people and my thoughts are with everyone dealing with this pandemic around the world. Here's the appropriately titled song that would have been performed tonight at the @royalalberthall. " Adams isn't the first to call out wet markets in response to the coronavirus and call for veganism.

- Meat alternative processors say they try to use meat shortage to their advantage, by discounting their products and filling in for lacking meat products

2020-05-13 - The Wallstreet Journal - ARTICLE

Coronavirus Meat Shortages Have Plant-Based Food Makers' Mouths Watering; Beef producers racing to meet consumer demand say any shortfalls are temporary, as sellers of meat alternatives look to seize opportunity

Plant-based food makers are racing to fill in for missing cuts in supermarket meat cases, after the coronavirus disrupted operations at meatpacking plants. Companies like Beyond Meat Inc ., Impossible Foods Inc. and Tofurky Co. say they are ramping up production, discounting their plant-based meat alternatives to appeal to more consumers and expanding into more stores—sometimes at the request of grocery chains that are running short[https://www.wsj.com/articles/grocers-hunt-meat-as-coronavirus-hobbles-beef-and-pork-plants-11587679833] of staple meat products.

"This is a peak moment for trial potential among regular meat eaters," said Pat Brown, Impossible Foods's chief executive. The pandemic has upended the $213 billion U.S. meat industry, forcing industry giants including Tyson Foods Inc, JBS USA Holdings Inc., Smithfield Foods Inc. and Cargill Inc. to temporarily close plants. Nearly 5,000 workers have fallen ill, and at least 20 have died, the Centers for Disease Control and Prevention

2020-05-14 - The Wallstreet Journal - ARTICLE

Plant-based food makers are racing to fill in for missing cuts in supermarket meat cases, after the coronavirus disrupted operations at meatpacking plants. Companies like Beyond Meat Inc., Impossible Foods Inc. and Tofurky Co. say they are ramping up production, discounting their meat alternatives to appeal to more consumers and expanding into more stores -- sometimes at the request of grocery chains that are running short of meat products. "This is a peak moment for trial potential among regular meat eaters," said Pat Brown, chief executive of Impossible Foods.

- Tyson Reduces Some Beef Prices as Coronavirus Pushes Grocery-Store Costs Higher

2020-05-14 - The Wallstreet Journal - ARTICLE

Move will help keep beef affordable as meatpacking plants resume operations, company CEO says Tyson Foods Inc . is lowering some prices it charges supermarkets and restaurants for

beef, after coronavirus-driven disruptions[https://www.wsj.com/articles/tyson-expects-coronavirus-to-continue-crimping-production-11588594884] at meatpacking plants have led to a surge in meat costs[https://www.wsj.com/articles/grocers-hunt-meat-as-coronavirus-hobbles-beef-and-pork-plants-11587679833].

- Health risks of eating meat, now that people are forced to eat less (every fifth Wendy's is out of beef); pro arguments for meat substitutes as alternative to meat like health or environmental benefits → exaggerated headlines like: Meat Alternatives Can Help Reduce Covid-19 Mortality (2020-05-23 - The Wallstreet Journal – ARTICLE)!

2020-05-18 - CNN – ARTICLE

Worried about beef shortages and price spikes? Here's what happens if you eat less meat

Coronavirus came for Americans' hamburgers in early May. On May 5, the fast-food chain Wendy's announced[https://www.cnn.com/2020/05/05/business/wendys-beef-shortage/index.html] that some menu items were unavailable; an analyst estimated that nearly one in five Wendy's franchises was out of beef. That followed news that some meat processing plants across the US had temporarily closed[https://www.cnn.com/2020/04/26/business/meat-processing-plants-coronavirus/index.html] due to coronavirus. That's because meatpacking and food-processing workers are getting sick and some are dying from Covid-19.

Some 20 meatpacking and food-processing workers have died from Covid-19, according to the United Food and Commercial Workers International Union . As a result of the pandemic, 22 meatpacking plants have closed in the last two months. With plants closed, and livestock accumulating, some farmers are desperate enough to put their animals on Craigslist[https://www.cnn.com/2020/05/07/politics/hog-farmers-meat-processing-closures-euthanization-craigslist/index.html]. The same features that allow a steady churn of cheap meat also provide the perfect breeding ground for airborne diseases like the coronavirus: a cramped workplace, a culture of underreporting illnesses, and a cadre of rural, immigrant and undocumented workers who share transportation and close living quarters.On May 5, the fast-food chain Wendy's announced [https://www.cnn.com/2020/05/05/business/wendys-beef-shortage/index.html] that some menu items were unavailable; an analyst estimated that nearly one in five Wendy's franchises was out of beef.

2020-05-21 - USA Today - ARTICLE

The much shorter lag time between production and distribution of plant-based meat makes it far better equipped than animal-based agriculture to handle sudden economic shifts.

Plant-based meat also is more resource efficient. Rather than growing thousands of pounds of crops to feed animals, the raw ingredients grown for plant-based food funnel directly to the product itself.

2020-05-26 - USA Today – ARTICLE

The 33-year-old single mother from Mexico worked on a fast-paced line in one of America's most dangerous industries. Meatpacking plants have long faced criticism for sacrificing worker safety in the name of efficiency and cheap meat. Injuries are common. Severed fingers. Chemical exposure. Back sprains.

But Maria, who asked to be identified only by her first name because of employment concerns, feared something worse in mid-April at the Mountaire Farms poultry facility in Siler City, North Carolina.

As the novel coronavirus invaded meatpacking plants across the nation, infecting dozens – then hundreds, then thousands – of workers, Maria said she feared for her life. Every time a colleague coughed, she said, she wondered if COVID-19 had found its way to Mountaire.

She worried about getting sick and dying, leaving her kids without a mother. She said plant supervisors wouldn't talk about it. So she kept working.

By late April, the company confirmed at least 11 employees had tested positive for the virus. One of them was a co-worker, Maria said, who called her upset that she unwittingly passed the virus to her father and he died.

The meatpacking industry has evolved into a marvel of modern efficiency, producing 105 billion pounds a year of poultry, pork, beef and lamb destined for dinner tables across America and the world. That's nearly double what it produced three decades ago.

But its evolution came at a cost. The same features that allow a steady churn of cheap meat also provide the perfect breeding ground for diseases like the coronavirus: a cramped workplace, a culture of underreporting illnesses, and a cadre of rural, immigrant and undocumented workers who share transportation and close living quarters.

"This pandemic is preying on decades of the fundamental arrangement of how we produce our food," said Joshua Specht, an assistant professor of history at the University of Notre Dame who studies the meat industry.

The meatpacking industry now faces perhaps its greatest test of worker safety as the novel coronavirus sweeps through its slaughterhouses and processing plants. As of May 20, officials have publicly linked at least 15,300 COVID-19 infections to 192 meatpacking plants, according to tracking by the Midwest Center for Investigative Reporting. At least 63 workers have died.))

- Meatpacking plants reopen and supermarkets reduce limits on meat purchases, meat prices are very high and keep rising

2020-05-31 - The Wallstreet Journal – ARTICLE & 2020-06-10 - CNN - ARTICLE

Meat Plants Reopen, but Burgers Stay Pricey; Consumers will have fewer options for months, grocery executives say; supplies of rice, flour remain tight A national meat-supply crunch driven by the coronavirus pandemic is beginning to ease, though meat and grocery suppliers expect the effects to linger for months.

Even as meatpacking plants reopen and some supermarkets reduce limits on meat purchases, consumers are paying more for ground beef and other staples across the country as meat

production remains hampered by Covid-19, and grocery distributors struggle to get some orders filled[https://www.wsj.com/articles/grocers-hunt-meat-as-coronavirus-hobbles-beef-and-pork-plants-11587679833]. The U.S. food industry heads into the summer months with beef and pork production last week about 7% lower than the same time last year, according to the U.S. Department of Agriculture

- 'Billion Dollar Burger' Review is being published: portrait or review about first lab grown meat burger of Mark Post, a researcher at Maastricht University and his team in 2011; 252 pages

2020-06-09 - The Wallstreet Journal – ARTICLE

'Billion Dollar Burger' Review: Wherefrom the Beef? Who will be first to market with a 'clean meat' product cultured in a lab from animal cells? And will chefs and consumers accept it?

It seemed like regal treatment for five ounces of uncooked hamburger. In 2013, on a brightly lit London stage with cameras trained on him, Mark Post, a researcher at Maastricht University in the Netherlands, ceremoniously lifted a silver cloche, unveiling a pinkish patty. British chef Richard McGeown did the honors of searing the burger, and thereby made history.

The cooking demonstration was the public debut of meat created in Mr. Post's laboratory from a few microscopic cells collected harmlessly from a cow still very much alive even as Mr. McGeown's skillet sizzled. With a bun, some lettuce and a slice of tomato, it could have come from any fast-food outlet. It cost $1.2 million a pound.

In "Billion Dollar Burger," Chase Purdy, a food-business reporter based in New York, tells a tale set at the nexus of food culture, hard science and corporate swashbuckling as venture capitalists, biology nerds and fast-talking promoters race to become the first to market what Mr. Purdy calls "cell-cultured meat." Proponents hope to bite off a chunk of the $1.8-trillion meat market and launch the biggest revolution in how humans feed themselves since our Neolithic ancestors domesticated livestock. With the disruptive technology, they intend to circumvent the environmentally harmful and ethically questionable practice of raising billions of animals annually on industrial farms, which scientists say are responsible for about 14% of greenhouse-gas emissions.

Cultured meat is not to be confused with popular imitations produced by companies like Beyond Meat and Impossible Foods , which are made from plant material. Cell-cultured products are meat, period, and have the same nutritional profile as traditional meats.

Mr. Purdy follows the work of about nine cellular-agriculture startups engaged in what he calls an "edible space race." They are based in Silicon Valley, Holland, Israel and Japan, but the bulk of "Billion Dollar Burger" is focused on a San Francisco company called JUST and its leader, Josh Tetrick, a mesmerizing protagonist. Educated as a lawyer, he's a food-world visionary, slick salesman, mercurial boss and all-around pugilist who battles internal rebellions and takes on competitors, government bureaucrats and legal authorities while single-mindedly driving toward being the first to get his products in restaurant kitchens and supermarket meat departments.

An "Alabama-born, Philadelphia-raised vegan activist with scruffy hair and a razor-wire stare," Mr. Tetrick co-founded **JUST in 2011**. Like any good tech startup, JUST was launched from a

West Coast garage, which it outgrew as its line of plant-based eggless condiments (Just Mayo being the best known) penetrated mainstream supermarkets, making JUST the first food-technology unicorn, a brand-new private company valued at $1 billion or more.

Here's where supplements can come in handy, according to guidelines from national health organizations. Before you add any supplements to your diet, however, meet with a health care provider who can determine what is best for you based on your individual health history and lifestyle habits.

- Vegans/ Vegetarians lack B12 vitamin and iron

2020-06-24 - CNN - ARTICLE

Vegans: Vegans of any age are at risk of vitamin B12 deficiency because vitamin B12 is not produced by plants, Stipanuk explained. If you are a vegetarian, especially a vegan, you should ingest a reliable vitamin B12 source, such as fortified foods or supplements, according to the Vegetarian Nutrition Dietetic Practice Group[https://vegetariannutrition.net/docs/B12-Vegetarian-Nutrition.pdf] of the Academy of Nutrition and Dietetics . The average daily recommended amount[https://ods.od.nih.gov/factsheets/VitaminB12-Consumer/] for adults is 2.4 micrograms per day.

7.5.9 2020/3

- As answer on high number of corona cases in meat packing plants, are buying safety equipment, testing safeguards, and are looking for robot butcher solutions as longterm solution.

2020-07-02 - The Wallstreet Journal - ARTICLE

Coronavirus Surge Tests Safeguards for Meatpacking Workers; New infections grow in major meat-producing states as the industry has returned to regular production levels in recent weeks

Surging coronavirus cases[https://www.wsj.com/articles/what-we-know-about-the-coronavirus-11579716128]in major meat-producing states are testing safeguards that the U.S. meat industry has implemented to protect employees and their meat production after a wave of infections forced widespread plant shutdowns in April.

2020-07-09 - The Wallstreet Journal - ARTICLE

Tyson Turns to Robot Butchers, Spurred by Coronavirus Outbreaks; The pandemic is speeding meatpackers' shift from human meat cutters to automated ones, but machines can't yet match people's ability SPRINGDALE, Ark.—Deboning livestock and slicing up chickens has long been hands-on labor. Low-paid workers using knives and saws work on carcasses moving steadily down production lines. It is labor-intensive and dangerous work.

Those factory floors have been especially conducive to spreading coronavirus. In April and May, more than 17,300 meat and poultry processing workers in 29 states were infected and 91 died, according to the U.S. Centers for Disease Control and Prevention. Plant shutdownsreduced U.S. beef and pork production[https://www.wsj.com/articles/a-smart-guide-to-the-u-s-meat-shortage-11588768651?mod=searchresults&page=1&pos=16] by more than one-third in late April.

Meatpackers in response spent hundreds of millions of dollars on safety equipment such as personal protective gear, thermal scanners and workplace partitions, and they boosted workers' pay to encourage them to stay on the job. They also are searching for a longer-term solution.

While meat processing overall has grown safer in recent years, it remains one of the more hazardous jobs in the U.S. economy, according to the Bureau of Labor Statistics. With 4.3 workplace injuries or illnesses per 100 full-time workers in 2018, the industry's rate is nearly 40% higher than the national average for all industries, surpassing logging, mining and construction. Animal slaughter and processing facilities logged 23,500 nonfatal injuries and illnesses in 2018, the latest year for which data is available, though such data is marred by underreporting, according to the U.S. Government Accountability Office .

Bashar Abdulrazzaq, an Iraqi refugee, said he lasted less than a year at Tyson's Perry, Iowa, pork plant. After an eight-hour shift carving meat from the backs of hogs, Mr. Abdulrazzaq said, his fingers often were locked in place and he had to pry open his hand to begin work the following morning. Lower back pain, caused by moving heavy carcasses, ultimately drove him from the job, he said. "Doing that for eight hours a day nonstop," he said, "it's not human."

- Import/exports between China and the US are increasing for the first time in years, due to corona. Corona cases are decreasing in China

2020-07-14 - The Wallstreet Journal - ARTICLE

China's Imports and Exports Rebound as Coronavirus Fades in World's Second-Largest Economy; China's trade surplus with the U.S. narrows from a year earlier on rise in agricultural imports

BEIJING—Chinese imports from the U.S. rose for the first time since the new coronavirus[https://www.wsj.com/articles/who-has-covid-19-what-we-know-about-tests-for-the-new-coronavirus-11585868185] emerged earlier this year, showcasing Beijing's post-pandemic purchasing power even as political tension between the world's two largest economies continues to rise.

China's appetite for meat and other agricultural goods helped Chinese imports of U.S. goods to jump by 11.3% in June from a year earlier, after a 13.5% drop in May, data from Beijing's General Administration of Customs showed Tuesday. The Chinese buying helped to narrow Washington's trade deficit with Beijing from a year earlier, though Chinese exports to the U.S. also improved, rising 1.4% in June from a year earlier after a 1.3% decline in May.

Increasing tensions between China and the U.S. on various fronts, including Hong Kong's new security law[https://www.wsj.com/articles/senate-passes-bill-to-sanction-chinese-officials-and-entities-enforcinghong-kongnational-security-laws-11593102046], the origins of the

coronavirus and Beijing's territorial claims in the South China Sea[https://www.wsj.com/articles/u-s-set-to-reject-certain-chinese-maritime-claims-in-south-china-sea-11594661229], have ignited concerns among economists about deteriorating trade ties between the two countries. The June trade figures, however, suggest that the economic relationship has so far been insulated from the geopolitical disputes, said Serena Zhou, a Hong Kong-based economist for Mizuho Securities.

- New study shows, methane emissions reach a new hight, acriculture and cows make up big part of those emissions

2020-07-15 - CNN - ARTICLE

The world's methane emissions are at a record high, and burping cows are driving the rise Methane[https://cnn.com/2020/02/19/world/methane-emissions-humans-fossil-fuels-underestimated-climate-change/index.html] emissions are at their highest level ever, with agriculture[https://cnn.com/2020/07/14/business/burger-king-cow-diet/index.html] and fossil fuels the biggest drivers, according to new research.

Climate models suggest that continued increases in methane levels could see global temperatures increase by 3-4 degrees Celsius by 2100, researchers from the Global Carbon Project said in a statement published Wednesday. Researchers looked at methane emissions from 2000 to 2017, the last year for which complete global data are available, and warn that the current path leads toward a "dangerous temperature threshold," according to the statement. Both natural disasters, such as wildfires, floods and droughts, and social disruptions, including mass migrations and famines, would become "almost commonplace," it said.

Methane is 28 times more effective than carbon dioxide at trapping heat over 100 years, the team said, and human activity accounts for more than half of methane emissions. Annual emissions of the greenhouse gas have risen by 9% since 2000, which has the same effect on warming as adding 350 million cars to our roads.

The team, led by Rob Jackson, a professor of Earth system science in Stanford University's School of Earth, Energy & Environmental Sciences, published two papers in the journals Earth System Science Data and Environmental Research Letters on Wednesday.

The research showed that cattle ranching is the main reason for increased methane levels. "Emissions from cattle and other ruminants are almost as large as those from the fossil fuel industry for methane," Jackson said. "People joke about burping cows without realizing how big the source really is." Agriculture as a whole produces two-thirds of total emissions, with rice cultivation and biomass burning also significant contributors, according to the researchers.

- McDonalds want to make meat production more sustainable by investing in agricultural research and make it more save by investing in new robots, triggered by the meat shortages during the first part of the pandemic (closed meat packing plants)

2020-07-17 - CNN - ARTICLE

The truth is, this pandemic has exposed vulnerabilities in the meat supply chain that are challenging our food system like never before.

I am inspired by the strides our supplier partners are making in this area. They're finding new ways to leverage automation and robotics -- not to replace their workforce, but to make their jobs easier and improve productivity. They're testing blockchain technology to increase traceability of meat from farm-to-table, which has significant implications[https://www.accenture.com/_acnmedia/PDF-93/Accenture-Tracing-Supply-Chain-Blockchain-Study-PoV.pdf] for food safety and quality.

We must invest in innovation – As one of the world's largest restaurant companies, McDonald's also has a responsibility to accelerate sustainable innovation. We take that responsibility seriously, and we're partnering closely with farmers, agricultural scientists and research institutions to study and test new solutions. For example, through our beef sustainability strateg y[https://corporate.mcdonalds.com/corpmcd/scale-for-good/beef-sustainability.html], we're working with the Foundation for Food and Agriculture Research [https://nam02.safelinks.protection.outlook.com/?url=https%3A%2F%2Ffoundationfar.org%2F&data=02%7C01%7Camy.jamieson%40us.mcd.com%7C42e86ecb01a74ce67c5e08d816b46f90%7Cc05b8d5ab8834afbae93db5db239911c%7C0%7C0%7C637284311503754750&sdata=V7iZ8vDRuDMOnk%2B67gUD5ssmly1bn1QCXyigeD6pOGg%3D&reserved=0] and several US universities to look at how **regenerative cattle grazing practices can capture more carbon in soil** -- reducing greenhouse gas emissions while also improving biodiversity on agricultural land. Programs like this will help McDonald's meet our commitment to reduce emissions intensity (per metric ton of food and packaging) by 31% across our supply chain by 2030 compared to 2015 levels.

- *Different restaurant chains want to reduce emissions, by serving plant-based menus, adding lemongrass to cow feed,*

2020-07-19 - CNN - ARTICLE

4 new products that show Corporate America is getting serious about climate change

Burger King has sold a meatless alternative to its iconic Whopper for about a year using Impossible's plant-based product[https://www.cnn.com/2019/08/01/business/impossible-whopper-national/index.html]. But for the meat eaters out there, Burger King is making the flagship burger a little more planet friendly. The chain announced this week it's changing its cows' diet by adding 100 grams of lemongrass [https://www.cnn.com/2020/07/14/business/burger-king-cow-diet/index.html] to reduce methane emissions, aka cow burps and farts. Those emissions are one of the key contributors to climate change because the gas traps the sun's heat and warms it.

The Restaurant Brands International -owned company said the new lemongrass-fed beef is being used in Whoppers at some restaurants in Austin, Los Angeles, Miami, New York and Portland. Around 50% to 65% of all methane emissions come from human activities, including factory farming, according to the Environmental Protection Agency.

Chipotl is testing riced cauliflower [https://www.cnn.com/2020/07/13/business/chipotle-cauiflower-rice/index.html]as customers' tastes continue to shift toward plant-based and low-carb options.

- Senators denounce meat plants for putting profit over employers safety

2020-07-29 - The Wall Street Journal

Senators Get a Meaty Education

Producing meat is tough going in a pandemic, especially when you're getting slaughtered by politicians. Last month Senators Elizabeth Warren and Cory Booker denounced America's four largest meat processors for allegedly putting profits over workers, and Smithfield Foods CEO Kenneth Sullivan's unapologetic response deserves attention.

Meat-processing plants became virus hot spots this spring, and factory closures caused shortages of some meat products at grocery stores and led to the culling of hogs, chicken and cattle. But as Mr. Sullivan notes in a letter to the Senators co-signed by more than 3,500 employees, "processing plants were no more designed to operate in a pandemic than hospitals were designed to produce pork."

- Tyson foods promotes new ceo with technological knowledge, that might be good for implementing new technology in meat plants, meat sales profit decreased in the past few months, but it increased medical care for employers

2020-08-03 - The Wallstreet Journal - ARTICLE

Tyson's core chicken business lost $120 million in the quarter, after prices fell and the company's plants slowed operations and prioritized less-profitable products, partly because some workers fell ill or stayed home. "No part of our business has seen greater Covid-19 impacts than our chicken segment," Mr. Banks said.

While Tyson expects overall meat demand will grow over time, the company said the pandemic made it difficult to predict short-term profitability of its businesses. The company plans to hire nearly 200 nurses and create a chief medical officer position to support a new coronavirus monitoring program for its employees. Tyson said that it has tested about one-third of its U.S. workforce and that the overall infection rate currently is below 1%.

- Taiwan wants free trade relationship with the USA

2020-08-12 - The Wallstreet Journal - ARTICLE

Taiwan Seeks to Start Free-Trade Talks With U.S. A pact would be part of island-democracy's effort to deepen its partnership with Washington and resist pressure from Beijing

Taiwanese President Tsai Ing-wen said she wants to start talks on a free-trade pact with the U.S., part of a broad effort to deepen her island democracy's partnership with Washington and resist pressure from Beijing[https://www.wsj.com/articles/china-breaks-with-taiwan-precedent-omitting-call-for-peaceful-unification-11590151372]. In an online speech aired Wednesday, Ms. Tsai said starting trade negotiations are among her second-term priorities in strengthening relations with the U.S.[https://www.wsj.com/articles/taiwans-president-

renews-call-to-hold-firm-against-chinese-pressure-11589977931?mod=article_inline], a major trading partner and key arms supplier for Taiwan.

Ms. Tsai didn't set a time frame for the talks. Progress toward formal free-trade negotiations have been stalled for roughly two decades over disagreements that include Taiwanese restrictions on additives used in the production of American pork and beef.

- Impossible food wants to enter retail (direct-to-consumer selling) and is starting a new funding round; beyond meat already entered retail

2020-08-17 - CNN - ARTICLE

Impossible announces new round of funding as it leans into retail Investors are finding Impossible Food 's plant-based meat increasingly appetizing as the brand leans into retail. Impossible announced last week that it has raised another $200 million in funding, bringing the company's financing to a total of about $1.5 billion. This latest round, the second this year, was led by the hedge fund Coatue. It will be used to pay for product development, international operations and more. The news comes at a time of rapid retail expansion for the plant-based meat maker: In March, the company's signature product was available in about 150 grocery stores. Now, customers can find it in over 8,000 retailers, including major outlets.

Impossible first debuted its commercial product in restaurants. But it was always planning to go big on retail, Impossible's chief financial officer David Lee told CNN Business Thursday. Consumer behavior driven by the pandemic — mainly, a spike in demand for protein in grocery stores -— drove Impossible to expedite those plans. Over the past several months, demand at the grocery store for meat, dairy and other staples has risen as consumers eat most of their meals at home. Impossible reacted quickly.

In April, the company temporarily allowed its restaurant partners to sell Impossible directly to individuals. It later launched a direct-to-consumer platform. And over the past few months, the Impossible Burger hit shelves at Walmart and Publix.

Beyond Meat , Impossible's main competitor, has also been aggressive in its retail strategy. During a recent analyst call discussing the company's second-quarter results, Beyond CEO Ethan Brown said that at the start of the year, products were sold equally in foodservice and retail. In the second quarter of this year, he said, "the balance was 88% retail, 12% foodservice."

- Eating a plant-based diet and eating less meat to reduce climate change, recepies for all people in home office and cooking at home during the pandemic

2020-08-25 - CNN - ARTICLE

Try this Earth-friendly diet: How to shop, cook and eat to fight climate change; There is no avoiding it — we have to eat every day. And as the effects of climate change become increasingly evident, the choices we make about what we're eating are more significant than ever.

With many of us cooking at home these days, there is more of an opportunity to use food to fight climate change. With these ingredient swaps and tweaks to your eating habits, you can help make a more positive impact on your health as well as the Earth's. Ease up on red meat - If you only make one switch[https://www.cnn.com/2020/05/19/health/eat-less-meat-more-plants-wellness/index.html] in the service of the planet, cutting out red meat and animal proteins[https://www.cnn.com/travel/article/vegetarian-diet-beginners-coronavirus-wellness/index.html] will have the greatest immediate impact.

"A diet without meat products can reduce greenhouse gas emissions by 49 percent and water-scarcity weighted water footprint by 19 percent," said Galen Karlan-Mason, founder and CEO of GreenChoice, a grocery shopping app that helps consumers make informed choices about sustainability and nutrition, citing a 2018 study[https://science.sciencemag.org/content/360/6392/987] in the journal Science.

Karlan-Mason cited a number of factors that make industrial agriculture one of the most environmentally taxing processes in global food production. "We monocrop corn and soy and process it into feed, ship the feed to the cattle, provide land and water, and repeat for the life of the cattle, all while the cattle release methane gas daily."

Plant-based meats, however, aren't a one-to-one replacement for burgers and sausages. "If we look at soy production, it's second to beef in environmental damage — we're replacing first degree murder with second degree murder," said Douglas Murray, associate professor and chair of the nutrition and food studies department at Montclair State University in New Jersey.

7.5.10 2021/2

- World famous NY restaurant bans meat from menu, due to environmental reasons

2021-05-06 - CNN – ARTICLE

One of the world's top restaurants is ditching meat. Here's what could go wrong - Earlier this week, Eleven Madison Park's chef and owner Daniel Humm made an unexpected announcement[https://www.cnn.com/2021/05/03/business/eleven-madison-park-meatless-trnd/index.html]: When the famed New York City restaurant reopens its doors next month, meat will be off the menu. It might seem like the perfect time to get people on board with an all-vegan menu. Plant-based proteins are as popular as ever. Impossible Foods and Beyond Meat, which sell alternatives to meat designed to look, taste and cook like the real thing, have expanded massively in grocery stores[https://www.cnn.com/2020/08/17/business/impossible-foods-funding/index.html] and struck major deals[https://www.cnn.com/2021/02/26/business/beyond-meat-mcdonalds-partnership/index.html] with big food companies and restaurant chains. Last month, the food site Epicurious said it would stop publishing beef recipes [https://www.cnn.com/2021/04/26/media/epicurious-beef-sustainability/index.html], noting that production of the meat emits harmful greenhouse gases[https://www.cnn.com/2020/09/21/world/cows-methane-asparagopsis-c2e-scn-spc-intl/index.html].

- Chicken shortage and very high prices, due to high consumer demand during the pandemic

2021-05-06 - USA Today - ARTICLE

Is there a chicken shortage? How COVID, chicken sandwich war and chicken wing demand are impacting restaurants

Has chicken flown the coop? The nation's chicken wars and cravings for comfort food during the pandemic have made poultry so scarce and expensive that some restaurants are limiting or running out of chicken sandwiches, wings and tenders. Others are considering changes to menus and promotions. Heavy winter storms took a larger bite out of supply. While some restaurants have not been able to meet demand, it's unclear if and how the low supplies will affect consumers in the grocery store. The poultry industry is tamping down growing alarm over a chicken shortage with National Chicken Council spokesman Tom Super saying there was a "very tight supply but short of a shortage."

- Governor wants to promote meat by inserting a meat-passport for meat stamps in order to win prices in Nebraskan restaurants, supporting the Nebraskan meat industry

2021-05-07 - USA Today - ARTICLE

Omaha: Gov. Pete Ricketts ramped up his crusade for the meat industry Wednesday by endorsing a new "beef passport" program to promote meat eating, weeks after he blasted Colorado's governor for a resolution encouraging its residents to eat less. Ricketts, a Republican, cast meat as essential to his state's economy and the nation's food security. He criticized "radical environmentalists" and Bill Gates for promoting alternatives, such as synthetic, lab-grown meat, and for arguing that the current global meat production system isn't sustainable. "If you do away with the beef industry, it's going to be devastating to Nebraska," Ricketts said at a downtown Lincoln steakhouse, where he issued his annual proclamation of May as "Beef Month." Nebraska is one of the nation's top beef-producing states, and much of the corn it produces is used for livestock feed. Ricketts said meat is nutritionally dense and "part of a traditional, healthy diet." He said 3 ounces of beef has more protein than 3 cups of quinoa. "Who wants to eat 3 cups of quinoa anyway?" he said. The Nebraska Beef Passport, managed by the Nebraska Beef Council, features 40 restaurants throughout the state that offer the meat on their menus. Patrons earn stamps they can submit to the Nebraska Beef Council for the chance to win prizes, including a high-end cooler full of meat.

- National Academy of Sciences of the United States of America publishes study, that links 12'700 deaths each year to air pollution from animal based food production

2021-05-11 - CNN – ARTICLE

Air pollution from animal-based food production is linked to 12,700 deaths each year, study says

Air pollution from food production in the United States is linked to an estimated 15,900 premature deaths each year, according to a new study published Monday[https://www.pnas.org/content/118/20/e2013637118] in the Proceedings of National Academy of Sciences of the United States of America . Of those, an estimated 12,700 deaths -- around 80% -- are connected to production of animal-based foods. Scientists have known for years that farming contributes to harmful air pollution, but experts say this study offers the first full accounting of deaths connected to the production of certain types of food. "When we think of the big sources of air pollution in the U.S., our imagination usually turns to smokestacks and tailpipes," said Joshua Apte, an assistant professor at the University of California-Berkeley, who was not involved in this study. "But it turns out that agriculture is also a major contributor to our air pollution and therefore we should care about it for our health." The study focused on a specific type of tiny pollution particles known as PM2.5. They linger in the air we breathe and measure barely a fraction of the diameter of a human hair. But despite their small size, the particles have been linked to millions of premature deaths globall[https://www.cnn.com/2021/02/09/world/climate-fossil-fuels-pollution-intl-scn/index.html]y, as well as serious cardiovascular and respiratory problems, especially in children and the elderly[https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm].

PM2.5 particles kicked up into the air by tilling and fuel combustion in farm equipment are part of the problem, but the study found the majority of premature deaths are linked to ammonia emissions from livestock waste and fertilizer. Airborne ammonia reacts with other chemicals to form dangerous particulate matter.

- Bill gates promotes meat alternatives, in a studiotalk, they elaborate pros and cons of lab-grown meat

2021-05-11 - Fox News - ARTICLE

BILL GATES, COFOUNDER, BILL AND MELINDA GATES FOUNDATION

: Well, there are some Tesla equivalents here. People like Beyond Meat and Impossible that are creating a category where instead of using a cow, they use proteins made in a factory, and so there's no animal cruelty. There's none of this greenhouse gas release, none of the manure. (END VIDEO CLIP)

CARLSON: So here's a little tip, if you want life advice, you definitely want to take it from Bill Gates. He has done a pretty good job, made some pretty crappy software and got rich off it, but you definitely want him in charge of the planet.

Dave Duquette is the founder of Western Justice, not in charge of the planet, but he has views on the beef question. Dave, why do they hate beef so much, do you think?

DAVE DUQUETTE, FOUNDER, WESTERN JUSTICE: Hi, Tucker. Thanks for having me on. The funniest part about that little Bill Gates deal was, you know, this fake meat situation is all but greed. He is creating the ruse that it's a green situation, and it's not. When they put this fake meat, some bovine cells into a petri dish with whatever else they put in there, they end up -- it creates bait, mainly yeast, but it creates a bunch of CO2 gas. It has got to go somewhere. So it's all about greed. CARLSON: Oh. I wonder if the escape of COVID-19 from the Wuhan

Institute of Virology makes us want to conduct more reckless biology experiments or fewer on our safe food supply?

DUQUETTE: Yes, I'm with -- the study we're doing that I talked about before was a study to prove that cattle actually have a net negative impact on the environment. But also, one of the things we're going to put into this is how bad this fake meat is and all the things that they put into the fake meat.

- Tyson foods spokesperson names new male roosters used for fertilizing as source of chicken shortage

2021-05-13 - New York Post

Cock-a-doodle-snafu New roosters partly blamed for chicken shortages Underperforming roosters that aren't producing as many chicks as expected are partly to blame for the US poultry shortage, say executives at Tyson Foods . The Springdale, Ark.-based company, one of the world's largest producers of poultry and other meats, said earlier this week that it is struggling to ramp up chicken supply because the new roosters it's been using for fertilizing eggs and breeding new chicks simply aren't hitting expectations. "We're changing out one [type of] male that, quite frankly, we made a bad decision on," Donnie King, president of Tyson's poultry business, said Monday on a conference call with analysts. Breeding companies provide hens and roosters to chicken producers like Tyson, which then breed the birds and hatch their eggs to produce poultry. Tyson owns one of the major breeding companies in the United States, Cobb-Vantress. King explained that the company discovered that eggs fertilized by this specific type of rooster hatch less often, limiting the company's supply just as nationwide demand for chicken is sky-high. He added that the company is working to replace the rooster by the fall, but there could be a lingering supply hit that carries over into next year.

- Food suppliers can not keep up with demand from restaurants, since people are starting to eat out again after the lockdown is over

2021-05-21 - The Wallstreet Journal - ARTICLE

Food Supply Chains Are Stretched as Americans Head Back to Restaurants; Shortages of key ingredients and labor are troubling suppliers as refrigerated transportation costs also surge

Americans are returning to restaurants, bars and other dining places as Covid-19 restrictions come down, adding new strains in food supply chains. Suppliers and logistics providers say distributors are facing shortages of everyday products like chicken parts, as well as difficulty in finding workers and surging transportation costs as companies effectively try to reverse the big changes in food services[https://www.wsj.com/articles/grocers-restaurants-to-suppliers-hurry-up-make-more-11620388801] that came as coronavirus lockdowns spread across the U.S. last year. "Over the last six weeks, we have seen the market come roaring back faster than anybody would have anticipated," said Mark Allen, chief executive of the International Foodservice Distributors Association. "The start up has been, in many ways, as difficult as the shutdown…Everybody is trying to turn it on immediately and the capacity might not be there."

Kerry Byrne, president of Total Quality Logistics LLC, a Cincinnati-based freight broker with a large portfolio of business serving food-processing companies and distributors, said shortages of raw materials are leading to erratic deliveries of items that usually arrive on predictable schedules. "That disrupts entire supply chains. Everything is stressed," he said.

The food sector is seeing a version of what supply-chain experts call the bullwhip effect[https://www.wsj.com/articles/consumer-demand-snaps-back-factories-cant-keep-up-11614019305], where companies that have pulled back their operations seek to rapidly scale up on signs of improving demand, leaving suppliers scrambling to keep up.

- New ruling of a federal judge, that wants to reduce the production-speed of ham and bacon for working safety reasons, is criticised by pork producers

2021-05-27 - USA Today - ARTICLE

Des Moines: A group representing pork producers urged the federal government Tuesday to let them continue an effort to speed up the processing of pigs into bacon and ham despite a union's claim that the increased volume endangers workers. The National Pork Producers Council , an industry trade group, sent a letter to the U.S. Department of Agriculture calling on the agency to appeal a ruling by a federal judge that it argued would needlessly slow production and hurt farmers still recovering from problems associated with the coronavirus pandemic. "The U.S. pork production system, the most advanced in the world, is characterized by robust competition, innovation and efficiency. With the stroke of a judge's pen, the lives of many hog farmers will be upended if this misguided ruling takes effect," said NPPC President Jen Sorenson, communications director for Iowa Select Farms , the state's largest pork producer based in West Des Moines. The United Food and Commercial Workers Union , which represents 33,000 pork slaughterhouse workers, said the judge's ruling recognized that the USDA failed to consider worker safety when it finalized the faster production speeds. UFCW International President Marc Perrone said the USDA must conduct a comprehensive evaluation of the impact of increased line speeds on worker safety.

- Possible red meat shortages due to cyberattack on JBS US, company plants in the US and Australia were shut down. Feared meat shortages did not materialize but timing right after corona hits the firm very badly.

2021-06-02 - CNN – ARTICLE & 2021-06-02 - Fox News - ARTICLE

What the JBS cyberattack means for meat supply - Some shoppers may want to brace themselves for yet another possible supply crunch[https://www.cnn.com/2021/05/08/business/supply-chain-shortages-pandemic/index.html] — this time with meat. Major beef and pork producer JBS USA suffered a cyberattack[https://www.cnn.com/2021/06/01/tech/jbs-usa-cyberattack-meat-producer/index.html] last weekend, prompting reported shutdowns at company plants in North America and Australia.

The White House has said that the ransomware attack was likely carried out by a Russia-based criminal organization, and that it is dealing with the Russian government on the matter. The Australian government has said that US law enforcement is taking the lead on investigating

the attack. So far, some authorities and trade groups have assured that operations will be back to normal as soon as possible, allaying concerns of major disruption. But experts warn that it will depend on how quickly the issue is taken care of. Australia hoping to reach 'full capacity' soon David Littleproud, the Australian Minister for Agriculture, Drought and Emergency Management, told CNN Business on Wednesday local time that the country does not believe there will be a red meat shortage, even though JBS accounts for about a quarter of Australia's red meat processing.

DMITRI ALPEROVITCH, CO-FOUNDER AND EXECUTIVE CHAIRMAN, SILVERADO POLICY ACCELERATOR: The Russian government is allowing them to operate within their country. They have refused over the years to extradite those people or even to arrest them. And at some point, we need to start holding them accountable.

GRIFFIN: JBS has more than $50 billion in annual sales worldwide and accounts for 20 percent of all the beef, poultry and pork sold in the U.S. Its American headquarters is in Greeley, Colorado, an hour north of Denver. So far, there have been no meat shortages and the company says a majority of operations will resume today. Our systems are coming back online and we are not sparing any resources to fight this threat, JBS said in a statement. The disruption couldn't come at a worse time for restaurant owners who say meat prices as a result of the pandemic are already at a six year high.

- Famous NY restaurant reopens after the pandemic with meat free menu, due to environmental reasons. Guest in talkshow adds health reasons.

2021-06-06 - CNN - ARTICLE

ZAKARIA: One of the fanciest, highest-rated, most theatrical and most delicious restaurants in Manhattan made a stunning announcement last month. Eleven Madison Park announced that, after a long closure due to the pandemic, it would reopen with an entirely animal-free, plant-based menu. It's part of a larger trend that seems to be slowly gathering more and more steam. People are seeing the light, as I have, that eating animal products cannot only be bad for you; it can be bad for the planet. I am not a vegetarian yet but working my way to having more vegetables and less meat.

My next guest says that this trend needs to speed up. In the New York Times , Ezra Klein published a manifesto saying we need a "moonshot for meatless meat."

KLEIN: You know, I had known that the way we treat animals on factory farms wasn't something that I morally could support, and I could just push it out of my mind. And that's what I did for -- for many years. But I say that to say, like, I love meat.

As you said, I put it on the Instagram . I, you know, chased after fancy restaurants. And then in my 20s, I began going more vegetarian and I went back and forth. For a long time, I was vegan, except I would let myself have three burgers a month because I love burgers.

And I say all that not because my personal journey on this is interesting but because this is part of what I think should happen here. People like meat; I like meat; I'm not here to tell anybody it's not delicious. But what it is doing to the planet, what it is doing to the animals and what it is doing to our own pandemic and antibiotic risk is something that -- that should worry all of us.

ZAKARIA: So let's talk about that. What is it, something in the range of 80 billion animals -- 80 billion animals are slaughtered every year for meat. What do we know about the suffering and what do we know about the climate effects?

KLEIN: Yeah, and so that's even just land animals. But so 80 billion land animals slaughtered a year for meat, most of them chickens. Look, we live in the age of animal cruelty. It was not possible to raise, concentrate, pack together and slaughter animals at the scale we do now at any other time in human history because we didn't have the technology. The animals we eat are technologies. They're not animals. They're bred to -- to grow really quickly. We pump them full of antibiotics so they don't get sick when we pack them together in these industrial factory farming operations. And I always want to say, like, if you're a farmer or you're eating, you know, regeneratively raised meat, like that's fine, like that's not something I'm all that concerned about. But most of us eat meat from industrial agriculture. And that has tremendous consequences. And there's a lot of disease risk because viruses mutate and evolve in these packed-together factory farms. They then can mutate into a form that could jump to humans, or we eat so many antibiotics that our antibiotics stop working on us and then we get antibiotic-resistant diseases.

- Grocery stores charge a little extra on top of the rising meat and pork prices

2021-06-18 - CNN - ARTICLEGrocery stores are excited to charge you higher prices

You might not be excited about paying higher prices[https://www.cnn.com/2021/06/10/economy/rising-prices/index.html] for meat and vegetables, but your grocery store is thrilled. The rising prices for staples like milk[https://www.cnn.com/2021/06/18/business/oat-milk-wars/index.html] and pork affect grocery stores too, as they have to pay more to their suppliers. But while they are raising prices under the guise of increasing supplier costs, they're adding a little extra on top of that. When grocery stores' costs rise, stores will "mark up the full rate of inflation plus a little bit more," said Burt Flickinger, the managing director of retail consultancy Strategic Resource Group. For example, if the price of meat that a store pays to its suppliers goes up 6 cents a pound, the store might raise the price it charges for that same meat by 10 cents. Stores are betting most customers won't balk at price increases because they need to buy groceries, after all, and will still consider shopping a bargain compared to eating out at restaurants. Prices for food at restaurants are growing faster than prices at grocery stores, according to Labor Department data[https://www.bls.gov/news.release/cpi.toc.htm], giving grocers more flexibility to charge you extra.

- US chicken market is dominated by few big players, Sanderson (one of them) made a very big profit due to rising demand and high prices. Some of the big players make new investments

2021-06-21 - The Wallstreet Journal - ARTICLE

Mississippi-based Sanderson, the third-biggest U.S. chicken producer by processing capacity, had a market value of around $3.5 billion Monday afternoon, and a buyer would be expected to pay a premium to that. Demand for chicken breasts, wings and other products has increased as pandemic restrictions lift and restaurants reopen, boosting sales and prices

[https://www.wsj.com/articles/chicken-shortage-sends-prices-soaring-and-restaurants-cant-keep-up-11620302400]. At the same time, consumers have continued spending more on groceries as many are still working from home. The cost of boneless, skinless chicken breast has more than doubled since the beginning of the year and wing prices have hit records.

That helped Sanderson report better-than-expected sales and profit last month. Meat companies' costs are also rising. Grain prices [https://www.wsj.com/articles/surging-grain-prices-fuel-surprise-farm-recovery-11611322634]—typically the biggest expense in raising poultry—have jumped over the past year, pushed higher by growing exports to China and poor weather for South American farmers. Labor shortages in the rural areas that are home to major meat plants have forced poultry producers to increase wages and expand benefits to recruit and retain workers. Some companies, including Sanderson, are making fresh investments in automation [https://www.wsj.com/articles/meatpackers-covid-safety-automation-robots-coronavirus-11594303535].

The U.S. chicken industry is dominated by a handful of big players including Tyson Foods Inc ., which processes about one-fifth of the country's poultry, according to research from Watt Poultry USA. A deal with Continental would merge Sanderson with Georgia-based Wayne Farms LLC , a poultry producer owned by Continental , forming a company producing about 15% of the country's chicken meat. No. 2 player Pilgrim's Pride Corp. produces about 16% of the national total. Sanderson in October 2020 said it rejected an unsolicited takeover approach from Durational Capital Management that the chicken producer said was too low.

- New online only restaurants uses chicken wing shortage to launch, with chicken thighs

2021-06-21 - USA Today - ARTICLE

'They eat like a wing, but with more meat': Wingstop launches Thighstop amid chicken wing shortage

Wingstop is expanding its body of chicken offerings with Thighstop, an online-only, temporary restaurant that will deliver chicken thighs via DoorDash amid a chicken shortage. The "new thigh concept" will be available at more than 1,400 locations nationwide and is addressing the "consumer's fear of a chicken wing shortage head-on," the company said in a release provided by Thighstop spokesperson Megan Sprague. "We think they'll appeal to guests because they're a different part of the chicken and therefore a new way to experience Wingstop flavor," Charlie Morrison, CEO and chairman of Wingstop restaurants, told USA TODAY.

"They eat like a wing, but with more meat," Morrison continued. Chicken lovers will have access to a menu filled with crispy thighs of a naked and sauce-covered variety with 11 signature Wingstop flavors.

- Export of US hog is declining, since China has recovered from African swine fewer and herds there are growing again

2021-06-29 - The Wallstreet Journal - ARTICLE

U.S. Hog Prices Sink as China Rebuilds Herd; Prices for U.S. hogs have slipped since the Chinese government said its supplies have nearly fully recovered from African swine fever

Imports of U.S. pork to China are expected to sharply decrease in the second half of this year. PHOTO: Sylvia Jarrus for The Wall Street Journal Prices for hogs in the U.S. are tumbling in the wake of China's announcement that the country's herds have recovered from the African swine fever. Through last week, the most-active hog futures contract trading on the Chicago Mercantile Exchange has fallen nearly 17%, bringing the price down to 99 cents a pound—the first time it has fallen under a dollar since March. Futures have posted a slight rebound to start this week, rising 0.8% Tuesday to nearly $1.04 a pound. U.S. prices for pork cutouts—parts of the pig such as loin or ribs—have posted a steep dive in recent weeks.

7.5.11 2021/1

- Pro and cons of lab grown meat: Studiogespräch.

2021-01-03 - CNN – ARTICLE

ZAKARIA: And now for the last look. These I think most will agree are tasty looking chicken nuggets. But you might be surprised to learn that the meat inside them was ground not on a flesh and bone chicken, but in a lab. It is chicken meat, though, not some substitute. All of the cells are copied from this chicken named Ian.

This feat was achieved by a California startup called Eat Just, one of several companies in a high-stakes race to get lab-grown meat to market. The cultured chicken meat is made in a device called a bio reactor through a process its creators say is biologically similar to brewing beer.

- Meat packing plants didn’t report corona deaths

2021-01-11 - USA Today Online

COVID-19 deaths go uninvestigated as OSHA takes a hands-off approach to meatpacking plants

Normally, a workplace death in the United States is met with a swift and thorough response. By law, employers must report a death within eight hours to the U.S. Occupational Health and Safety Administration. An inspector from OSHA typically arrives within a day to interview workers, review the site of the incident, and determine whether the death resulted from unsafe conditions.

For workers in the meatpacking industry during the COVID-19 pandemic, however, the system of swift reporting and next-day inspections that should protect them has broken down.

At least 239 meatpacking workers have died and 45,000 have contracted the coronavirus since the start of the pandemic, according to tracking by the Midwest Center for Investigative Reporting. But companies reported less than half that number of deaths to OSHA, a joint

investigation by USA TODAY and the Midwest Center found. Experts say that's in large part because the agency weakened reporting requirements during the pandemic.

2021-01-25 - CNN - ARTICLE

As we have seen in the past nine months, workplaces can be a significant source of spread of COVID-19. And the meatpacking which includes, you know, red meats and pork and poultry industry, saw a significant, you know, outbreaks in the facilities where in many of the facilities over a thousand workers got sick. It was a recent study by the -- published by the National Academy of Sciences here in the U.S. that said just in the first four or five months of the pandemic, the meat and poultry plants because they did not mitigate the spread of COVID-19 were responsible for hundreds of thousands of illnesses in their plants, in their community, as well as so many deaths, thousands of deaths. HOLMES: Obviously things have changed. It's a new day in that way. OSHA obviously has a crucial role in worker protections but how damaged was the organization and their ability to do their job over the last four years? How was it limited in its ability to fight for workers safety?

- High number of deaths in meat packing plants

2021-01-11 - USA Today - ARTICLE

For workers in the meatpacking industry during the COVID-19 pandemic, however, the system of swift reporting and next-day inspections that should protect them has broken down.

At least 239 meatpacking workers have died and 45,000 have contracted the coronavirus since the start of the pandemic, according to tracking by the Midwest Center for Investigative Reporting. But companies reported less than half that number of deaths to OSHA, a joint investigation by USA TODAY and the Midwest Center found. Experts say that's in large part because the agency weakened reporting requirements during the pandemic.

Even fewer deaths triggered the kind of robust investigation OSHA typically conducted before the pandemic. Worker advocates say that's also a consequence of a hands-off approach from OSHA. Deaths at meatpacking plants And it isn’t just how many died, but who. The U.S. meatpacking industry has long relied on vulnerable populations to fill its workforce: immigrants, refugees, people of color, and those who lack other employment opportunities. During its last data release in July, the U.S. Centers for Disease Control and Prevention found that 87% of coronavirus cases in meatpacking plants occurred among racial or ethnic minorities.

- Report launched saying diet change is necessary to mitigate CC and biodiversity loss

2021-02-04 - CNN - ARTICLE

'Shift' to plant-based diets is key to saving world's wildlife

The global food system is the primary driver of biodiversity loss [https://cnn.com/2021/01/13/world/biodiversity-climate-intl-scli/index.html]and species extinction, and a shift to plant based diets is needed to curb the damage being done to nature,

according to a new report. Biodiversity, which is crucial to both human well-being and a healthy planet, is declining faster than at any time in human history, the report from think tank Chatham House said. Agriculture is driving this destruction, threatening 86% of the 28,000 species at risk of extinction, researchers said in a report [https://www.chathamhouse.org/sites/default/files/2021-02/2021-02-03-food-system-biodiversity-loss-benton-et-al_0.pdf]launched Wednesday with the UN's environment program. Cheap food is at the center of this devastation, researchers said: Low cost food is reliant on our use of fertilizer, pesticides, energy, land and water, and use of unsustainable farming methods.

2021-02-04 - CNN - ARTICLE

'Shift' to plant-based diets is key to saving world's wildlife

The global food system is the primary driver of biodiversity loss [https://cnn.com/2021/01/13/world/biodiversity-climate-intl-scli/index.html]and species extinction, and a shift to plant based diets is needed to curb the damage being done to nature, according to a new report. Biodiversity, which is crucial to both human well-being and a healthy planet, is declining faster than at any time in human history, the report from think tank Chatham House said. Agriculture is driving this destruction, threatening 86% of the 28,000 species at risk of extinction, researchers said in a report [https://www.chathamhouse.org/sites/default/files/2021-02/2021-02-03-food-system-biodiversity-loss-benton-et-al_0.pdf]launched Wednesday with the UN 's environment program.

Cheap food is at the center of this devastation, researchers said: Low cost food is reliant on our use of fertilizer, pesticides, energy, land and water, and use of unsustainable farming methods. But the low cost of food production creates a "vicious circle," creating a demand for further cheap food, which must be produced through intense and harmful methods, researchers warn.

"The more we drive food production, the cheaper food becomes, and the more our diets become dominated by a smaller number of crops grown intensively and at scale," Tim Benton, Chatham House 's research director in emerging risks and one of the report's authors, told CNN in an email. Intensified agricultural production also degrades soils and ecosystems, rendering land less productive and requiring even more intensive methods of farming to keep up with demand.

"As we grow more food, it becomes economically rational to waste it, over eat the calories and feed grain to livestock so we can eat more meat. Fueling demand further leads to the expectation that supply will grow and prices will fall, leading to more land conversion and more intensification," he said.

The way we produce food isn't only threatening the Earth's biodiversity, researchers warn. Accounting for around 30% of human-produced emissions, our food systems are also driving climate change. The planet needs more 'plant-heavy' diets In order to counter biodiversity loss, researchers say that we need to shift towards plant-heavy diets because of the disproportionate impact that animal agriculture has on biodiversity, land use and the environment. "Eating healthily is about eating the right amount of the right foods," Benton

said, adding that a healthy diet is rich in plants like fruit, vegetables, leafy greens and pulses, whole grains, and limited livestock produce and low in ultra processed fats, sugars and starches.

"With under 50% of the world a healthy weight, and overweight and obesity becoming the main determinants of long term health, eating less on average reduces the land footprint of diets. "Eating more plant protein reduces it further," he said, adding that 100 grams (3.5 ounces) of tofu takes on average 1/75th the land to produce than 100 grams of beef.

- Bill gates advocates synthetic meat

2021-02-18 - Fox News - ARTICLE

STEYN: There's no manure because there's no cows. If you want to play the time honored rural game of Cow Pat Bingo, which given the thin rule of Netflix is all I do most weekends, the manure is now going to have to be synthetically made in a factory around the back of the Wuhan Institute of Virology. So the new normal is tightening the screws and moving us to the next stage. From fake news to fake moos. Bill Gates, again, quote: "I do think all rich countries should move to 100 percent synthetic beef," he told "Technology Review." "You can get used to the taste difference, and the claim is, they're going to make it taste even better over time. Eventually, that green premium is modest enough that you can sort of change the behavior of people or use regulation to totally shift the demand." Bill Gates, you can get used to the tastes difference. That's the slogan of this cowed new world. You'll get used to the difference in everything from your cheeseburger to your freedom of movement, and freedom of association.

- Beyond meat signs suppy deal with Mc Donalds

2021-02-26 - The Wallstreet Journal (13 Statements)

Beyond Meat Signs Supply Deals With McDonald's, Yum; Partnerships with fast-food giants set to take meat alternatives further into the dining mainstream. Beyond Meat Inc. said it struck deals to supply plant-based meat imitations to McDonald's , KFC and Pizza Hut, a victory in the company's effort to take meat alternatives into the American dining mainstream. Under separate agreements announced Thursday, California-based Beyond said it would be the preferred supplier for a new plant-based burger from McDonald's Corp ., while helping develop new plant-based menu items for Yum Brands Inc . chains KFC, Pizza Hut and Taco Bell.

The deals boost Beyond's prospects as more restaurants resume in-person dining, after Covid-19 forced shutdowns and restrictions on eating out over the past year. The pandemic's blow to the food-service industry hurt Beyond's business, which had been heavily propelled by restaurants in recent years[https://www.wsj.com/articles/coronavirus-meat-shortages-have-plant-based-food-makers-mouths-watering-11589371206], and prompted the company to focus more on supermarket sales.

7.6 List of newspaper articles and news content (in chronological order)

7.6.1 2017/2

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8 Declaration of consent

Declaration of consent

on the basis of Article 30 of the RSL Phil.-nat. 18

Name/First Name: Senta Keller

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Study program: MSc in Climate Sciences

Bachelor ☐ Master ☑ Dissertation ☐

Title of the thesis: Analysis of the media discourse about meat and meat substitutes in the U.S.-media between 2016 and 2021

Supervisor: Prof. Dr. Karin Ingold

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