

Alaska's economy and the COVID-19 virus

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March 27, 2020

Abstract

The Alaska economy, similar to the rest of the world, will contract over the next few weeks and months due to the COVID-19 virus that has forced businesses to close or significantly curtail operations. While it is near impossible to identify the true economic consequences of these measures, we make educated assumptions about the size of the layoffs in the most vulnerable sectors. To get the full scale of the potential losses, we estimate multiplier effects from these losses using an input output model. Layoffs in the directly affected sector could exceed 27,000 with a payroll of almost 80 million dollars in the month of April. The indirect and induced effects of this shock could result in another 21,000 jobs lost if the employment separations are not temporary. In the second quarter of 2020, direct GDP losses due to the decline in economic activity -not including declines in oil prices- could amount to almost 2 billion dollars. If the disruption in economic activity is not short-lived, we could expect another 2 billion dollars in losses due to the indirect and induced effects. The significant Federal aid package which will provide a boost to unemployment insurance, direct transfers to households, and aid to businesses will certainly dampen some of the consequences we estimate. While the short term costs of social distancing are high, Alaska's long term economic health depends on first containing the virus.

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1 Summary

1.1 Main findings

Public health experts have advised governments around the world to mandate closures in order to mitigate the transmission of the virus. This document calculates the potential short-term economic losses associated with declines in spending, layoffs, and overall contraction. We do not attempt to calculate the trade-offs between full social distancing measures and ones that allow for a "re-opening" of economic activity as it is clear the state's long term health depends on virus containment. Instead, we assume the closures will be maintained for the next few months. We highlight the size of the sectors most vulnerable to this recent shock and illustrate the scale of the layoffs under fairly simple scenarios. In addition to the immediate effects, we also estimate "multiplier" effects from expected layoffs and declines in output. These indirect and induced effects will only materialize if the closures last for an extended period of time. None of the analysis accounts for reductions in employment and GDP that may occur in the Oil and Gas industry as a result of the much lower prices. Below is a summary of the findings:

- Alaska's economic structure:
 - Leisure and Hospitality, the sector most sensitive to closures as well as decline in travel, represents almost 10% of all jobs in Alaska.
 - Accommodation and food services, a subset of Leisure and hospitality, had 1883 firms with 929 -almost 50%- having fewer than 5 employees.
 - GDP in the first quarter of 2019 was 54.9 billion dollars with 1.6 billion coming Accommodation and Food services, and another 2.3 billion from Retail Trade. Transportation and Warehousing, another vulnerable sector, was responsible for 7.4 billion dollars.
 - In 2019, total wages were 437 million dollars higher in July than they were in January. Of that amount, 130 million is due to the Leisure and Hospitality sector. This large increase is due to the seasonal nature of tourism and the fishing industries, both of which are in jeopardy.
- Basic assumptions and employment effects:
 - At this stage, it is nearly impossible to know the exact economic response by businesses across the state. However, we use the best available information to make educated decisions for this illustrative exercise.

- Relying on national estimates, we assume that the first round of losses will be concentrated in the Leisure and Hospitality sector, the retail sector, and the Transportation sector.
 - Specifically, we assume the Leisure and Hospitality sector will employ 50% fewer people starting March 15th, and the retail and transportation sectors will each experience a 20% decline in employment starting on the same date.
 - Using these initial shocks, we calculate employment losses, and wage losses for March, April, and May 2020. We also measure the multiplier effects of these losses to capture economy-wide effects from the declines in spending and employment.
 - The direct effects of the assumptions above indicate that March, 2020 employment will be 26,319 less than March, 2019. Total wages will be 34 million less than March, 2019.
 - For the first full month post closures -April-, employment will be 27,072 less than the previous year, while total wages lost will equal 79.1 million dollars.
 - Once we account for the multiplier effects, we conclude that April employment in 2020 will be around 48,000 less than April, 2019. Again, the size of the multiplier effects will depend on the length of the closures as well as well as how quickly the Federal aid reaches people's and businesses bank accounts.
- GDP effects:
 - Assuming that economic disruption in Alaska started mid-way through March and making similar assumptions to the employment case, we conclude that the direct effect of the contraction will result in a 490 million dollars or 0.89% decline in GDP for the first quarter of 2020.
 - In the second quarter -April through June-, we find that maintaining the closures for the first two months results in the GDP for 2020 being almost 2 billion dollars less than GDP for 2019. Accounting for the multiplier effects shows that GDP in the second quarter could be 4.1 billion dollars less than the second quarter of 2019 based on the scenarios we evaluate. Importantly, these declines in GDP do not take into account the effect of the declines in oil prices which could further depress the state's Gross State Product. Similar to the employment case, the multiplier effects may be much smaller if the federal aid reaches businesses quickly.

2 Introduction

The spread of COVID-19 has created adverse economic impacts for the nation and these impacts have been growing over the last few weeks. Given the severe decline in the oil markets and the stock markets, most economic observers anticipate a U-shaped recovery rather than V-shaped one. This shift in expectation is largely driven by concerns surrounding how long it will take for consumer and business confidence to recover. The speed and the scale of the recovery will depend on how quickly the virus is contained, how aggressive the aid packages are to small businesses, households, and local governments, and whether households revert back to spending money. Alaska will not escape the damage as the tourism season is in serious jeopardy, oil prices have significantly declined, and the recent establishment closures as of Mid-March are affecting a few sectors, mainly the Leisure and Hospitality industry. While it is clear that this contraction in spending has economic costs, we do not have access to high frequency data that would allow us to comment on the current economic effects of the pandemic. Instead, we make assumptions about the size of the employment/wage/output cuts based on the best available information, and then track the multiplier effects of these losses. The economic effects from social distancing measures as well as the decline in travel will have far reaching consequences for the Alaska economy in both the short and long run. This short summary addresses neither the health effects nor the long term economic effects but instead focuses on the immediate and near term costs of the pandemic on the Alaska economy.¹

Below, we provide some background on the Alaska economy, the sectors most sensitive to the announced closures and declines in spending, as well as estimates of payroll, wage, and GDP losses over the next few months.

In Table 1, we show that almost 32,000 -10%- of all jobs in March, 2019 were in the Leisure and Hospitality sector. The sector is, arguably, the most vulnerable as it contains restaurants and drinking establishments which are no longer allowed to provide dine-in services and have as a result laid-off a considerable number of workers.²

¹We do not account for cuts that may happen in the Oil and Gas Industry due to the drop in oil prices.

²Based on preliminary reports, initial unemployment claims jumped by almost 596%

3 Alaska Leisure and Hospitality Industry Breakdown for Jobs and establishments

Table 1: Leisure and hospitality industry

	Jobs	(Share)	(Establishments)	(Share)
Total	318,890	–	22,065	–
Leisure and Hospitality	31,638	9.92%	2,639	11.9%
Arts, Entertainment, and recreation	4,347	1.36%	586	2.66%
Accommodation	6,807	2.13%	588	2.66%
Eating and drinking places	20,484	6.42%	1,465	6.64%

4 Job losses

The economic consequences of mitigating this public health crisis are far reaching. The most direct effect is that many businesses have closed (at least temporarily) and there are expectations of record layoffs in the coming months. According to the U.S. Department of Labor,³ the number of initial unemployment claims in Alaska for the week ending March, 21st were 7,806. This represents a 596% increase over the previous week and we will likely be seeing even higher initial claims for the upcoming weeks as more businesses lay off employees. According to a report by the Federal Reserve Bank of St. Louis,⁴ 46% of all occupations, at the national level, are at "high risk" of layoffs. Unsurprisingly, the most vulnerable individuals include those employed in Food Preparation and Serving-Related Occupations, Sales and Related Occupations, Production Occupations, and Installation, Maintenance and Repair Occupations. Moody's analytics, in a recent report, has produced equally grim projections as they show that as many as 80 million Americans are in high or moderate risk of a layoff. They project that at least 10 million of those in relatively high risk occupations will actually be laid off. They consider workers in transportation and travel, leisure and hospitality, temporary help services and oil drilling and extraction amongst the most likely to be affected. While it is near impossible to obtain real time estimates of the layoffs, the recent mandated closures to maintain social distancing coupled with the preliminary initial unemployment claims indicate that the output and job losses in Alaska will be very large. In Table 2, we show the starting

³Initial claims

⁴High risk occupations

assumptions we use to estimate the economic impacts. We assume the direct losses will occur in Leisure and Hospitality, Transportation, and Retail. We model the losses as starting on March 15th and lasting through the end of May. Based on relative vulnerability and data from previous natural disasters, we expect the largest losses -50% decline to occur in Leisure and Hospitality. We anticipate Transportation and retail to each experience a 20% decline. While Merchandise stores are open and some are even hiring employees, many retail establishments such as furniture stores are closed. Table 3 and Table 4 show the employment and wage losses using the inputs we describe above. In the first full month of the shut-down, April, employment losses would equal 27,072 employment with total wages lost of 79.1 million dollars.

Table 2: Assumptions about employment and wage reductions by month

Month	Leisure	Transport	Retail
March	50% starting March 15th	20% starting March 15th	20% starting March 15th
April	50% full month	20% full month	20% full month
May	50% full month	20% full month	20% full month

Note: Some firms may keep workers on the payroll as the federal aid starts being distributed.

Table 3: Sector size and expected employment declines in the most affected sectors by month

Month	Leisure	losses	Transport	losses	Retail	Losses	Drop relative to previous year
March	31,031	15,819	18,090	3,618	34,410	6,882	26,319
April	32,574	16,287	18,987	3,797	34,941	6,988	27,072
May	38,572	19,286	22,025	4,405	36,109	7,222	30,913

Note: The losses in blue are a direct result of the assumptions in Table 2.

Table 4: Sector size and expected wage declines in the most affected sectors by month

Month	Wage Leisure losses	Wage Transport losses	Wage Retail Losses	Drop relative to previous year
March	14.8 M	10.06 M	9.29 M	34.15 M
April	37.5 M	22.2 M	19.4 M	79.1 M
May	37.5 M	22.2 M	19.4 M	79.1 M

Note: Actual wage losses could be smaller/larger depending on the actual size of the layoffs/reduction in hours.

4.1 Multiplier effects of the decline in economic activity

The declines in economic activity we describe above only account for the losses incurred in the sectors directly affected by the social distancing measures, declines in spending, and declines in travel. These sectors are, of course, connected to the rest of the economy as

Table 5: Multiplier effects of employment losses using April numbers

Sector	Direct effect	Multiplier	Total effects
Retail trade	6,988	1.86	13,019
Transportation and warehousing	3,797	2.42	9,226
Leisure and Hospitality	16,287	1.6	26,059
Total	27,072		48,304

they purchase goods and services from other businesses. In Table 5, we present the direct effects, the multiplier⁵ for each sector, and the expected total losses for the month of April if no changes occur between now and then. It is important to note that both the direct and spin-off effects will be temporary if the virus is contained relatively quickly. If, on the other hand, the pandemic lasts longer, the job losses may become permanent as small businesses which typically operate on razor thin margins start to fail. The recent passage of the federal stimulus bill which boosts unemployment insurance, provides loans and grants to businesses, and provides states with health related dollars may affect businesses' ability to keep workers on the payroll. In the next section, we turn our attention to potential GDP effects using a similar methodology. Given that GDP data is only available at the quarterly level, we present the potential consequences on GDP for 2020 Q1, 2020 Q2, and 2020 Q3.

⁵We use IMPLAN to obtain the employment and output multipliers. IMPLAN is an input output model often used to estimate economic impacts of private and public activities. There is a great deal of uncertainty over both the length of the closures as well as when the federal aid will reach businesses and households.

5 Alaska GDP and expected losses

In Figure 1, we show that Alaska's GDP in the first quarter of 2019 was 54 billion dollars with 1.6 billion coming from Accommodation and Food services, and another 2.3 billion from Retail Trade. Transportation and Warehousing, another vulnerable sector, was responsible for 7.4 billion dollars. Before presenting the potential GDP losses, we show in Table 6 the assumed reductions in GDP by quarter and sector. In the first quarter, we assume the disruptions occurred half way through the month of March, for the second Quarter we assume that the effects last for April and May, and for the third quarter we assume that the results last the whole quarter due to tourism related disruptions. In Figure 2,⁶ we show the expected GDP changes before the onset of the virus and the expected losses due to the pandemic. Given that GDP for the first quarter was disrupted towards the middle of March, the expected decline in GDP using the assumptions described in Table 6- will be relatively moderate at 490 million dollars or 0.89%. Table 5 shows the direct economic impacts by quarter, while Table 6 shows both the direct and total effects using the second quarter as an example. In Figure 5, we show the percentage change in GDP by quarter due to the direct effects alone. The losses, when accounting for both direct and indirect effect as we show in Table 8, could amount to 4.1 billion dollars in the second quarter of 2020. That would represent a 7.4% decrease in GDP relative to the second quarter of 2019. As we explain in the employment section, these losses do not account for the potential effects of oil decline and also behavioral responses by households and businesses as a result of the federal aid package.

⁶GDP by sector is assumed to grow between 2020 Q1 and 2019 Q1 at the same rate it did between 2019 Q1 and 2018 Q1

Table 6: Assumptions about GDP losses by quarter and sector

Description	Quarter 1	Quarter 2	Quarter 3
Retail trade	20% for half a month	20% for April and May	No effect
Transportation and warehousing	20% for half a month	20% for April and May	10% for all three months
Arts, entertainment, and recreation	50% for half a month	50% for April and May	70% for all three months
Accommodation and food services	50% for half a month	50% for April and May	60% for all three months

Table 7: GDP losses by quarter (in Millions)

Description	Quarter 1	Quarter 2	Quarter 3
Retail trade	79.81	316.39	–
Transportation and warehousing	249.91	990.66	754.26
Arts, entertainment, and recreation	27.83	110.35	237.72
Accommodation and food services	132.81	526.48	962.88

Table 8: Multiplier effects of GDP losses using Q2 numbers (in Millions)

Sector	Direct effect	Multiplier	Total effects
Retail trade	316.39	2.10	664.41
Transportation and warehousing	990.66	2.22	2,199.26
Arts, entertainment, and recreation	110.35	2.10	231.735
Accommodation and food services	526.48	2.04	1,074.01
Total			4,169

Figure 1: Alaska GDP

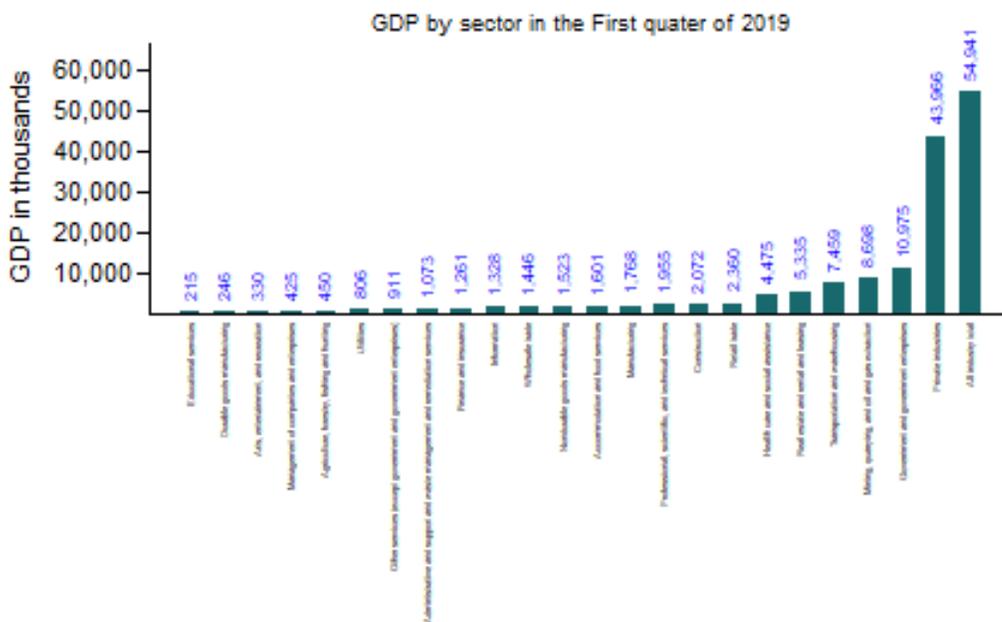


Figure 2: Q1 GDP changes with and without the virus

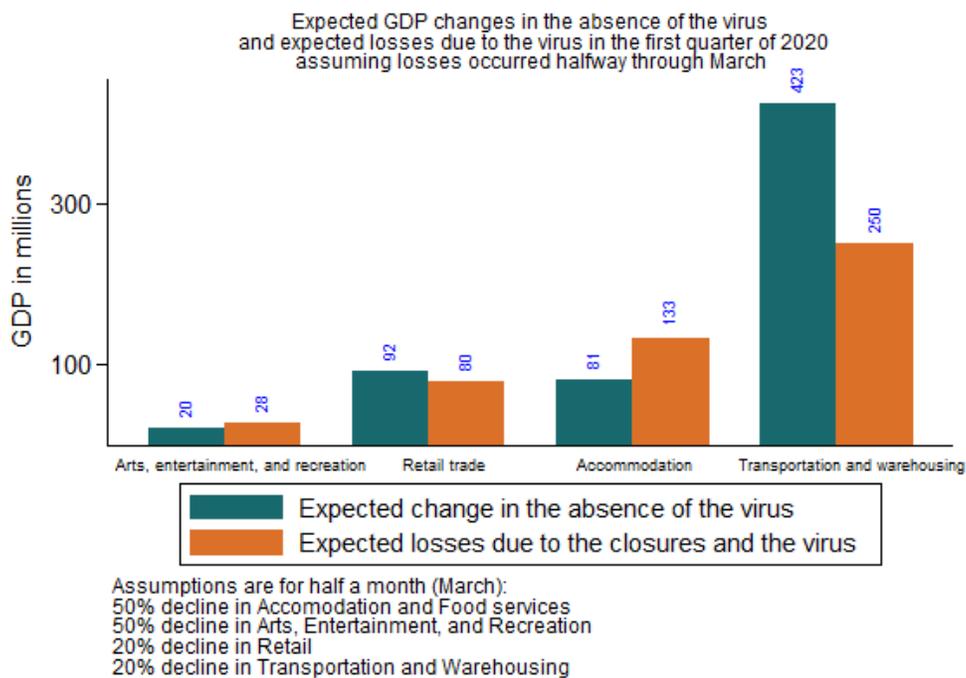


Figure 3: Q2 GDP changes with and without the virus

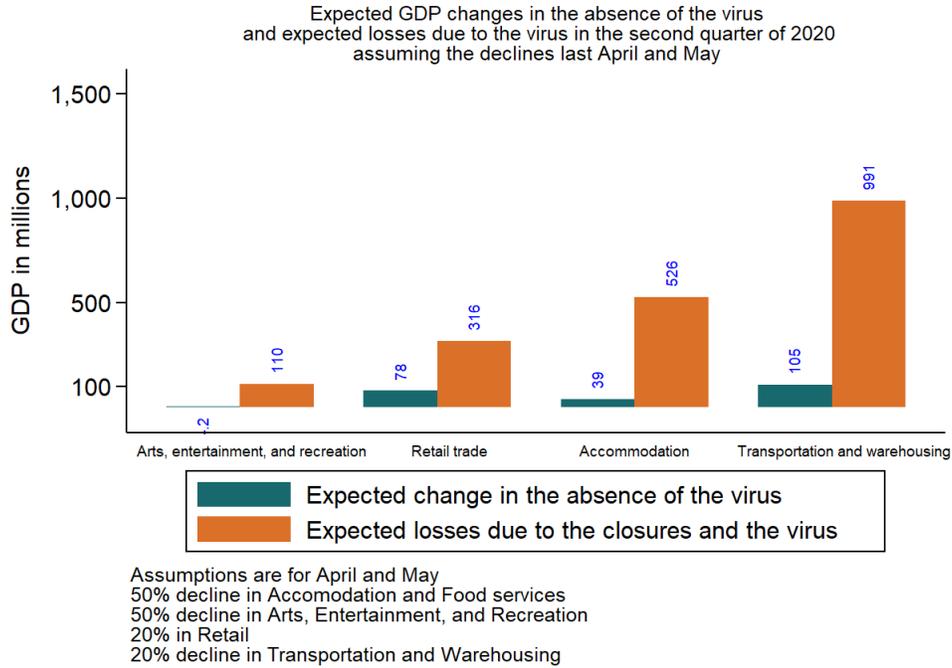


Figure 4: Q3 GDP changes with and without the virus

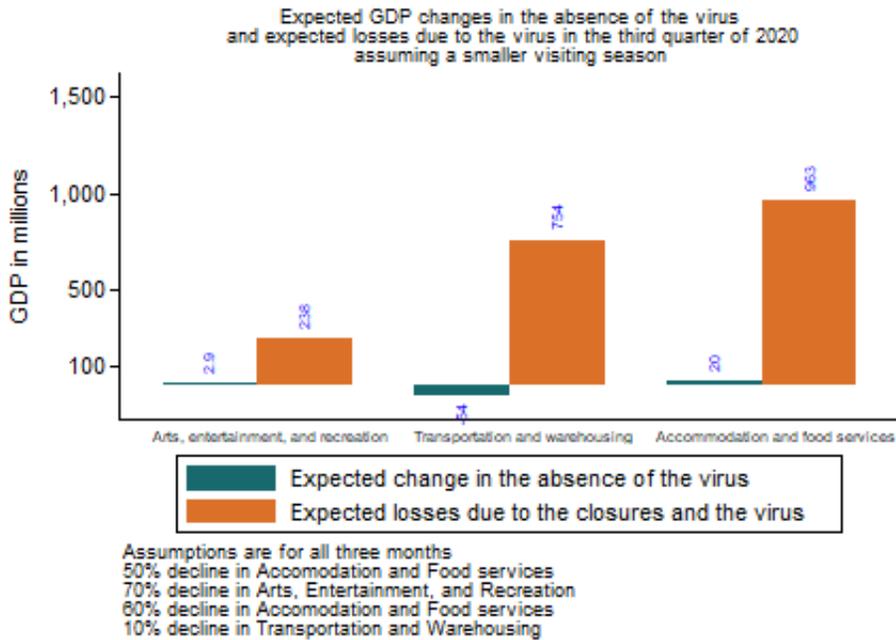
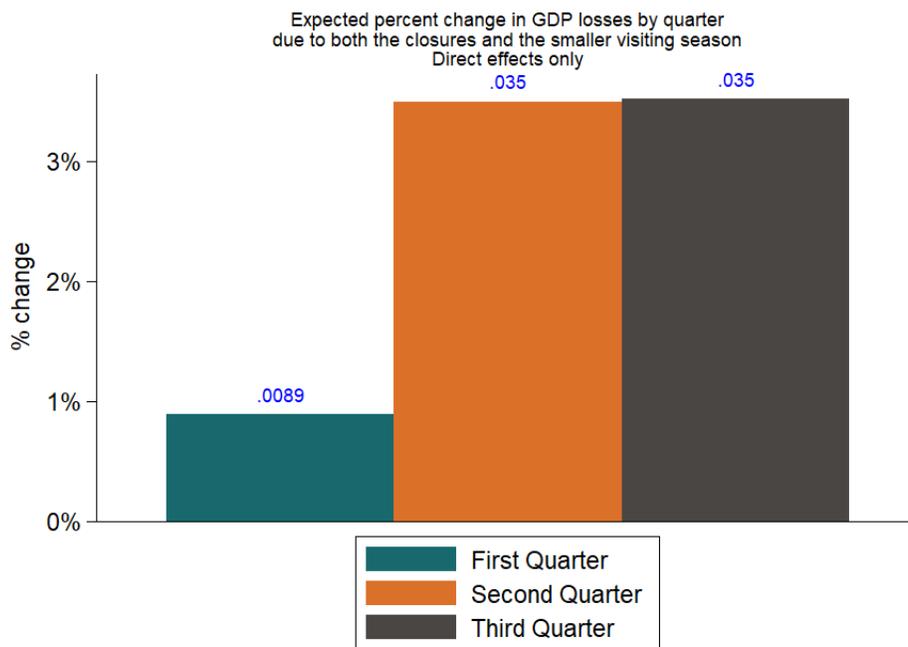


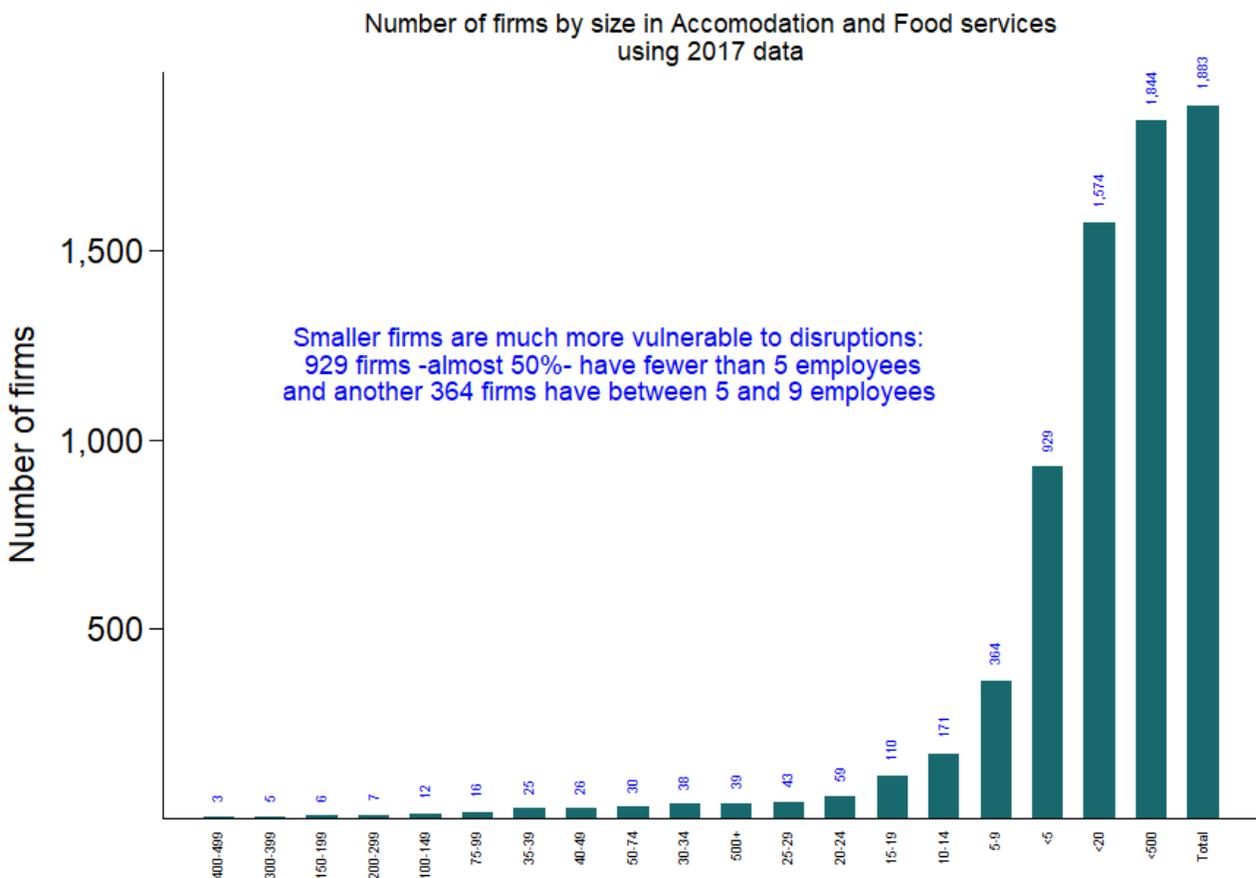
Figure 5: Potential GDP losses by quarter



6 Firm size and vulnerability

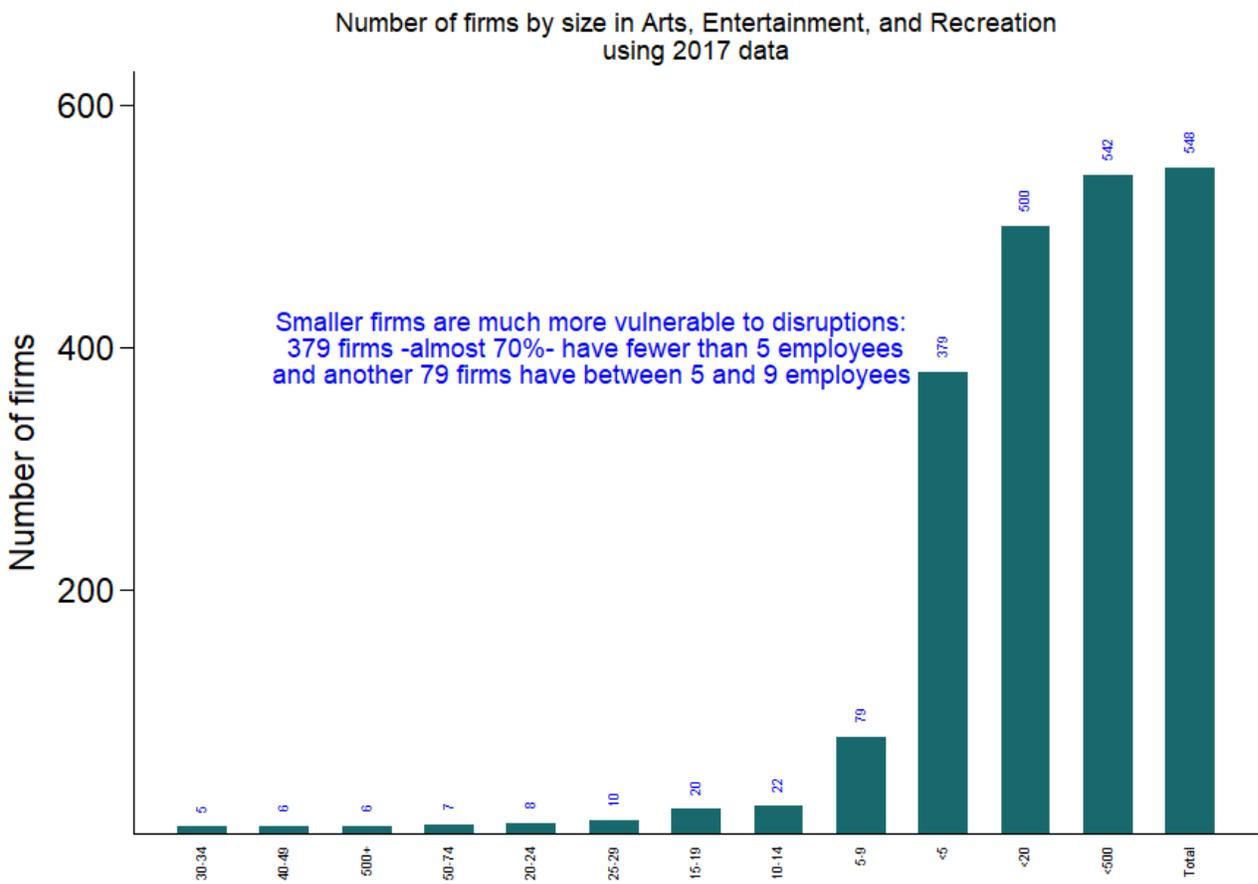
The short term effects we estimate in the previous sections ignore that fiscal stress on employers due to lack of revenues may lead to business exits and/or bankruptcies. In Figure 6, we show that almost 50% all firms in Accommodation and Food services have fewer than 5 employees and are therefore very sensitive to income disruptions. These firms will not only be affected by the closures but also by the much smaller anticipated summer season. The other sector whose

Figure 6: Accommodation and food services



firms are likely sensitive to the travel restrictions is the Arts, Entertainment, and Recreation industry where 70% of all firms have fewer than 5 employees.

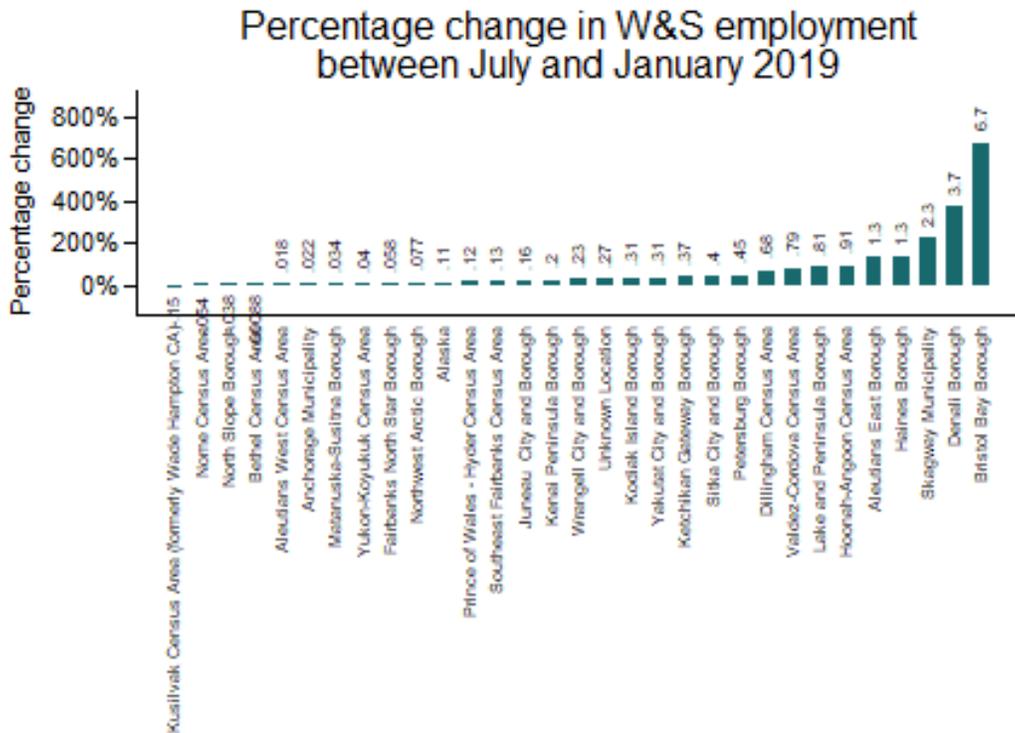
Figure 7: Arts, Entertainment, and Recreation



7 Tourism season

The leisure and hospitality sector of the economy has been and will be very adversely impacted by the closures. Leisure and hospitality includes hotels, motels, restaurants and bars, and the arts, entertainment, and recreation sectors. Similarly, the travel industry is being impacted by increased social distancing, including airlines, cruise lines, buses, and trains. In Figure 8 and Figure 9, we show the extent to which each borough's economy swells over the summer. Statewide, wages are 437 million dollars higher in July than in January with a 124 million of the increase due to the Leisure and Hospitality sector. Table 9 shows the potential declines in employment due the closures and declines in spending at the borough level.

Figure 8: Percentage change in wages between July and January by borough



8 conclusion

In this short summary, we provide an illustration of the potential economic losses due to the COVID-19. The results should be not be interpreted as a prediction for the potential consequences but instead as an attempt to capture the scale of the effects. A return to full

Figure 9: Total changes in wages between July and January by borough

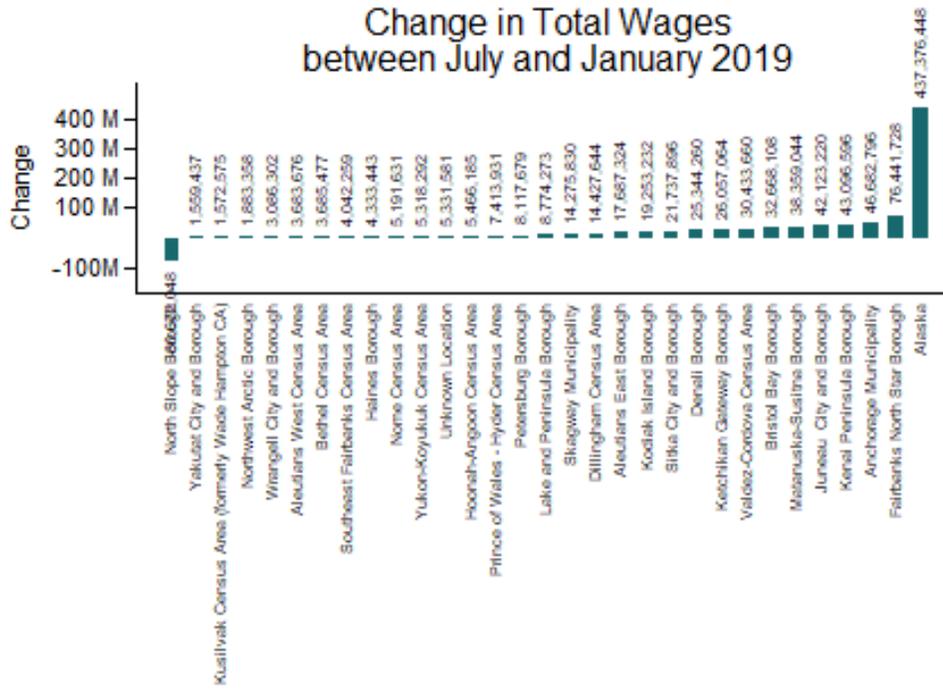
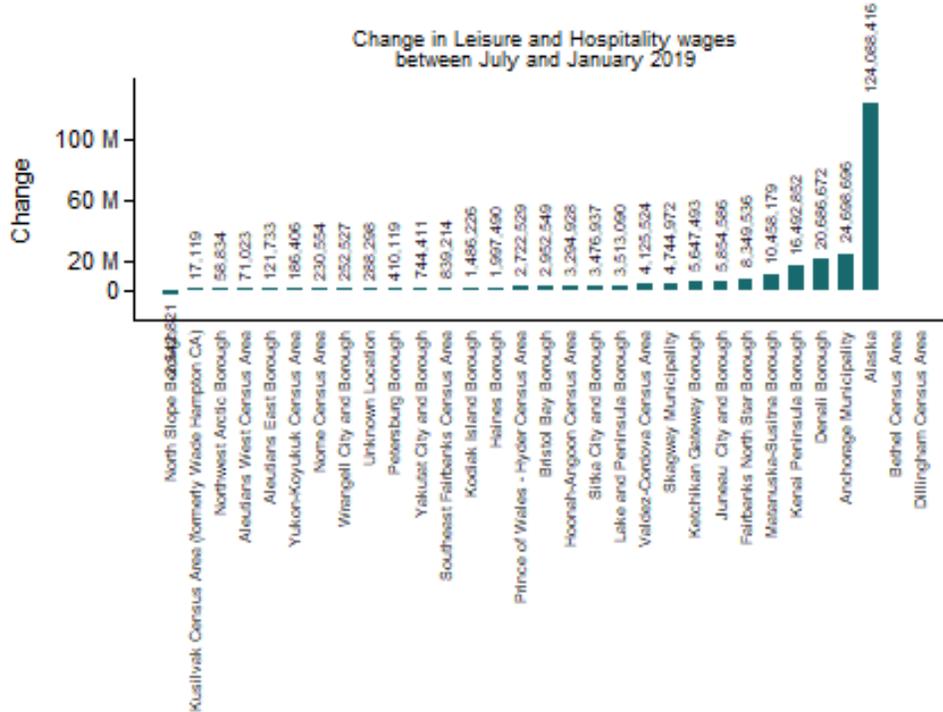


Figure 10: Total changes in wages in Leisure and Hospitality between July and January by borough



production and economic activity will first require virus containment. In the meantime, it will be important to support households, businesses, and local governments as they deal with significant disruptions that may have far reaching and long term consequences.

Table 9: Direct Employment losses in the Leisure and Hospitality sector by month assuming layoffs of 50% of workers starting March 15th

Area	March	April	May
Alaska	15,819	16,287	19,286
Aleutians East Borough	13	14.5	17
Aleutians West Census Area	16.5	18	17
Anchorage Municipality	8694	8611.5	8852
Bethel Census Area		35.5	40
Bristol Bay Borough	26.5	36	56
Denali Borough	102	171.5	976.5
Dillingham Census Area		26.5	34.5
Fairbanks North Star Borough	2073	2125	2373.5
Haines Borough	63	81.5	166.5
Hoonah-Angoon Census Area	23	43	159
Juneau City and Borough	734	782.5	986
Kenai Peninsula Borough	1001.5	1094	1560.5
Ketchikan Gateway Borough	327	368	506.5
Kodiak Island Borough	204.5	220	230
Kusilvak Census Area (formerly Wade Hampton CA)	11	10	11.5
Lake and Peninsula Borough	21	20.5	46
Matanuska-Susitna Borough	1252.5	1326.5	1654
Nome Census Area	94	68.5	68.5
North Slope Borough	389.5	366.5	314
Northwest Arctic Borough	60.5	58	58.5
Petersburg Borough	41	44.5	58
Prince of Wales - Hyder Census Area	46	49.5	56
Sitka City and Borough	211.5	220	297.5
Skagway Municipality	33	71.5	259
Southeast Fairbanks Census Area	77.5	82	103
Unknown Location	8	8	17
Valdez-Cordova Census Area	198	218	275.5
Wrangell City and Borough	18.5	28	30
Yakutat City and Borough	12	32.5	34
Yukon-Koyukuk Census Area	14		