Economic Impact of
Iowa Property & Casualty Insurance Carriers

Regional Economic Impact Study

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Executive Summary

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Study Overview

The Iowa Insurance Institute retained Muller Economics (ME) to create an economic study of the economic impact of their industry on the State of Iowa. ME utilized the REMI Policy Insight+ dynamic economic model to estimate economic multipliers associated with industry employment and economic output, and the resulting impacts on the State's personal income and population.

Model Specification

The REMI model configuration was aggregated from a multi-Area model to simulate a Single Area region consisting exclusively of the State of Iowa. The study involved shocking employment in NAICS Sector 524 (Insurance Carriers and Related Activities), both positively (to simulate industry expansion) and negatively (to simulate industry contraction). The scenarios assumed either an increase or a decrease of 9,800 employees in proportion to all the occupations in the industry, which equates to the number of employees in the sub-industry consisting of property and casualty insurance carriers, but excluding brokerages and agencies, which are considered largely intrastate services for purposes of this study.

Economic Impact

Employment
- Mean wages for Iowa property and casualty insurance carriers in 2019 were estimated by the Bureau of Labor Statistics (BLS) to be $71,280, well above the state average of $47,330 for all occupations in the same year. Approximately 38% of the jobs are classified by the Bureau of Labor Statistics (BLS) as "Business and Financial Operations Occupations."

- A change of 9,800 jobs would be associated with an additional 24,000 jobs in the Iowa economy, for a total Dynamic Multiplier of approximately 3.45 (ie., each job fuels 2.45 additional jobs in the economy).

- The industrial sectors most impacted include:

  - Construction: 4,027 jobs
  - State and Local Government: 3,924 jobs
  - Finance and Insurance: 3,178 jobs (largely supply chain jobs, and in addition to the 9,800 direct impact)
  - Retail Trade: 2,368 jobs
  - Accommodation and Food Service: 1,594 jobs

- - o   Health Care and Social Assistance: 1,506
      .

- Occupation categories most impacted include:
  - o   Sales/Related, Office Admin and Support: 11,063 jobs
  - o   Management, Business, and Financial Operations: 6,518 jobs
  - o   Construction and Extraction: 2,675 jobs
  - o   Computer, Math, Architecture, Engineering: 1,892 jobs
  - o   Health Care Occupations: 1,879 jobs
  - o   Food Prep and Serving Related: 1,607 jobs
  - o   Educational Instruction and Library: 1,493 jobs (including 954 PK-12 teachers)

Income & Output

- In 2019, the BLS estimated that the 9,810 jobs in the sub-industry "Direct Insurance (except Life, Health, and Medical) Carriers" (which consists primarily of property and casualty firms) paid total salaries of $700 million, averaging $34.27/hour and $71,280 annually. Total Personal Income in the economy associated with those jobs is estimated by the REMI simulation to be $2.7 billion in 2025, but grows to $4.5 billion within the next decade.

- Total Direct Output associated with these 9,800 jobs is approximately $6.9 billion. When the dynamic effects of this industry are captured, there is an additional $6.1 billion of value of goods and services produced in the economy, suggesting a Dynamic Output Multiplier of about 1.9.

Demographic Impact

- Population will change in response to changes in demand for labor and associated change in wage rates, but these changes take time to work through the system.

- A significant change in jobs in the Insurance Carrier Industry will cause a lagging impact on population, labor supply, and population. While population is expected to cause a change in economic migration of 10,500 people in the first year, that is a relatively small share of the lives impacted by the change in employment, positive or negative. By the middle of the next decade, we should expect a change in population in the State of Iowa of approximately 50,000 people compared to the baseline forecast.

Project Overview and Industry Description

The Iowa Insurance Institute, a trade association representing 26 Iowa property and casualty insurance firms, retained Muller Economics (ME) to study the economic impact of their industry on the State of Iowa.

Industry Description

There are more than 45,000 people employed in NAICS sector 524, Insurance Industry and Related Activities. That number can be disaggregated into the group consisting of insurance carriers and another consisting of agencies and brokerages:

NAICS Code	Industry Classification	Jobs	Average Wage
524	Insurance Carriers and Related Activities	45,370	74,610
5241	Insurance Carriers	26,920	82,080
52412	Direct Insurance (except Life, Health, and Medical) Carri	9,810	71,280
	Other Insuance Carriers	17,110	88,272
5242	Agencies, Brokerages, and Other Related Activies	18,450	63,720

2019 Occupational Employment and Wage Survey

The result in Iowa is that approximately 2.7% of jobs in this State are in this parent industry. That compares to 2.3% in neighboring states and 1.9% nationally. Put differently, employment in the insurance carrier industry is 14.4% more intensive than neighboring states, and 41.9% more intensive than the nation.

The Property and Casualty Carrier industry is the primary subset of NAICS 52412 identified in Table 1, and comprises 21.6% of all the jobs in the parent classification, with a mean annual wage that is 50.6% ($23,950) above the State average.

In fact, it should not be surprising that the Major Industry 52 "Finance and Insurance," which contains all these subindustries, is important to the State of Iowa. Based on 2017 Census Data, Iowa was second only to Delaware in the sectors per capita employment, and 7th in per capita payroll, at 3.1% and $2,241 respectively.

The task of the project is to measure the extent to which the client industry, which is over-represented in terms of jobs and massively over-represented in compensation, interacts with the rest of the economy in terms of employment, income, economic output, and population.

Model Specification and Data Selection

ME utilized the REMI Policy Insight+ dynamic economic model to estimate economic multipliers associated with industry employment and economic output, and the resulting impacts on the State's personal income and population.

Unlike static Input/Output models, REMI is a dynamic model that provides labor force and population impacts over time, rather than simply a snapshot of the indirect and induced effects in a typical trade flow matrix.

The REMI simulation's output describes a single region (Iowa) and 70 economic sectors, with historical data recently updated through 2019. The revised model is largely unchanged, with one notable exception, and that relates to the population response to economic activity. In previous models, migration flows were primarily a function of employment, while the revised model also has a response to relative wage rates to the nation outside the region. The model provides for shocking either employment or investment/spending variables.

Additional information about the REMI model can be found on their website, www.remi.com. The following overview of the model is provided there:

> The REMI model is a dynamic forecasting and policy analysis tool that can be variously referred to as an econometric model, an input-output model, or even a computable general equilibrium model. The model forecasts the future of a regional economy, and it predicts the effects on that same economy when the user implements a change. REMI models have been used throughout the world for a wide range of topic areas, including economic development, the environment, energy, transportation, and taxation, forecasting, and planning.

> The REMI model incorporates aspects of four major modeling approaches:

> - Input-Output,
> - General equilibrium,
> - Econometric,
> - Economic geography.

> Each of these methodologies has distinct advantages as well as limitations when used alone. The REMI integrated modeling approach builds on the strengths of each of these approaches.

> The REMI model, at its core, has the inter-industry relationships found in Input-Output models. As a result, the industry structure of a particular region is captured within the model, as well as transactions between industries. Changes that affect industry sectors that are highly interconnected to the rest of the economy will often have a greater economic impact than those for industries that are not closely linked to the regional economy.

> General equilibrium is reached when supply and demand are balanced. This tends to occur in the long run, as prices, production, consumption, imports, exports, and other changes

occur to stabilize the economic system. For example, if real wages in a region rise relative to the U.S., this will tend to attract economic migrants to the region until relative real wage rates equalize. The general equilibrium properties are necessary to evaluate changes such as tax policies that may have an effect on regional prices and competitiveness.

The following is a high-level view of the model's linkages
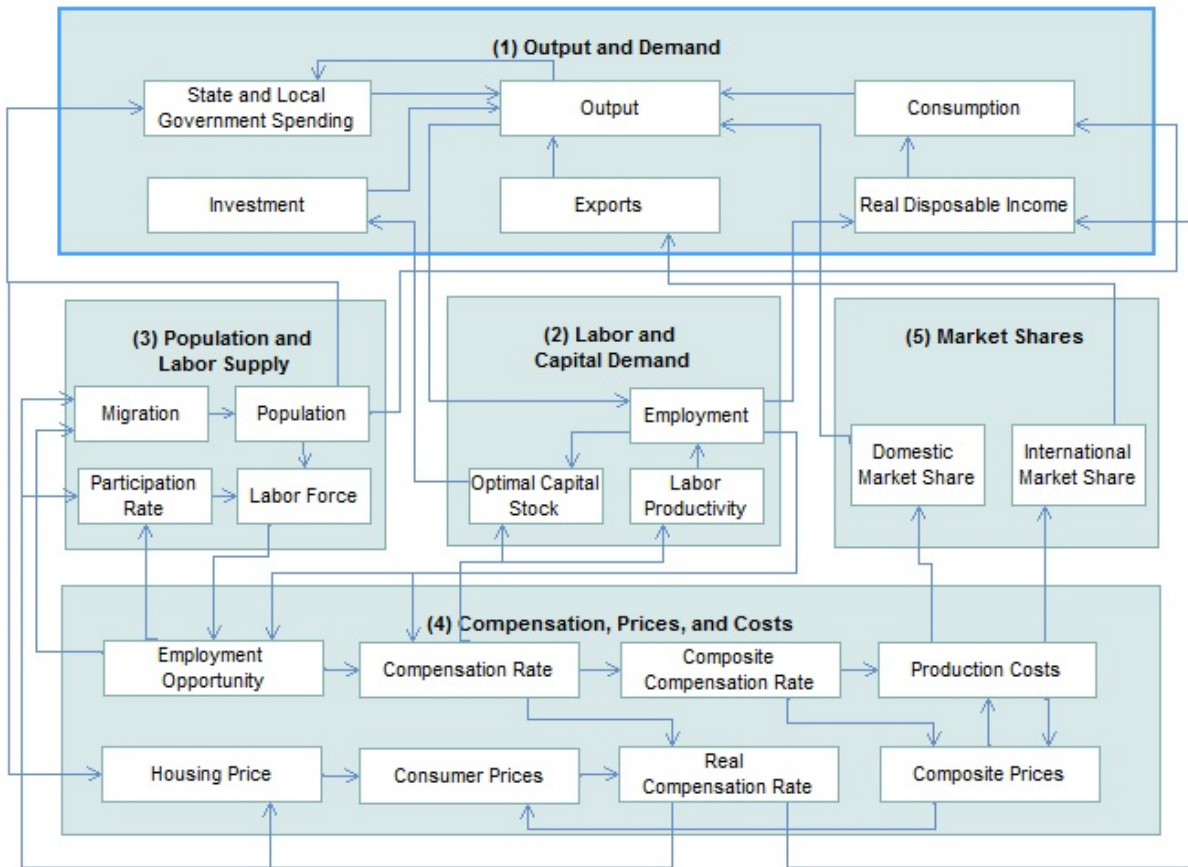
Model Specification

Balancing the relative benefit vs. the relative cost of the type of model, ME recommended a Single Region Model built on 70 Economic Sectors. All models are just that, models. They are not the real economy. The prospect of going to 160 sectors would have allowed for more specified industry inputs, but the results are not expected to be materially different.

Similarly, a single area (Iowa) was chosen rather than multiple areas representing those regions of the State most impacted by the industry being studied. The REMI model relies on Regional Purchase Coefficients (RPC) to determine the amount of spending within specified regions vs. the amount outside those specified regions. A region's RPC is a function of its unique economic clusters as they relate to the type of investment undertaken, but also of its geographic size and the location of the project within that region.

The base model used for this project consists of 2 Areas, which was a division of counties for a prior project, and divided according to criteria that had nothing to do with this study. ME estimated the industrial sector "Insurance Carriers and Related Activities" to determine the percentage of the 9,800 jobs that should be shocked in each area. The results would then be aggregated into a single output for the State of Iowa for purposes of analysis and reporting. It is almost certainly true that the subindustry for P&C carriers has a different geographical footprint than its parent industrial classification. To determine the extent to which this would distort the results, ME compared the occupation and wage components of the various insurance sub-industries. While the occupational mix and wage rating was marginally different, the difference was within the reported margin of error, and would not be expected to make a difference in the aggregate.

Data Input Description

REMI provides the means of shocking the model, or creating a simulation, through various economic handles. Using sound data retrieved prior to the simulation, one can shock employment and then the model will estimate the direct investment and spending that would be associated with that level of employment. Conversely, one can shock investment and spending, and the model will estimate the direct employment that would be associated with those levels.

ME elected to shock employment. Insofar as the simulation was of the entire property and casualty sub-industry, it was the best way to ensure that the impact of this employment shock would be weighted properly across all the impacted jobs, as well as all the investment by the industry and resulting trade flows, both within the State of Iowa and between Iowa and the rest of the world.

While it may be tempting to choose a more detailed model, in which the subcategory "Insurance Carriers" (ie., without related activities), it appears the broader industrial classification is likely a preferable proxy for purposes of this study. Property and casualty insurance wages are closer to what we find in the broader industry than in the Insurance Carrier sub-industry. And that came at little cost, as the relative composition of jobs is comparable across the broader industry. Thus ME chose to shock the model with a change in employment of 9,800 from 2023 to 2045.
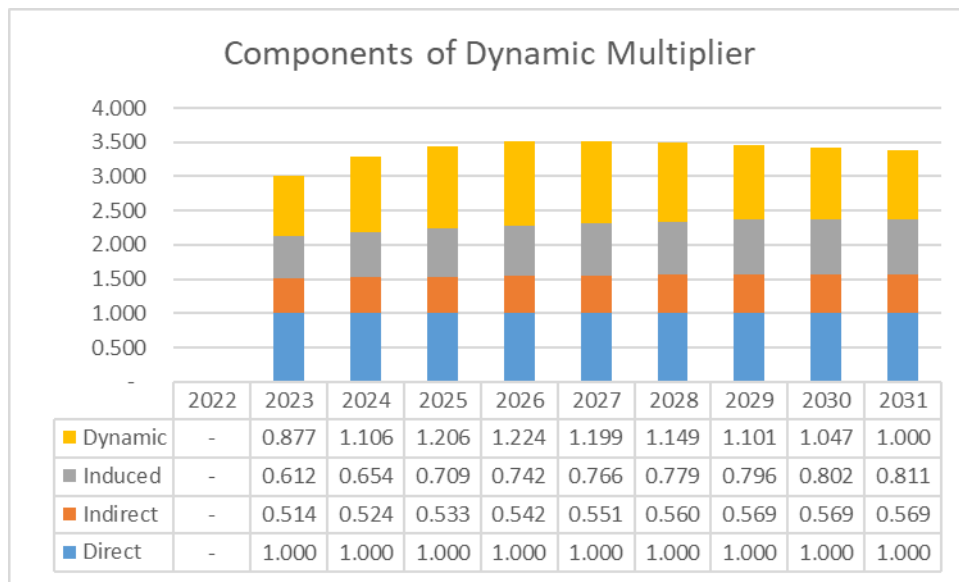
Economic Impact

The following data demonstrates the economic impact of the Property and Casualty Insurance Carrier industry on the State of Iowa. It begins with a discussion of multipliers and then provides the dynamic impacts broken down by Employment, Population, Personal Income, and Output. In each case, the data is presented as a thought experiment rather than an actual likely scenario. The results are answering the two-pronged question, what happens if the industry were to disappear or double? While neither of those scenarios is likely to occur, it provides a relative scale of the impact of the industry on the State's economic well-being.

Multipliers

Economic multipliers quantify the change in total employment or output resulting from a change in direct employment or output. There are three types of multipliers in addition to the Direct impact:

- *Type 1*: Direct and Indirect – These are the add-on effects of the supply chains directly related to the industry affected by a change in employment and output.
- *Type 2*: Direct, Indirect, and Induced – Induced effects occur when there is a change in labor income in a region, which leads to a change in spending on the myriad goods and services consumers purchase across all industries.
- *Dynamic*: Full Economic and Population Effect - In a dynamic model, the multipliers change over time, representing the lagging effects of changes in demand and investment. It provides a measure of the economic impact of changes in the population and labor force as it responds to the changes in demand.

The following table shows the marginal contribution of each type of multiplier on employment, which sum up to the full economic and population impacts. The impact peaks at approximately 3.5, meaning a change of one job in the sector is associated with a change of 2.5 additional jobs.

Components of Dynamic Multiplier

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Dynamic	-	0.877	1.106	1.206	1.224	1.199	1.149	1.101	1.047	1.000
Induced	-	0.612	0.654	0.709	0.742	0.766	0.779	0.796	0.802	0.811
Indirect	-	0.514	0.524	0.533	0.542	0.551	0.560	0.569	0.569	0.569
Direct	-	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Employment

While the initial impact, plus or minus, is approximately 30,000 jobs, the dynamic effects associated with lagging employment effects due to a change in demand continue to grow for about five years, peaking at approximately 35,000 jobs. At that point, the wage effects relative to other regions begin to slowly moderate to a new steady state. Chart 2 illustrates this phase-in, and Table 2 provides an estimate of the impact by Industry in 2025.
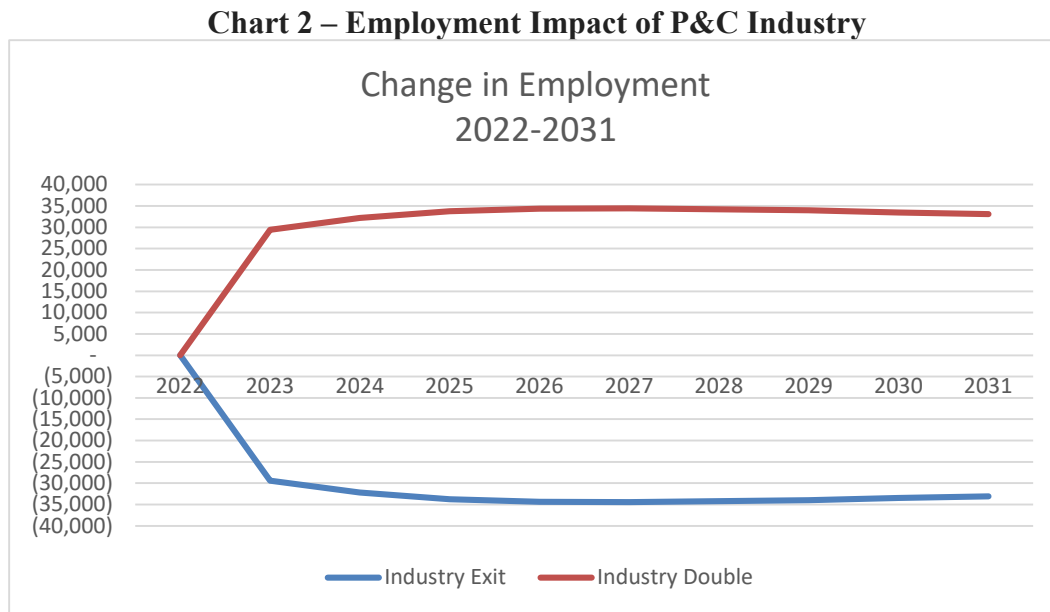
Chart 2 – Employment Impact of P&C Industry

Table 2 – Employment Impacts Sorted by Major Industry (Absolute Value and Percent)

NAICS - Industry	Number of Jobs	Percent of Total
52 - Finance and insurance	12,978	38.4%
23 - Construction	4,027	11.9%
NA - State and Local Government	3,926	11.6%
44-45 - Retail trade	2,368	7.0%
72 - Accommodation and food services	1,594	4.7%
53 - Real estate and rental and leasing	1,507	4.5%
62 - Health care and social assistance	1,506	4.5%
54 - Professional, scientific, and technical services	1,477	4.4%
56 - Administrative, support, waste management, a	1,404	4.2%
81 - Other services (except public administration)	1,400	4.1%
48,492-493 - Transportation and warehousing	390	1.2%
71 - Arts, entertainment, and recreation	349	1.0%
31-33 - Manufacturing	306	0.9%
All Others	562	1.7%

Population

Changes in population lag changes in employment, and the effect takes longer to play out to a new equilibrium in the economy. Indeed, while the employment impact matures in 5 or 6 years, the full population impact doesn't materialize until 2043, at a change of 54,000 people. In that sense, we might think of 54,000 people living in the State of Iowa, directly or indirectly, due to activity occurring at P&C carrier firms.

It should also be noted these demographic effects have broader impacts than the pure headcount. As relatively high-paying jobs enter or leave the State, there's a disproportionate impact on women of childbearing age than for retired populations, for example. The result is the State gets relatively younger with industry expansion and relatively older with industry contraction. By way of example, by 2031, the model estimates 972 fewer births but only 60 fewer deaths in the contraction scenario.

**Chart 3 – Population Impact of P&C Industry**
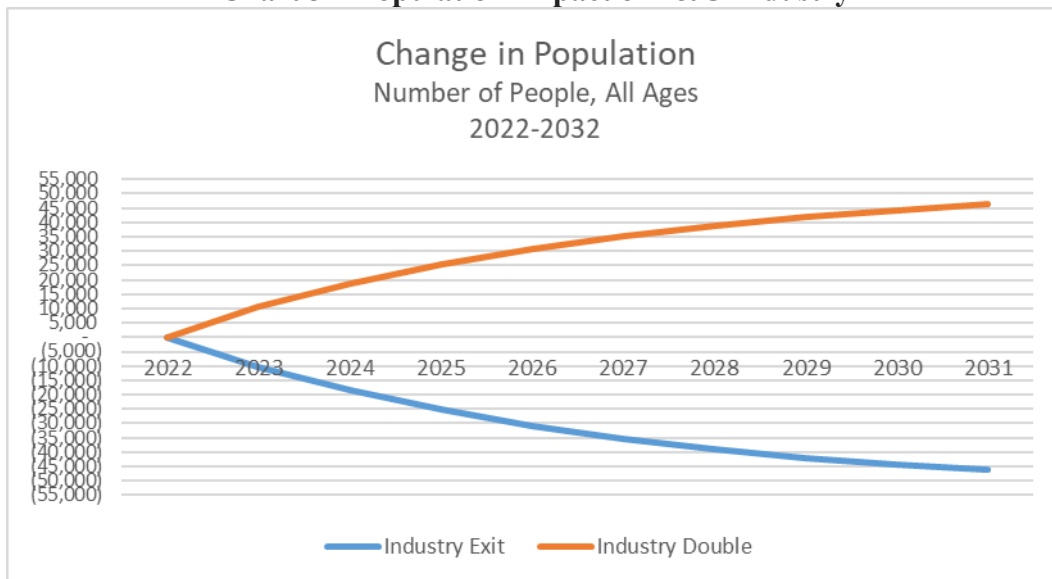
Personal Income

Personal income is comprised of wages, salaries, other workplace compensation (less contributions for social security), proprietor income, and realized investment gains. Personal income continues to be impacted by dynamic effects after the first few years, and reaches $3.8 billion annually by 2031, though most impacts beyond the first decade are attributable to inflation. Chart 4 provides an estimate of the impact on personal income over time.
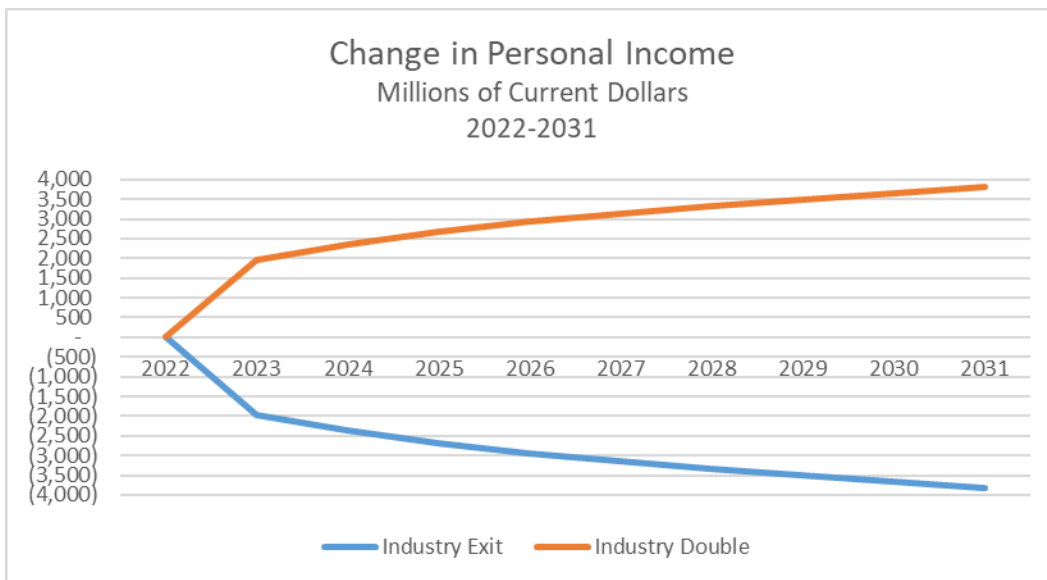
Output

Output is a measure of all final industry sales in the region. Chart 5 illustrates the impact of the industry on overall output across all industries, reaching approximately $16 billion by 2030, and impacted principally by inflation thereafter.

Chart 5 – Total Output Impact from P&C Industry
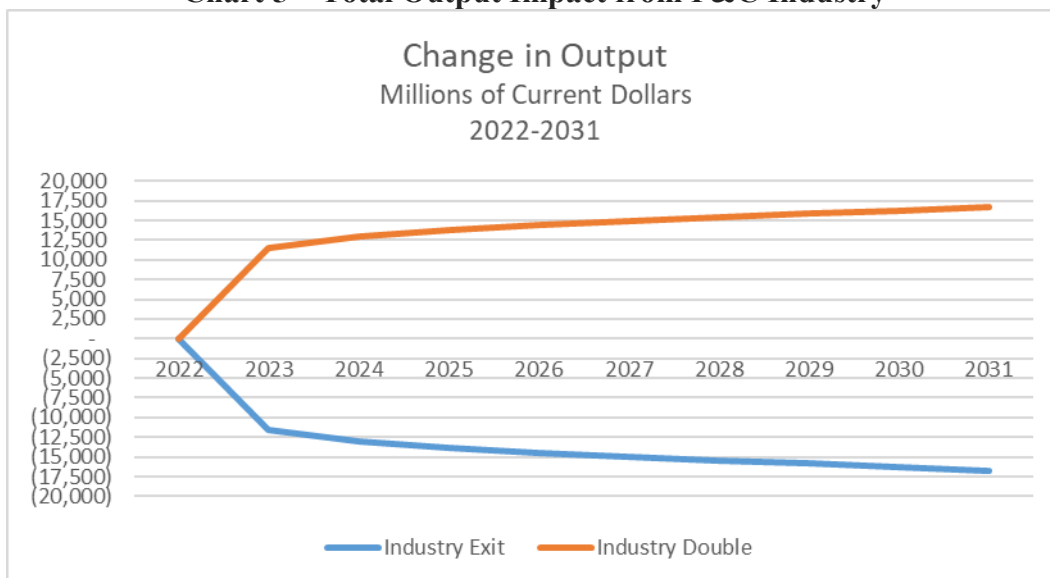
Discussion and Limitations

It should come as no surprise that the Iowa insurance industry writ large, and the property and casualty subsector specifically play an important role in the State's economy. The industry plays a more prominent proportional role in Iowa than most of the nation, and a more prominent role than the sum of the other industries in terms of the balance of high wage jobs.

The impacts may be a little rich or a little light depending on the interplay of various considerations. The average wage of the proxy variable was about 4.7% higher than BLS estimates for the sub-industry. It remains unclear, however, if that's entirely due to the nature of pay in the respective insurance sub-groups or due to geographical considerations, which the model may have implicitly corrected by construction. And given the standard error, it is not conclusively true that actual wages in the P&C industry are statistically much different than the other insurance subsectors. All that said, given the scale of pay relative to the general economy, we would not expect materially different results.

The study also chose to omit the impact of any claims paid by Iowa insurers, both routinely for individual events and for economy-wide events like the Derecho in the Summer of 2020, for which claims exceeding $3 billion, which likely rivaled total industry sales in that year. While it's possible to estimate the economic impact of these events, we would not in any case attribute any unique impact to the presence of Iowa-based insurance carriers. Even if enticing agglomeration effects materialized outside the State and caused the departure of every carrier, those claims would still be paid.

Another aspect that was not considered was the evolving nature of the finance industry generally, and property and casualty carriers in particular, due to either a change in markets or the way consumers interact with their carriers. While the REMI model Control Forecast predicts an increase in total employment of about 5,000 jobs over the next ten years for the Major Industry "Finance and Insurance," it's projecting 2,500 fewer jobs for the subgroup "Insurance Carriers and Related Activities." Though it's likely the agglomeration effects present for P&C carriers are shared with the broader industry to a significant degree, and it's conceivable the employment contraction has more to do with productivity gains than any contraction by firms.

With those limitations in mind, the results are quite robust. Employment multipliers above 3, let alone 3.5, are relatively uncommon, as are industries this large that pay wages at these levels across the occupations.