Coronavirus Pandemic

Implications

Maggie Farr, Steven Hu, Stephen Lindsey

Samuel Ripple, Sriya Srikanth, Cassy Webb

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Introduction

The Coronavirus pandemic has affected our lives in a way that has never been seen before. Countries have ordered lockdowns to contain the spread of the virus. Schools, restaurants, and retailers have closed their doors. Only the essentials— hospitals, grocers, and a few others— have been able to maintain their businesses. As a result, there have been substantial economic implications. People are unable to work and provide for themselves. The U.S. government stepped in to keep the economy running by passing an unprecedented $2 trillion stimulus package. Other countries have also passed stimulus packages, and the world has surpassed $7 trillion in spending as a response to the crisis (Horowitz, CNN). Even then, the volatility of the market has caused the S&P500 and the DOW to crash multiple times. As countries try to stabilize without a vaccine, their economies will suffer the shocks for decades.

In transportation, supply chains have suffered as containment measures such as travel restrictions have prevented goods from being transported to their destinations. In warehousing, companies are facing both a sudden increase in demand and a need to protect their warehouse workers from the virus. Consumer demand has fallen and risen significantly in some places. Consumers have been purchasing new cars less, and as a result, the auto industry has a supply of cars with fewer buyers than usual. Medical device companies have seen an increase in demand for their medicines and hospital materials such as masks. This increased demand correlates with the increase of patients from the Coronavirus amongst the average quantity of patients hospitals care for. Hospital staff require more masks and other items to protect themselves as they treat patients. Additionally, more medicine is required to treat the new influx of patients. Due to the shutdown of many sit-down restaurants, consumers can no longer support those businesses. The stores that offer take-out are staying afloat by implementing "contactless delivery," and many dine-in restaurants are

serving take-out for the first time. After the dust has settled, there is a long road to return the economy and society to normal. Remote work and our healthcare industry have been at the forefront of our minds. People scramble to work from home to provide for themselves and their families. Our work-life could change as so many people and businesses turn to telework and working in an online environment. The pandemic has also cast a light on the U.S. healthcare industry, foreshadowing a likely change in health insurance premiums in response to the influx of new patients. With rapidly increasing medical costs, individuals may be forced to open their pockets to recuperate the lost profits of these insurers.

Transportation and Warehousing

The outbreak of the COVID-19 virus has drastically impacted producer supply chains, both nationally and globally. The virus originated in China, a vital hub in the world supply chain, which makes disruptions in the global supply chain inevitable. When businesses and firms are unable to receive supplies from China, they will have to stockpile their inventory or begin turning to other suppliers in different regions. Economists from Vox document that the six nations that have been hit the hardest by the virus— China, Korea, Italy, Japan, U.S., and Germany— account for "55% of world supply and demand (GDP), about 60% of world manufacturing, and 50% of world manufacturing exports" (Baldwin 59). This information tells us that an event like this is likely to result in "supply-side contagion." While some countries may be mostly unaffected by the COVID-19 outbreak, their supply chains will most likely experience disruptions as the supply shock travels through the other major nations.

One significant way that supply chains are affected, which we are already seeing, is the impact on the transportation of goods. Truck, air, and water transportation have all been disrupted due to the spread of the COVID-19 virus. A representative from Yellowhammer Logistics, a

transportation provider, discusses that while the company typically has many shipments moving back and forth internationally, water transportation has come to a halt as ports close in accordance with regional mandates. "It took 3-4 weeks to notice the impacts due to the transit time across the ocean… 'everybody's experiencing a pain point somewhere in their supply chain'" (Mitchell, WHNT). When it comes to truck transportation, while it may be the method of transportation least affected by this pandemic, the industry is still facing some issues. Transportation routes have been disrupted as demand spikes, and workers begin to call in sick. While there is a higher need for truck transportation, the volume of freight trucks on the road has decreased, mostly due to a decrease in the workforce. In the figure provided by Geotab, it can be seen that across the United States and Canada, commercial vehicle activity has dropped much below the rates of regular operation. Activity fluctuated throughout March and the beginning of April, and as of April 17th, most regions are only operating between 70% and 80% of their regular activity (Figure 1).

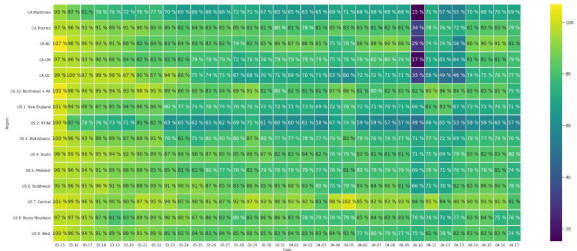

Figure 1. Commercial vehicle activity volume as a percentage of normal operations by macro region in Canada and the U.S.

These impacts on trucking are not only developing in North America. Data from BFI shows the decline of truck flows between provincial capital cities in China, beginning in January of 2020. The figure separates those truck flows where there is Wuhan travel and no-Wuhan travel. As shown in the figure, both divisions of truck flows began decreasing dramatically, beginning around January

9th and reached their lowest between January 23rd and January 30th. While the no-Wuhan division began recovering quickly, the Wuhan division's truck flows have remained very low throughout March (Figure 2). This decline in truck flows is due to both a standstill in China's industrial output and the lockdown of the Wuhan region instituted to prevent the spread of the virus.

The division of transportation that is likely most impacted by the global crisis is air transportation. Nearly half of the world's air cargo is transported in the bellies of passenger planes, and now airlines are losing vital cargo space as "more than 185,000 passenger flights have been canceled since the end of January in response to government and travel restrictions" (Knowler, JOC). This drastic decrease in available cargo space is pushing up air cargo rates and charter demand as well. As a result, airlines such as Delta Airlines have begun filling empty passenger planes with cargo in order to meet the delivery demand for essential items. Without the weight of passengers, these planes are now able to hold significantly larger capacities of cargo.

COVID-19 has also caused changes in the warehousing sector. With the rise in online shopping due to the virus, warehousing has become increasingly important (Forde, Supply Chain Dive). However, the safety of the warehouse workers must also be considered. With stores closed and shopping moving online, customers and workers at nonessential stores can stay home, but warehouse employees still must work. Many companies have responded by implementing safety measures such as social distancing and increased sanitation (Savage, Future of Commerce). Amazon has also stopped nonessential items from going to its warehouses (Savage, Future of Commerce). However, some companies are being criticized for not adequately protecting their warehouse workers (Savage, Future of Commerce). For example, many Amazon workers claim that the company is not implementing social distancing and cleaning rules appropriately, causing them to feel unsafe (Savage, Future of Commerce). In addition, some workers and observers object to the

continued delivery of large nonessential items that require multiple people to make the delivery, negating the possibility of social distancing (Webber, Personnel Today). Companies have struggled to strike a balance between meeting high demand and keeping their workers safe (Savage, Future of Commerce), and unfortunately, this has led to warehouse workers at some companies being put at risk. These changes in routine warehousing procedures, in addition to disagreements among management and staff, are bound to result in a decrease in warehouse productivity, making it increasingly difficult to keep up with higher demand for goods.

Another concern for warehouse workers due to COVID-19 is automation. According to the Brookings Institute, recessions tend to cause a spike in automation. Warehouse workers are particularly vulnerable to automation; their data shows that the warehousing and transportation industry has a 58% automation potential (Muro et al., Brookings). This makes it very possible that some workers in this industry will see their jobs disappear due to automation associated with the COVID-19 recession. As such, even when the virus fades, and the world becomes more routine, warehouse workers may see their struggles continue, and employment rates will be affected.

In conclusion, the COVID-19 pandemic has caused significant disruptions in the warehousing and transportation sector. Due to factors such as lockdowns and travel restrictions, transportation by water, air, and land has become increasingly difficult, affecting supply chains across the world. The warehousing sector has faced both an influx of demand and safety concerns, as well as job stability concerns for the warehouse workers on the front lines.

Consumer Demand for New Vehicles

Vehicles are an integral part of America's economy, especially new ones. Every day, new cars are being designed, produced, and purchased by consumers. Lately, they have not been due to the Coronavirus. New car sales across the country are down due to the COVID-19 pandemic. Due to

government orders, many people are forced to stay home, and many businesses are closing their doors in order to prevent the spread of the virus. Most people only leave the house in order to purchase necessities such as groceries or medicine. Some car dealerships are still open; however they have seen a considerable decrease in the sales of most car brands. The decrease for some brands has been above fifty percent over January, February, and March of 2020 when compared to those same months in 2019 (Thiel, GCBC). One reason for the decrease in consumer demand is that consumers are not buying a new car right now as they want to wait until the risk of the virus has gone down, or they simply do not have the income anymore. Many people have been laid off over the last few months and buying a new car certainly would not be a priority to most people who do not have any current income. Another reason is that people have very few travel options. As stated earlier, most businesses and social gatherings are canceled. If a consumer purchased a new car today, it would sit in either the garage or driveway, losing value as time goes by. In that sense, it is more reasonable to purchase a new car after the pandemic subsides.

The graphic from GoodCarBadCar (Figure 3) shows the percent changes from first-quarter sales from 2019 and this year. As indicated by the mostly red numbers, the sales data is evidence that the demand for new cars has dropped, and consumers have significantly purchased fewer cars this year during the coronavirus pandemic then compared to last year when there was no pandemic. Tesla is the only outlier from the list of data. However, Tesla cars must be ordered in advance. So it is likely that Tesla sales went up due to orders completed in 2019 before the pandemic hit the United States.

Brand	Month	LY	Change	YTD	YTD Last Year	YTD Change
Acura	7,037	14,408	-51.16%	28,531	36,385	-21.59%
Alfa Romeo	943	1,774	-46.84%	3,702	4,286	-13.63%
Audi	10,537	20,302	-48.10%	41,371	48,115	-14.02%
BMW	15,141	32,228	-53.02%	62,152	73,888	-15.88%
Buick	8,627	18,426	-53.18%	33,870	51,865	-34.70%
Cadillac	7,722	12,788	-39.62%	30,323	35,996	-15.76%
Chevrolet	110,418	160,486	-31.20%	429,529	451,742	-4.92%
Chrysler	7,493	12,169	-38.43%	29,945	31,591	-5.21%
Dodge	22,582	46,367	-51.30%	88,656	110,517	-19.78%
Fiat	287	847	-66.12%	1,128	2,214	-49.05%
Ford	124,562	199,651	-37.61%	489,051	557,884	-12.34%
Genesis	969	1,451	-33.22%	3,955	4,203	-5.90%
GMC	30,238	44,614	-32.22%	118,718	125,579	-5.46%
Honda	70,116	134,101	-47.71%	270,253	333,402	-18.94%
Hyundai	35,118	61,177	-42.60%	130,875	147,585	-11.32%
Infiniti	6,510	13,406	-51.44%	25,556	34,315	-25.53%
Jeep	46,525	87,328	-46.72%	182,667	212,804	-14.16%
Kia	45,413	55,814	-18.64%	137,945	136,596	0.99%
Lexus	15,585	29,249	-46.72%	56,345	66,791	-15.64%
Lincoln	6,510	8,872	-26.62%	25,562	24,874	2.77%
Mazda	15,664	26,934	-41.84%	67,670	70,831	-4.46%
Mini	1,333	3,769	-64.63%	5,236	8,905	-41.20%
Mitsubishi	9,394	19,599	-52.07%	35,563	42,070	-15.47%
Nissan	59,102	137,362	-56.97%	232,048	331,536	-30.01%
Porsche	3,055	4,779	-36.07%	11,984	15,024	-20.23%
Ram	35,782	51,822	-30.95%	140,486	137,013	2.53%
Subaru	32,611	61,601	-47.06%	130,591	156,754	-16.69%
Tesla	10,000	14,625	-31.62%	52,800	30,600	72.55%
Toyota	120,145	185,698	-35.30%	439,402	476,925	-7.87%

Figure 3 Change in First Quarter Sales from 2019 to 2020

Consumer Demand for Medical Products

The demand for medical supplies sees a massive shock all across the globe. Governments and hospitals are scrambling to establish supply chains among the shortage. One class of medical products that are seeing a huge demand spike is personal protective equipment or PPE. The U.S. Conference of Mayors conducted a survey that revealed 91.5% of cities did not have an adequate supply of face masks for their first responders and medical personnel. According to the World Health Organization, demand for PPE is up to 100 times higher than usual, with prices of up to 20 times higher (WHO). More than 3,000 companies in China have added various medical products to their production lines since COVID-19 broke out (Sun, Siegal, The Washington Post). It is evident that the current stockpiles and production are not able to satisfy the relatively sudden shock. Several factors are creating a spike in demand from the everyday consumer.

One of these factors is the increased influx of ill people that require more care and resources. These individuals that catch the Coronavirus need certain medical supplies. For example, the nurses and doctors that tend to the patients have to use a new mask every time they visit a new patient due to the virus's contagiousness. This new utilization of masks is added to regular demand for masks. Also, many individuals are purchasing masks for when they go out in public in order to protect themselves and others. Before this pandemic, it was rare to see someone wearing a mask outside of a hospital. However, now it is quite common, and in some places expected. The demand for masks has gone up, and as mentioned before, that demand can not be entirely supplied. Similarly, medicines that are used to treat the Coronavirus are also used in the treatment of other diseases. So, the demand for those medicines has increased as well.

Consumer Demand for Purchased Meals and Beverages

COVID-19 is having a significant impact on the foodservice industry. There is a wide range of effects that are influenced by the type and flexibility of different businesses. The places that are seeing better than average business are grocery stores and delivery/take-out restaurants. At the other end of the spectrum, restaurants, and bars that focus on dine-in are suffering the most. Based on data from 48,000 restaurants that use Womply, a customer management software, restaurants have seen 33% less revenue in comparison to the same time last year (Figure 4), and it looks like it will keep declining (Dixon, Eater). As of April 2020, most states have some sort of restriction or complete shutdown of dine-in operations. This has led to an increase in demand for all the other options.

Figure 4 Restaurant Revenue Change from 2019 to 2020

The data shows an increase in interest for common take-out options such as wings and pizza places by 103% and 88%, respectively. Common sit-down options such as French restaurants, breakfast/brunch cafes, and hot pot places have experienced decreases in consumer interest by 59%, 44%, and 42%, respectively (From March 1st through April 2nd). Interest for grocery stores has gone up 186%, and there has been an increase in downloads of grocery delivery apps, such as Instacart, which had a 216% increase (Yelp). The major increase in grocery interest can also be credited to the many items offered that go beyond the scope of the food industry. All of these changes in demand make logical sense. Consumers have to eat no matter what, and the loss of dine-in restaurants has to be met with an increase in grocery stockpiling and take-out.

Implications of Moving to an Online Environment

The outbreak of COVID-19 has forced many businesses to shut their doors and send their workers home. Although many firms are reluctant to have their employees work from home, this may become the new normal. Those fortunate enough to be able to work in an online environment have discovered many benefits. There is no longer a need to commute to work, and schedules are

more flexible. The average American spends 26 minutes commuting one-way to work every day. That number varies widely in different areas with commutes as long as 43 minutes one-way in Washington D.C. (Berger, CNBC). Those people would be able to see massive gains in their everyday leisure time. They also save costs on car insurance and fuel costs. While working from home, it is even possible to cut down on childcare costs. Firms are also able to benefit from this arrangement. Although firms are unable to see the benefits given the current fixed costs of rent and utilities, looking forward, they can cut their expenses (office rental fees, utilities, office supplies) as employees no longer come to the office.

Some firms have been afraid of letting their employees work from home. They fear that their workers will be less productive or will slack off without direct oversight. This pandemic has forced firms to move to the online environment just to keep their businesses afloat. Although there have been difficulties moving to this new environment with connectivity issues and security concerns, as more firms see the benefits and move to the new model, working from home will become both easier and more popular. Of course, given the current pandemic, it has been much harder to adapt. Parents are unable to send their children to school and being locked inside the house indefinitely has been difficult for many. A return to normality would allow firms to judge the benefits of remote work better. As Roni Molla writes, "remote work works best if it is by choice and not every day (Vox)." In her interview with Nicholas Bloom, an economics professor at Stanford University, Bloom states that the employees who worked from home were 13% more productive, and their quit rates halved.

Once remote work is ubiquitous, people are no longer locked into working near their workplace and can live out of state or across the country. If there is no need to commute, in the long term, employees could seek cheaper housing in areas they would normally never consider. As a result, there could be a shift in the demand for housing in traditionally "in demand" markets such as

New York or California. Frank Newport states there was a 12% gap between the number of people who desired to live in rural areas and those who actually did (Gallup). Although many people want to live in rural areas, they are financially constrained. Large cities and urban areas tend to have the most job opportunities, so people stay in the city.

Of course, there is a possibility that firms will return to business as usual. As mentioned earlier, there have been difficulties moving to the online environment. Certain industries that require a high level of security, such as government workers, may be unable to move to the online environment. In addition, not all employees enjoy the work from home method. During Bloom's interview, he mentioned that 500 of the 1000 employees did not volunteer to work from home. After the study, 30 of those who worked from home preferred to return to the office (Vox).

A few firms may choose to slowly transition to the online environment and allow their employees to telework occasionally. It is difficult to break down the traditional notion of going to work, but employees and employers have been given a chance to experience remote work. If remote work is optimized, the saved costs for both the consumers and firms will lead to a higher overall level of utility.

Long Term Effects on Health Insurance

It is predicted that COVID-19 will create an unbelievable demand for medical care. With emerging uncertainty of the economic impact, the long-term effects of COVID-19 on the healthcare industry and health insurance companies are up for question.

The coronavirus outbreak will likely cost the U.S. health system billions, which could subsequently lead to a dramatic spike in future health insurance premiums. In an article from the Washington Post, Peter Lee, the director of California's insurance marketplace, estimates that COVID-19 related medical care, "could generate between $29 billion and $216 billion in hospital

costs nationally for patients on employer-sponsored or individual market coverage..." (Cunningham, The Washington Post). Individuals purchase health insurance to alleviate their risk in the event of an unexpected problem, merely investing in a metaphorical safety net. However, with an influx of new patients, the pool of funds for insurance companies drastically shrinks, and policyholders are left with a safety net that is increasing in price. Market analysis from Covered California, the health insurance marketplace of California, reports that “2021 premium increases to individuals and employers from COVID-19 alone could range from 4 percent to more than 40 percent.” (Covered California). With an ever-growing number of hospitalized individuals and a rapidly increasing global impact, insurance companies will be incurring sizable bills, leading to a possible increase in future premiums.

With this plausible rise in future health insurance premiums, a generous increase in federal spending may be able to offset this spike in prices. Health insurance companies were not addressed in the newly established stimulus bill; however, many companies have attempted to reach out to lawmakers in Washington, D.C. America's Health Insurance Plans (AHIP), a trade association of health insurance companies, sent a letter to a group of high-ranked politicians to urge specific actions they believe would benefit businesses and families in the long term. AHIP explicitly proposed, "a temporary, emergency risk mitigation program to ensure that health care premiums do not spike and that benefits are stable in the future" (Serota, Eyles). This backup plan would only be activated if health insurance rates became substantially higher than anticipated. House Democrats have discussed a possible plan of action to combat the rise of health insurance premiums; however, like most concerns, another stimulus bill would be a cause for political dispute.

Without a current stimulus bill to aid insurance companies with their netted losses, it seems like the lost profit will be coming out of consumers' pockets. Employers providing health insurance

will likely not be able to offer affordable coverage, and individuals may have to go completely uninsured. Although insurers have enjoyed high profits in recent years, they warn that the financial impact of the pandemic may be daunting, particularly to increasingly distressed businesses and employees who were struggling to pay for coverage in the first place. While health insurance companies begin to set insurance rates for 2021, with the idea of cost recuperation and the protection of assets, health insurance premiums may, unfortunately, skyrocket, leaving many individuals uninsured.

Conclusion

COVID-19 has had a seismic impact on the economy. Monetary policy and stimulus packages have not been able to revive the economy to what it once was. Without a vaccine, it seems dubious that any country will return to normal. Even if lockdowns are lifted, consumers may be hesitant to return to their daily routines. The restaurant and travel industry may not see demand return back to normal for months or even years. Without adequate demand, suppliers may have to find methods to get rid of inventory or even halt production entirely. An in-depth analysis of the virus's widespread effects can only be done once the first wave of infections has passed. Necessary items, like hospital masks and medicines, have seen their demand rise sharply while nonessential items, like automobiles, have experienced a sudden decrease in demand. With an inundation of new medical patients, in order to remediate their lost profits, insurance companies may be forced to increase premium prices, deepening the hole in consumers' pockets. The economy will likely not rebound until the population has achieved herd immunity either through the transmission of the virus or through vaccinations. No amount of fiscal or monetary policy could stimulate a potential recession that has resulted from this public health crisis. The potential revival of the economy is in the hands of the government to choose whether to put public health first or the economy first.

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