Planting a Plant-Based Future in China:

A study of China's growing plant-based industry

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ABSTRACT

In 2016, the Chinese government published new Dietary Guidelines that suggested a 50% decrease in citizen meat consumption to help curb carbon emissions and reduce diet-related illnesses. This study examines whether brand marketing and consumer messaging of plant-based meats align with the intended goals of the 2016 policy, and whether the rise of plant-based meat products is related to this policy. Semi-structured interviews were conducted to examine how companies position themselves in the market and consumer perspectives were analyzed through a detailed media analysis by identifying how plant-based products were being framed pre and post COVID-19. Results demonstrate that health concepts are the utmost important message for both companies and consumers, while climate messaging holds a much lower priority. Ironically, strong trust in government is identified yet policy implementations of climate goals seem to fall short. The influence of young generations and QSR's (quick service restaurants) are identified as a new finding in this area of research which provides implications for future messaging around plant-based products. These results imply there are disparities between the goals of the 2016 policy and the actual deliverables of the policy. It also conveys the importance of health messaging around plant-based products for Chinese consumers, which may be uprooted by the incoming generations. More importantly, it outlines the need for more climate education and understanding around plant-based products in China, as well as critical future research in this field.

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INTRODUCTION

The past few years, the plant-based market around the world has exponentially increased mainly in Western countries with Australia being the most popular country for veganism in 2018, followed by the UK and New Zealand (Ismail, Hwang and Joo, 2020). Health awareness in populations such as motives for weight loss, beauty standards and the rise in diet-related illnesses has energized the market and introduced the innovation of plant-based meat in many countries (Renub Research, 2019). On a global scale, the plant-based food market exists in North America, Europe, Asia-Pacific, Latin America, and the Middle East & Africa, and the global market for plant-based substitutes is projected to reach $85 billion by 2030, up from $4.6 billion in 2018 (Gordon et al., 2019). During mid-March of 2020—the peak of food-buying during the COVID-pandemic—sales of plant-based foods increased by 90%, compared to sales during the same time last year (Starostinetskaya, 2020). This was spurred by a shift in consumers becoming more aware of the health and immunity benefits of plant-based products; a vital concern of all during a pandemic (Starostinetskaya, 2020). Promoting increased consumption of plant-based foods is now a recommended strategy by researchers to reduce human impact on the environment and is also a potential strategy to reduce the high rates of some chronic diseases such as cardiovascular disease and certain cancers (Bombe, 2020). Due to this, both demand for and availability of plant-meat products have grown in grocery stores and restaurants. While these substitutes are increasingly normalized within the Western market, Asia has just started to explore introducing meat and dairy alternatives into their market as well.

In 2016, the Chinese government published new Dietary Guidelines that suggested a 50% decrease in individual meat consumption. The main goals of this guideline were to curb carbon emissions and reduce diet-related illnesses such as obesity and diabetes. Since then, the plant-based market within China has grown 33.5% (Robertson, 2020) with multiple local and international brands establishing themselves within Asia. This study investigates how plant-based companies within China brand their products in the market and whether or not this messaging aligns with the goals set out by the new Dietary Guidelines. This will be relevant in exposing whether these guidelines are attainable by these companies and if these guidelines were one of the main catalysts for the market's growth. It will also use the media to examine how public messaging frames consumer perspectives on plant-based meat. While the growth of China's plant-based industry has been quite monumental, there is a distinct conflict between climate awareness and policy implementation due to the health and wellness goals that drive consumer preference, company marketing and even government action around the plant-based market.

BACKGROUND

In 2016, the Chinese government outlined a plan to reduce its citizens' meat consumption by 50% (Milman and Leavenworth, 2016). New dietary guidelines were drawn up by the Chinese Nutrition Society (CNS) that recommended the nation's 1.3 billion population to consume between 40g to 75g of meat per person each day (The Chinese Dietary Guidelines, 2016) compared to 50g-80g in 2007. These measures were released to encourage the reduction in greenhouse gas emissions and to improve overall health in order to reduce chronic health problems like obesity and heart conditions. The core recommendations include:

1) Eat a variety of foods, cereal based

2) Be active to maintain a healthy body weight
3) Eat plenty of vegetables, fruits, dairy products and soybeans
4) Eat moderate amounts of fish, poultry, eggs and lean meats
5) Limit salt, cooking oil, added sugar and alcohol
6) Develop healthy eating habits, avoid food waste (Wang, et al. 2016)

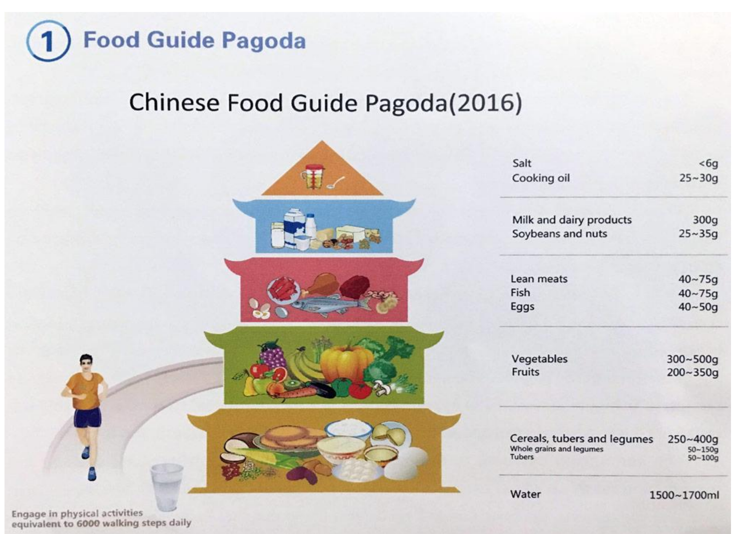
The CNS 2016 guidelines also offers support in environmental sustainability in a few specific recommendations such as:

1. Selecting fish, poultry and eggs as a source of protein over red meats and advising against smoked and cured meats altogether.
2. It emphasizes consuming and buying seasonal produce such as vegetables and fruits, which are more likely to be grown locally.
3. It discourages food waste as one of its core recommendations, because “frugality is a virtue in Chinese culture”. It recommends “individuals, families, schools and the whole society to reduce food waste and adapt healthy eating culture and behavior” (Wang, et al. 2016)

To support this update, three figures were developed to illustrate and help consumers understand the guidelines core recommendations and how to implement a balanced dietary lifestyle. These three figures include a food guide pagoda, a food guide plate, and a food guide abacus.

<u>Food Guide Pagoda (Fig 1.)</u>
The food guide pagoda serves as the central visual depicting the new CNS guideline update. It serves as a general visual representation of an ideal, balanced diet for an adult, illustrating both the amount and varieties of food that should be consumed in one day. It also emphasizes the importance of moderate exercise and daily hydration (The Chinese Dietary Guidelines, 2016).

Fig. 1 Food Guide Pagoda



Source: The Chinese Dietary Guidelines (2016)

Food Guide Plate (Fig 2.)

The Food Guide Plate is based on the principles of a balanced diet. It is a visual demonstration of food proportions represented for a person's meal. Vegetables account for 34-36%, followed by cereals 26-28%, fruits 20-25% and proteins 13-17%. It also recommends drinking a glass of milk equivalent to 300g (The Chinese Dietary Guidelines, 2016).

Fig. 2 Food Guide Plate

Source: The Chinese Dietary Guidelines (2016)

Food Guide Abacus (Fig 3.)

This guide was specifically developed for children, ages 8–11 years old. Compared to the pagoda, fruit and vegetables are in separate categories where each row is a different food group, and the abacus beads represent the portions recommended. The colorful visual is meant to attract the interest of children and aid in memorization (The Chinese Dietary Guidelines, 2016)

Fig. 3 Food Guide Abacus

Source: The Chinese Dietary Guidelines (2016)

In conjunction with the updated dietary guidelines, the Chinese government has launched an advertisement campaign called “Less Meat, Less Heat, More Life” produced by WildAid (Milman and Leavenworth, 2016). The campaign features Western celebrities including former California governor Arnold Schwarzenegger and director James Cameron along with China’s most famous actress, Li Bingbing. Its goal was to promote the reduction of meat consumption in order to reduce greenhouse gas emissions and slow climate change in China while also outlining the health benefits of reducing meat consumption. Furthermore, CNS has also engaged with multiple Chinese stars to promote this new dietary pattern, as well as companies such as PepsiCo and Nestle to promote healthier meals and nutrition education for children across China (Luo, 2016).

These dietary changes could lead to a potential reduction of China’s emissions by 9% or global agriculture emissions by 22% (Luo, 2016). This is an important feat as China as a country has consistently been the world’s largest greenhouse gas emitter (GHG), accounting for approximately 27% of global GHG emissions (Climate Action Tracker, 2019). It still consumes 28% of the world’s meat, including 50% of its pork in 2019 (UN Food and Agriculture Organization, 2019). With that said, the diets of young and middle-class consumers have been shifting as eating less meat has become a big health trend for mainland China consumers and the plant-based industry within the country has also been growing. This shift serves as a main reason behind this study as it will examine how businesses market themselves to meet changing consumer demands.

TERMINOLOGY

Plant-based diets (vegan, vegetarian, pescatarian, flexitarian)

A “plant-based diet” is used to describe a diet primarily composed of plant foods but can also include the occasional animal product depending on personal preference such as honey, eggs, dairy, meat, and fish. Plant-based diets range from veganism (excludes all animal products including honey, dairy and eggs), vegetarianism (excludes all animal flesh, including red meat, poultry, and seafood but can or cannot include dairy and/or eggs), pescatarians (excludes all animal flesh except fish and/or shellfish) and semi vegetarianism or flexitarians (occasional inclusion of meat) (Miki et al., 2020).

Plant-based meats

Plant-based meats, also referred to as meat replacers, meat alternatives, or meat analogs are food products that replicate the taste, texture and chemical characteristics of certain types of meat (Science Daily, n.d.) They are made of plant-derived ingredients that contain proteins made from soy, cereal protein, or fungi. In the last decade, the modern advances technology in food science and manufacturing has expanded the plant-based industry and many can now mimic the taste, texture and look of conventional meat-based products (Ismail, Hwang and Joo, 2020). In 2019, the plant-based meat market was estimated to account for a value of USD 12.1 billion and is projected to grow 15.0% to reach a value of USD 27.9 billion by 2025 (GFI, 2020). The top five brands in the global plant-based meat market include Impossible Foods (US), Beyond Meat (US), Garden Protein International (US), Morningstar Farms (US), Quorn Foods (UK) and they all are present in retail and restaurant chains on a global level (MarketandMarkets, 2019). The top five brands within China include Zhenmeat, Z-Rou, Omnipork and Beyond Meat (Soo, 2020).

LITERATURE REVIEW

The new dietary guidelines drawn up in 2016 by the Chinese Nutrition Society (CNS) has encouraged Chinese consumers to reduce their meat consumption by 50% in hope of preventing diet-related illnesses and to curb greenhouse gas emissions. While Chinese dishes are known to be meat-focused and pork-heavy, reducing meat consumption may not be as difficult as imagined as more and more plant-based companies are establishing themselves within China. Consumers are being offered more and more plant-based options on a daily basis including plant-based pork, beef, milk, egg, etc. This section reviews the main reasons behind the consumer acceptance and growth of the plant-based industry. It first discusses the recent rise in China’s plant-based industry and then provides three main reasons why plant-based diets and products are increasingly popular, including environmental reasons, health reasons and religious reasons. It also provides the relevant background and analysis of the current state of the plant-based market in Asia to help inform this research study.

Rise of the Plant-Based Industry in China

In 2018, The Good Food Institute (GFI) produced a first-of-its-kind report to serve as a benchmark for the emerging category of plant-based meat in China. They found that in 2018, the market size of the Chinese domestic plant-based meat industry was about 6.1 billion yuan (910 million USD) and by comparison, the US market size stood at 684 million USD (Siu and Miao, 2018). While the rise in this industry has been large, GFI cites that 90% of Chinese participants surveyed did not identify as vegan, vegetarian, or pescatarian, and yet 86.7% of the participants had consumed plant-based meat products. Products in the form of plant-based pork, beef, egg and milk have all been making its mark within China. Southey (2019) reports that in April 2018, a Hong-Kong based company, Green Monday, launched an alternative-pork product called OmniPork in mainland China. This product is now available in Taco Bells, JiXiang Wontons (a national-famous wonton chain), Family Marts, and more than 180 other restaurants in Shanghai and Beijing. The next year, in November 2019, Z-Rou (株肉) another plant-based pork product launched in China (Vegconomist, 2020). They are top contenders with OmniPork yet have also been making their mark in Shanghai's most popular restaurants. In April 2020, Cargill partnered with Yum China to trial the release of its meat-free chicken nuggets across KFC in China (Starostinetskaya, 2020) and during the same month, Beyond Meat entered the market, partnering with Starbuck on so-called "Starbucks GOOD GOOD" campaign aimed at encouraging consumers to explore new lifestyles that are "good for the planet." (Yi, 2020). It is evident that the competition within the plant-based meat industry has increased sharply the past two years as startups and internationally renowned brands are starting to insert themselves into China's markets. The number of vegan restaurants has also more than doubled within the past five years (Flink, 2018). Flink (2018) suggests that consumers are being offered more choice in terms of vegetarian options because of increased consumer demand and "the niche market of vegetarian and vegan eateries has never been more competitive". With all that said, it can be seen that China has many pivotal roles to play in the global shift to a new sustainable, plant-based diet.

Environmental Impact

<u>Environmental Impacts of Plant-Based Diets</u>

According to the IPCC, our food system is responsible for 9-11% of the total anthropogenic greenhouse gas (GHG) emissions, which makes up more than a quarter of the global total (IPCC, 2014; Springmann et al., 2016). In China, agriculture is also found as one of the main greenhouse gas emission sources (Shimokawa, 2015). For example, Dong et al. (2008) demonstrate that 17% of China's total greenhouse gas emissions were attributable to agricultural activities in 1994. The growing concerns regarding the environmental impact and sustainability of our food system has been driving a general consensus towards adopting alternative diets that would help reduce global agricultural GHG emissions. Tilman & Clark (2014) projected that adopting Mediterranean, pescatarian, and vegetarian diets would reduce food related GHG emissions in 2050 by 29%. Comparing these diets fairly limited in meat intake to those diets that have an average or above average meat intake, Tilman & Clark (2014) concluded that dietary solutions are tightly linked to our global environmental crisis. Meat and dairy demand intensive land and agriculture use which make up a majority of our GHG emissions and therefore dietary change is of utmost importance in tackling emission output. The reduction of meat is further echoed with the release of the new Chinese Dietary Guidelines by the government in 2016 (Luo, 2016). The guidelines called for a reduction in meat consumption by 50% and if followed, these dietary changes could lead to a potential reduction of China's emissions by 9% or global agriculture emissions by 22% (Luo, 2016).

Climate Change Perceptions in China

Within the Chinese government, awareness of the problems of climate change has gradually increased. In the past, climate change policy was not a high priority, especially at the local government level. Zhou et al. (2014) states that policy evolution within the central government has been largely a response to international pressure. As of 2010, China has successively enacted eight targeted laws, including the Environmental Protection Law, 50 regulations, 660 corresponding rules (ministries and local governments), 800 national standards, and 10 military regulations aimed at climate, resource, and environmental protection. Yet Zhou argues that power to implement such policies is sometimes absent and problems are inevitable, which may cause some local authorities to emphasize local economic goals and immediate interests at the expense of sustainable development and long-term interests. Wang and Zhou (2020) also found that before 2009, the Chinese central government did not place climate change on the priority list of its work. Correspondingly, few media covered this topic, leading to little influence on the general public. In the last decade however, there has been a rising awareness regarding climate change, with over 70% of Chinese respondents understanding that the issue was human caused (Wang and Zhou, 2020). They also found that the Chinese public strongly believe the government should take more responsibility on tackling climate change and that while adjustments within individual lifestyles are possible, the government should play the main role in tackling climate change. Eberhardt (2012) received a similar response when surveying Chinese youth about the importance of climate change. When asked who was responsible for addressing climate change, the majority of respondents placed responsibility on the government, while individuals put responsibility on themselves to use resources more wisely in their daily lives (Eberhardt, 2012). Consumer willingness to alter their lifestyle to make it more environmentally friendly, comes with the rise in awareness towards the severity of climate change. This increase in awareness is mainly due to government-led campaigns, media reports and individual experiences with extreme climate events (Wang and Zhou, 2020; Jing, 2018; Wei et al., 2018) A report by Jing (2018) found that most of the public's attitudes towards climate change is driven by public media and high-profile campaigns and as a result, this shift in perception has gone hand in hand with consumers' willingness to pay more for environmental and climate-friendly products. Jing (2018) reinforces how taking public transportation and garbage sorting are individual changes that most of the public are more receptive to compared to changes such as eating less meat or buying low emission cars.

Fallbacks of Reducing Diet-Related Emissions

While developments in the food system and individual diets may play a large role in reducing emissions, there is only so much it can do. Contrary to arguments above, Hedenus et al. (2014) suggest that deeper cuts in other sectors such as energy and transport would be more cost-effective and favorable compared to the food system. The authors state that the human species would need to consume 56% less red meat and 15% fewer calories and therefore adopting global dietary guidelines may not be practical enough to keep GHG emissions at bay. Instead, reductions in other sectors of our economy must be explored. Hallstrom et al. (2015) also provides their own critiques questioning the environmental effects plant-based alternatives bring. These alternative products are highly processed and are energy-intensive to produce yet the further environmental impact they pose have only been investigated by a limited number of studies. While these substitutes are increasingly normalized within the Western market, countries such as Asia have just started to explore introducing meat and dairy alternatives into their market as well. Therefore, the environmental impacts that these products may bring would be significant to explore.

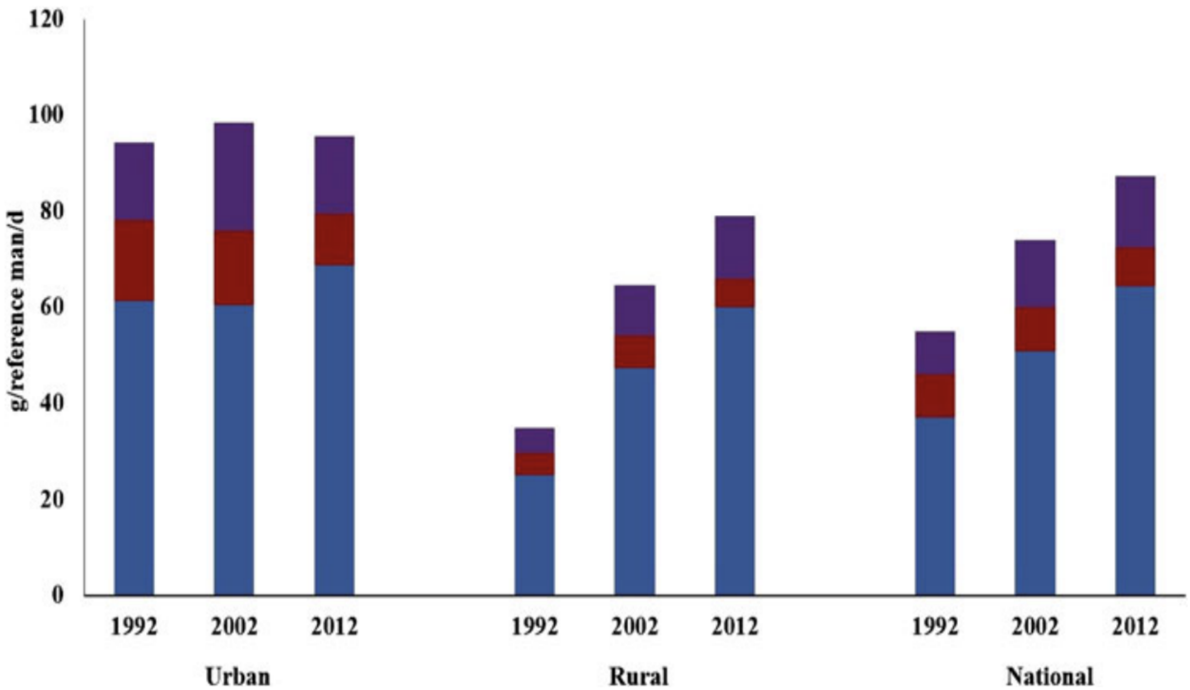
Health Impacts

<u>The General Chinese Diet</u>

Prior to the 1980s, the majority of China's daily caloric intake was derived from a plant-based diet. This mainly consisted of grains such as rice and wheat with minimal amounts of protein and oils (Ali-ali et al., 2018). Meat has historically been a rare and luxury food as well as having associations with celebration and social occasions. As China's economy grew and massively urbanized, so did the consumption and demand of meat. According to statistics from the UN Food and Agriculture Organization and the Organization for Economic Co-operation and Development, China consumed nearly 50% of the world's pork in 2019. People have now come to enjoy and feel entitled to more frequent consumption of meat due to their rising incomes and availability of meat on the market because of higher demand. This shift towards an increased consumption of meat was reinforced by He et al. (2016), as they found that the consumption status of meat and dairy products among Chinese residents increased with available income. Their review of the food consumption patterns in China revealed that there was a heavy increase in animal food consumption between 1992-2012 in both urban and rural areas (Fig 4.). In China, dietary patterns were shifting from the traditional pattern with high consumption of plant food, to the Western pattern characterized by a high consumption of animal foods (He et al., 2016). This adoption towards a more Western-type diet within China is further elaborated by Yang (2014) as he links the increased exposure to foreign products and purchasing power in China, to an increased demand towards Western processed foods. As food trends in China continue to be increasingly influenced by Western diets and food cultures, more Chinese are incorporating more meat in their diets than ever before (Yang, 2014). While China is still the country with the highest meat consumption (FAO, 2019), the rising plant-based industry has actually brought this "meatification" to a slow halt. Sales of China's most loved meat – pork – have been falling since 2016, according to data from research firm Euromonitor (Patton, 2017). As young and middle-class consumers in China seek to adopt healthier diets, they are demanding more products with less fat and less meat. This comes with more demand for vegetable dumplings and less from traditional pork-rich dumplings within young urbanites (Patton, 2017). Alongside the demand by young consumers, the outbreak of African swine fever has caused the country to face meat shortages (Lee, 2019). Furthermore, COVID-19 has also influenced the country to release new guidelines on their meat imports (Gu & Daly, 2020) and caused locals to be more wary of consuming animal products (WIO News, 2020). Coupled together, these effects have caused consumers to become more health conscious and provided huge opportunities for local and international plant-based brands to introduce themselves in China's food product market.

Fig 4. Trends in meat consumption in China.

Fig. 4. (Colour online) Trends of meat consumption in China. Poultry (■), other meats (■), pork (■). Data sources: 1992 China Nutrition Survey, 2002 China Health and Nutrition Survey, 2010–2012 China Health and Nutrition Surveillance.



Source: He et al. (2016)

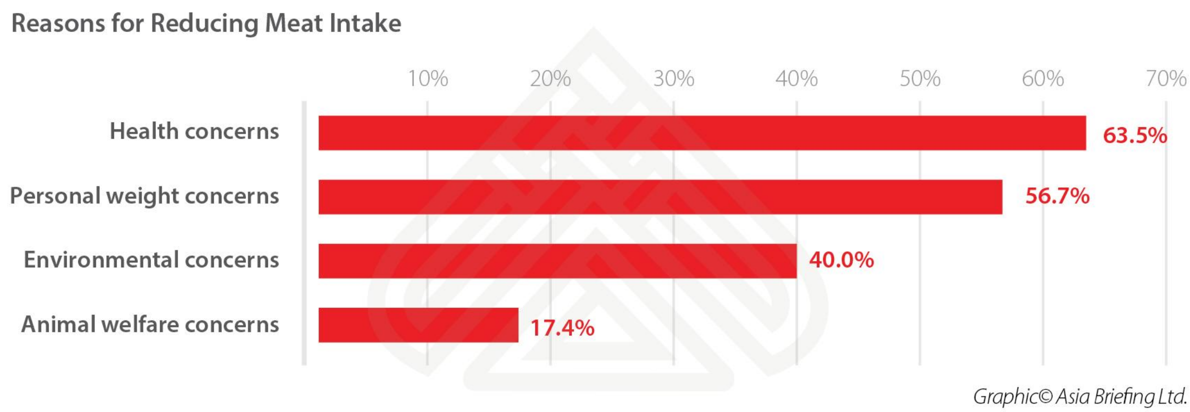
<u>Consequences of Meat Consumption</u>

Though an increase in meat consumption is associated with an increase in income and an overall improvement in social wellbeing within China, it is important to reflect on the health consequences that this dietary change brings as well. In the United States, obesity, diabetes and heart disease and diet-related illness are prevalent among both adults and youth (Miki et al., 2020). Therefore, the adoption of Western diets poses serious health consequences amongst the Chinese. In 2004, The China Study was published, shedding light onto the effects that Western diets brought to the Chinese. The study took place in 65 counties in China, over 20 years, and concluded that counties with a high consumption of animal-based foods were more likely to have had higher death rates from "Western" diseases, while the opposite was true for counties that ate more plant-based foods (Campbell & Campbell, 2004). These “Western” diseases included obesity and diet-related chronic disease which are continually found to be linked to a diet high in red and processed meat (Segelken, 2001; Tuso et al., 2013; He et al., 2016). Another study done in 2001, comparing the diets of Taiwan and mainland China today to the less meat intensive past, found that even a minor increase in animal foods could be associated with an increased risk of disease such as high cholesterol, liver cancer, and various cardiovascular diseases (Segelken, 2001). Moreover, Popkin et al. (2001) estimated that diet-related chronic diseases (e.g., stroke, hypertension, and cancers) accounted for 41.6% million deaths annually in China in 1995 and potentially 52% of all deaths by 2025. The rise in diet-related illnesses within China pose serious public health issues and are becoming a large concern for the Chinese government.

Motives for Plant-Based Diets

In light of the growing burden of chronic illnesses, plant-based diets are a growing area of interest in public health because there is some evidence that they can decrease risk for diet-related chronic diseases (Tuso et al., 2013; Miki et al., 2020). Influences from government agencies like the Chinese Nutrition Society, and the new 2016 dietary guidelines are also valuable in terms of shifting views regarding diets and health. One of the goals behind the revised guidelines was to improve overall health in order to reduce chronic health problems like obesity and heart conditions (Luo, 2016). This concern in personal health is also seen to be one of the major reasons why Chinese consumers are seeking to adopt a healthier, plant-based diet. A survey conducted in 2017 by the New Zealand Institute of Plant and Food Research asked 2,000 respondents, mainly from tier-one Chinese cities, their daily protein intake and reasons for including meat and/or plant-based alternatives. The major reasons given for reducing meat intake were perceived health benefits, managing personal weight, and environmental concerns, in that order (Phelps, 2017) (Fig 5.). In relation to prioritizing health, labels on a popular, local, plant-based beef brand, Zhenmeat, display the phrase "You won't get fat if you eat this", further reflecting the importance of personal health and weight concerns when adopting plant-based products in the eyes of Chinese consumers.

Fig 5. Major reasons for reducing meat consumption by Chinese consumers



Source: Phelps (2017), New Zealand Institute of Plant and Food Research

Consequences of Plant-based Diets

While plant-based diets are continuously cited as a way to improve individual health, there is a lot of controversy as to whether plant-based diets are truly beneficial or not. The nutritional gaps within a plant-based diet can deter consumers. Schepker (2019) addresses how vegan and vegetarian diets are known to be lacking in vitamin B12, as it is usually only found in animal-based products. Furthermore, Tuso et al. (2013) follows up saying that iron, calcium and fatty acids such as omega-3-fats are also some nutrients that can be deficient within plant-based diets. Therefore, both authors agree that many individuals that follow plant-based diets are highly encouraged to supplement their diet with multivitamins and minerals to ensure adequate nutrition (Tuso et al., 2013; Schepker, 2019). While a plant-based diet might eliminate meat, avoiding animal products also does not guarantee that one's diet can be beneficially healthy. Plant-based diets may still be high in refined starches, sugars, and unhealthy fats, which pose separate health risks of their own (Schepker, 2019). This is extremely true if consumers are only relying on plant-based substitutes as their main source of nourishment. Despite the immense popularity of plant-based products, researchers, doctors and even company CEO's are warning customers about the dangers of these mock products. Both Whole Foods' CEO and Chipotle CEO have spoken up about their criticisms toward plant-based meat, citing them as "super, highly processed foods" (Heeti, 2019) and similarly, The Wall Street Journal stated plant-based meats as highly processed and no healthier than meat (Connor, 2019). Compared to a beef patty, the Impossible and Beyond burgers have similar amounts of protein and calories, with less saturated fat and no cholesterol, but also considerably higher in sodium. These plant-based burgers contain about 16 percent of the recommended daily value as shown by research done by Dr. Frank Hu, chairman of the nutrition department at the Harvard T.H. Chan School of Public Health. In line with these results, public health nutritionist Clare Farrand in Australia also conducted research on the 'fake meat products' that were booming in Australian supermarkets. She found that many of the products had high levels of fat, salt and sugar (Terzen, 2019). While these products may appear to be healthier due on the surface level because its ingredients are purely plants, consumers do not realize that manufacturers are also adding high salt, fat and sugar content to make the products taste better. The studies by Dr. Hu and Farrand from Australia both indicate that plant-based lifestyles are not necessarily healthier if they rely on processed foods. The only reason these diets may pose health benefits to an individual's lifestyle is if the diet is mainly composed of whole foods such as fruits, vegetables, grains, nuts, legumes.

Religion

According to the Pew Research Center, an estimated 245 million Buddhists exist in China, around 18% of the total national population (Pew Research Center, 2018). China's long cultural background associated with Buddhism has introduced vegetarianism and mock-meat products long before today's trend. According to Cao (2010), mock meat products were recorded at least as early as a thousand years ago, during the Tang dynasty (7th – 10th centuries) and many of these dishes were meant to capture the flavor and texture of meats with the use of substitutes such as wheat gluten, soybeans and mushrooms. Unlike the plant-based meats we have now, these "meats" were mainly catered towards the palates of vegetarians (Cao, 2010). This idea of "2.0" plant-based meats—products that are attractive not only to vegetarians but also to meat eaters— did not exist in China until much recently (Siu and Miao, 2018). Kieschnick (2005) reinforces that these mock meat products have brought about a number of Buddhist vegetarian restaurants in China and abroad. He also notes that Buddhist vegetarianism has encouraged millions of Chinese to adopt a vegetarian diet on the basis of religious beliefs and while the motives behind adopting a vegetarian diet nowadays may be for environmental or health reasons, long before it was due to religious and welfare reasons. Cao (2010) articulates that arguments for meat avoidance among Chinese Buddhists have typically involved notions of 'karmic retribution' (*ebao*) and the 'protection of life' (*husheng*). Klein (2016) similarly explored how eating meat is seen to make one complicit in the 'killing of life' (*shasheng*), and that the adoption of vegetarianism within Chinese Buddhism was part of a wider moral unease about killing animals for food which is shared with other religious and philosophical traditions, including Confucianism and Daoism (Klein, 2016). Yet while there are moral concerns with taking life, Watson (2014) contends that animals are also praised for its flavors and textures and is crucial to be consumed during festivities and banquet within Chinese culture. Sacrifices of meat were seen to be fundamental to the relationships of reciprocity constructed between the living and the dead (Watson, 2014). Even now, people in China use food as a way to show their social status (Ma, 2015). Foods that are typically more expensive, such as meat, are presented in order to express their wealth (Ma, 2015) and certain types of meat such as pork have been viewed as a symbol of material prosperity. Therefore, the Chinese have faced a culturally widespread dilemma when discussing meat. While it holds heavy symbolic value, killing beings whom we share fundamental characteristics with is seen as morally wrong in the eyes of cultural religion.

Given this literature it is clear that the plant-based market in China can establish themselves strongly on the basis of environmental, health and religious standpoints. The new dietary guidelines alongside consumer perception of meat allows plant-based companies to have immense potential to continue expanding within the country. Yet there has been a lack of research regarding where this rise in plant-based alternatives comes from and consumer perception on it. Thus, this paper examines "*What do (plant-based) companies perceive as the main drivers behind the growth within the plant-based market?"* and *"How closely do these drivers align with the goals of the 2016 Dietary Guidelines?* To analyze consumer perception of this growth, this study will use media to explore *"What are the main frames used in the media to portray China's plant-based industry?"* and *"How do these media messages explain consumer perception of plant-based meat?"*

METHODS

To assess the effects of the 2016 governmental plan on the rise of China's plant-based industry, data collection will take place using qualitative measures in the form of interviews and online media analysis. Qualitative interviews with plant-based companies will explore what factors company owners and operators consider as contributing to the recent rise of plant-based meats China and whether or not the government has had an influence on these emerging brands. Media analysis will demonstrate how the plant-based industry has been framed pre and post COVID-19 and consequently how consumers are viewing the rise of plant-based products in China.

Interviews

Interviews were mainly focused on plant-based meat alternatives as they are more popular within the emerging market in China. Interviews were conducted with brand representatives of Z-Rou, Zhenmeat, Omnipork, and JUSTEgg (Table 1). No representative from Beyond Meat was willing to participate. Names of each representative were disclosed through participant's consent. Interviews were all conducted in person, other than Zhenmeat which was conducted through a WeChat call. Interviews were recorded with participant consent, and later transcribed. They gave an in-depth insight into the main drivers and motivators behind the plant-based market. They revealed how brands work to cater towards non-Western consumers and the reasons why they believe the industry is thriving. Each interview began with a few rapport-building questions and then asked participants to describe the main factors behind their brand's growth, main marketing messages, and thoughts on government policy. Participants were allowed time to fully respond to each question, and when necessary, probes were used to encourage respondents to expand on or clarify specific marketing messages or opinions about their brands. While the interviews were guided by a standard number of questions, they were relatively conversational. Interview questions can be found in the appendix A.

Table 1. List of interviewed brand representatives and their importance in China's plant-based industry

Brand	Representative	Role	Importance
Z-Rou	Frank Yao	Founder & CEO	Local plant-based pork brand, Shanghai based
Zhenmeat	Vince Lu	Founder & CEO	Local plant-based beef brand, Beijing based
Omnipork	David Yeung	Founder & CEO	The biggest plant-based meat brand in China, Hong Kong based
JUSTEgg	Gary Zhang	Marketing Director	One and only plant-based egg brand in China, US based

<u>Media Analysis</u>

Online media analysis examined three major newspapers in China; The China Daily (a national English-language newspaper), People's Daily 人民日报 (a national Chinese-language newspaper), and the Shanghai Daily (a regional Shanghai newspaper). These newspapers were chosen due to their popularity and audience. Due to the English content, The China Daily most likely caters towards more foreigners while People's Daily caters more towards the local Chinese population. Examining these papers shed light onto how local and foreign consumers all around China are viewing the plant-based industry before and after the 2016 policy. On the other hand, due to the location of this study, the Shanghai Daily was used to reveal how consumers in the city where the study is taking place, view the rapid expansion of the plant-based industry.

Articles were evaluated using the frame analysis with a focus on how plant-based products/mock meat products were framed before and after the 2016 governmental policy. This analysis is useful because it helps to identify how issues are defined and communicated, and for what purpose. Because consumers are constantly being exposed to media, their perspective on new, upcoming trends are strongly influenced by how the media communicates and identifies issues. A shift in the 'primary definers' of certain issues can coincide with a shift in how these issues are framed in the media (MacKendrick, 2010), resulting in a shift in how consumers view this issue. Therefore, analyzing how plant-based products and diets were framed pre-post 2016 government policy, was used as a method to better understand the changes in consumer perspective towards the food system in China.

Two keywords, "*Meat substitute*" and *"Plant-based meat"* were searched within these three major newspapers between the years 2014-2020. A total amount of 63 articles were gathered between the years 2014-2020. No significant articles under the keyword "*Meat substitute"* were found in any newspaper outlet other than The China Daily and therefore the articles retrieved under the keyword "*Meat substitute"* were omitted in this analysis. A total of 41 articles out of the 63 were analyzed under the keyword *"Plant-based meat"* (Table 2). No significant articles were found to be published before 2019. Therefore, the resulting media analysis focuses on the pre and post COVID period. Pre-COVID period was established as any year before or during 2019, and post-COVID period was established as any year after 2019 (Table 3).

Table 2. Total number of articles derived from keyword '*Plant-based meat'* between the years 2018-2020 for each respective newspaper outlet.

Newspaper	Total Amount
The China Daily	23
People's Daily	10
Shanghai Daily	8

Table 3. Distribution of the selected 41 articles derived from keyword '*Plant-based meat'*, pre-post COVID period, for each newspaper outlet.

Newspaper	Before and During 2019	After 2019
The China Daily	11	12
People's Daily	2	8
Shanghai Daily	3	5

DATA/FINDINGS

Interviews with leading plant-based representatives and media analysis of influential local newspapers, led to an understanding of how the plant-based industry is portrayed to local consumers and how it fits into the 2016 government policy of dietary change. In this section, interviews with Frank Yao (Z-Rou), Vince Lu (Zhenmeat), David Yeung (Omnipork) and Gary Zhang (JUSTEgg) are laid out with their respective themes and subthemes and then analyzed in the context of previous literature and broader market importance. Second, the main frames given to plant-based meat by local media are discussed alongside the implications of how these frames influence and shape consumer opinion.

Interviews

Interviews with brand representatives were coded by hand post-transcription. Codes were assigned based on individual responses to each interview question and subthemes were determined based on similarities codes shared with each other. Interviews with plant-based brands revealed three main themes: 1) companies' marketing strategy/messages, 2) a growing shift towards plant-based diets, and 3) strong trust towards government policy. These main themes included sub-themes in which the interviewee's responses fit in (Table 4).

Table 4. Main themes identified through interviews along their respective subthemes and provided evidence.

Main Theme #1: Main marketing messages that are implemented by plant-based companies

<table>
<tr><th>SUBTHEMES</th><th>IMPORTANCE</th></tr>
<tr><td>Companies emphasize on catering towards consumer palates, specifically focusing on the taste/texture of their food</td><td>High</td></tr>
<tr><td colspan="2">Frank: "Good food first, ethics and welfare values out of the window, open your stomach to open you mind"

"We have an entire culinary team that is dedicated to make the produce taste good. Our team also learns fast and adapts what consumers are liking/disliking in this growing market. Essentially, we want to execute the product properly and therefore taste, texture and making the product taste delicious is our priority"

David: "Well I mean number 1 is in terms of taste or texture is actually very similar. And they don't have to relearn anything. The whole process of cooking and preparation is just simple, clean and you know, and identical to how people can cook pork"

"People find it to be an excellent product, it's very versatile, and now with the luncheon meats, the Omnipork luncheon the Omnipork mince, the strip （肉丝), we are providing a huge variety of ingredients people can play with to design dishes they like."

Vince: "When we choose food, it's not only about the idea it's a lot about the expense, how easy it is to cook, it's about the delicacy. It's about the deliciousness of the food itself. This is what we would say as the most important way to make a very successful product in this field and to let consumers know and remember your brand."

"plant-based meat has fulfilled a lot of consumers needs unlike before…unlike tofu, plant-based meat is meatier, more juiciness, better mouthfeel."</td></tr>
</table>

Brands stress the importance of health messaging in their marketing to appeal to the Chinese audience	**High**
Frank: "We market Z-Rou so it is saying that *you will have a healthier, longer life*. I don't want to focus on vanity because it's not my own value and it is not our company's values. We focus not on conspicuous consumption but on *conscious consumption."* **David**: "*Health, wellness and sustainability,* those are integral pillars of our brand and why we exist." "So when you look at this, [points at product advertisement on table], no added nitrate, non gmo, no hormones, no antibiotics, *craving without guilt*…on a microlevel, *you need to address people with taste, with health propositions."* **Vince**: "Well we position ourselves as *an innovation company with health*y and convenient products. *Healthy and convenient* is our message to the consumers." "From our message to consumers, it is not only about the fat intake, not only about the cholesterol intake but more about 养身, more about the over hundreds of years of tradition where Chinese people are *eating plant-based for better gut health for better living condition.* It is more about culture not only about the numbers in the fat level." **Gary**: "In China, I think health is absolutely one of the key reasons…But in the China context, we cannot actively promote animal welfare, so we just keep repeating "this is plant-based and it's not made from chickens" and we just stop there." "One of the reasons why they pick plant-based eggs… is *zero cholesterol and much lower saturated fat and non GMO,* etc."	

<table>
<tr><td>Companies believe climate change is an unnecessary marketing message</td><td>High</td></tr>
<tr><td colspan="2">Frank: “Practically there is less climate footprint in the product but I’m not sure if it makes sense on the marketing side though and I’m not sure if it’s important to convey “

David: “Well from a consumer standpoint, I mean you cannot be bombarding people with climate change messaging every time.”

“… people when they eat, they are not here to receive a very heavy message about the planet is dying”

Vince: “Yes [we include climate messaging] but not most importantly.

Gary: [In response whether climate messaging is used] Not really, I think in Western countries health and sustainability are the key motivations to choose plant-based foods or alternative proteins. In China, I think health is absolutely one of the key reasons…</td></tr>
<tr><td>Companies seek to work with KOL’s/celebrities in order to increase their exposure in the plant-based market</td><td>Medium</td></tr>
<tr><td colspan="2">Gary: “In terms of awareness building, we collaborate with KOLs or vegans, foodies, or vegetarians.”

David: "Now of course, the others are typical things that we know. The social media, the celebrities, the word of mouth, and also a lot of teaching materials to let people know how to use these new ingredients and products.”</td></tr>
</table>

The above themes demonstrate that plant-based companies seem to revolve their marketing around individual consumer benefit whether that be through product taste or personal health benefits. Climate awareness is often brushed aside, and the strong stance put on health shows that consumers may not benefit or be receptive to such heavy environmental messaging.

Main Theme #2: Brands put in their trust towards the government regarding its 2016 dietary policy

SUBTHEMES	IMPORTANCE
Brands echo that they trust the government and how beneficial this policy is	**High**
Frank: **"**China knows what they are doing. *I trust the government as they know best*." **Vince:** **"**We think this outline, *this plan is very helpful* for the whole plant-based meat industry." **Gary:** "*This is a smart choice and wise decision*, what you see in 2016 is just white paper."	
Companies indicate that this policy comes from the government's pursuit for sustainability	**High**
Vince: "We think in 2030 Chinese will consume half animal protein and half plant protein. But the total protein intake or consumption will be more and more compared to today, *it's just more sustainable and healthier* for consumers to eat more plant-protein than animal protein" "Basically, every city wants to consume more protein, but you can choose it wisely, you can consume more plant-protein, reduce red meat consumption. Because Chinese consumers love eating pork, but pork is 100% red meats that is a big health risk in the future" The health risk will give social security a big burden, so long term, we want our population healthier, the easiest way is to go from daily nutrition and the daily intake. If we all consume less red meat and more plant-based protein, people will get more and more healthy. In an extreme way, *the whole health security will collapse if too many people get heart diseases*." **Gary:** I think it shows the commitment from the top government that they really want to do something to make the planet and also China, *the food system, more sustainable*. And also, they want to make their citizens healthier. I don't see any specific examples, but I have heard that many gov centered restaurants are starting to have a so-called "Vegan/vegetarian" Monday or Tuesday. And this kind of initiative is happening in some regions.	

The themes around government policy indicate that representatives seem to hold strong trust in the government and belief that this policy is an aim towards sustainability. However, the sustainability goals of this policy seem to manifest as a focus on citizen health first and foremost, instead of a focus of reducing greenhouse gas emissions.

Main Theme #3: Young Chinese consumers are shifting towards plant-based diets as it becomes a growing trend

SUBTHEMES	IMPORTANCE
Companies identify the large influence the younger generation plays on the plant-based movement	**High**
Frank: "Purely because of education, more of *the younger generation* are learning more about ourselves and the environmental impact we can bring." **David:** "…the younger people are the ones who have been following the news from around the world, and they see brands such as Beyond Meat that are getting popular and they are also *reading about climate change…*" **Vince:** "We see a lot of *young people living a vegan or vegetarian life in China*, very similar to America or another western country." **"**A lot of people like *young generations born post 90's or 2000's* they look at a lot of channels like Youtube, they are getting more exposed to new ideas, especially to some more advanced ideas regarding nutrition." **Gary:** "People are more aware of health from dining, taking good care of the planet, *being more responsible for the planet especially from the younger generation.*" "I also sense that the *Gen Z* from China are paying attention to these kinds of topics and they are more open minded than other age groups to try new things. *Climate change is also very noticeable to them* and they want to contribute their efforts from every meal they take, from their daily diets."	
Plant-based diets are seen as a growing dietary trend for Chinese consumers to adopt	**Medium**
Vince: "But right now people are shifting because they want to embrace *the trends of plant-based diet*." "We have seen a lot of health and nutrition trends going to China. A lot of young generations will embrace it, and the plant-based trend is one *of the biggest trends* we have seen over the past 10 years." **Gary:** "… we believe that *this type of trend will continue,* it won't fade and instead become more and more established."	

The large role that younger generations play in plant-based diets indicate that there is a growing consumer base for this concept. It shows that while health benefits may lead the majority of consumers to adopt plant-based diets right now, the increasing trend brought by the push of younger generations may entirely change the reasons for going plant-based in the future.

Interview Findings

Main Marketing Strategy/Messages Utilized by Companies

When asked about their main marketing strategies all interviewees echoed the sentiment that they place a large emphasis on the **taste and texture of their products**. In other words, they all work on catering towards consumer palates. Vince from Zhenmeat even states that elevating the taste of a product is the easiest way to be very successful in this field, and to let consumers know and remember your brand. Therefore, it can be seen that taste and texture is one of the key marketing strategies used by both new and established plant-based brands in China. Unlike tofu, these new plant-based options are more meaty, juicier and have better mouthfeel which allows them to stand alone and convince more consumers to try their products. The weight given to products that taste good, have better mouthfeel, and are more meaty show that plant-based products are not only made and targeted at local vegetarians like it was historically (Cao, 2010). Instead, brands such as Z-Rou, Omnipork and Zhenmeat are working on catering towards a wider consumer palate. This is hugely important as it indicates there is a growing appetite for plant-based products. Vegetarians and vegans are now not the only ones seeking to try these plant-based alternatives but also carnivores. As previous literature stated, these alternatives that also cater towards 'meat-eaters' are relatively new to China's market (Siu and Miao, 2018) yet the pull of plant-based products that entice carnivores can be seen as one of the main reasons behind the strong growth of plant-based brands in China.

While their main marketing strategy focuses on the taste/texture of their products, when it comes to marketing messages, interviewed brands distinctly prioritize health messaging over climate change messaging. The key message these brands want to send out to consumers is that plant-based products are 'healthier' and 'nutritionally better' substitutes for the real thing. Having health as one of the most important pillars or values for these companies may be the easiest way to appeal to consumers in this market. Previous research within China's plant-based market supports this argument as the major reason why consumers even attempt to reduce meat intake is due to health benefits and managing personal weight (Phelps, 2017). Therefore, brands positioning themselves within the health and wellness space is conducive in driving consumer acceptance as consumers themselves seem to also hold the idea that plant-based products are more nutritionally beneficial than conventional products. From this we can see that while the climate goals of China's government policy seem to want to drive meat reduction, the health goals of consumers are more compelling.

On the other hand, all brands specified that climate change is not a necessary message they need to convey. Frank, Gary and Vince said they incorporate climate messaging to some extent, but it is not the most important message. Climate change in their eyes, seems like a too hefty of a message for consumers to grasp within the Chinese market. This resonates with previous literature in that while climate awareness in China has been rising (Wang and Zhou, 2020) consumer willingness to alter personal lifestyles seem to only come through taking more public transportation and upholding garbage sorting standards. Dietary change, specifically reducing meat consumption, as a solution to climate change was not a message that many consumers were receptive with (Jing, 2018). This shows that many Chinese consumers may not consider the effects that dietary change can bring onto the environment. It may be due to lack of education or the specific marketing messages around plant-based diets from companies themselves or media. Because of this, we can see that messages revolving around large-scale issues such as climate change is not of immediate importance for consumers or companies. Instead, brands seek to focus on health/nutrition, on how their products can bring benefits to the consumers directly themselves, instead of sustainability targets.

Companies Strongly Trust in the 2016 Government Policy

All interviewees stated that they were aware of the 2016 government policy to reduce meat consumption by half. When asked about their opinions on this policy, they all said that they trusted the government and believed the policy to be a smart decision. Gary and Vince expanded a bit further, conveying that the government has a strong stance on pursuing sustainability through this policy. Vince explained how this policy mainly arises from the government's concern over its health system collapsing.

> Chinese consumers love eating pork, but pork is 100% red meat, and that is a big health risk in the future…The health risk will give social security a big burden…in an extreme way, the whole health security will collapse if too many people get heart diseases…[However], Chinese consumers and people will continue to demand more and more protein, high quality protein…so there must be a more sustainable way of providing protein…If we all consume less red meat and more plant-based protein, people will get more and more healthy. Less people will have heart diseases and the social security, or the health security will have no burden.

He proclaims that by 2030, protein consumption in China will be made up of half animal protein and half plant protein. From this, it is made abundantly clear that the government not only acknowledges that plant-based protein is a sustainable alternative to regular meat, but also that it can provide a logical and beneficial solution to impeding health risks. With this in mind, it seems that the 2016 policy goal of reducing meat intake mainly revolves around the idea of improving individual health concerns rather than reducing greenhouse gas emissions even though climate goals are also clearly outlined within the policy. This shows that the government has not been successfully delivering climate goals of their policy. Ironically, previous literature makes clear that the Chinese public strongly believe the government is the main bearer of responsibility when tackling climate change (Eberhardt, 2012). The emphasis on government responsibility by the Chinese public shows the heavy confidence and belief that government policy will help tackle climate change problems. Yet, we can see here that there is a discrepancy between the goals of climate change and the actual execution of it within the 2016 policy. The government itself, while pursuing sustainability, is pursuing it more through health-related ideas than climate emission ones. While the policy clearly states certain climate goals it aims to hit, there is a clear lack of executable action to reach these goals. Therefore, it's reasonable to conclude that the climate goals of the 2016 government policy are consistently overshadowed by competing health motives from companies, consumers and the government itself.

The Influence of Younger Generations on Plant-Based Diets

The recent shift and curiosity towards plant-based diets and their respective products have been identified by interviewees to be highly due to rising awareness within the younger generation, specifically Generation Z. Gary and Frank both mentioned that the Gen Z are becoming more and more educated on the environmental impact individual diets can bring. And this education is coming from the consumption of social media, specifically from abroad. Brands believe that the younger generation play a remarkable role in garnering popularity of plant-based products. The strong awareness regarding health, sustainability and wellness within this demographic is one that can influence other groups to adopt this new concept as well.

The attention placed on the role that the younger generation plays in the popularity of plant-based products have also established this diet as a trend. Vince, who has been around the food & beverage industry for over a decade, believes that the plant-based trend will become the longest trend in China for the next 10 years. He also reiterates the idea that this trend is heavily influenced by channels such as Youtube. This heavily establishes the fact that the popularity of plant-based within China is widely influenced by media channels abroad. This newfound trend is something that only widespread consumer acceptance could have brought and therefore they both believe it is here to stay.

Both the emphasis on the role that younger generations play, and the trend plant-based diets have picked up on China's market are new findings that previous literature has not identified before. Instead, it has been mentioned that government influence such as the Chinese Nutrition Society and the new dietary guidelines can shift views around diet and health (Luo, 2016). These findings however show that in the recent years, the influence of younger generations may play a larger role in shifting diet trends. This indicates that the consumer base for plant-based products will continuously grow in the future as younger generations continue to adopt this trend. However, even so, sustainability awareness within younger generations seem to stem from social media consumption, specifically international media consumption. Therefore, more localized education regarding climate ideas and sustainability concepts would be needed if this trend seeks to reach an even larger consumer base. While personal health goals may be the sole reason individuals accept plant-based ideas right now, the increased sustainability awareness within younger generations may bring about change behind the motives for pursuing plant-based diets within the future. Climate change and sustainability may become the forefront of the reasons why individuals aspire to try or adopt plant-based products because of the shared awareness from younger generations. Due to this, climate awareness and stronger, more successful, executions of sustainability policies by the government may be reached.

While interviews reveal the specific marketing messages brands use to attract consumers to their products, preceding ideas around plant-based meat and diets by large media outlets can also largely shape consumer perspective. The following media analysis builds on from the interview findings by offering an insight into how the media's portrayal of the plant-based industry may influence consumer ideas towards plant-based products. More importantly, it offers insight into the changes of the plant-based industry pre-post COVID, and the larger implications of these changes to consumer behavior.

Media Analysis

Media framing was examined in the study to analyze what messages consumers were given regarding the rising plant-based market in China in the recent years. Frames were identified by examining how the articles used concepts, themes, or quotes to describe the reasons for consumer acceptance and growth in plant-based products. Three different frames describing the market's growth are identified:

1) The advancement of plant-based meat generations. This includes how different generations of plant-based meats cater towards different diets and how they should become more adaptable to the Chinese consumer palate.
2) Consumer benefits of plant-based products (e.g., Personal health and food safety concerns)
3) The growth of plant-based industry itself, apart from consumers. Here, the influence of powerful marketing players other than media itself such as international companies or long-standing quick service restaurants (QSR) are given a certain amount of weight in the conversation.

<u>Not just for vegetarians: A transition from plant-based meat 1.0 to plant-based meat 2.0</u>

Many of the articles examined before 2019 focused on the history of mock meat and vegetarian meat in China. They noted that "vegetarian meat can be traced back to the Tang Dynasty (618-907) when monks started eating tofu made from soybeans" (Luan, 2019) and how "the tradition that has lasted until the present day" (Chai, 2019). However, an important characteristic about these mock meats was that they mainly used ingredients such as wheat gluten, soy products, and mushrooms. As past research has shown, these products were mainly catered towards the already long-standing vegetarian community, which were more or less made up of Buddhists (Cao, 2010). These characteristics allowed them to be framed as plant-based meat "generation 1.0" in the media.

Instead of only catering towards vegetarian palates, articles post 2019 show a shift in how plant-based meat are framed. Specifically, they became framed as "generation 2.0" due to the shift in target audience. Articles focus on how to make plant-based meats more adaptable within Chinese cuisine, and to better cater towards the palates of Chinese consumers. For example, Li Chen, deputy director for food and beverages at research firm Mintel, stated that "Plant-based meat products have to be well-integrated with Chinese cuisine." (Wang, 2020) And "if plant meat is to better achieve localized development, it is also necessary to develop products that are more suitable for the Chinese food scene…. make the product into a meat block and a meat strip structure." (Yang, 2020) The focus on making products that would be more widely accepted within Chinese cuisine and consumer palates implies two things. One, in order for local expansion to increase, plant-based products cannot only be presented in the form of meatballs, hamburgers, or minced meat, which are more suitable for Western-style cuisines. Two, plant-based products have advanced to a new generation in which they are starting to cater towards the carnivorous population as well as the vegetarian population. With this progress in generations, the consumer audience of the plant-based market is not only localized within the vegetarian population. Instead, it has expanded to satisfy the needs of all consumers which gives more opportunity and potential for this market to expand. Therefore, this shift in how plant-based products are framed generationally, clearly states that reasons other than religion and dietary restrictions play a factor in why consumers are willing to adopt new plant-based options.

Consumer benefits: A shift from health to food safety

Across both time periods, all articles identify plant-based meats as potential health solutions for an individual's diet. However, a shift towards food safety concerns, specifically antibiotics present in animals, due to the rising COVID-19 pandemic were identified in articles post 2019.

Before 2019, the reasons for adopting a vegetarian lifestyle were emphasized on the growing "health" trend. Specifically, how "artificial meat" could entice those that are becoming more aware of adopting a healthier diet. One article "noted the rise of "artificial meat" is in line with the development trend of China's consumption upgrade and growing health awareness." (Chai, 2019). Post 2019 however, while health is still a major benefit of plant-based products, articles get more detailed nutritionally. This means that a lot of articles start focusing on the cholesterol, fat, and protein content of plant-based products. For example, one article says that "Compared with real meat, plant-based meat is high-protein and has low cholesterol and fat…which has triggered a food trend that various food companies and capital markets worldwide have been following" (Xinhua, 2020). Companies themselves such as Zee-Ai, market their dishes as "products made of plant protein raw materials, with a soybean base characterized by high protein, zero cholesterol and low saturated fat" (Li, 2020). This shift in the health frame demonstrates that instead of the media focusing on health as a growing trend, it focuses on health in the context of an established trend.

Articles post COVID start focusing on how consumers are embracing this trend. A customer in one article, after trying the new plant-based options at Starbucks, is quoted saying, "It is in line with my expectations for plant-based meat. If I want to eat meat during the weight loss period, I am afraid that it is too oily. This kind of food is the most suitable" (Yan & Xuan, 2020). Another article quotes a different diner, "Although the overall taste is a bit loose, it doesn't have any beany flavor, and it can be regarded as tough, mainly because it is relatively healthy" (Yang, 2020). The emphasis these consumers place on how these plant-based products are a healthier option, and can be eaten for weight loss, reiterate the health frame given to plant-based products in the media. It emphasizes that plant-based products are an important health solution to an individual's diet and echoes previous literature around the fact that personal health and weight loss are seen as a major motive as to why Chinese consumers seek to adopt plant-based diets (Phelps, 2017). This frame also implies that plant-based products in China have strongly established themselves within a health and wellness perspective instead of other perspectives such as environmental concern, reiterating similar messages received from interviews.

Though health is a strong frame before and after 2019, post COVID articles also start to introduce food safety as another major reason why consumers should adopt plant-based options. The research company Mintel said the COVID-19 pandemic has led to changes in Chinese perceptions of meat consumption (Wang, 2020). In a McKinsey report, three-quarters of respondents to its COVID-19 consumer survey cited they wanted to eat more healthily after the pandemic (Xinhua, 2020). Other than the pandemic however, many consumers also "worry that the animal feed contains antibiotics, etc., which will lead to drug residues and adverse effects on the human body. 'Plant meat' can avoid this problem and make the human body healthier" (Gao & Zhang, 2020). The shift in consumer perception towards meat products after 2019, attests to the increasing dominance that food safety has in the narrative around plant-based products. It also shows that while health may continue to be a major frame in which consumers adopt plant-based products, the role that food safety plays will be a growing factor in the framing of plant-based products. Furthermore, the rising food safety frame implies that plant-based products not only cater towards consumers that are concerned with health but also cater towards consumers that are concerned with food safety.

Growth of the plant-based industry: Influence of international brands to local QSR's

From an industry standpoint, apart from consumers, the plant-based market itself has been framed differently through a series of international and local brand recognition. Most of the articles before 2019 identify international brands as significant players in the market, while most of the articles after 2019 identify local QSR's as significant players in the market.

Before 2019, articles focused a lot on international brands such as Beyond Meat and Impossible Foods, and their potential of entering China's market. One article cited how "Impossible Foods, JUST and Beyond Meat are luring affluent Asian consumers with products they say are more sustainable and environmentally friendly than conventional meat" (Wang, 2019). Furthermore, a lot of attention was also placed on the future opportunities of the plant-based market in China, as the industry had only just begun the first phase of development (Li & Xu, 2019). For example, one article stated that "Plant-based meat manufacturers from China are looking to tap more mass market consumers" (Chai, 2019) while others had a gloomier look towards this market as "some industry experts are not optimistic about the development of plant meat in China" (Li & Xu, 2019). The focus placed on international brands and on the early development of plant-based meat in China convey how unpopular plant-based products were before and during 2019. It demonstrates that there were never any key local players established during that time period but also expresses the potential for expansion and growth of which consumers may want to keep their eye on.

As an increasing number of plant-based brands started establishing themselves locally in 2020, more attention was put on large QSR companies such as Starbucks, KFC, Papa Johns, etc. within media articles. Most of the articles reported on the fact that "the two giants of international western fast food brand KFC and international coffee chain brand Starbucks have successively launched "plant meat", attracting the attention of food lovers to the new trend of creative diet" (Gao & Zhang, 2020) and "Not only in top franchises such as Starbucks and Wagas, but also in local bistros and independent restaurants, dishes made of plant-based "meat" are now very common in Shanghai" (Li, 2020). Furthermore, many more local plant-based products brands start being mentioned in articles during this time period. Names such as Oatly, OmniPork, Starfield, The Vegetarian Butcher, are starting to make their appearance in articles showing that the plant-based market in China is becoming very well established. The shift in focus towards the multiple QSRs' influence on China's plant-based market not only reinforces the already established health trend but also implies that 1) these products are legitimate and consumers or businesses who have yet to embrace the plant-based trend should try it, and 2) they have the same influential power as the younger generations mentioned throughout the interviews, meaning that QSR's can play an important role in delivering elevated messages around plant-based diets in the future. The framing post 2019 makes it clear that the plant-based industry has established a strong footing into the local market. Due to the industry's strong growth, local players are able to provide consumers with choices that are more accessible and more affordable than ever before through the collaboration with influential QSR's. As Flink (2018) mentioned, the number of vegan restaurants has also more than doubled within the past five years as consumers are being offered more choice in terms of vegetarian options. And as we can see here, this may have a lot to do with the role that QSR's are playing within the past year or two which makes them the utmost importance in persuading consumers to adopt plant-based products around ideas other than health and wellness.

All the frame shifts identified here have revealed the important players and channels that are responsible for creating the steady growth within the market for the past few years. These channels will continue to penetrate the market and serve as conducive ways to further establish the local plant-based trend.

POLICY RECOMMENDATIONS

This study demonstrates that the climate goals of government policy are overshadowed by the health motives of consumers, companies and the government itself as well, though a focus on health may have a co-benefit on reducing climate impacts. In order to meet the climate goals of China's new dietary guideline more effectively, policy changes on a local and government level can be implemented. Government regulation around climate change education, collaborations with schools and tighter regulations around food safety measures in relation to COVID-19 are some recommendations that could broaden the consumer idea around plant-based concepts.

1. Government Regulations around Climate Change Education

Stronger policy around climate education can be a primary regulation put in place for swaying public perception towards plant-based alternatives. Data collection revealed that while a large amount of the younger generation have strong climate change awareness, the main source of this awareness stem from the consumption of international media specifically Youtube and news outlets. Improving local education on climate issues can harbor wider recognition towards diet-related emissions, allowing more of the Chinese public to see eye to eye on the issue. It can also widen the consumer base for plant-based products and ultimately shift consumer rationale towards plant-based alternatives as well.

2. Collaboration Programs with Schools

Due to the regulations and sensitivity around government influences in China, policy suggestions on that level would most likely be an overstretch. However, local changes specifically starting within schools could be the most successful way to ingrain ideas of sustainability from a young age. As brand representatives made clear, the influence of younger generations within this space is tremendous, and media analysis shows that QSR's also play a monumental role in this space as well. Seeking collaborations or implementing school programs could be one of the most socially successful ways brands can spread heavier messages regarding climate change around plant-based diets. Green Monday and Z-Rou both have educational programs that include curriculum guides as well as catering services which focus on delivering their products in school canteens. Programs like these could be used as a starting point for other brands to adopt. Moreover, brands could come together and seek collaborations with each other on an educational level. Brands could work with each other to develop a holistic curriculum that addresses plant-based diets on a climate, health and animal welfare level. Together, their ideas can not only influence future consumers to view plant-based diets as one that only has to do with health, but also view the market as one that isn't sectored by individual brands with individual goals but rather a collective space with collective motives.

3. Stronger Regulation of Animal Wet Markets

Given the origin of COVID-19, it is important to consider public health policies that can be implemented surrounding food safety. Due to the outbreak having emerged from a Wuhan seafood market, it urges policymakers to gravely consider enacting stronger, more stringent regulations towards these wet markets. Both the handling of animals and meats throughout the supply chain as well as sanitation measures should be tightened by government law. Harsher safety requirements such as continuous testing for diseases, providing proper handling equipment and training, can protect against potential infections or diseases within meats that are sold for human consumption. Furthermore, ensuring markets are properly disinfected, cleaned, and employing frequent sanitation check-ups can be imposed on the food businesses that rely on wet markets.

4. Ban of Exotic Animal Consumption

Considering the origin of the pandemic, a complete elimination of wild animal consumption can be seen as an aspirational goal in the future. Foodborne diseases are very common even in most developed countries and as we can see from this pandemic, they pose a significant burden on public health, food safety, economic growth and much more. Warning measures around consuming exotic animals have surfaced through Chinese social media as well as community posters (Figure 6 and Figure 7). Though these safety measures can influence consumers to rethink their dietary choices, it does not completely eliminate the potential risk of other related diseases to appear. Therefore, banning consumption of exotic animals is a definite way of preventing the future emergence of such zoonoses diseases.

Fig 6. Poster showing the silhouette of exotic animals with the caption: “Do not illegally hunt, trade or eat wild animals, “Keep the boundaries of natural ecological safety, healthy and civilized New Year!”

Source: Graham (2021)

Fig 7. Community banner warning against wild animal consumption. Caption: “Do not eat wild animals.” “Don’t let wild animals end up on your plate”

Source: BBC (2020)

CONCLUSION

Plant-based products and diets are and have been on a continuous rise within the past decade. The recent surge in China within this space has brought upon questions and curiosity from both emerging businesses and novel customers. From the release of the 2016 Dietary Guideline, China has done its best to abide by its purpose, reducing the country's overwhelming climate footprint through dietary change. However, we can see from this research that there is a disparity between the governments' reasoning behind eating less meat and its actual execution of the policy. Furthermore, consumer and company behavior around marketing plant-based products only help to increase the tension. The findings here show that plant-based diets in China are growing mainly due to motivations for bettering personal health. In the eyes of Chinese consumers, plant-based companies, and government policy, climate awareness, sustainability, and animal welfare are inferior reasons to adopting plant-based as compared to health. This situation urges for changes in the way plant-based diets are being marketed. Fortunately, while personal health is a large part of adopting this "trend" right now, the influence of local QSR's combined with the growing influence of younger generations and their awareness towards sustainability, may effectively alter the reasons for going plant-based in the future. However, this change would also need support from changes in how influential plant-based brands portray themselves in the market, and also changes in social media messaging around plant-based diets. It may also insinuate changes in government thinking and implementation of certain policies as this will help them better target the next steps to take around consumer dietary change.

While past literature has shed light onto the consumer reasons for going plant-based, this study is the first to explore perspectives from brands and how their messaging lines up to government policy as well as how it fits into the sector's growth. Results here are the first in literature to show the potential heavy influence that QSR's and young generations have in popularizing plant-based diets. It also exposes the different channels that brands use to push their messaging to consumers which may be important for future businesses that wish to settle into the market. More importantly, though previous literature has mentioned that climate is becoming a standout issue at the forefront of Chinese government policy within the recent decades, findings here unveil the potential cracks the country has towards climate awareness. This then exhibits the need for more comprehensive education and regulation in this area.

Further research is much needed within this area as there is a heavy lack within this new and emerging market. Future studies could focus on the consumer perspective, specifically studying their decision making around plant-based products and reasons behind it. It could also manifest as a deep dive within educational institutions and their thoughts on climate education surrounding plant-based diets, or partnerships with plant-based brands in China.

Nevertheless, the plant-based movement in China will not cease anytime soon whether that be because of health reasons, sustainability awareness or the influence of younger generations. This is a trend that is growing and will continue to do so by each day. As more brands emerge and more consumers are attracted to this newfound idea, China's market will have the potential to make immense leaps within the plant-based world.

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APPENDIX A

Interview questions for plant-based brand representatives:

1. What is your name and position at the company?
2. How long has [company] been in China's market?
3. What influenced you to start a plant-based meat brand in China?
4. Since launching your product, how much has your company grown?
5. What do you deem as the main factors behind your growth?
6. What are your most popular products?
7. What is your demographic?
8. What are the main challenges you face for your brand?
9. How do you market your products?
10. What are your most effective marketing messages?
11. What makes consumers want to buy your product?
12. Do you include climate change messages in your advertising?
13. Why do you think people are shifting from meat to plant-based meat?
14. Do you think that plant-based meat consumption will help with reducing emissions in China?

15. Are plant-based meat companies receiving government subsidies or are they government supported?
16. Is your company aware of China's 2016 government plan to reduce its nation's meat consumption by 50%?
17. (If yes to question 7) What do you think of this policy?
18. (If yes to question 7) Do you think this plan is achievable?
19. (If yes to question 7) Has this policy directly affected your business or sales (before and after 2016)?
20. (If yes to question 7) How has it affected the plant-based market?
21. Is there anything else you want me to know about the plant-based market in China?
22. Are there any other materials you can share with me about your company?