

The Economic Impact of COVID-19-
Related Restaurant Closures on the
Regional Economy
– A Preliminary Examination

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I. Introduction

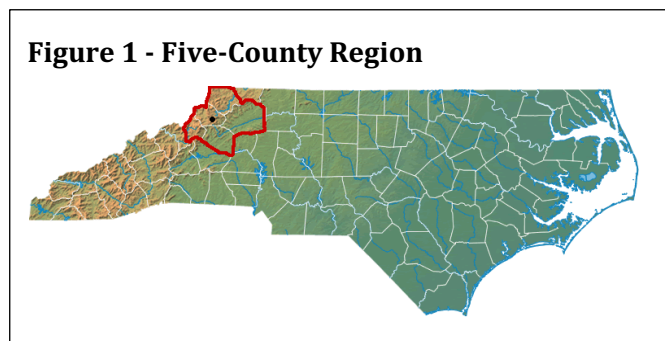
Restaurants, bars, and other food service establishments are one of many service industries whose operations were halted altogether or drastically scaled back in response to the “Stay at Home” Order (Executive Order No. 121 (EO 121), issued March 27, 2020) issued by North Carolina Governor Roy Cooper. Among other requirements, EO 121 required the statewide closure of all bars and restaurants for dine-in service, effective as of 5 PM on March 30, 2020. These requirements were extended through May 8, 2020 by Executive Order 135 (issued April 23, 2020).

Because restaurants and bars account about 8.5% of total statewide employment¹ these closures will have a profound impact on local economies across the state. These economic impacts occur in the form of lost wages and lost tax revenue through the direct effect of business closures and the secondary effects of the impacts to supply chains and reduced local economic activity.

This preliminary study examines the total economic impact to a five-county region in northwestern North Carolina from one month (April 2020) of operational restrictions and closures in food service industry establishments resulting from EO 121 implementation. Importantly, no primary or secondary economic data are yet available, so the analysis is based on assumptions about changes in the level of business activity experienced by restaurant and bar business during the first month following issuance of the “Stay at Home” (EO 121) Order.

i. 5-County Region

The five-county region includes the Counties of Ashe, Avery, Caldwell, Watauga, and Wilkes, as shown in **Figure 1**. These largely rural counties have a combined population² of 255,934 and an average population density of 115.8 people per square mile.



During the first quarter (Jan-Mar) of 2019 the region’s average monthly employment was 67,553, and its average weekly wage of \$732.7 was only 68.8% of North Carolina’s average weekly wage, according to the Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW). The region’s top industries, in terms of both employment and wages, are trade/transportation, manufacturing, education, and leisure/hospitality.

¹ State and Metro Area Employment, Hours, & Earnings. Current Employment Statistics. Bureau of Labor Statistics

² NC OSBM. Population, Voting Age, Density, Migration. Revised March 2020.

ii. Food Service Industry

The 425 restaurant and bar establishments in the five-county region employed an average of 8,164 people per month during the first quarter of 2019. The region's industry paid total wages of \$28.7 million and an average weekly wage of \$272 over this same time period.

As shown in Table 1, the food service industry represents a larger portion of the region's total economy than in either the state or nation. Restaurants and bars represent 7.9% of all establishments within the region, compared with 7.2% of establishments in North Carolina and 6.6% in the US. Perhaps more importantly, is this industry's larger share of total employment (12.1%) and wages (4.5%) within the region than within the state or nation. While the food service industry tends to pay lower than average wages compared to other industries, the industry's average weekly wage in the region is 37.1% of the region's overall average weekly wage, compared with only 31% and 31.8% for NC and the US, respectively.

Table 1 - Geographic Comparison of the Food Services Industry

Food Services Industry as a percent of all industries			
	Region	NC	US
Establishments	7.9%	7.2%	6.6%
Employment	12.1%	10.3%	9.4%
Wages	4.5%	3.2%	3.0%
Average Weekly Wage	37.1%	31.0%	31.8%

Data Source: Quarterly Census of Employment and Wages - Bureau of Labor Statistics

The importance and competitiveness of restaurant and bar businesses to this region's economy can be further evaluated using a concentration ratio such as a location quotient (LQ). Location quotients are often used to describe a region's economic base and provide an indication of which industries have a comparative advantage within the region versus a broader reference area such as North Carolina or the United States.

The location quotient is simply an industry's share of local employment or wages divided by the industry's share of state or national employment or wages. If the location quotient is 1 then the industry's share of local employment is the same as the industry's share of employment nationally. A location quotient greater than 1 means the industry employs a greater share of the local workforce than is employed by that industry on a national basis. A location quotient less than 1 implies that the industry's share of local employment is smaller than its share of national employment. A location quotient between .85 and 1.15 is close enough to 1 so that it is not considered to be particularly different from the national average for that same sector.

A location quotient greater than one implies that the industry sector in question is producing more goods and services than are consumed locally. Thus, the industry must be a net exporter of the goods or services to non-local consumers, and in the process, bringing outside spending into the local area. In the case of the food services industry, a high location quotient implies that restaurant and bar businesses in the local area are "exporters" or, in other terms, that these businesses are bringing customers and money from elsewhere into the region.

Table 2 - Regional Food Services Industry

Regional Food Service Industry Metrics for Jan-Mar 2019

	Establishments	Average Quarterly Employment	Total Quarterly Wages	LQ (US) Employment	LQ (US) Total Quarterly Wages
Regional Total	425	8,164	\$28,707,132	1.28	1.51
Ashe County	41	675	\$2,239,093	1.22	1.43
Avery County	41	490	\$2,072,807	1.05	1.80
Caldwell County	108	1,859	\$6,108,174	0.95	0.88
Watauga County	140	3,490	\$12,686,835	2.05	2.85
Wilkes County	95	1,650	\$5,600,223	0.99	1.14

Data Source: Quarterly Census of Employment and Wages - Bureau of Labor Statistics

With an employment LQ of 1.28 and a total quarterly wages LQ of 1.51, as shown in Table 2, the region's restaurant and bar businesses are much more significant drivers of the region's economy than in the nation's economy. These businesses are a significantly competitive source of both employment and wages for Watauga County and Ashe County to a slightly lesser extent, as well as a notable source of competitive wages in Avery County. While not equally distributed across the region's counties, the food services industry is a driver of economic competitiveness within this region.

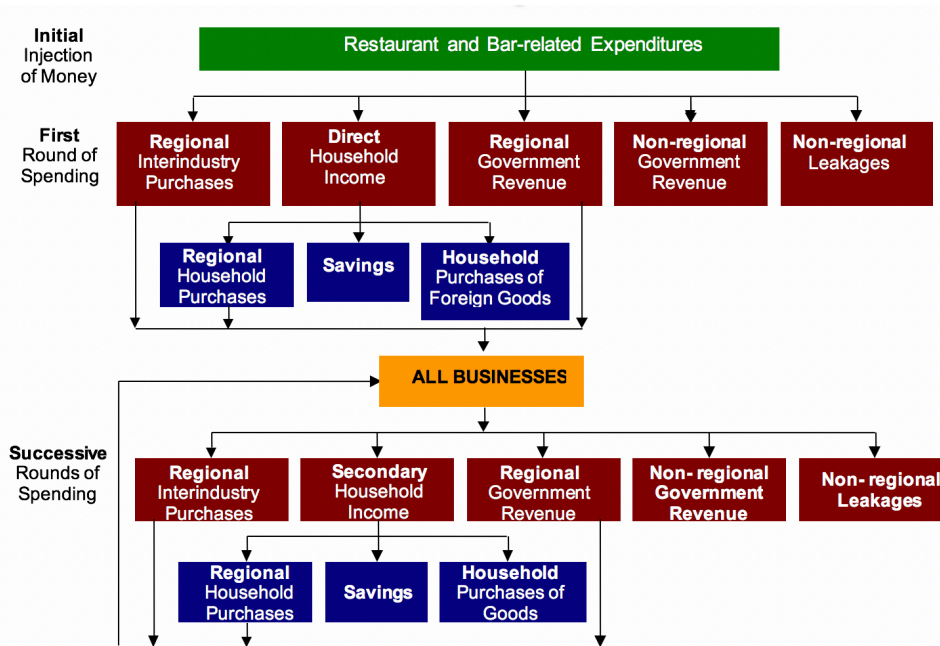
II. The Economic Impact Model

An input-output (IO) model provides a useful tool to measure the total economic impacts resulting from restaurant and bar closures as it captures both the downstream effects of these businesses no longer ordering materials and other inputs from suppliers (food supplies, beer and liquor, etc.), and the impacts of reduced income earnings associated with restaurant workers (and suppliers). Using an IO model is also a reasonable way of assessing short-run regional economic impacts from industry shutdowns, changes in consumer spending, and changes in trade levels in recession-like conditions when there is excess capacity in most of the economy, particularly in circumstances like the present when primary and secondary economic data reports lag months behind rapidly changing events.

i. Model Design

This preliminary study captures total economic impacts through development of a geography-specific input-output model. The key component of the input-output model is that it provides a conceptual insight into the relationship between direct and secondary effects through the multiplier process. The schematic in Figure 2 is a graphical representation of the multiplier process as a result of the presence of restaurants and bars in the regional economy.

Figure 2 – The Economic Multiplier Process



The presence and production-related revenues of these businesses equates with a certain level of economic activity. The associated flows are disbursed in five different ways. The three local recipients of the disbursement will continue to spend this money in the same five ways over successive rounds of spending. Money that flows to non-local governments and other non-local leakages (intermediate purchases from non-regional suppliers and non-regional employees) has no further impact in the local economy. Through the multiplier process, the initial revenues in the local economy have a ripple effect throughout the economy as successive rounds of spending magnify their impact.

The model of choice for this project is the IMPLAN model. IMPLAN is an input-output model that uses financial flow data generated from businesses' accounting data, and spending patterns for households of particular income levels, to describe the economic linkages that exist within a regional economy. These models begin with U.S. government-generated county-level data on business purchases and receipts in order to model the inputs that are used from across the many sectors of the economy in the production of particular goods and services. The level of geographic and commodity detail can vary from production of printing ink, to storage batteries, to banking services in a geographic area as small as a zip code or as large as the national economy. The most commonly reported and useful level of detail is county-level geography at either the 1, 2, or 3 North American Industry Classification System (NAICS) level of commodity detail.

ii. Model Methodology

The modeling methodology for estimating the economic impacts of COVID-19-related restaurant and bar closures is to use with/without analysis. With/without analysis involves two simulations of the economic input-output model. The initial simulation of IMPLAN is undertaken under existing conditions. That is, what does the local economy look like with restaurants and bars working at typical capacity. Results will provide the baseline level of economic activity, by sector for the local economy.

A second simulation of the model is performed after making assumptions regarding the direct impacts of interruptions to restaurant and bar functions as a result of Executive Order 121. Specifically, we assume that all dine-in, full-service restaurants are closed, with limited take-out service. Further, we assume a 50% reduction in limited-service restaurants that offer carry-out, and an 85% reduction in all other food and drinking establishments (including bars and catering). Essentially, we remove these direct effects from our regional model and conduct a second run of the model. This will provide a forecast of the regional economy with the restaurant and bar closures impacts included. The difference in results will be the economic impact of restaurant and bar closures on the regional economy.

Performing a with/without analysis of this nature uses the strength of the input-output model to identify and measure the total economic impact of the expenditure flows. By adding the direct effects to the economy, the model will highlight all the "secondary" impacts related to its presence. The model tracks all the inter-industry transactions, and the total economic impacts of the expenditure flows are then measured as the sum of all direct plus secondary effects. This methodology also allows the identification of those sectors most sensitive to the restaurant industry, and hence most connected to it. An ancillary benefit of this approach is that we can identify those sectors in the primary economy most connected to changes in the larger economy (those with the largest "multipliers") that can provide support for future policy actions.

Economic impacts can be measured in different ways. We propose to estimate and present impacts in three major ways to provide a complete picture of the impacts. The loss in restaurant expenditure flows will decrease jobs. Thus, a job loss count is an appropriate way to measure impact. It is also an intuitive concept and provides a broad measure of lost economic opportunities for workers. However, it has the shortcoming that not all jobs are equal and differences in industry structure

between regions and differences in pay for similar jobs due to other factors (e.g., quality of life) may mean that jobs in one region are different from jobs in another region. Relying on lost jobs alone is not sufficient. Perhaps the most widely accepted measure of economic impact is the change in total industry output, or gross regional product (GRP). The change in output attributable to the foregone expenditure flows represents the change in the annual value of production, by industry. Essentially, the change in output can be thought of as the decrease in the value of sales plus or minus inventory. We will report the economic impacts in terms of lost output. Further, the decrease in employment and output will impact labor income in the region. Decreases in labor income will also be reported. As such, the analysis will quantify the impact of reduction in expenditure flows on the local economy in terms of decreases in employment, local output, and labor income. Finally, lost state and local taxes are also calculated.

III. Results

The total economic impacts from restaurant and bar closures within the five-county regional economy are shown in Figure 3. The impacts are presented as lost gross regional product, fulltime equivalent employment, and labor income. Each impact is also broken out by the direct, indirect, and induced effects. For example, in terms of employment, the direct effects constitute lost employment directly related to restaurant and bar closures and reduced operations. The indirect effects represent employment losses as restaurants spend less on supplies of goods and services in their immediate supply chain. Finally, induced effects represent further employment losses as employees of these restaurants and employees of suppliers to these restaurants reduce spending as they no longer earn income (or income has fallen).

Figure 3 - Total Economic Impacts

Impact Type	GRP (\$millions)	Employment (annual FTE)	Employment (one-month FTE)	Labor Income (\$millions)
Direct	(\$34.5)	-546	-6552	(\$12.4)
Indirect	(\$11.3)	-81	-972	(\$3.0)
Induced	(\$6.5)	-49	-588	(\$1.8)
Total	(\$52.4)	-675	-8112	(\$17.2)

Results indicate that COVID-19-related closures and operation interruptions to the region’s restaurant and bar businesses during the month of April decreased gross regional product by \$52.4 million. This translates into the annual equivalent of losing 675 full-time jobs (annual FTE) or a reduction in full-time equivalent employment of 8,112 (one-month FTE) during the month of April, and corresponding foregone labor income of \$17.2 million. The reduction in GRP represents approximately \$3.5 million in total foregone sales tax revenue, about \$1.05 million of which is distributed to county and other local governments in the region, and foregone labor income reduces state income tax revenues by about \$548,000.

Again, it is worth noting that this is merely a preliminary analysis based on assumptions regarding COVID-19 impacts on the restaurant industry during a single month. Further, this is not a net impact analysis. For example, it is likely that households will transfer expenditures from restaurants to other industries, such as retail trade, which will mitigate the regional economic impacts described above. An analysis of this nature will be available when more secondary (and potentially primary) data are available.