ECONOMIC AND SOCIAL IMPLICATIONS FOR COVID-19 POLICIES: LESSONS LEARNED FROM SPANISH INFLUENZA AND OTHER DISEASE OUTBREAKS IN HISTORY

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Introduction

Estimates on Spanish flu suggest that 500 million individuals worldwide were infected by the virus, and that 50–100 million people died in the aftermath of an infection between 1918 and 1920 (the majority of the victims of the Spanish flu were healthy young people in the age interval 15–40, which apparently makes it different from COVID-19).

The conventional approach in economic costs' estimation of Spanish influenza (focusing on mortality rates and costs directly associated with it to researched economies) underestimates the true economic costs of infectious diseases of epidemic proportions which are highly transmissible and for which there is no vaccine. The experience from these previous disease outbreaks provides valuable information on how to think about the implications of COVID-19.

A 2019 joint report from the World Health Organization and the World Bank estimates the impact of such a pandemic upwards, bringing the total cost to 2.2–4.8% of global GDP meaning 3 trillion US dollars (Global Preparedness Monitoring Board, 2019). Economic losses estimations are considerably higher for XXI century pandemic events to compare to those extrapolated from the Spanish flue's data.

Given a highly mobile and connected society, any future influenza pandemic is likely to be more severe in its reach, and perhaps in its virulence, than the 1918 influenza. Mitigating a pandemic will require cooperation and planning by all levels of government and the private sector. Public education on flu mitigation is necessary. A multi-faceted crisis will require monetary, fiscal and health policy responses.

Now faced with the COVID-19 pandemic, many medical professionals and government officials are looking at the Spanish flu to anticipate the impacts of the coronavirus on economic and social costs.

The article's goal is to prove that the experience from previous disease outbreaks provides valuable information on how to think about the economic and social implications of COVID-19.

The additional goal is to extrapolate macroeconomic effects and estimate direct and indirect costs of a pandemic based on major disease outbreaks in history with special emphasis on the Spanish influenza including its first and second wave. In addition to the above, the article will focus in part on tourism and entertainment as those sectors were mostly affected by SARS & H1N1 and are suffering the most during COVID-19.

The purpose of the presented literature review is to place each work in the context of its contribution to use its findings to build a set of recommendation on COVID-19 policies for national and local governments and their respective agencies responsible for economic and social areas.

The author decided to use an integrative review (Snyder, 2019, pp. 333–339) as a research method with the aim to assess and synthesize the literature on the Spanish flu and other outbreaks' economic and social costs to enable new perspectives to emerge as recommendations for COVID-19 pandemic policies.

The purpose of using an integrative review method is to overview the knowledge base, to critically review what we know about costs of pandemic events focusing on lessons learned from the Spanish influenza and extrapolating the acquired knowledge to the current pandemic event.

Economic and social impact

The Spanish influenza of 1918–1919 was the largest world pandemic in the past century, causing 50–100 million deaths worldwide and 675,000 deaths in the United States (Schelden, 2020).

The world was hit by three pandemics in the 20th century: the Spanish influenza in 1918, the Asian influenza in 1957 and the Hong Kong influenza in 1968. Of these the Spanish flu was by far the most severe (two major pandemic catastrophes in the history were Black Death in the mid-14th century and the Spanish influenza in 1918––1919). However, there is little consensus on their economic results which depend crucially on the models used and on the availability of data (although the literature on the Black Death is substantial, researchers have not reached firm conclusions concerning its long-run effects).

The fear of the 1918–1919 Spanish influenza, as the „deadliest plague in history," with its extreme severity and gravity of clinical symptoms, is still present in the research and general community. Direct and indirect economic costs of illness are often the subject of the health economics studies on the burden of disease. The conventional approach uses information on deaths (mortality) and illness that prevents work (morbidity) to estimate the loss of future income due to death and disability. Losses of time and income by careers and direct expenditure on medical care and supporting ser-

vices are added to obtain the estimate of the economic costs associated with the disease. This conventional approach underestimates the true economic costs of infectious diseases of epidemic proportions which are highly transmissible and for which there is no vaccine (e.g. HIV/AIDS, SARS and pandemic influenza). The experience from these previous disease outbreaks provides valuable information on how to think about the implications of COVID-19 (McKibbin, Fernando, 2020).

The Spanish influenza pandemic led to a significant increase in poverty rates; there is also strong evidence that capital returns were negatively related to the pandemic (Karlsson et al., 2013). The total value of losses (including lost income – through reductions in the size of the labour force and productivity, increases in absenteeism and, importantly, as the result of individual and social measures that interrupt transmission, but disrupt economic activity – and the intrinsic cost of elevated mortality) incurred by a severe global influenza pandemic (such as the 1918 pandemic), could reach about $500 billion per year, i.e. about 0.6% of global income (the expected number of influenza-pandemic-related deaths is about 720 000 per year).

Research results present losses much higher than those found in studies limited to income losses (Delivorias, Scholtz, 2020). Income losses have been estimated to represent between 15% and 50% of the total economic losses associated with a severe pandemic and a mild pandemic, respectively (in previous studies income losses were estimated to be about 16% of total pandemic related costs) – meaning that in less-mortality pandemic events income losses can account up to 50% of total losses (and that could be a case of COVID-19).

For poverty there is a strong and positive effect, which seems to have appeared only once, the epidemic receded in 1920 (11 per cent estimated growth of poverty). On the other hand – the pandemic appears to have increased regional employment rates in the industrial sector. This finding clearly suggests that the pandemic led to a significant reduction in average worker quality (as the production output did not increase); in this way, the study provides evidence that heterogeneity of the labour force needs to be taken into account when analysing the effects of a pandemic (Karlsson et al., 2013).

The long-term effects of the Spanish flu went well beyond the immediate demographic losses that it caused. Much research has been conducted into its consequences for the health of survivors, fewer studies exist on the way in which experiencing the Spanish flu shaped individual behaviour and human societies at large.

Recent studies argue that major crises can have long lasting effects on individual behaviour (Aassvea et al., 2020). Experiencing the pandemic likely had permanent consequences in terms of individuals' social trust. Findings suggest that lower social trust was passed on to the descendants of the survivors of the Spanish flu who migrated to the US. As trust is a crucial factor for long-term economic development, the research offers a new angle from which to assess current health threats. The analyses suggest that experiencing the Spanish flu and the associated condition of social disruption and generalised mistrust had permanent consequences on

individual behaviour in terms of lower social trust. These mutated individual social traits were inherited by descendants. Therefore, major pandemics should be added to this list of trust-reducing catastrophes.

Processes of this kind might also have been triggered by other major mortality crises of the past, which would include the medieval Black Death and the severe Cholera pandemics of the nineteenth century. Any forecasting of their future performance should account for the lasting damage to social trust, which has elsewhere been shown to have pivotal impact on the quality of institutions. This feature might be relevant for the African sub-Saharan countries which have been affected by Ebola in recent years, and maybe also for the parts of East Asia affected by the current epidemic of COVID-19.

Tourism & entertainment as the sectors most affected by SARS & H1N1

The 2003 severe acute respiratory syndrome (SARS) epidemic was the first epidemic of the XXI century to pose a threat to global health and generate considerable panic across the globe. During the period of a few months there were dramatic reductions in air travel and tourism, and leisure and/or hospitality services in the areas affected by SARS (Noy, Shields, 2019).

The economic consequences of the SARS epidemic can be delineated into direct and indirect impacts. Direct impacts included lost income and output due to death and symptomatic illness, as well as increased health-care costs. Indirect costs arise from aggregate behavioural changes driven by the public's perception of the outbreak – the economic impacts on the tourism, transportation, and leisure industries can all be classified as indirect economic impacts of the SARS epidemic.

These losses were driven by public avoidance, which contributed to a disproportionate aggregate disease prevention cost. This has led to concerns that an outbreak exhibiting higher mortality rates could result in a catastrophic impact on the global economy caused by even more drastic behavioural responses.

The SARS epidemic did cause temporary but significant indirect economic losses through behavioural changes, when millions of individuals sought to avoid becoming infected by the virus. These behavioural changes were driven by individuals' subjective judgments about the risk of contraction and death from SARS. Its outbreak generated substantial attention and panic internationally. One reflection of this panic was the early economic projections on the impact of SARS, which generally predicted losses to be greater than what eventually transpired. During the height of the epidemic international visitor arrivals fell dramatically in China, Hong Kong, Singapore and Taiwan that had the most SARS cases and resulted in an estimated gross domestic product (GDP) loss amounting to $13 billion. These losses, however, did not affect any of these economies for more than a couple of quarters.

The SARS epidemic, specifically, differed from the usual pattern of the cost of epidemics, as the majority of economic losses arose from the uncoordinated efforts of millions of individuals seeking to avoid infection; this manifested in significant changes to consumer behaviour due to individual subjective probability judgments about the risk of contraction and resulted in a significant portion of GDP loss attributed to mass avoidance of perceived exposure. In all the SARS affected economies, domestic consumption of leisure activities, local and international transport, and tourism, were the most significantly affected sectors. However, much of this consumption was postponed rather than cancelled, so some of the economic activity was only displaced temporarily.

That said, the irrecoverable losses to the tourism sector in Beijing alone were estimated to amount to around $1.4 billion, or 300 times the direct cost of medical treatment for SARS cases in the city. International visitor arrivals to Hong Kong dropped by 65% compared to the previous year's figure during April and airlines consequently began cancelling flights; between March and April 2003, total arrivals of visitors fell by 63% from 1,347,386 visitors to 493,667; daily arrivals plummeted from an average of around 27,500 passengers to roughly 5,000 passengers per day at the end of April. The reduction in tourism had a significant impact on hotel occupancy rates in Hong Kong, which fell dramatically between April and June to an average of 25%, from around 80% in the previous months.

Economic implication of an epidemic is that travel and tourism to regions affected by outbreaks are likely to decline (Delivorias, Scholz, 2020):

- economic impact to the Mexican tourism sector of the H1N1 influenza pandemic, by examining tourist arrivals: due to the virus, Mexico lost almost one million overseas visitors, which is estimated to have resulted in losses of around US$ 2.8 billion (this extended over a five-month period, mostly because of the slow return of European travellers to the country);
- similarly, the economic impact of the 2015 Middle East respiratory syndrome coronavirus (MERS) outbreak on the Republic of Korea's tourism-related industries finds that the relatively brief outbreak was associated with 2.1 million fewer non-citizen visitors, which corresponds to about US$ 2.6 billion in lost tourism revenue;
- the impact of SARS to domestic tourism earnings, losses reached US$ 3.5 billion in China and US$ 1.7 billion in Malaysia.

During the SARS epidemic, information or the lack thereof, was key for the evolution of the epidemic; preventing the spread of inaccurate or biased information, and the active and transparent reporting of timely and accurate data, which is consistently and constantly being monitored, should always be prioritised; available clear and visible information can guide individual responses and potentially can act to minimise transmission pathways and subsequent economic losses.

Second wave and importance of social distancing

The second wave of the influenza is considered to have fallen within the autumn of 1918 and was the most widespread, as well as deadliest, of the three waves. For the US, it was this wave that reintroduced the Spanish flu and

caused the most damage to its citizens. On a global scale, the second wave spread the virus to new places, even to Africa and indigenous communities whose contact with contagious Western countries were minimal trading relationships. When the third wave eventually hit, it especially impacted areas affected by the first wave but avoided the second, while many areas that experienced the second wave were not as impacted by the third (Radusin, 2012, p. 917).

The second wave of the Spanish flu hit the world with an evolved strain that was more contagious and virulent (Fottrell, 2020). While the first wave mostly infected and took the lives of the elderly, the second wave disproportionately affected young people—about half of the deaths of the pandemic ended up being amongst those in between the ages of 20 and 40 (Hagemann, 2020). As the pandemic coincided with the end of WWI, understanding of its spread is greatly related to the movement of military troops in the summer and fall. Where the troops went, they brought the virus with them. In the US, for example, while some soldiers were returning home, even more were going off to Europe to end the war in August and September. The public was unwilling to isolate and instead continued to support the war effort with demonstrations that furthered the virus's spread. Intimate contact amongst families and public events both contributed to the extent of the outbreak (Hagemann, 2020).

Philadelphia was amongst the American cities that failed to practice social distancing at the start of the second wave, serving as a cautionary example of the capabilities of a contagious virus in public spaces. On September 28, 1919, the city held a parade to raise funds for WWI efforts attended by 200,000 people. The decision to hold such an event, however, was made with the knowledge of returned cases, yet the mayor felt a quarantine would only instil panic throughout the city. Consequently, the Spanish flu hit Philadelphia rapidly: within three days after the parade all beds of all the city's 31 hospitals were filled, within the week 2,600 Philadelphians died from contracting the virus, and by the following week the death toll rose to 5,600. On October 3 the government shut down the city in response to the outbreak, closing schools, churches, and other public spaces. That closure, however, did little to alleviate the overwhelmed hospitals, and even morgues, which were ill equipped to be dealing with so many patients (Davis, 2018).

The case of San Francisco during the Spanish flu is similarly a testament to the importance of social distancing and the imposition of restrictions for public health. When the flu first came to the city in the fall of 1918, their government acted quickly to contain the virus. On October 18, schools and public places such as movie theaters were closed, mass gatherings and public dancing were prohibited, and masks were required to be worn in public. By October 25, 1918, the city hit its peak with over 500 cases and 94 deaths on that day. Their numbers began to decrease after then and the city was quick to remove its restrictions. By November 21, the city fully reopened (Canales, 2020).

By early December 1918, however, the virus was reimported into San Francisco. Having already lifted restrictions, city officials were unable to maintain the same level of compliance from citizens they saw through the initial lockdown during this „second hump." On January 17, 1919, the govern-

ment mandated masks to be worn in public again, but that was met with resistance and even protests. The second wave caused the death toll to almost double—from 1,857 deaths in November to 3,213 by the end of February. While San Francisco served as an example during the first wave, the city was one of the few to experience a second hump and became one of the most impacted in the US with a death rate of 673 for every 100,000 (Canales, 2020).

The same phenomenon happened in St. Louis and Denver, which also had reopened their cities prematurely out of concern for the economy. For these two cities though, the second hump was especially deadlier than the first. Like San Francisco, when the second hump hit the local governments had to reimpose their initial restrictions. By not maintaining them the appropriate amount the first time, however, St. Louis' and Denver's total time of lockdown was double than that of other cities, like New York, which had kept their restrictions longer based on health and safety, not the economy (Blodget, Plotz, 2020).

From September through November of 1918, the death rate from the Spanish flu skyrocketed. In the United States alone, 195,000 Americans died from the Spanish flu in just the month of October. And unlike a normal seasonal flu, which mostly claims victims among the very young and very old, the second wave of the Spanish flu exhibited what's called a „W curve"—high numbers of deaths among the young and old, but also a huge spike in the middle composed of otherwise healthy 25 – to 35-year-olds in the prime of their life.

Studies affirm that social distancing, at the forefront of non-pharmaceutical interventions, during the Spanish flu pandemic were not the cause of the adverse effects on the economy. Areas more severely impacted by the virus subsequently experienced a more severe economic decline compared to the economies in areas less impacted by the flu. In the US, higher mortality rates had a negative association with economic activity, thus revealing that social distancing and related measures are not responsible for economic damage but the virus itself is (Roos, 2020).

Furthermore, cities that instituted early and extensive non-pharmaceutical interventions actually saw a relative increase in the economic activity after the pandemic. This is important because it reveals early and rigid non-pharmaceutical interventions in anticipation of a second wave can mitigate both the economic and public health related consequences of the pandemic (Correia, Lucky, 2020).

It has to be stressed that the rapid spread of the Spanish flu in the fall of 1918 was at least partially to blame on public health officials unwilling to impose quarantines during wartime. Measures of quarantine, closing places of mass gatherings, and wearing face masks were used during the Spanish flu pandemic.

Estimates for next pandemic events

In case of new pandemic event comparable to that of the Spanish influenza, GDP loss in Europe will be ranging between 2 and 4 per cent. Those results are in line with recent studies that explore the macroeconomic effects of a pandemic for other countries and regions. Their estimate of the macroeconomic cost of a pandemic in Europe is high, as they have

investigated a rather severe medical scenario with a mortality rate higher than that of the Spanish influenza in Europe in 1918–1920. Estimated macroeconomic effects of a future pandemic are roughly of the same size as those of a major recession (Jonung, Roeger, 2006).

The estimates of the annual probabilities of pandemics are the following (Fan et al., 2016):
- Expected pandemic deaths exceed 700,000 per year worldwide with an associated annual mortality cost of estimated at $490 billion; expected income loss at $80 billion per year and hence the inclusive cost to be $570 billion per year or 0.7% of global income (range: 0.4–1.0%);
- For moderately severe pandemics about 40% of inclusive cost results from income loss. For severe pandemics this fraction declines to 12%: the intrinsic cost of elevated mortality becomes completely dominant.

A 1918-severity pandemic might reduce the global GDP by about 5% and that the disruptive effects of avoiding infection would account for about 60% of that total (according to the World Bank). In an extreme scenario it would lead to income losses of over 12% of GNI worldwide and over 50% in some developing countries. The expected number of pandemic deaths per year is 720,000 (subject to major uncertainty). The expected annual inclusive cost that results for the world is $570 billion or 0.7% of global income.

The inclusive cost of a pandemic is the sum of its adverse impact on income and of the intrinsic cost of premature mortality and illness. Income losses are only a small fraction of inclusive costs (about 12%) for severe pandemics but a much larger 40% of inclusive costs for moderately severe pandemics (this probably will be the case of COVID-19). Significant macroeconomic after-effects of the pandemics persist for about 40 years, with real rates of return substantially depressed with a shift to greater precautionary savings. Labour scarcity (if high mortality rate would occur) may elevate wages.

On the other hand – pandemics are followed by sustained periods – over multiple decades – with depressed investment opportunities, possibly due to excess capital per unit of surviving labour, and/or heightened desires to save (unfortunately – higher levels of private savings may hurt the whole leisure industry), possibly due to an increase in precautionary saving or a rebuilding of depleted wealth (Òscar et al., 2020).

The information provided in the prominent publications on the 1918 influenza pandemic are used to formulate a list of the likely economic effects of a modern-day influenza pandemic and possible ways to mitigate the severity of any future pandemic (Garrett, 2007, p. 2):
- Given the positive correlation between population density and influenza mortalities, cities are likely to have greater mortality rates than rural areas;
- Urban dwellers are likely to have, on average, better physical access to quality health care, though nearly 19 percent of the city population in the United States has no health coverage compared with only 14 percent of the rural population;
- Health care is irrelevant unless there are systems in place to ensure that an influenza pandemic will not knock out health-care provision and prevent the rapid disposal of the dead in the cities (as it did in Philadel-

phia, which was exacerbated by medical leaves during World War I). If medical staff succumbs to the influenza and facilities are overwhelmed, the duration and severity of the pandemic will be increased;
- Local quarantines would likely hurt businesses in the short run. Employees would likely be laid off. To prevent spread, quarantines would have to be complete (i.e., no activity allowed outside of the home). Partial quarantines, such as closing schools and churches but not public transportation or restaurants (as done in Philadelphia, St. Louis and Washington, D.C.) would do little to stop the spread of influenza;
- Some businesses could suffer revenue losses in excess of 50 percent. Others, such as those providing health services and products, may experience an increase in business (unless a full quarantine exists). If the pandemic causes a shortage of employees, there could be a temporary increase in wages for remaining employees in some industries. This is less likely than in 1918, however, given the greater mobility of workers that exists today;
- Local preparedness by health departments and hospitals, volunteer services (e.g., Red Cross) and private businesses, and responsible actions of the population are likely to mitigate the effects of a modern-day influenza pandemic.

A range of policy responses will be required both in the short term as well as in the coming years (McKibbin, Fernando, 2020). In the short term, central banks and Treasuries need to make sure that disrupted economies continue to function while the disease outbreak continues. In the face of real and financial stress, there is a critical role for governments. While cutting interest rates is a possible response for central banks, the shock is not only a demand management problem but a multi-faceted crisis that will require monetary, fiscal and health policy responses. Quarantining affected people and reducing large scale social interaction is an effective response. Wide dissemination of good hygiene practices can be a low cost and highly effective response that can reduce the extent of contagion and therefore reduce the social and economic cost.

The longer-term responses are even more important. Despite the potential loss of life and the possible large-scale disruption to a large number of people, many governments have been reluctant to invest sufficiently in their health care systems. The idea that any country can be an island in an integrated global economy is proven wrong by the latest outbreak of COVID-19. Global cooperation, especially in the sphere of public health and economic development, is essential. All major countries need to participate actively. It is too late to act once the disease has taken hold in many other countries and attempt to close borders once a pandemic has started.

The outbreak of COVID-19 shows that if diseases are generated in poor countries due to overcrowding, poor public health and interaction with wild animals, these diseases can kill people of any socioeconomic group in any society. There needs to be vastly more investment in public health and development in the richest but also, and especially, in the poorest countries.

Conclusions

The influenza of 1918 was short-lived but had a permanent influence on consumer behaviours. Society as a whole recovered from the 1918 influenza quickly, but individuals who were affected by the influenza changed their way as consumers forever.

Given our highly mobile and connected society, any future influenza pandemic is likely to be more severe in its reach, and perhaps in its virulence, than the 1918 influenza despite improvements in health care over the past 90 years. Mitigating a pandemic will require cooperation and planning by all levels of government and the private sector.

Extrapolating the presented research finding, because of COVID-19 we will face the lasting damage to social trust, also to government institutions, and drastic changes in human behaviours which will have their impact on consumers' buying decisions favouring basic necessities and services and delaying decisions on non-essential ones including services and entertainment. Losses in those industries will be disproportionally higher to compare to other sectors of the economy.

Assuming that citizens want the government to mitigate an influenza outbreak, there should be concern about government's readiness and ability to protect citizens from a pandemic. Public education on flu mitigation, a greater reliance on charitable and volunteer organisations, and a dose of personal responsibility may be the best ways to protect citizens in the event of a future influenza pandemic.

According to the identified research if medical staff and facilities are overwhelmed, the duration and severity of the pandemic will be increased. Short-time anti-crisis investments should be made to strengthen hospitals' infrastructure. The scale of costs might be avoided by greater investment in public health systems – those actions are urgently needed. To prevent spread, quarantines would have to be complete (partial quarantines would do little to stop the spread of influenza). US cities that instituted early and extensive non-pharmaceutical interventions – like obligatory social distancing – actually saw a relative increase in economic activity after the pandemic.

Most studies indicate the expected long-term changes in the behaviour of consumers and investors increasing precautionary saving or a rebuilding of depleted wealth which will put at risk the entertainment/hospitality sectors. Countries where the tourism sector is important should be designing policies that can minimise the impact on this vulnerable sector, should an epidemic occur. The research has shown that tourism and hospitality recorded the majority of the economic losses in the SARS epidemic. And a very similar situation repeats itself during COVID-19 calling for a continuation of the research presented in this article.

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Ekonomiczne i społeczne implikacje dla polityk COVID-19: wnioski wynikające z grypy hiszpanki oraz innych pandemii w historii

Streszczenie

Konwencjonalne podejście do szacowania kosztów ekonomicznych pandemii grypy hiszpanki nie uwzględnia rzeczywistych kosztów ekonomicznych chorób zakaźnych o rozmiarach epidemii, które są wysoce zaraźliwe. Doświadczenia z tych poprzednich pandemii dostarczają cennych informacji o tym, jak myśleć o konsekwencjach COVID-19.

Celem artykułu jest wykazanie, że doświadczenia z największych epidemii chorób w historii dostarczają cennych informacji dotyczących COVID-19 oraz szacowania bezpośrednich i pośrednich kosztów pandemii. Łagodzenie pandemii będzie wymagało współpracy i planowania na wszystkich szczeblach rządowych oraz sektora prywatnego. Po doświadczeniach związanych z grypą hiszpanką pojawiają się wątpliwości co do gotowości rządów i ich zdolności do ochrony obywateli przed pandemią. Edukacja publiczna na temat łagodzenia skutków pandemii oraz większe oparcie na organizacjach charytatywnych i wolontariacie mogą być najlepszymi sposobami ochrony obywateli na wypadek przyszłych wydarzeń pandemicznych. Większość badań wskazuje na długoterminowe zmiany w zachowaniu konsumentów i inwestorów, w szczególności zwiększanie oszczędności kosztem inwestycji i wydatków konsumpcyjnych, co zwłaszcza zagrozi sektorowi rozrywki/hotelarstwa. Kraje, w których sektor turystyczny jest ważny, powinny opracowywać polityki minimalizujące wpływ na ten wrażliwy sektor w przypadku wystąpienia epidemii.

Słowa kluczowe

koszty ekonomiczne, grypa hiszpanka, COVID-19, zachowania konsumenckie