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**Centre for  
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## **Dr Reynolds and Dr Armstrong response to the EFRA committee enquiry COVID-19 and food supply**

### **Summary**

1. We provide this response to highlight data collected through online survey research.
2. Our most important finding is that UK citizens typically perceive individual items of food to be higher risk following the UK lockdown. By risk we mean increased likelihood that eating the food would damage their health due to risks of contamination, food poisoning, improper handling, food fraud and mislabeling. However, this increased perception of food risk varies by food type.
3. Post lockdown UK citizens perceive foods from China and the USA to be higher risk than that from the UK or the EU (this data is currently under peer review). This has implications for post lockdown (and post Brexit) trade policy and public trust. To rebuild the UK food system post COVID19, communication of food safety and food supply decisions must be coordinated, transparent and wide reaching.
4. Our research confirms three key findings of other surveys carried out since the COVID19 lockdown<sup>1</sup> that: 1) cooking and shopping practices have changed since lockdown with larger less frequent shops; 2) household food waste behaviour has changed since lockdown, with different population segments (age/income) self reporting wasting more or less than usual; 3) household food insecurity has increased by at least 10% since lockdown and the COVID crisis.
5. We recommend that the Government and food industry should highlight to the public that the risk of contracting COVID19 through food or food packaging is highly unlikely. As perceptions of food risk influence citizen food choice<sup>2</sup> it is key to understand whether specific foods or food groups show a greater increase in perceived food risk (e.g. fruit and vegetables vs. high fat sugar and salt foods), as this could have a negative impact on the uptake and consumption of sustainable healthy diets within the UK population post lockdown.
6. We highlight that citizen science is uniquely placed as a research method to 1) investigate food issues, and 2) communicate information to the UK public. Providing further funding for citizen science research would be advantageous as the UK rebuilds the food system post lockdown.

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<sup>1</sup> <https://www.hubbub.org.uk/blog/how-has-covid-19-changed-our-eating-habits>, <https://ahdb.org.uk/news/consumer-insight-how-will-covid-19-lockdown-impact-our-eating-habits>, <https://wprn.org/item/424952>, <https://wprn.org/item/412052>, and <https://wprn.org/item/425152>,

<sup>2</sup> Grunert, K. *European Review of Agricultural Economics*, 32(3), 369–391 (2005).

## About the authors

7. Dr Christian Reynolds is Senior Lecturer at the Centre for Food Policy, City, University of London; he researches the economic and environmental impacts of food loss and waste, and how to shift citizens towards sustainable diets and cookery.
8. Dr Beth Armstrong is a Researcher at the Institute for Sustainable Food, University of Sheffield. She is a Consumer Psychologist with experience in designing, conducting and evaluating interventions focused on labelling and sustainable consumption habits.
9. Since 2019, Dr Reynolds, Dr Armstrong and a wider research team have used citizen science methods to investigate UK citizen perceptions of food (Citizen science invites members of the public to participate in scientific thinking and to collaboratively support researchers in their data collection around a set theme or experiment.)
10. In consultation with Defra and the FSA, this research has focused on perceptions of sustainability (carbon footprint), health (caloric density), food safety, animal welfare, and cooking information for individual food items.
11. In this submission we combine the data from multiple studies carried out in 2019, and 2020 before and after lockdown<sup>3</sup>.

## Evidence related to the enquiries' terms of reference

### **Are the Government and food industry doing enough to support people to access sufficient healthy food; and are any groups not having their needs met? If not, what further steps should the Government and food industry take?**

12. ~30% of our survey respondents (n=473, from 25th March to 7th April 2020,) reported some form of household food insecurity after the 23rd March UK lock down - a noticeable increase from the 20% found in the FSA's Food and You survey in wave 5 (2018).<sup>4</sup>

### **How effectively has the Government worked with businesses and NGOs to share information on disruptions to the supply chain and other problems, and to develop and implement solutions? How effectively have these actions been communicated to the public?**

13. The COVID19 pandemic has resulted in changes to the global and UK food systems. Since the lockdown began changes in consumer eating habits, the type of foods being purchased, and how food is being bought and cooked have been documented<sup>1</sup>. Citizen perceptions of food

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<sup>3</sup> The first study explored consumer perceptions (food safety, animal welfare, energy density, carbon footprint) of 30 foods, and investigated how the recruitment method used impacts observed perception. The recruitment methods were 1) Zooniverse -a citizen science platform; and 2) Prolific and Qualtrics (two traditional panel survey tools). Data collection from UK-based consumers (n=407, 67% female) was conducted using an online survey (Prolific) from 30th January to 6th February 2020, before the 23rd March UK lock down. The data from Prolific was used in the current report.

The second study investigated how consumer perceptions (food safety, animal welfare, deliciousness, purchase intention, energy density, carbon footprint) of three foods are influenced by information about the country of origin or ethical status information. Data was collected from UK-based consumers (n=701, 63% female) using an online survey (Prolific) between the 25th and 30th March, following the 23rd March UK lock down.

The third study investigated how consumer perceptions, shopping and cooking habits, food waste, and food security status changed between countries (10 foods). Data collection from UK-based consumers (n=473, 62% female) was conducted using an online survey (Prolific) from 25th March to 7th April 2020, after the 23rd March UK lock down.

<sup>4</sup> <https://www.food.gov.uk/research/food-and-you>

safety are linked to food choices and demand. Perceptions of food safety can be influenced by a variety of factors, including country of origin and production method<sup>5</sup>. Media communications can have a greater impact on citizen perceptions of food safety and purchase intentions following food scares<sup>6</sup>, though it is not known how media communications related to the pandemic are influencing perceptions. The World Health Organisation has stated that the transmission of COVID19 contracted from food or food packaging is highly unlikely<sup>6</sup>. However, beyond our research, it is not known how UK citizens perceive food safety following the COVID19 outbreak. In order to successfully adapt to the changes in the food system, it is key that policy makers understand how citizen perceptions, preferences and trust of foods have altered.

14. Based on our research, we recommend that the Government and food industry should highlight to the public that the risk of contracting COVID19 through food or food packaging is very low. As perceptions of food risk influence citizen food choice<sup>7</sup> it is key to understand whether specific foods or food groups show a greater increase in perceived food risk (e.g. fruit and vegetables vs. high fat salt and sugar), as this could have a negative impact on the uptake and consumption of sustainable, healthy diets within the UK population.
15. From our research we observed that UK citizen perceptions of all variables (food safety, animal welfare, deliciousness, purchase intention, energy density, carbon footprint) are influenced by origin and ethical status information. Post lockdown; foods from China were considered to be the highest risk, followed by those produced in the USA. Products produced in the UK and the EU, or those with an ethical label (Organic, Fairtrade) were considered to be safer compared to standard (unlabelled control) foods. Across the majority of attributes, foods from China were perceived least favourably, followed by foods from the USA, whereas, products from the UK, EU, Organic or Fairtrade were perceived more favourably.
16. Our findings have implications for rebuilding the UK food system post COVID19 (and post Brexit), with assurances that high quality and safe food must be part of a future UK food system. Decisions and policy must be communicated transparently and openly to citizens.
17. In order to explore the difference in citizen perceptions before and after the UK COVID19 lockdown, we compared the perceptions of the three foods (chicken<sup>8</sup>, pasta<sup>9</sup>, apples) and four attributes (food safety, animal welfare, carbon footprint, energy density) which were present in our pre and post lockdown studies<sup>10</sup>.

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<sup>5</sup> Lobb, A., Mazzocchi, M., & Traill, W. *Food quality and preference*, 18(2), 384-395 (2007).

<sup>6</sup> Department of Communications. COVID-19 and Food Safety: Guidance for Food Businesses WHO/2019-nCoV/Food\_Safety/2020.1. *World Health Organisation* (2020). <https://www.who.int/publications-detail/covid-19-and-food-safety-guidance-for-food-businesses>. (Accessed: 17th April 2020)

<sup>7</sup> Grunert, K. *European Review of Agricultural Economics*, 32(3), 369–391 (2005).

<sup>8</sup> The context for this research was the potential acceptance of chlorinated chicken as part of the UK-US trade deal was widely discussed in the UK media prior to COVID-19. The process of washing chicken carasses in a chlorinated solution is intended to remove high levels of harmful bacteria, but the need for this process has been criticised as a substitute for higher welfare and food hygiene standards required in the EU. Consequently, the media coverage may have an additional impact on both safety and welfare perception of products from the USA, both pre and post lockdown. See <https://doi.org/10.1108/BFJ-08-2019-0582> and <https://www.soilassociation.org/our-campaigns/top-10-risks-from-a-uk-us-trade-deal/what-is-chlorinated-chicken/>

<sup>9</sup> The choice of pasta was made prior to the lockdown shortages. For panic buying of pasta, see <https://www.dailymail.co.uk/news/article-8068943/Panic-buying-Brits-strip-supermarket-shelves-pasta-rice-water.html>, <https://metro.co.uk/2020/03/13/coronavirus-uk-colour-12391493/>,

<sup>10</sup> A series of Kruskal-Wallis analyses were used to explore the data.

18. Our research demonstrates that UK citizen perceptions of food have changed following the UK. Below, we draw focus on UK citizen perceptions of food safety, which are linked to food choices and demand, and rebuilding citizen trust in the food system post COVID.
19. When rating food safety, UK citizens were asked to consider how likely it was that eating the food would damage their health due to risks of contamination, food poisoning, improper handling, food fraud and mislabeling. Overall, we observe that UK citizens perceive an increase in food risk post lockdown ( $H(1)=14.67, p<.001$ )<sup>11</sup>.
20. When we consider the risk/safety perceptions for each food type, we see that apples and pasta are both perceived to be higher risk following the UK lockdown<sup>12</sup>. Conversely, chicken is perceived as lower risk following the UK lockdown<sup>13</sup>. However, chicken is consistently considered as higher risk than other foods (pasta, apples) before and after lockdown<sup>14</sup>.
21. Foods appear to be rated less favourably following lockdown, however some foods (chicken) appear to be less susceptible to changes in perception. We suggest that this effect is due to a halo effect, with the UK COVID19 lockdown resulting and media influence having a negative impact on citizen perceptions across different attributes.
22. There was no observed change in UK citizen perceptions of animal welfare standards for chicken<sup>15</sup>, indicating that some attitudes may be less susceptible to influence.
23. A comparison of estimated energy density (Kcal) for each food type indicates an impact of lockdown on citizen perceptions, however the effect varies by food type<sup>16</sup>.
24. We observe a change in carbon footprint perceptions before and after the UK lockdown, however the effect varies by food type.<sup>17</sup>
25. This has implications for the Government when advising citizens to select healthy and sustainable foods. For example, pasta was perceived to be higher in energy and chicken (the highest carbon impact of the three items) was perceived to have a lower impact than pre lockdown.
26. We observe small to moderate correlations between the measured variables<sup>18</sup>, indicating some attribute conflation. Though pre and post lockdown UK citizen perceptions differ, the correlation is observed in both datasets. We propose this is due to the halo effect which can influence citizen perceptions across different attributes.

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<sup>11</sup> with foods being rated as lower risk (mean rank=1397.41) before then after lockdown (mean rank=1526.87)

<sup>12</sup> apples ( $H(1)=14.67, p<.001$ ; mean rank: pre =404.67 vs. post= 535.18) and pasta ( $H(1)=31.56, p<.001$ ; mean rank: pre =421.34 vs. post= 528.16).

<sup>13</sup> ( $H(1)=25.58, p<.001$ ; mean rank: pre =566.96 vs. post= 466.82)

<sup>14</sup> Before ( $H(2)=437.38, p<.001$ ) and after lockdown ( $H(2)=581.82, p<.001$ ).

<sup>15</sup> ( $H(1)=2.39, p=1.22$ )

<sup>16</sup> There was no difference in the estimated calories of chicken ( $H(1)=19.81, p=.16$ ), however apples ( $H(1)=5.65 =.02$ ); mean rank: pre =463.17 vs. post= 510.54), and pasta ( $H(1)=19.81, p<.001$ ; mean rank: pre =434.12 vs. post= 522.78), were perceived to contain a greater number of calories following the lockdown.

<sup>17</sup> There was no difference in the estimated carbon footprint (g Co2e) of apples ( $H(1)=1.47, p=.23$ ), however chicken is perceived to have a lower carbon footprint following the lockdown ( $H(1)=66.63, p<.001$ ); mean rank: pre =612.00 vs. post= 449.49), and pasta ( $H(1)=30.31, p<.001$ ; mean rank: pre =421.11 vs. post= 530.72) is estimated to have a greater carbon footprint following lockdown.

<sup>18</sup> e.g. safety-energy density,  $r(2746)=.11, p<.001$ ; safety-carbon footprint,  $r(2755)=.38, p<.001$ , this did not hold for energy density and animal welfare.

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**Declaration of interest**

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