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IMPLAN



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Webinar Agenda



- 1. Economic Impact Modeling Overview
- 2. Economic Analyses Relevant to Modeling Coronavirus Impacts
- 3. Potential Effects of an Economic Stimulus
- A Brief Discussion About the Environmental Impacts
- 5. Final Thoughts
- 6. Q&A

Economic Impact Modeling Overview

Input-Output (I-O) Model

- No model can predict everything
- I-O models estimate wider-reaching economic impacts
- I-O models trace relationships across regions and industries
- Used to evaluate other affected industries, the effect of stimulus programs or business restrictions, etc.

Considerations of I-O Models

Advantages

- Data is organized by region and industry
- Need for user data is low
- Assumptions are transparent

Disadvantages

- Assumes constant behavioral pattern
- Assumes unlimited supply of goods
- Production functions are fixed

I-O Models are reasonable to analyze short-term impacts like the effects of the Coronavirus.

Advantages of IMPLAN U.S. Data

- 546 industries exclusive to IMPLAN
- County-to-county trade and commuting data
- Consumer spending by detailed commodity by household income level
- 5 U.S. territory models
- Customizable geographies

Setting Up a Coronavirus Impact

Analysis

What Information Do You Need?

- Affected industry
- Expected loss in revenue or employment
- Region

IMPLAN will fill in remaining variables for the industry and region.

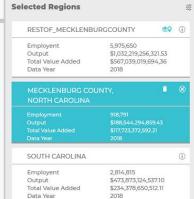
Overview Study Area Data Social Accounts Industry Accounts Multipliers

FILTERS Region: is 39106

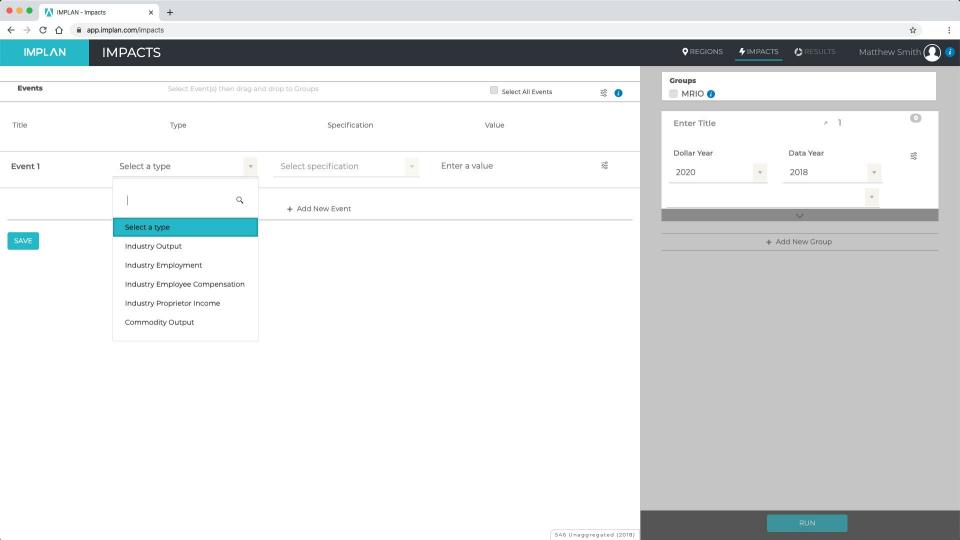
Regions Industry Detail 51m ago 🚳

Industry Detail

Industry Code	Description	Total Employment	Total Output	Employee Compensation	Proprietor Income	Other Property Income	Tax on Production and Imports
	496 Performing arts companies	932.66	\$106,235,800.41	\$20,625,243.86	\$30,506,633.71	\$11,041,351,63	\$1,546,540.8
	497 Commercial Sports Except Racing	2,853.78	\$590,366,108.50	\$414,069,602.77	\$45,526,175.97	\$1,699,627.62	\$6,442,925.
8	498 Racing and Track Operation	58.72	\$6,404,837.06	\$1,807,062.16	\$22,157.12	\$1,804,109.42	\$121,209.
9	499 Independent artists, writers, and performers	3,654.68	\$253,662,098.44	\$5,213,644.67	\$221,900,268.81	\$2,866,156.40	\$3,050,618.
0	500 Promoters of performing arts and sports and agents for public figures	1,241.66	\$293,945,996.97	\$69,339,490.91	\$26,692,566.90	\$81,079,751.27	\$3,959,184.
1	501 Museums, historical sites, zoos, and parks	343.50	\$57,747,620.92	\$16,713,283.74	\$25,960,956.61	\$2,112,782.82	\$304,831.
	502 Amusement parks and arcades	739.57	\$86,466,669.84	\$21,734,805.54	\$101,168.26	\$43,293,783.95	\$5,788,631
3	503 Gambling industries (except casino hotels)	1,659.19	\$303,176,948.61	\$80,949,681.03	\$32,484,115.07	\$87,921,169.83	\$12,063,055
14	504 Other amusement and recreation industries	2,951.40	\$163,318,834.49	\$84,277,232.83	\$2,200,300.59	\$1,701,490.32	\$7,324,101
15	505 Fitness and recreational sports centers	6,824.14	\$263,996,261.78	\$90,695,399.98	\$2,967,303.54	\$39,805,172.53	\$14,278,902
6	506 Bowling centers	280.14	\$17,648,056.39	\$6,261,531.78	\$1,480,843.76	\$1,800,346.52	\$921,132
	507 Hotels and motels, including casino hotels	6,738.64	\$745,618,150.57	\$207,391,182,43	\$98,419,872.60	\$116,196,927.69	\$50,495,104
18	508 Other accommodations	1,290.90	\$114,893,256.70	\$47,588,050.81	\$26,460,552.06	\$10,272,781.17	\$3,620,769
19	509 Full-service restaurants	26,684.39	\$1,773,109,086.62	\$633,802,730.82	\$117,137,028.71	\$226,348,524.31	\$63,563,442
	510 Limited-service restaurants	22,755.95	\$1,753,835,022.70	\$455,464,093.19	\$142,725,587.39	\$184,423,487.56	\$69,708,372
1	511 All other food and drinking places	17,301.93	\$1,368,776,946.73	\$558,030,410.94	\$293,482,569.66	\$124,252,178.13	\$37,517,219
	512 Automotive repair and maintenance, except car washes	7,677.26	\$779,350,734.28	\$332,554,785.27	\$144,855,963.43	\$8,290,702.70	\$55,075,322
3	513 Car washes	5,040.26	\$609,074,236.69	\$211,318,008.76	\$91,783,750.20	\$59,347,329.63	\$50,817,971
4	514 Electronic and precision equipment repair and maintenance	2,356.48	\$482,295,022.70	\$235,960,417.82	\$18,657,680.97	\$69,831,624.87	\$14,340,259
15	515 Commercial and industrial machinery and equipment repair and maintenance	2,276.91	\$350,425,314.40	\$177,712,938.47	\$21,647,487.02	\$19,563,916.10	\$19,525,610
6	516 Personal and household goods repair and maintenance	3,045.99	\$136,912,335.29	\$42,614,852.34	\$88,267,159.92	\$(46,150,849.02)	\$9,288,171
7	517 Personal care services	10,889.75	\$291,831,616.35	\$122,891,989.78	\$172,823,862.36	\$(90,767,717.82)	\$8,579,063
18	518 Death care services	262.77	\$21,440,176.67	\$10,092,334.70	\$458,793.31	\$1,943,014.74	\$737,120
19	519 Dry-cleaning and laundry services	1,571.76	\$96,587,763.13	\$61,073,705.44	\$2,174,026.28	\$1,338,048.59	\$3,363,033
tal		918,790.65	\$188,544,294,859.43	\$61,570,104,114.72	\$8,583,579,631.43	\$41,730,332,327.94	\$5,839,356,518

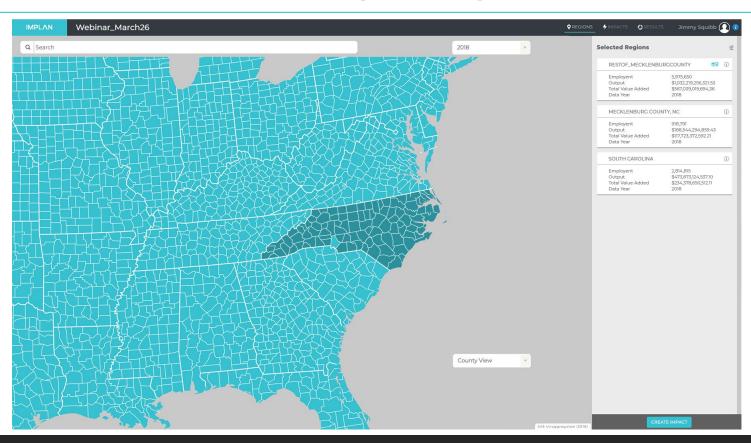


Run



Modeling the Net Effects of the Coronavirus

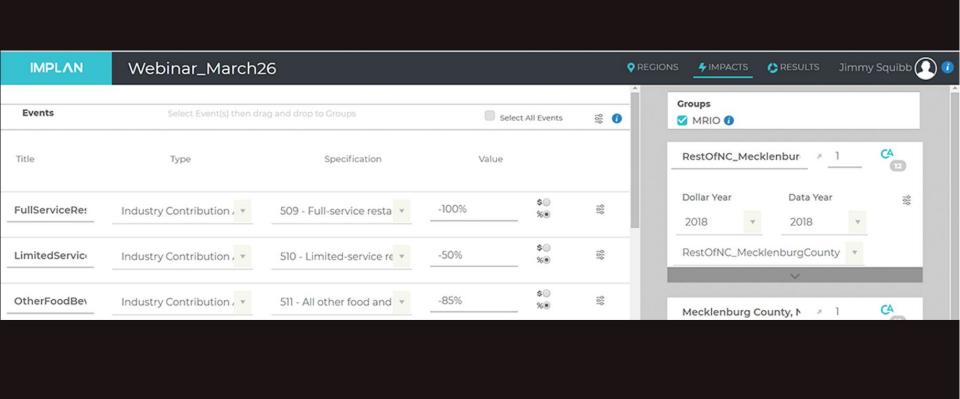
Selecting a Region



Restaurant Industry Shutdown

Assumptions:

- 100% shutdown of full-service restaurants,
- 50% reduction in limited service,
- 85% reduction in of all other food & drinking (includes bars & catering)



Results from Restaurant Closings

Employment	Mecklenburg County, NC	North Carolina	South Carolina
Direct	(52,769)	(340,531)	0
Indirect	(30,539)	(90,311)	(3,483)
Induced	(7,256)	(54,393)	(1,832)
Total	(90,564)	(485,236)	(5,316)

Consumer Spending Shift

Assumptions:

- Restaurant Industry Shutdown:
 - o 100% shutdown of full-service restaurants,
 - 50% reduction in limited service,
 - 85% reduction in of all other food & drinking (includes bars & catering)
- Consumer Spending Shift
 - Households spend 50% more on soaps & sanitizers

Jimmy Squibb 🕡 🕡

Regions Household Local Commodity Demand

Overview

FILTERS Region: is 39106

Study Area Data Social Accounts Industry Accounts

Employent

Output Total Value Added

Data Year

50

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Multipliers

Household Local Commodity Demand

		Household Code >	10001	10002	10003	10004	10005	10006	10007	10008	10009	
		Description >	Households LT15k	Households 15- 30k	Households 30- 40k	Households 40- 50k	Households 50- 70k	Households 70- 100k	Households 100- 150k	Households 150- 200k	Households GT200k	Total
	Commodity	Description										
172	3172	Pharmaceuticals	\$100,069.88	\$234,735.46	\$209,614.30	\$171,211.84	\$296,924.88	\$304,749.06	\$331,797.87	\$178,890.35	\$235,143.43	\$2,063,137.07
73	3173	In-vitro diagnostic substances	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
74	3174	Biological products (except diagnostic)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
75	3175	Paints and coatings	\$5,700.67	\$20,996.28	\$12,162.89	\$41,649.10	\$47,785.42	\$88,823.99	\$82,428.52	\$20,014.91	\$25,174.00	\$344,735.78
76	3176	Adhesives	\$17,278.02	\$39,606.04	\$28,144.42	\$26,003.73	\$75,495.83	\$62,611.15	\$91,536.98	\$33,762.71	\$108,359.67	\$482,798.55
77	3177	Soaps and other detergents	\$44,462.00	\$81,632.57	\$69,472.36	\$69,229.64	\$108,362.46	\$147,797.83	\$151,791.40	\$81,901.82	\$116,903.34	\$871,553.43
78	3178	Polish and other sanitation goods	\$132,221.52	\$242,759.68	\$206,597.54	\$205,875.76	\$322,249.32	\$439,522.61	\$451,398.76	\$243,560.49	\$347,648.40	\$2,591,834.08
79	3179	Surface active agents	\$2,893.25	\$5,312.04	\$4,520.74	\$4,504.95	\$7,051.42	\$9,617.58	\$9,877.45	\$5,329.56	\$7,607.20	\$56,714.17
80	3180	Tollet preparations	\$89,220.44	\$172,852.84	\$98,302.77	\$160,927.94	\$232,783.30	\$308,841.74	\$398,625.93	\$203,349.37	\$338,857.71	\$2,003,762.03
81	3181	Printing inks	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
82	3182	Explosives	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
83	3183	Compounded resins	\$4,224.83	\$7,275.10	\$7,471.99	\$6,529.71	\$18,308.61	\$21,478.06	\$25,336.64	\$11,187.59	\$33,963.76	\$135,776.28
84	3184	Photographic films and chemicals	\$2,341.66	\$4,032.30	\$4,141.43	\$3,619.16	\$10,147.74	\$11,904.44	\$14,043.10	\$6,200.84	\$18,824.77	\$75,255.44
85	3185	Other miscellaneous chemical products	\$3,812.28	\$6,564.70	\$6,742.36	\$5,892.09	\$16,520.82	\$19,380.78	\$22,862.57	\$10,095.15	\$30,647.27	\$122,518.03
86	3186	Plastics packaging materials and unlaminated films and sheets	\$36,545.75	\$71,452.86	\$59,848.94	\$50,631.96	\$93,440.70	\$121,081.47	\$122,313.60	\$60,795.33	\$97,046.84	\$713,157.45
87	3187	Unlaminated plastics profile shapes	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
88	3188	Plastics pipes and pipe fittings	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
89	3189	Laminated plastics plates, sheets (except packaging), and shapes	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
90	3190	Polystyrene foam products	\$11,383.76	\$18,717.22	\$12,076.97	\$12,071.46	\$28,470.15	\$36,808.02	\$42,134.49	\$27,489.42	\$27,923.91	\$217,075.40
91	3191	Urethane and other foam products (except polystyrene)	\$6,877.04	\$10,813.37	\$8,266.74	\$8,917.24	\$23,661.78	\$23,845.52	\$25,596.15	\$16,682.78	\$28,608.61	\$153,269.22
92	3192	Plastics bottles	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total			\$1,227,650,268.06	\$2,374,911,973.91	\$2,145,327,618.52	\$2,279,945,193.46	\$4,165,393,940.06	\$5,451,141,115.12	\$6,296,795,847.33	\$3,345,888,282.23	\$7,140,892,959.52	\$34,427,947,198.20

Selected Regions RESTOF_MECKLENBURGCOUNTY **₹**9 ① 5,975,650 Employent \$1,032,219,256,321.53 Output \$567,039,019,694,36 Total Value Added Data Year SOUTH CAROLINA

> 2,814,815 \$473,873,124,537.10

2018

\$234,378,650,512.11

Commodity Demand

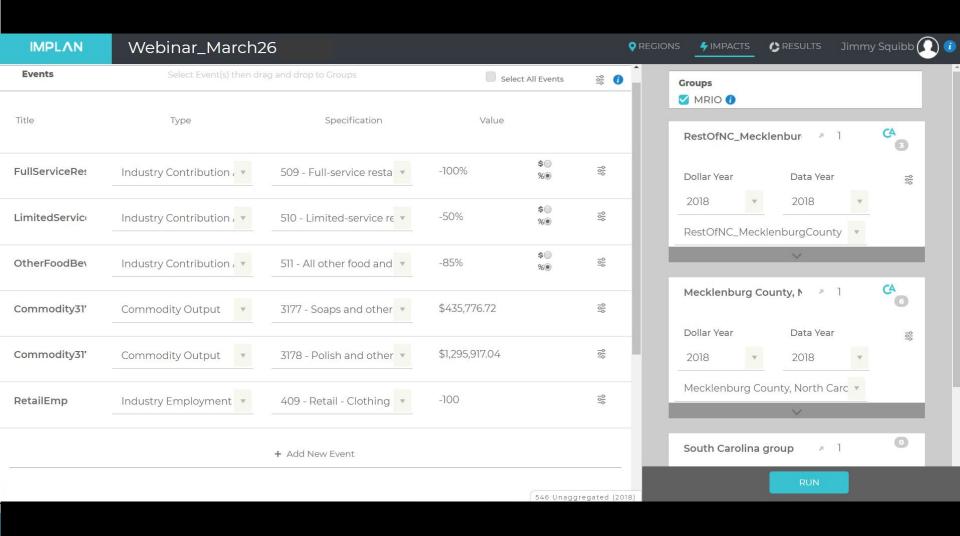
(REGIONAL INPUTS)

Commodity Code	Commodity Description	Industry	Households
3177	Soaps and other detergents	\$808,300	\$871,553
3178	Polish and other sanitation goods	\$6,150,350	\$2,591,834

Employment Loss

Assumptions:

- Restaurant Industry Shutdown:
 - o 100% shutdown of full-service restaurants,
 - o 50% reduction in limited service,
 - 85% reduction in of all other food & drinking (includes bars & catering)
- Consumer Spending Shift
 - o Households spend 50% more on soaps & sanitizers
- Employment Loss
 - Layoff of 100 jobs in retail clothing



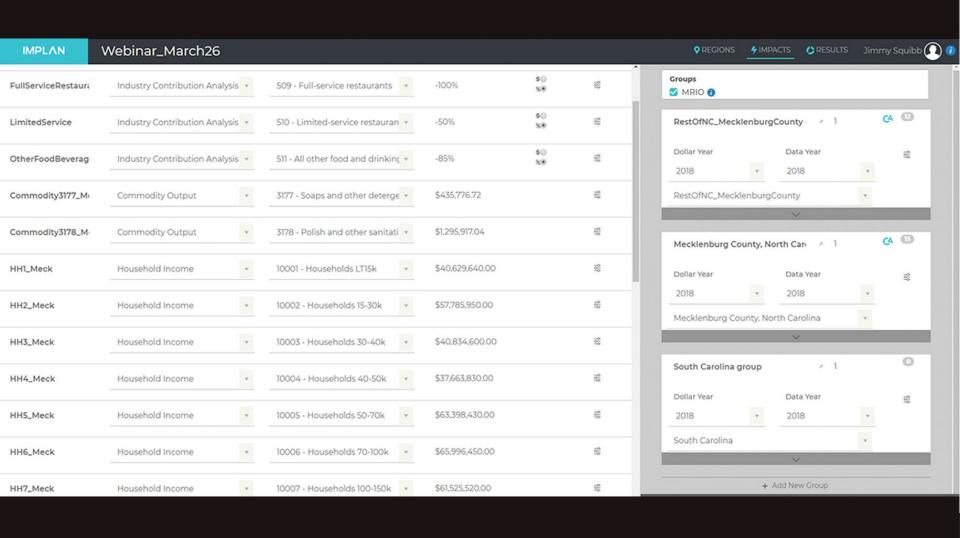
Toilet Paper Buying Panic

- Increased need in short-term, may be offset by a reduction in the long-term
- Companies ramping up production could mean more jobs and input goods and services needed in short-term
- Relevance depends on your region and timeframe of concern

Government Stimulus

Assumptions:

- Restaurant Industry Shutdown:
 - 100% shutdown of full-service restaurants,
 - 50% reduction in limited service,
 - 85% reduction in of all other food & drinking (includes bars & catering)
- Consumer Spending Shift
 - o Households spend 50% more on soaps & sanitizers
- Employment Loss
 - layoff of 100 jobs in retail clothing
- Government Stimulus:
 - Model with household spending events
 - Assume \$1,000 per household



Summary of Results

Employment	Mecklenburg County, NC	North Carolina	South Carolina
Direct	(52,859)	(340,531)	0
Indirect	(28,132)	(87,419)	(3,136)
Induced	(4,932)	(28,301)	(1,688)
Total	(85,923)	(456,251)	(4,824)

International Demand

International Demand

- Country-Level International Models
- Foreign Exports by Region

IMPLAN Webinar_March26

Study Area Data Social Accounts Industry Accounts Multipliers





REGIONS FIMPACTS PRESULTS Jimmy Squibb (1)

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Regions Commodity Trade

30 just now 💿

• FILTERS Region: is 39106

Overview

Commodity Trade

Commodity Code ^		Description	Foreign Exports	Domestic Exports	Total Exports	Intermediate Imports	Institutional Imports	Total Imports	Foreign Export Proportion
1	3001	Oilseeds	\$357,573.49	\$545,545.36	\$903,118.86	\$124,080,543.21	\$0.00	\$124,080,543.21	39.599
2	3002	Grains	\$196,169.89	\$83,554.91	\$279,724.80	\$92,702,109.04	\$4,573,836.88	\$97,275,945.92	70.139
3	3003	Vegetables and melons	\$30,491.08	\$293,259.98	\$323,751.06	\$10,700,152.39	\$79,778,307.64	\$90,478,460.04	9.429
4	3004	Fruit	\$92,675.94	\$529,383.91	\$622,059.85	\$17,359,799.53	\$51,001,799.33	\$68,361,598.86	14.909
5	3005	Tree nuts	\$2,911.80	\$3,626.75	\$6,538.54	\$5,463,492.69	\$21,863,926.98	\$27,327,419.67	44.53%
6	3006	Greenhouse, nursery, and floriculture products	\$545,659.57	\$21,990,708.67	\$22,536,368.24	\$24,431,343.84	\$35,428,733.22	\$59,860,077.06	2.429
7	3007	Tobacco	\$5,848.17	\$4,789.25	\$10,637.43	\$1,925.36	\$2,306.75	\$4,232.12	54.989
8	3008	Cotton	\$6,546.42	\$4,860.95	\$11,407.38	\$5,182,784.07	\$27,231.40	\$5,210,015.46	57.399
9	3009	Sugarcane and sugar beets	\$15.86	\$7,133,47	\$7,149.33	\$6,585.76	\$7,890.32	\$14,476.08	0.229
	3010	All other crops	\$101,102.39	\$95,272.74	\$196,375.13	\$46,291,455.04	\$10,552,484.36	\$56,843,939.40	51.489
1	3011	Beef cattle	\$2,541.25	\$590,352.16	\$592,893.40	\$29,733,617.68	\$129,668.49	\$29,863,286.17	0.439
2	3012	Dairy cattle and milk products	\$0.00	\$437,581.30	\$437,581.30	\$6,951,087.91	\$160.90	\$6,951,248.81	0.009
3	3013	Poultry and egg products	\$405.10	\$43,195.22	\$43,600.32	\$53,568,954.46	\$20,731,726.26	\$74,300,680.72	0.939
4	3014	Animal products, except cattle and poultry and eggs	\$70,576.41	\$3,776,313.75	\$3,846,890.15	\$21,083,951.07	\$14,891,999.10	\$35,975,950.16	1.839
5	3015	Forest, timber, and forest nursery products	\$238,237.12	\$3,343,601.00	\$3,581,838.12	\$6,939,008.22	\$715,441.79	\$7,654,450.01	6.65%
6	3016	Logs and roundwood	\$638,520.62	\$4,156,438.45	\$4,794,959.07	\$4,773,298.67	\$138,297.65	\$4,911,596.31	13.329
7	3017	Fish	\$829,801,42	\$995,557.40	\$1,825,358.82	\$30,003,975.58	\$17,034,358.56	\$47,038,334.15	45,469
8	3018	Wild game products, pelts, and furs	\$0.00	\$17,774,929.83	\$17,774,929.83	\$160,618.77	\$6,076,204.15	\$6,236,822.92	0.009
9	3019	Support activities for agriculture and forestry	\$73,735.18	\$25,753,505.58	\$25,827,240.76	\$84,178.60	\$197,968.46	\$282,147.06	0.299
	3020	Natural gas and crude petroleum	\$6,657,463.03	\$30,887,644.25	\$37,545,107.28	\$79,295,305.21	\$0.00	\$79,295,305.21	17.739
1	3021	Coal	\$0.00	\$0.00	\$0.00	\$13,007,637.88	\$2,217,595.32	\$15,225,233.20	
2	3022	Copper, nickel, lead, and zinc ore	\$0.00	\$0.00	\$0.00	\$47,156,746.93	\$0.00	\$47,156,746.93	9
3	3023	Iron ore	\$0.00	\$0.00	\$0.00	\$17,461,561.19	\$1,224,072.04	\$18,685,633.23	
tal	3024	Gold.ore	\$10.951.953.181.92	\$78,147,792,868.45		\$10.595.858.43 \$18.503.319.379.76		\$17,068,263,11 \$39,359,411,394,07	12.299

Selected Regions

RESTOFNC_MECKLENBURGCOUNT.

Employment Output Total Value Added 5,975,650 \$1,032,219,256,321.53 \$567,039,019,694.36

2018

Data Year

SOUTH CAROLINA



2,814,815 Employment Output \$473,873,124,537.10 Total Value Added \$234,378,650,512.11 Data Year 2018

Environmental Impacts

IMPLAN Environmental Data

- Consists of environmental factors like greenhouse gas emissions (GHG), emissions to water, etc.
- Bridged to IMPLAN sectors
 - o i.e. Emissions per dollar of output
 - o e.g. Manufacturing decreases by \$XX, GHG emissions decrease by YY
- Example: The data show that the "Light truck and utility vehicles manufacturing" sector emits 9.363 grams of CO2 into the air for every \$1 of output

Final Thoughts

Q&A

Thank You for Joining Us!

Analyzing the Economic Impacts of the Coronavirus

A recording of this webinar and supplemental material will be sent to you shortly.

If you were not able to pose your question for any reason, or have others you'd like to submit, please email support@implan.com

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