

## Extended Abstract

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| <b>Poster Title</b> | <b>How did the Voluntary Lockdown Fatigue Affect Food Consumption?: Evidence from Japan</b> |
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| <b>Abstract</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <i>200 words max</i>                                                                                                                                         |
| <p>We investigated how the Voluntary Lockdown (VL; policy without a legal binding to restrict behaviour) during the COVID-19 pandemic affected each food acquiring channel ('Offline', 'Online', 'Eat-out', 'Delivery/Takeaway') in Japan. First, we found that households increased their share of 'Offline', 'Online', and 'Delivery/Takeaway' sectors and decreased that of 'Eat-out' during the VL. We also show that the decrease in the share of 'Eat-out' slowed down after the second half of the VL, which suggests evidence that some households did not have the incentive to refrain from going out for food consumption because of stay-at-home fatigue. Second, we found that households who have concerns about contracting COVID-19 mostly contributed to the increasing share of the 'Online' and 'Delivery/Takeaway' channels during the second half of the VL and After VL. The findings suggest that households who have stay-at-home fatigue had demanded to eat special meals using Food-Away-From-Home (FAFH) meals during the VL. Moreover, it also shows that households concerned about contracting COVID-19 infection continued to have an incentive of stay-at-home even at the second half of the VL.</p> |                                                                                                                                                              |
| <b>Keywords</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | food consumption, COVID-19, concern, voluntary lockdown                                                                                                      |
| <b>JEL Code</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | D12: Consumer Economics: Empirical Analysis<br>see: <a href="http://www.aeaweb.org/jel/guide/jel.php?class=Q">www.aeaweb.org/jel/guide/jel.php?class=Q</a> ) |
| <b>Introduction</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <i>100 – 250 words</i>                                                                                                                                       |
| <p>The COVID-19 pandemic has changed food consumption patterns through some restrictions and affected the food sector. Current literature shows that a lockdown policy with legal binding to restrict behaviour affected consumers' food shopping and eating habits (e.g. shopping at online supermarkets during the lockdown) in many countries.</p> <p>Unlike other countries, Japan had a Voluntary Lockdown (herein VL) policy without a legal binding force from 7 April to 25 May 2020. The government 'requested' people to refrain from going out of their homes. Although supermarkets opened as usual, and some restaurants remained open until 8 P.M., many Japanese people followed the government's request, and the stay-at-home rate was similar to that of the USA which took strict lockdown (Watanabe and Yabu, 2021).</p> <p>However, many people lacked the incentive to continue refraining from going out such as visiting restaurants during the VL as many got tired of home-cooked meals and stay-at-home long time. As some had refrained for over two months from March</p>                                                                                                                                 |                                                                                                                                                              |

2020 that started close schools, people started changing their eating behaviour in the second half of the VL. Others concerned about contracting COVID-19 continued to refrain from eating out. These circumstances around households may have impacted their food acquiring methods.

This study aims to investigate the impact of the VL on the share of spending channels (Offline, Online, Eat-out, and Delivery/Takeaway) when acquiring food. We also capture the effect of concern about contracting COVID-19 on it as a confounding factor. We consider the effects of concern about contracting COVID-19 and less incentive of refraining from going out on food consumption.

### **Methodology**

**100 – 250 words**

We expect to answer two research questions using the DID (Difference-in-Differences) and DDD (Triple Difference) frameworks. First, we examine the impact of the VL on the expenditure share of food acquiring channels. We considered the incentive to refrain from going out for food shopping/eating by estimating the changes in shares. Second, we incorporate the concern about contracting COVID-19 as a confounding factor to the DDD framework to estimate the interaction effects of VL and the concern about contracting COVID-19. We interpret this as the impact of infectious risk on food consumption.

We set the Treat variable if year=2020 and the Post variable if the time after the VL in the DID framework. In addition, we divide the Post variable into three dummy variables; the first half, the second half, and After-VL. By doing so, we can capture the gradual change of share during the VL and recovery after VL. We employed a fixed-effect model to mitigate endogeneity. We used weekly household food spending data from January to June in 2019 and 2020.

We computed the food spending share for each channel as dependent variables: Offline includes supermarkets, discount stores, CVSs; Online includes internet supermarkets, grocery delivery services, and E-commerce; Eat-out includes regular restaurants/eateries; and Delivery/Takeaway includes meal delivery services such as Uber Eats and takeaway service provided by restaurants.

### **Results**

**100 – 250 words**

The VL decreased the 'Eat-out' channel's share and increased the share of other channels in the DID estimation. After starting the VL, the effects peaked at the first half of the VL, after then, they diminished compared to the baseline for 'Offline' and 'Eat-out' channels ('Offline': +9.7%pt (the first half), +7.4%pt (the second half), +4.7%pt (After-VL), 'Eat-out': -12%pt, -10%pt, -6.1%pt). Contrarily, the impacts on 'Online' and 'Delivery/Takeaway' channels peaked during the second half and slightly diminished in the After-VL period ('Online': +0.68%pt, +0.76%pt, +0.47%pt, 'Delivery/Takeaway': +1.3%pt, +2.3%pt, +0.99%pt). These results showed that households increased relatively the share of 'Eat-out' and 'Delivery/Takeaway'

channels and decreased the share of 'Offline' spending during the second half of the VL.

The concern about contracting COVID-19 affected the 'Online' and 'Delivery/Takeaway' shares in the DDD estimation. Although the overall VL effects had parameters similar to that of DID, households concerned about contracting COVID-19 increased the shares of these channels during the second half of the VL and After-VL. The overall treatment effects were not significant, but the interactions of concern regarding COVID-19 were significant, and each effect size was +1%pt for 'Online' and 'Delivery/Takeaway'. Households concerned about contracting COVID-19 enjoyed eating meals by using these channels to avoid infectious risks. With or without the concern about contracting COVID-19, the spending share of the 'Offline' sector increased, while that of 'Eat-out' decreased.

**Discussion and Conclusion**

*100 – 250 words*

There are two implications of our analysis. First, most households shifted to 'Online' and Food-Away-From-Home(FAFH) options such as 'Eat-out' or 'Delivery/Takeaway' during the second half of the VL. Given that people got tired of meals made at home, they wanted to eat different meals and foods. It suggests evidence that the VL effect diminished partially during the second half because of stay-at-home fatigue accompanied by the VL. People stayed at home during the VL period, therefore, they could not enjoy theatres, amusement parks, and other places of interest. They may have increased the share of FAFH as a substitution for their recreations. These changes in perception may have contributed to the shift of food consumption patterns during the second half of the VL.

Second, although the shares of 'Online' and 'Delivery/Takeaway' channels increased, households concerned about contracting COVID-19 mostly contributed to this expansion. Previous literature pointed out that the expenditures of online channels or delivery services for food shopping increased during the lockdown. Some studies also pointed out that one determinant of choosing these channels is the fear of contracting COVID-19. Our findings support those of previous studies and evidence of the potential effects of less incentive of stay-at-home and that of fatigue on food consumption patterns.