COVID-19: Economic Impact Analysis on Buffalo County Service Region

September 2021

EXECUTIVE SUMMARY REPORT

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Acknowledgements

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Emsi Burning Glass provides labor market data that helps to create better outcomes for communities. Our data, which cover more than 99% of the U.S. workforce, are compiled from a wide variety of government sources, job postings, and online profiles and résumés. A variety of our clients use Emsi Burning Glass to align programs with regional needs and demonstrate their institution's economic impact on their region. Visit economicmodeling.com/ci-consulting to learn more or connect with us.

INTRODUCTION

Buffalo County is one of nine counties located along the Mississippi River in Western Wisconsin that are members of the Mississippi River Regional Planning Commission (MRRPC)[1]. MRRPC includes Buffalo, Crawford, Jackson, La Crosse, Monroe, Pepin, Pierce, Trempealeau, and Vernon Counties. In 2020, the Buffalo county population was 13,317[2] , with a total regional employment of 4,544. The average earnings per job in 2020 was $52,567, which is $21,586 below the national average earnings per job.[3]

The Buffalo county economy creates value in many ways. The employed labor force in Buffalo generates new dollars and creates opportunities in the region.

MRRPC tracks Buffalo's industries and studies the changes in taxes, earnings, and job market. An understanding of the regional economy and the economic impact effects of COVID-19 is vital to Buffalo's efforts seeking to adapt to the post-pandemic economy.

Labor Force in Buffalo creates new opportunities in their region.

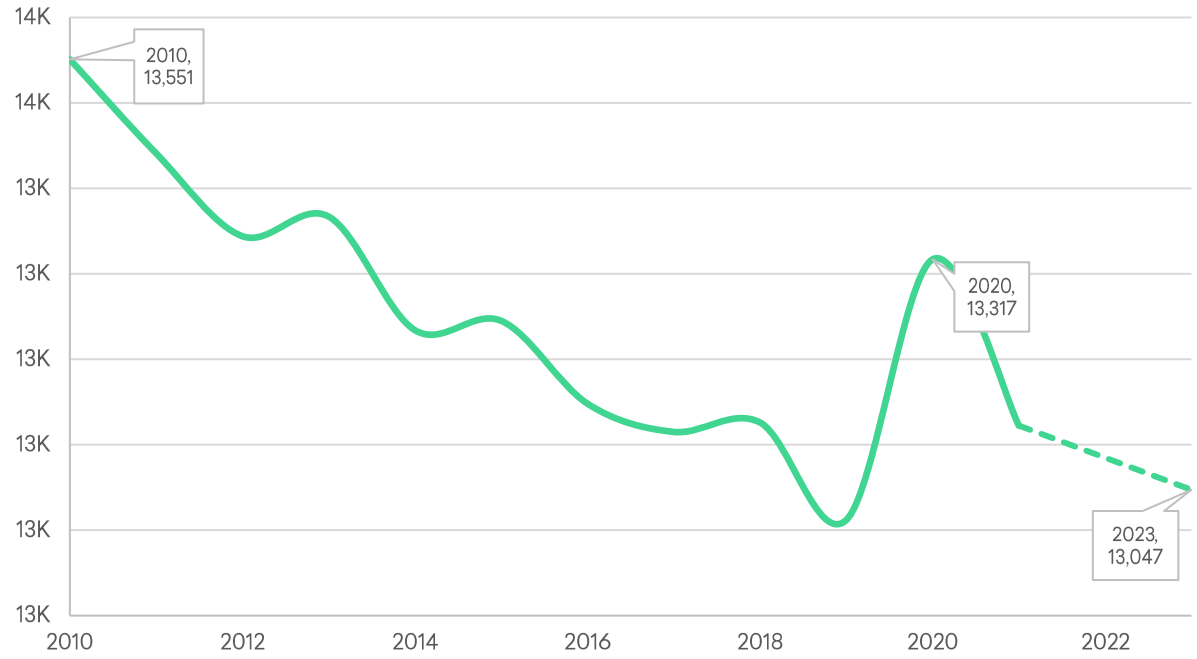
The purpose of this report is to outline the region's economy and provide an economic impact analysis of COVID-19. This report will focus on the effects of job losses during 2020 caused by the pandemic and the impact they have had on the region's diverse industries. The following figures and tables display key findings of the analysis.

[1] https://mrrpc.com/about/
[2] https://www.census.gov/library/stories/state-by-state.html
[3] Emsi Burning Glass proprietary data, collected on August 23, 2021.

ECONOMIC OVERVIEW

In 2010, 13,551 people resided in Buffalo. The county's population is projected to decline to 13,047 people by 2023 (Figure 01).

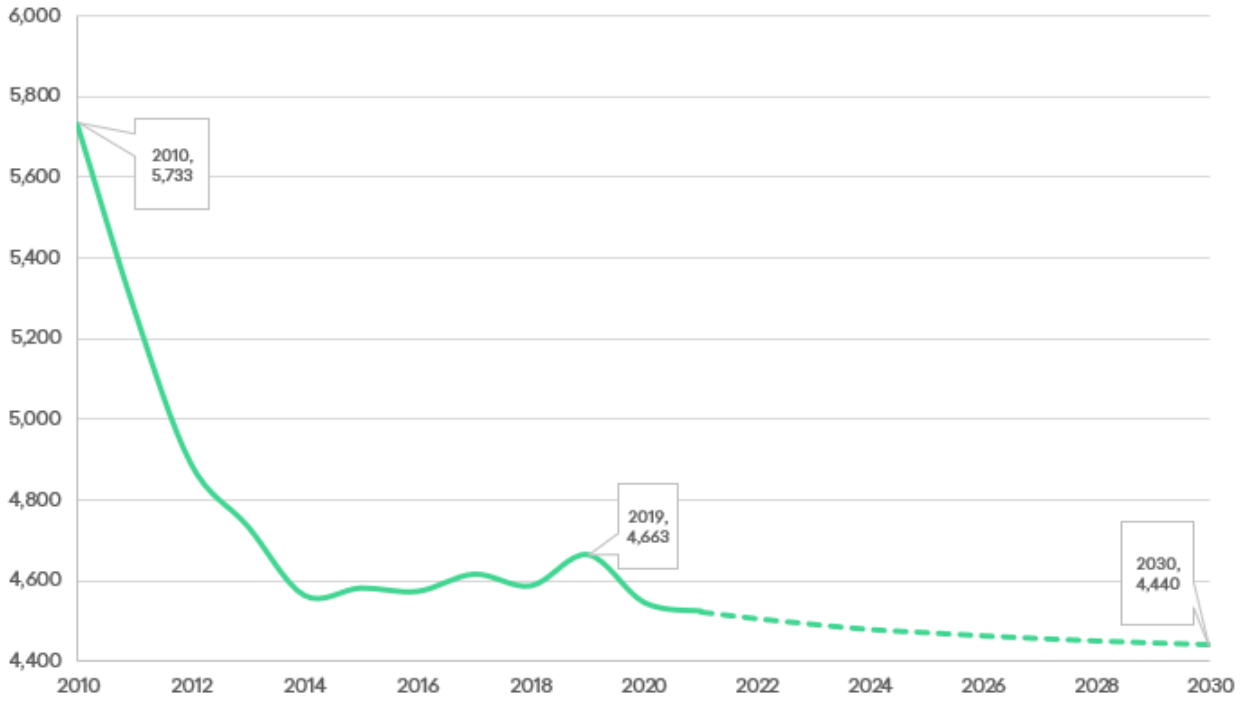
Figure 01: Historical and Projected Population in Buffalo, 2010 to 2023



Source: Emsi Burning Glass demographics data, U.S. Census Bureau.

As shown in Figure 02, Buffalo supported 5,733 jobs in 2010 and by 2019, the region had just 4,663 jobs. In 2020 alone, the region lost 119 jobs. Due to data limitations, projections may not capture the total impact of COVID-19 on future labor markets.

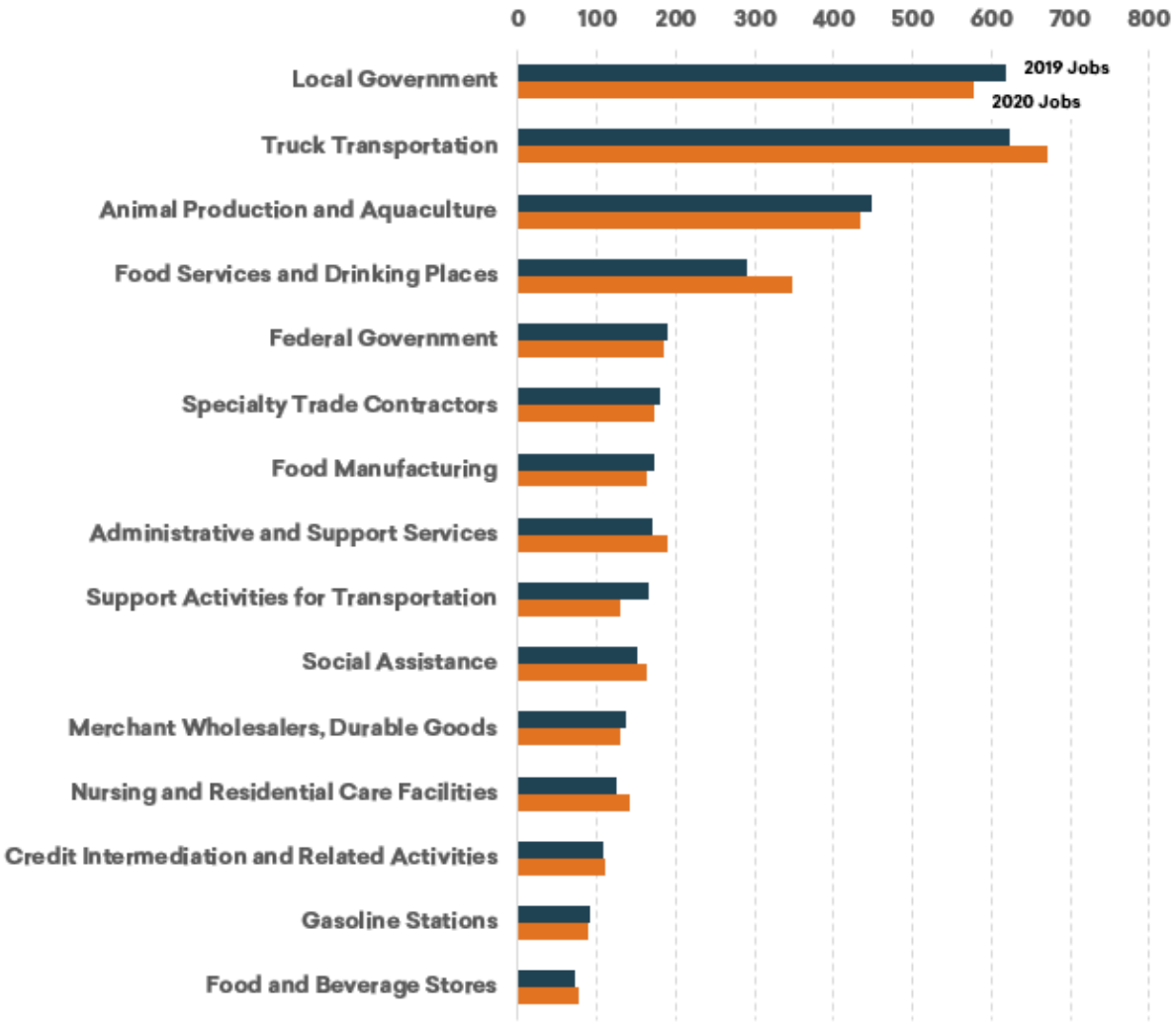
Figure 02: Historical and Projected Jobs in Buffalo, 2010 to 2030



Source: Emsi Burning Glass 2021.3.

Figure 03 displays the top industry subsectors in terms of employment in Buffalo. Local Government and Truck Transportation industries were the industries with highest number of jobs in 2019 and 2020.

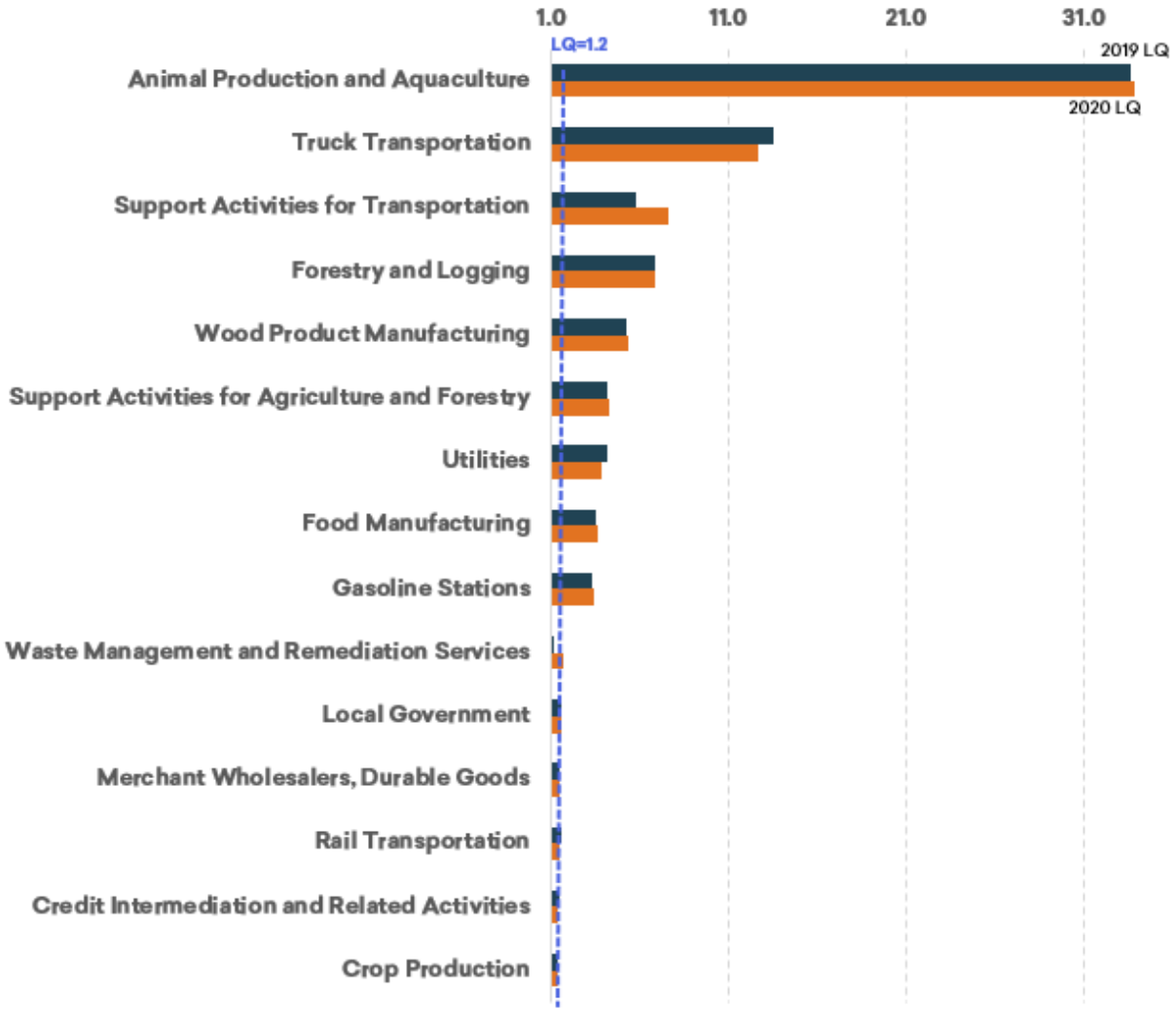
Figure 03: Top Industry Subsectors in Buffalo by Jobs



Source: Emsi Burning Glass 2021.3.

Figure 04 shows the top industry subsectors in terms of employment concentrations, referred to as location quotients[4] (LQs). High LQs (usually anything greater than 1.2) are an indication that the region has a comparative advantage or specialization in certain industry subsectors relative to the rest of the nation or to other regions.

Figure 04: Top Industry Subsectors in Buffalo by Employment Concentration (LQ)



Source: Emsi Burning Glass 2021.3.

[4] Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique. (https://www.economicmodeling.com/2020/02/03/understanding-location-quotient-2/).

Looking at industries in Figure 03, only 8 industries are within both the top 15 in terms of total jobs and in terms of relatively high LQs. The appearance of these industry subsectors provides an indication of their strength in the region's economy and offers insight into potential employment opportunities for people in the region's labor force that are looking for new professional opportunities. These industry subsectors, ranked by 2020 jobs, are:

- Local Government
- Truck Transportation
- Animal Production and Aquaculture
- Food Manufacturing
- Support Activities for Transportation
- Merchant Wholesalers, Durable Goods
- Credit Intermediation and Related Activities
- Gasoline Stations

The data in Table 01 shows several of the region's socioeconomic indicators as they compare to Wisconsin and the United States. Household income, reported as a median annual value, includes the income of all individuals in a household, 15 years and over, whether they are related to the householder or not. The median household income of Buffalo falls below both Wisconsin and the United States. Per capita income is calculated as the mean income for every person in the area divided by the aggregate income of the total population. In contrast, Buffalo shows low unemployment and poverty rates when compared against the nation.

Table 01: Income, Unemployment, and Poverty Characteristics

	AVERAGE MEDIAN HOUSEHOLD INCOME	UNEMPLOYMENT RATE (2020)	AVERAGE PERCAPITA INCOME	AVERAGE POVERTY ALL PEOPLE
Buffalo County	$57,829	4.72%	$30,503	6.80%
MRRPC Service Region	$57,495	3.87%	$29,488	6.90%
Wisconsin State	$61,747	4.05%	$33,375	7.20%
United States	$62,843	6.50%	$34,103	9.50%

Source: American Community Survey 2019 five-year estimates from the U.S. Census Bureau Data

Figure 05 displays the highest educational attainments in Buffalo, the MRRPC Service Region, Wisconsin, and U.S. adults. Educational attainment[5] data is useful for targeting specific population groups with less than or greater than average education levels. Here, Buffalo shows the highest percentage of Associate degree holders when compared against the different regions.

Figure 05: Highest Educational Attainments

	<HS	HS	Some College	Associate's Degre	Bachelor's Degree	>Bachelor's
Buffalo County	9.1%	39.8%	17.1%	14.1%	13.9%	6.1%
MRRPC	7.0%	32.7%	20.8%	12.6%	17.6%	9.2%
Wisconsin State	7.6%	30.2%	20.5%	11.1%	20.1%	10.6%
United States	11.8%	26.7%	20.3%	8.6%	20.0%	12.6%

Source: American Community Survey 2019 five-year estimates from the U.S. Census Bureau Data

[5] Educational Attainment of the Population 25 Years and Over

ECONOMIC IMPACT ANALYSIS

The Buffalo's labor force promotes economic growth inside the region as well as in the state of Wisconsin through its direct contribution to income generated by work and the ripple effects that expenditures create. This is attained through the industries' interconnection in the regional economy (indirect effects) alongside the impact on household spending (induced effects). COVID-19 disrupted the regional economy in many different ways. One is the reduction of the labor force which will take a great deal of effort to return to pre-pandemic levels. The effects of COVID-19 on the region were measured via three scenarios described in the following section. Each of them will be presented via Type I and Type II Economic Effects. The loss of jobs between 2019-2020 were discounted by the typical rate of death, unemployment, and retirement previous to COVID-19 in order to get a more precise measure of economic effect of COVID on this particular region.

INPUT-OUTPUT MODEL: TYPE I & TYPE II ECONOMIC EFFECTS DESCRIPTION

An Input-Output model is a way of representing the flow of money in an economy, primarily among industries, while also accounting for government, households, and regional imports and exports. An industry is a group of business establishments that share similar end-products (or services) and processes for creating those products/services. Once the flow is represented in the model; we can introduce events that change the flow (such as loss or gain of jobs in one industry) and simulate its effects on each industry in the region, as well as the region as a whole. *The Input-Output model therefore indicates how a change in one part of the economy will ultimately affect other parts based on their economic relationships*.

When we talk about the Input-Output model, we sometimes hear the term "multiplier" used in discussions of economic policy and modeling, usually in the context of job creation or loss. Basically, a multiplier represents how much some aspect of a model will change in response to changes coming from "outside" the model. In other words, *the multipliers capture the changes and will describe the effects of those changes in terms of the original change (final effect = original change times the multiplier)*.

In our particular case, we will talk about Type I and Type II multipliers.

Type I multiplier shows the industry-to-industry transactions. It is composed of Initial, Direct and Indirect Effects.

- *Initial Effect*: represents the first shock in the economy; in our case, it's the number of jobs that were lost during the pandemic in 2020, and therefore does not include ripple effects.
- *Direct Effect*: effects caused by the initially changed sectors; also describes the effects on those sectors' immediate supply chain.
- *Indirect Effect*: extends the concept of the direct multipliers to the supply chain's supply chain.

Type II multiplier adds to the Type I by introducing the effects by households (Induced Effect).

- *Induced Effect*: is due to the impact of the new earnings created by the Initial, Direct, and Indirect changes. These earnings enter the economy as employees spend their paychecks within the region on food, clothing, and other goods and services. In other words, this figure represents the income effects on inter-industry trade.

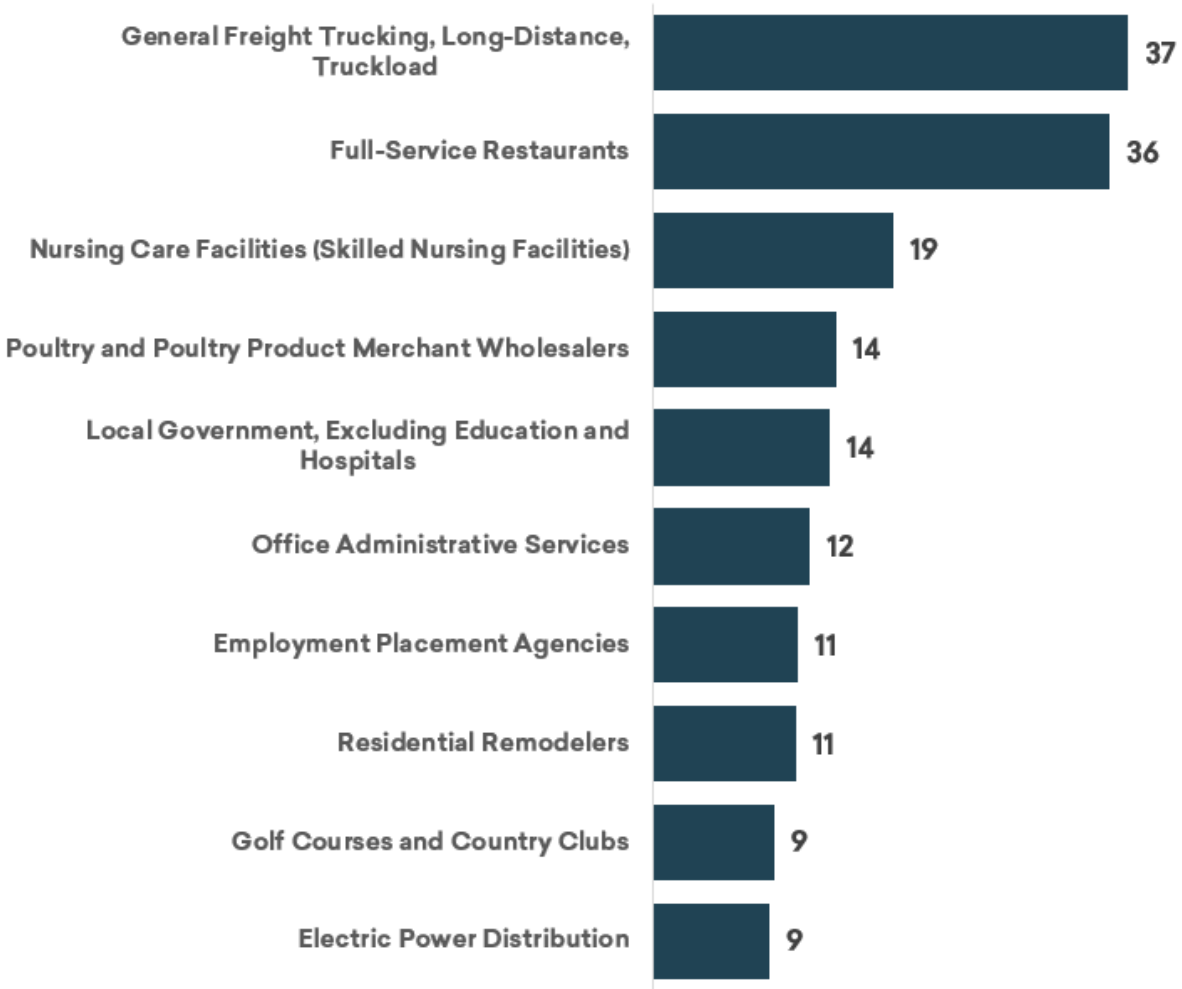
Another description for Type II: business/industry growth or decline that is going to affect the income of individuals and if the individuals spend it or not back in the economy, thus affecting the economy as a whole.

First Scenario:

The first scenario included all industries in which the number of jobs by industries in 2019 were larger than the number of jobs in 2020.

The total number of industries in this scenario were 97. Figure 06 displays the top 10 industries with the highest number of job losses.

Figure 06: Top 10 Industries for All Industries with the Highest Number of Job Losses during 2020



Source: Emsi Burning Glass 2021.3

In this scenario, the total number of lost jobs caused by the pandemic sum up to 314 jobs. Job losses shown by Figure 06 represent close to 55% of all jobs lost during 2020.

The total impact on Jobs, Earnings and Taxes on Production & Imports (TPI) by Type I and Type II effects are presented below.

The number of job losses during the pandemic increased to 367 for Type I and 385 for Type II economic effect. In other words, because of the initial 314 lost jobs, there are 53 that are full-time, part-time, and seasonal employee jobs in industries that are part of their supply chain (Type I effect) that were lost. Additionally, there are an additional 18 jobs that were lost because they were no longer supported by the 367 jobs already lost in the region (Type II effect).

The top 10 industries in Figure 06 showed a total effect of job loss by 25% compared to their initial effect with a total difference of -32 jobs for Type I and -43 Type II. (Table 02).

Total Effects by Job Loss in 2019-20 due to COVID 19

97 Industries
Negatively Affected

314
Initial Job Loss

385
Total Loss in Jobs*

$17.9 million
Earning Loss*

$2.9 million
Loss on TPI*

Table 02: Top 10 Industries All Industries Scenario Change in Jobs

Industries Name	Initial Effect	Type I	Type II
General Freight Trucking, Long-Distance, Truckload	37	47	49
Full-Service Restaurants	36	37	38
Nursing Care Facilities (Skilled Nursing Facilities)	19	21	22
Poultry and Poultry Product Merchant Wholesalers	14	20	21
Local Government, Excluding Education and Hospitals	14	15	16
Office Administrative Services	12	15	16
Employment Placement Agencies	11	13	14
Residential Remodelers	11	12	12
Golf Courses and Country Clubs	9	10	10
Electric Power Distribution	9	15	18
Other Industries	141	162	169
All Industries	314	367	385

Source: Multi-regional social account matrix model (MR-SAM). 2021.3, years 2019/2020.

* Total Type II Loss

In terms of Earnings loss, the total initial loss of earnings was $15,456,365 where the total effect of Type I is 13% higher and Type II 16% increase over the initial effect. Table 03 shows an initial loss (Initial Effect) of $10,473,681 and an economic impact of $11,695,844 loss on Type I and $12,019,966 on Type II effects, for the top 10 industries, which represents 67.1% of the total effects on Type I and Type II.

Table 03: Top 10 Industries All Industries Scenario Loss Earnings

Industries Name	Initial Effect	Type I	Type II
General Freight Trucking, Long-Distance, Truckload	$2,980,606	$3,410,469	$3,461,460
Electric Power Distribution	$1,546,636	$1,790,973	$1,889,912
Poultry and Poultry Product Merchant Wholesalers	$1,474,827	$1,669,639	$1,710,024
Office Administrative Services	$1,028,609	$1,100,163	$1,129,408
Nursing Care Facilities (Skilled Nursing Facilities)	$748,586	$817,911	$841,606
Employment Placement Agencies	$686,804	$742,642	$761,202
Local Government, Excluding Education and Hospitals	$595,228	$653,886	$675,981
Residential Remodelers	$491,938	$517,213	$529,918
Corporate, Subsidiary, and Regional Managing Offices	$468,372	$498,080	$506,974
Full-Service Restaurants	$452,075	$494,867	$513,482
Other Industries	4,982,685	5,712,861	5,887,140
All Industries	$15,456,365	$17,408,704	$17,907,106

Source: Multi-regional social account matrix model (MR-SAM). 2021.3, years 2019/2020.

The loss on Taxes on Production and Imports (TPI) measures the change in local, state, and federal tax revenue through the increased or decreased industry sales, specifically general sales, and property taxes. It's important to note the change in tax revenue corresponds to the ripple effects and cannot be tied to a particular timeframe. Buffalo county lost $2,911,744 on TPI where 19% corresponds to Federal, 38% to State and 43% to Local Government taxes. The top 10 industries represent 81% of the total loss on TPI (Table 04).

Table 04: Top 10 Industries All Industries Scenario Loss on Taxes on Production & Imports

Industries Name	Total Loss on Taxes on Production and Imports	Federal	State	Local
Electric Power Distribution	$1,549,795	$272,545	$591,641	$685,608
General Freight Trucking, Long-Distance, Truckload	$165,113	$31,819	$62,219	$71,074
Poultry and Poultry Product Merchant Wholesalers	$153,539	$41,576	$54,353	$57,610
Full-Service Restaurants	$98,777	$13,809	$38,750	$46,219
Motor Vehicle Supplies and New Parts Merchant Wholesalers	$80,162	$17,528	$29,599	$33,035
Electronic Shopping and Mail-Order Houses	$77,094	$15,046	$28,996	$33,052
Promoters of Performing Arts, Sports, and Similar Events with Facilities	$66,100	$14,639	$24,353	$27,108
Farm and Garden Machinery and Equipment Merchant Wholesalers	$59,480	$10,570	$22,675	$26,236
Nursing Care Facilities (Skilled Nursing Facilities)	$52,602	$7,487	$20,597	$24,519
Cheese Manufacturing	$52,005	$13,297	$18,639	$20,068
Other Industries	557,077	108,192	209,680	239,206
All Industries	**$2,911,744**	$546,507	$1,101,502	$1,263,735

Source: Multi-regional social account matrix model (MR-SAM). 2021.3, years 2019/2020.

Second Scenario:

The second scenario groups industries which performed worse in terms of job loss, unemployment, and job postings, after having been compared at the national level. We selected the industries from two digit NAICS code to six-digit NAICS code.

We called this set of industries the "Most Affected," relative to national levels. There was only one industry in the second scenario. Figure 07 displays the industries with number of job losses.

Figure 07: Most Affected Industries with the Highest Job Losses during 2020

Source: Emsi Burning Glass 2021.3

The industry lost just 2 jobs.

The number of job losses during the pandemic increased to 3 for Type I and Type II economic effects. In other words, because of the 2 lost jobs, there was an additional job lost in the supply chain. Additionally, there were no additional jobs lost from induced effects (Type II effect).

Total Effects by Job Loss in 2019-20 due to COVID 19

1 Industries
Negatively Affected

2
Initial Job Loss

3
Total Loss in Jobs*

$139,693
Earning Loss*

$2,944
Loss on TPI*

Table 05: Most Affected Industries Scenario Change in Jobs

Industries Name	Initial Effect	Type I	Type II
Specialized Freight (except Used Goods) Trucking, Long-Distance	2	3	3
All Industries	2	3	3

Source: Multi-regional social account matrix model (MR-SAM). 2021.3, years 2019/2020.

* Total Type II Loss

In terms of earnings loss, Table 06 shows an initial loss of earnings of $120,361, where the total effect of Type I is 14% higher and Type II 16% increase over the initial effect.

Table 06: Most Affected Industries Scenario Loss Earnings

Industries Name	Initial Effect	Type I	Type II
Specialized Freight (except Used Goods) Trucking, Long-Distance	$120,361	$137,783	$139,693
All Industries	$120,361	$137,783	$139,693

Source: Multi-regional social account matrix model (MR-SAM). 2021.3, years 2019/2020.

As was mentioned before, the loss on taxes on production and imports (TPI) measured the change in local, state, and federal tax revenues through general sales and property taxes. The county lost $6,828 on TPI where 19% corresponds to federal government, 38% to state and 43% to local governments (Table 07).

Table 07: Most Affected Industries Scenario Loss on Taxes on Production & Imports

Industries Name	Total Loss on Taxes on Production and Imports	Federal	State	Local
Specialized Freight (except Used Goods) Trucking, Long-Distance	$6,828	$1,308	$2,575	$2,944
All Industries	**$6,828**	**$1,308**	**$2,575**	**$2,944**

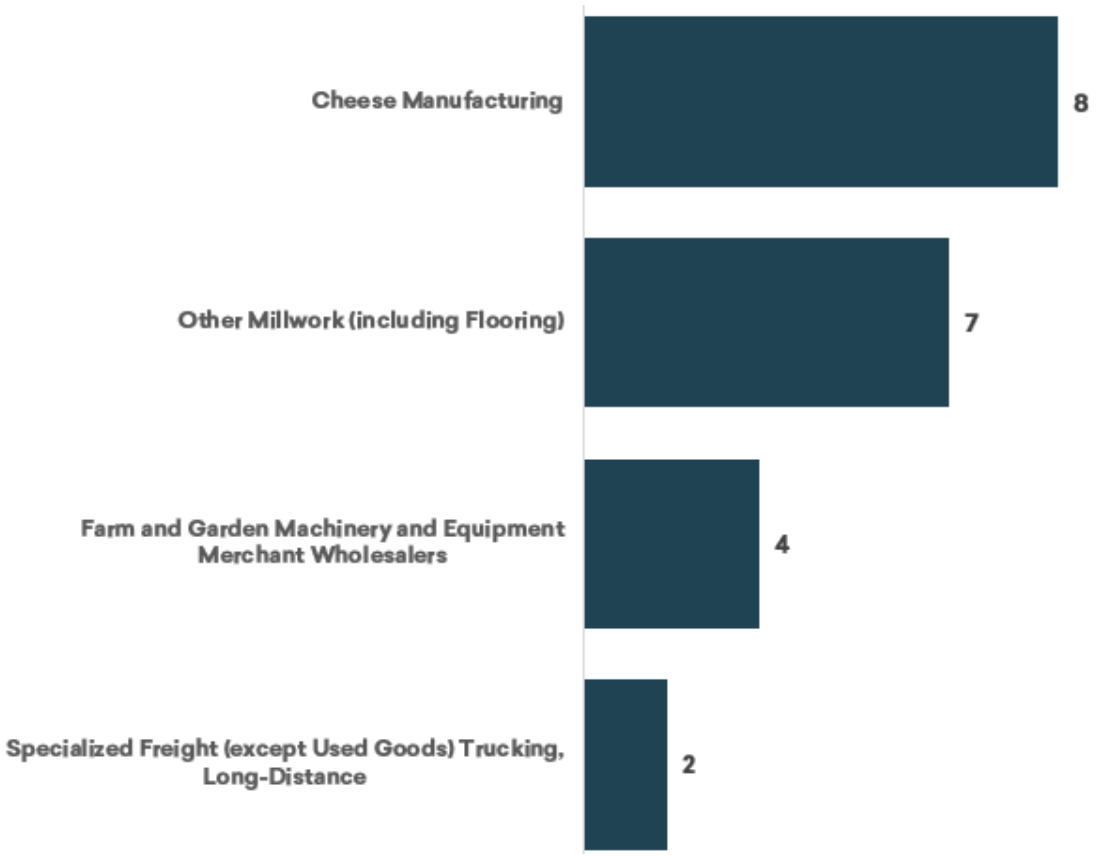
Source: Multi-regional social account matrix model (MR-SAM). 2021.3, years 2019/2020.

Third Scenario:

For our third scenario, we look at industries that are the most relevant to the region. Some of the industries included are Cheese Manufacturing, Other Millwork, as well industries where the largest employers in the region are classified.

We called this set of industries the "Most Relevant." The total number of industries on this scenario were 4. Figure 08 displays the industries with their number of jobs lost.

Figure 08: Most Relevant Industries with Number of Job Loss during 2020



Source: Emsi Burning Glass 2021.3

In our third scenario, the total job loss for the 4 industries amounts to 21 jobs during 2020.

The job losses increased to 27 for Type I and for 28 for Type II economic effects. In other words, because of the 21 losses on jobs there were 6 that were full-time, part-time, and seasonal employee jobs in industries that were part of their supply chain (Type I effect) that were lost. Additionally, there was 1 job lost because they were no longer supported by the 28 jobs already lost in the region (Type II effect).

The industries in Figure 08 showed a total effect on job loss of 33.5% compared to the initial effect with a total difference of -6 jobs for Type I and -7 Type II. (Table 08).

Total Effects by Job Loss in 2019-20 due to COVID 19

4 Industries
Negatively Affected

21
Initial Job Loss

28
Total Loss in Jobs*

$1.1 million
Earning Loss*

$138,361
Loss on TPI*

Table 08: Most Relevant Industries Scenario Change in Jobs

Industries Name	Initial Effect	Type I	Type II
Cheese Manufacturing	8	12	12
Other Millwork (including Flooring)	7	8	9
Farm and Garden Machinery and Equipment Merchant Wholesalers	4	5	5
Specialized Freight (except Used Goods) Trucking, Long-Distance	2	3	3
All Industries	21	27	28

Source: Multi-regional social account matrix model (MR-SAM). 2021.3, years 2019/2020.

* Total Type II Loss

In terms of earnings loss, the initial loss was $830,797 where the total effect of Type I was 31% higher and Type II increased 35% over the initial effect (Table 09).

Table 09: Most Relevant Industries Scenario Loss Earnings

Industries Name	Initial Effect	Type I	Type II
Farm and Garden Machinery and Equipment Merchant Wholesalers	$252,762	$284,003	$290,745
Cheese Manufacturing	$240,895	$382,048	$395,003
Other Millwork (including Flooring)	$216,780	$284,340	$294,246
Specialized Freight (except Used Goods) Trucking, Long-Distance	$120,361	$137,783	$139,693
All Industries	$830,797	$1,088,175	$1,119,687

Source: Multi-regional social account matrix model (MR-SAM). 2021.3, years 2019/2020.

The loss on taxes in production and imports (TPI) measured the change in local, state, and federal tax revenue specifically through general sales, and property taxes, showing Buffalo lost $138,361 on TPI. 23% corresponded to federal government, 37% to state and 40% to local governments (Table 10).

Table 10: Most Relevant Industries Scenario Loss on Taxes on Production & Imports

Industries Name	Total Loss on Taxes on Production and Imports	Federal	State	Local
Farm and Garden Machinery and Equipment Merchant Wholesalers	$59,480	$10,570	$22,675	$26,236
Cheese Manufacturing	$52,005	$13,297	$18,639	$20,068
Other Millwork (including Flooring)	$20,049	$6,639	$6,744	$6,667
Specialized Freight (except Used Goods) Trucking, Long-Distance	$6,828	$1,308	$2,575	$2,944
All Industries	**$138,361**	$31,814	$50,633	$55,914

Source: Multi-regional social account matrix model (MR-SAM). 2021.3, years 2019/2020.

CONCLUSION:

The results of this study demonstrate the perversive economic effects COVID-19 had on Buffalo county in each of the output scenarios.

One of the most relevant results came from the total effect on TPI by job losses in all industries, where more than 55% is attributed to the 10 industries under the first scenario.

The results of this study demonstrate the profound effect of COVID-19 on Buffalo across **multiple scenarios**.

The job projections suggest a steady decline over time. Finally, the 314 initial lost jobs translated to $18 million in earnings lost and a $3 million loss on TPI. This loss will affect the region deeply.

About the Study

Data and assumptions used in the study are based on several sources, including industry and employment data from the U.S. Bureau of Labor Statistics and U.S. Census Bureau, outputs of Emsi Burning Glass' Multi-Regional Social Accounting Matrix model. The study applies a conservative methodology and follows standard practices using only the most recognized indicators of economic impact. For a better description of the data and approach used in the study, please review the Methodology document.