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An Examination of the Economic Impact of Tobacco in Indiana and Marion County, Indiana

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1. Introduction

During the past decade, Indiana has made significant progress reducing cigarette consumption. The smoking prevalence rate among adults in Indiana fell from 24.0% in 2012 to 17.3% in 2021 (Behavioral Risk Factor Surveillance System (BRFSS), 2022). Despite these declines, the smoking rate in Indiana was considerably higher than the national rate of 14.4% in 2021, which placed Indiana as the state with the 8th highest smoking rate in the country.

Cigarette smoking inflicts a significant detriment to the health of individuals and imposes significant costs upon businesses in the state of Indiana. Two recent reports commissioned by the Richard M. Fairbanks Foundation quantified the smoking-related costs imposed upon individuals and businesses in Indiana (Chaloupka and Tauras 2023A and Tauras, Chaloupka, and Esposito 2023B). The reports concluded that more than 11,000 adults die prematurely each year in Indiana from smoking-related diseases with annual healthcare expenses directly caused by tobacco equaling $3.4 billion. Moreover, smoking employees were found to cost Indiana businesses $3.1 billion dollars in 2022. These costs were associated with excess absenteeism, unsanctioned smoking breaks, lost productivity (presenteeism), and excess healthcare costs for self-insured employers.

The tobacco industry contends that its products play a critical role in state economies, generating employment, income, and creating revenue for the government. The industry argues that public policies that reduce tobacco consumption will lead to less employment, falling incomes, and reduced revenue. However, when making these predictions, the tobacco industry treats the resources used for the production and distribution of tobacco as simply

disappearing from the economy if tobacco consumption declines or disappears entirely. In reality, if individuals decrease their consumption of tobacco or cease tobacco consumption entirely, the economic activity associated with tobacco sales would be redistributed to other parts of the economy, as consumers would use the money they would have spent on tobacco to purchase a different set of goods and services. This alternate set of goods and services would generate employment, income, and create revenue for the government through the sale, production, and distribution of these goods and services.

For states where there is little tobacco farming and production, the redistribution of consumer spending away from tobacco and towards the purchase of alternative goods may generate increases in economic activity and employment in those states. A significant fraction of the dollars consumers spend on tobacco in non-tobacco-producing states are exported to tobacco producing states. If spending in non-tobacco-producing states is reallocated away from tobacco and towards other goods and services, a larger fraction of the spending may be on goods and services that are natively produced within the state. As a result, a higher fraction of consumer spending is re-claimed within the state's economy generating even greater economic activity. This is likely to be the case in Indiana, as Indiana has the highest concentration of manufacturing jobs in the United States and has relatively low reliance on the production of tobacco products.

2. Macroeconomic Model

To quantify the economic impact of tobacco on the economies of Indiana and Marion County, Indiana we ask the following question: what would the Indiana and Marion County,

Indiana economies look like if tobacco consumption and production in Indiana did not exist? The answer to this question quantifies the contribution of tobacco to the economies of Indiana and Marion County, Indiana.

We use a state-of-the-art macroeconomic model produced by Regional Economic Models, Inc. to generate two projections of economic activity in the state of Indiana and separately for Marion County, Indiana and the remainder of Indiana. A detailed description of the macroeconomic model is described in Section 2.1. The first projection is a status quo projection that uses baseline data in Marion County, Indiana and the remainder of Indiana and allows tobacco consumption and production to continue on in the state as expected. The second projection removes the consumption and production of tobacco from the state economy. The difference between the two projections identifies the impact of tobacco on the economies of Marion County and the rest of Indiana. The second projection of Indiana becoming instantaneously "tobacco free" is unrealistic. Nevertheless, this hypothetical second projection allows us to quantify the contribution of tobacco to the economies of Indiana, Marion County, Indiana and the remainder of Indiana.

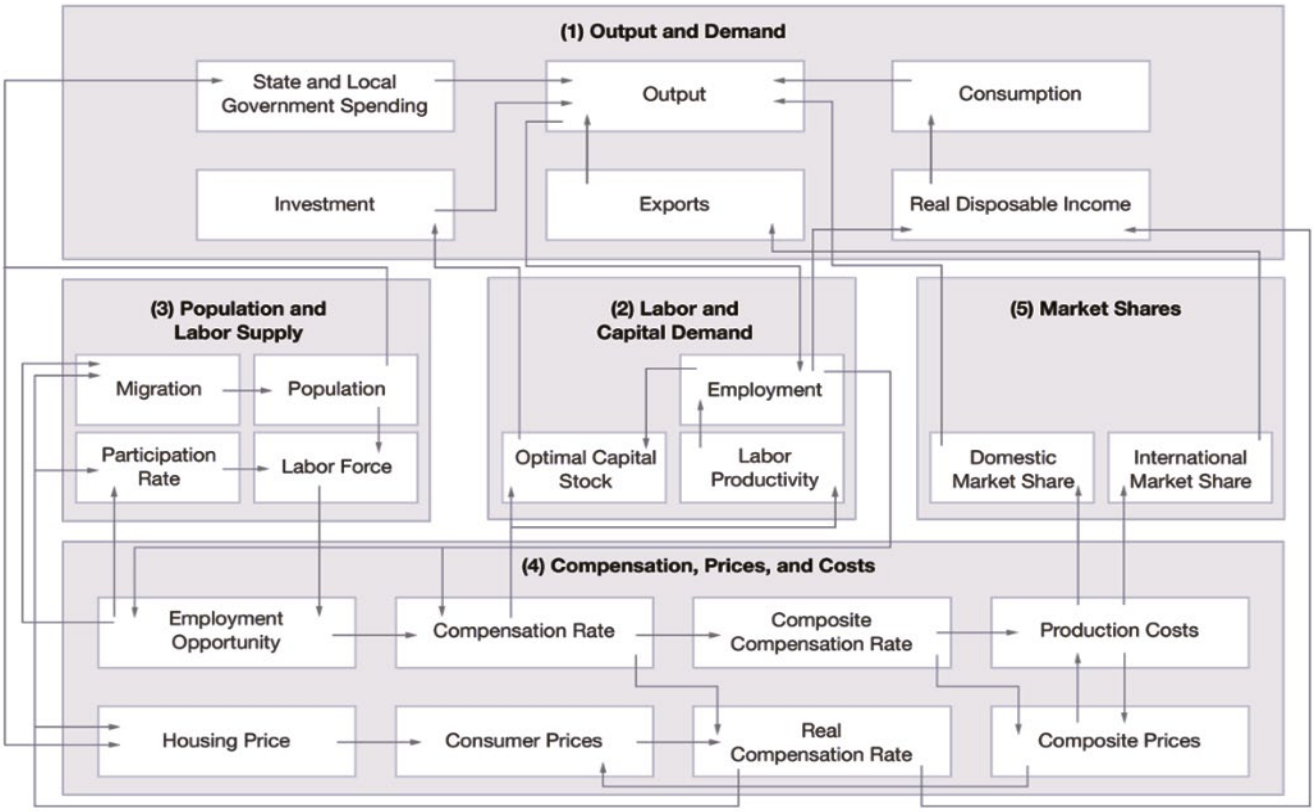
2.1. REMI Model

We use a dynamic macroeconomic input-output model created by Regional Economic Models, Inc. (referred to as the REMI model) in our analyses. The REMI model is a mathematical model that depicts the technical, economic, and demographic relationships within the economy of Indiana and outside the borders of Indiana. The REMI model that we employed is a 160-sector two region (Marion County, IN and the remainder of Indiana) input-

output matrix that describes the relationships between industries in the economy. The matrix is based on the input-output matrix maintained by the United States Bureau of Economic Analysis (BEA), which REMI uses to estimate the impact of a change in one sector of the economy on other sectors. In other words, the model involves thousands of simultaneous equations; however, the specific number of equations used in the simulation is dependent on the "extent of the industry, demographic, demand, and other detail in the specific model being used" (REMI, 2022). The channels for the impact on other sectors due to a change in one sector are represented in Figure 1 below. Changing one variable can change the macroeconomy through various channels; however, there are five main categories (or "blocks") these relationships affect in the Indiana economy: (1) output and demand, (2) labor and capital demand, (3) population and labor supply, (4) compensation, prices, and costs, and (5) market shares.

The output and demand block involves industrial output, demand per industry, investment, Federal, State, and Local government spending, imports, commodity access, and export concepts. The labor and capital demand block comprises labor productivity determination, labor intensity, and optimal capital stocks. The population and labor supply block encompasses comprehensive demographic information. The compensation, prices, and costs block incorporates delivered prices, production costs, equipment costs, consumption deflator, consumer prices, housing prices, and the compensation equation. Finally, the market shares block includes the market share equations that measure the part of Indiana and export markets captured by each industry.

Figure 1 REMI Model Linkages



The data used in the REMI model primarily comes from the Bureau of Economic Analysis (BEA) Regional Economic Accounts data series. This includes personal income, employment, and total employment for the State of Indiana and Marion County, Indiana. The baseline forecasts produced by REMI are based on the Bureau of Labor Statistics (BLS) Employment Projections. In the BLS projections, they assume "the labor market is in equilibrium, i.e., labor supply meets labor demand except for some degree of frictional unemployment." (REMI, 2022) Data in the REMI model is also collected from the U.S. Census, American Community Survey, Federal Housing Finance Agency, Centers for Disease Control and Prevention, Department of Defense, National Center for Education Statistics, Bureau of Justice Statistics, Bureau of Prisons, and Energy Information Administration.

The REMI model's methodology is documented in the professional literature and has been used in hundreds of published studies. It is one of the most highly respected models available for policy analyses.

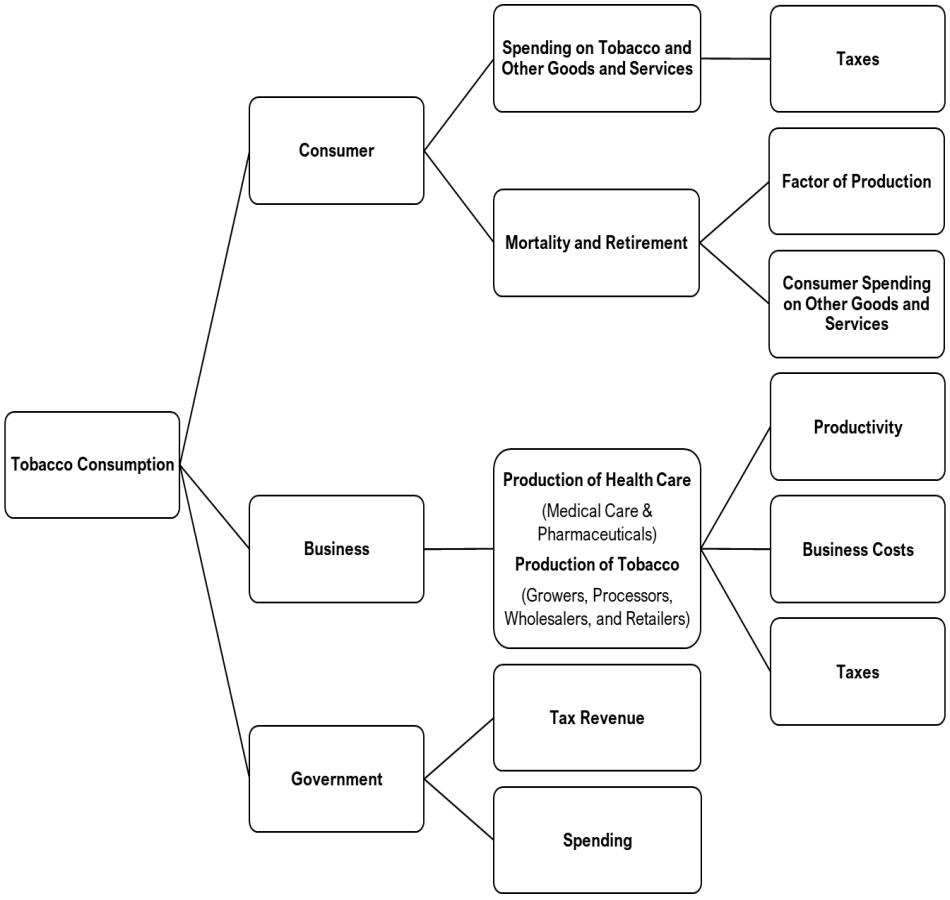
2.2. Input Assumptions and Model Implementation

In this report, we are interested in studying the impact of "removing" tobacco consumption from the State of Indiana and Marion County, Indiana. Figure 2 below displays the channels in which tobacco consumption impacts the economy in Indiana. There are three primary channels: consumers, business, and government. The first channel in which tobacco consumption will impact the Indiana economy is through consumers. Since individuals will not be purchasing tobacco products in the state of Indiana, spending on tobacco products will be zero and individuals will have additional money to buy other goods and services. Moreover, with the elimination of tobacco purchases, both sales tax and excise tax associated with tobacco will not contribute to government revenue, but sales tax and excise tax associated with the purchase of other goods and services will. Further, eliminating tobacco consumption will impact mortality and retirement in the state of Indiana. Indeed, Taylor et al. (2002) find that the life expectancy among smokers that quit by age 35 is about 6-to-8 years higher than those that continue smoking at age 35. The elimination of tobacco from Indiana will increase survival rates, resulting in individuals being able to work more years and hence having a greater supply of labor available to work (i.e., increase in factors of production) and additional spending on other goods and services for individual living additional years.

Another channel in which the elimination of tobacco will impact the economy is through business. Tobacco growers, processors, wholesalers, and retailers of tobacco products will no longer exist in the State of Indiana. Moreover, the demand for medical care will decrease as tobacco-related disease in Indiana is eliminated. Production in the medical care and pharmaceutical industries will decrease as a result. These industries influence spending from consumers, private businesses, state and local government, and the federal government. Moreover, as described in Tauras, Chaloupka, and Esposito (2023), tobacco use decreases workplace productivity and imposes excess cost to businesses, which needs to be considered when eliminating tobacco consumption. Finally, government revenue from taxes will change as healthcare production is decreased, tobacco production is eliminated, and the production of other goods and services changes in response to consumer demand.

The third and final channel in which the elimination of tobacco will impact the economy is through government. Indeed, as tobacco sales, distribution, and production are eliminated, health care production and spending are decreased, other goods and services production and sales change, government revenue collections will change resulting in changes in government spending and the provisions of goods and services.

Figure 2. Tobacco Consumption and Its Economic Channels



The channels described above influence the assumptions we make in the model. We will describe those assumptions in the context of the State of Indiana. Note that the dollar amounts described are in real 2020 dollars unless otherwise specified.

Assumption 1. Remove tobacco spending from consumers and redistribute that tobacco spending to other aspects of consumer spending.

When tobacco consumption is eliminated from the Indiana economy, consumer spending on tobacco drops to zero, and consumers have more money available to spend on other goods and services. We use the forecasted tobacco spending data for Marion County,

Indiana and the remainder of Indiana from REMI for the years 2023 to 2042, remove that year specific spending amount from the economy, and reallocate the identical amount of money among other goods and services such that the relative consumption of the goods and services among Indiana residents remains unchanged. For example, REMI estimates that consumer spending on tobacco products will be $2.178 billion in the year 2023. We take away the $2.178 billion from consumer spending on tobacco and then increase spending on goods and services that are not associated with tobacco by $2.178 billion for the year 2023. The $2.178 billion is spread to all non-tobacco goods and services based on the fraction of total consumer spending each good and service represents. In addition to addressing consumer spending, we also remove the amount of tobacco excise tax revenue that the state and federal governments would have received from the sale of tobacco products in the state of Indiana in each of the years between 2023-2042. For example, it is estimated that the federal government would have collected $345,009,288 in excise tax revenue in 2023 whereas the state of Indiana would have collected $315,715,761 in excise tax revenue in the same year. We simply decreased federal and state government spending by the amount of money they would have collected as a proxy for decreasing government revenue in 2023. We continue that process for the years 2024 to 2042.

Assumption 2. Reduce farm income associated with tobacco production

We reduce farm income associated with the elimination of tobacco leaf production in the State of Indiana. In the State of Indiana, tobacco farming is a very small aspect of its overall agricultural economy, and zero percent of farming in Marion County is contributed to tobacco production. An estimated 860 acres are used for tobacco farming in the rest of Indiana and the

revenue from tobacco sales is approximately $4,600 per acre (Galloway, 2021). The total revenue from tobacco farming in 2023 is estimated to be $3,956,000. Since that same acreage would have only produced $1,017,939 if soybeans were planted instead of tobacco (USDA, 2021), we reduced farm income by $2,938,061. We assume yield per acre and relative prices remain constant in the future such that the reduction in farm income remains constant for the years 2024 to 2042.

Assumption 3. Reduce health care spending attributed to tobacco use and reallocate the resources back to the entities that paid for the health care

The use of tobacco products by consumers is associated with disease and therefore generates a demand for medical goods and services. With zero tobacco consumption in the State of Indiana, the tobacco-induced demand for medical care is no longer present and the spending that would have taken place can be given back to the entities that paid for the health care.

Chaloupka and Tauras (2023) estimated that healthcare expenses directly caused by tobacco consumption totaled $3.4 billion in 2022 nominal dollars in Indiana, which is equivalent to $3,227,820,856 in real 2020 dollars. This estimate is calculated by considering the amount of money spent on treating diseases related to tobacco consumption among current tobacco consumers and non-tobacco consumers exposed to tobacco consumption, e.g., through secondhand smoke. Birth costs due to tobacco consumption are also considered in the tobacco consumption-related health care costs. We increase tobacco-related health care spending in

Indiana by 0.87% per year for each year between 2023 and 2042 to account for historical medical care inflation exceeding general inflation.

The health care costs attributed to tobacco can be broken down into medical services costs and pharmaceutical costs. These two types of health care spending may have different impacts on the economy and therefore it is important to take this into account in our modeling. Using Indiana-specific health expenditures from the Centers for Medicare & Medicaid Services (2022) we calculated that 87.46% of health expenditures in Indiana were related to medical services and 12.54% of health expenditures were related to pharmaceuticals. Chaloupka and Tauras (2023) estimated that healthcare costs attributable to tobacco in the State of Indiana were $3.4 billion in 2022 (equivalent to $3.228 billion in 2020 dollars using the medical care component of Consumer Price Index for deflation). We use the average yearly excess medical care inflation up and above regular inflation for years 2011-2021 to calculate the 2023 healthcare costs attributable to tobacco in the State of Indiana at $3.2563 billion (in 2020 dollars). Therefore in 2023, in the tobacco-free projection, we remove $2.85 billion from the medical services industry in Indiana ($406.65 million from Marion County and $2.44 billion from the rest of Indiana[1]) and $406.3 million from the pharmaceutical industry in Indiana ($57.97 million from Marion County and $348.33 million from the rest of Indiana).[2]

[1] The reductions in spending in Marion County and the rest of Indiana are based on the fraction of the state's population that resides in Marion County and in the rest of Indiana.

[2] While we allow normal employment shocks to occur in the pharmaceutical and medical manufacturing industries, we assume that medical services will not face a large shock in their employment levels. We believe this is a very reasonable assumption for two reasons. First, a tobacco-free state increases the attractiveness of Indiana as a place to work, particularly among health care providers who are more likely than other professions to self-select into locations that have healthier lifestyles. There is also an amenity value of a decreased probability of disease due to working and living in a location without second hand smoke and other direct and indirect negative consequences

In a tobacco-free scenario, there is zero spending treating tobacco-related disease. Therefore, the spending that would have taken place can be given back to the entities that paid for the health care. Unlike most goods and services that are purchased by consumers, smoking-related medical care is only partially paid for by consumers; the federal government, state and local governments, and businesses pay the remainder. Using Indiana-specific health expenditures from the Centers for Medicare & Medicaid Services (2022) we calculated that 15.74%, 38.46%, 40.70%, and 5.1% and of health care expenditures in the state of Indiana were paid by consumers, businesses, the federal government, and the state and local government, respectively.

We take the money that consumers would have spent on medical care and pharmaceuticals and allocate those funds to consumer spending on goods and services not related to health care nor tobacco consumption. We redistribute the money to spending on other goods and services based on the fraction of total consumer spending each good and service represents. We take the money business would have paid for medical care and pharmaceuticals and lower the costs of production by an identical amount. Lastly, we increase government spending (both federal and state and local governments) by the amount they would have spent on tobacco-related medical costs.

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associated with tobacco use. This amenity value also increases the attractiveness of Indiana as a place to work, particularly among health care providers. Second, more than 95% of medical services expenditures in Indiana are not related to treating tobacco-related diseases and a small reduction in medical services expenditures even without aforementioned self-selection and amenity value would result in only a small change in medical services employment.

Assumption 4. Adjust productivity

Tauras, Chaloupka, and Esposito (2023) estimated total productivity losses due to tobacco use in Indiana to be $272,072,003 in 2022 nominal dollars, which is equivalent to $240,608,318 in real 2020 dollars. This loss in labor productivity is attributable to absenteeism, presenteeism, and smoking breaks. We adjust for this productivity loss attributed to smoking by increasing labor productivity by 0.233% per year in Marion County Indiana and by 0.326% per year in the rest of Indiana. These productivity gains were calculated by REMI economists specifically for use in our simulations and represent average productivity gains across all sectors of the economy. One limitation associated with using average productivity gains is the possibility that the productivity gains vary from one sector of the economy to another, and we do not consider differential productivity gains by sectors in our estimates.

Assumption 5. Adjust life expectancy

The deleterious effects of tobacco consumption on human health result in a tremendous loss of life in Indiana. Indeed, more than 11,000 adult lives are lost each year in Indiana due to tobacco-related disease. Not only do smokers die prematurely, but they also face health-induced early retirement. This tobacco-induced early retirement affects the economy of Indiana through lost productivity. The human capital embodied within a skilled worker is lost when the worker dies or retires early due to a tobacco-related disease. Premature mortality due to tobacco also affects the demands for goods and services. That is, individuals who die prematurely due to tobacco consumption no longer purchase goods or services, which affects the state economy. In the absence of tobacco, life expectancy in Indiana

would be higher. Using age specific differences in deaths for smokers and never smokers from Woloshin, Schwartz, and Welch (2008) we adjusted the survival rates slightly upward in the REMI model to account for the higher life expectancy of a non-smoker compared to a smoker. In the REMI model, the higher survivor rates associated with eliminating tobacco in Indiana allow individuals to live longer lives, work and earn income for more years, and purchase additional goods and services in those additional years of life.

3. Results

As described in the Macroeconomic Model section above, the ways in which tobacco use affects the economy are numerous. Table 1 presents the impacts of tobacco on key economic outcomes including employment, income, and population in the State of Indiana. The REMI model initially calculated a baseline forecast for Indiana for 20 years in the future without making any changes to expected future tobacco trends. The REMI model then calculates an alternative forecast for 20 years in the future where tobacco is completely eliminated from the economy of Indiana. This alternative forecast takes into account all the assumptions we described in the previous section. The baseline forecast is subtracted from the alternative forecast and the resulting differences are the economic effects of the elimination of tobacco. Table 1 presents the one-year (2023), five-year (2027), ten-year (2032), and twenty-year (2042) differences between the baseline and alternative forecasts for the entire state of Indiana. One-year (2023), five-year (2027), ten-year (2032), and twenty-year (2042) differences between the baseline and alternative forecasts for Marion County, Indiana and the rest of Indiana can be found in the appendix to this report.

Table 1. Economic Impact Summary of Removing Tobacco from Indiana				
	2023 (1 Year)	**2027 (5 Year)**	**2032 (10 Year)**	**2042 (20 Year)**
Total Employment (Individual Jobs)	2,661	9,498	11,136	13,879
Private Non-Farm Employment (Individual Jobs)	19	6,019	6,505	7,616
Personal Income (Millions of 2020 Dollars)	353	907	1,213	1,817
Disposable Personal Income (Millions of 2020 Dollars)	302	769	1,045	1,577
Disposable Personal Income Per Capita (2020 Dollars Per Person)	31	29	2	-11
Population (Individuals)	1,824	11,007	18,227	25,217
Net Increases				

A tobacco-free Indiana would consist of more jobs, higher incomes, and a larger population compared to the status quo baseline estimates.

3.1. Employment

The simulations imply that without tobacco, Indiana would have 2,661 more jobs in 2023, and this number would continue to increase as time passes. By five, ten, and twenty years a tobacco-free Indiana would have 9,498, 11,136, 13,879 more jobs, respectively, than the status quo baseline forecast. Many factors are responsible for the growth in employment in a tobacco-free Indiana, including lower employment costs, increased population, increased longevity, and various other factors.

The breakdown of employment effects by industry associated with a tobacco-free Indiana are presented in Table 2. Most of the industries in a tobacco-free Indiana will experience gains in employment compared to the status quo economy. The two largest exceptions that experience an initial decrease in employment are state and local government

and retail trade. The loss in state and local government employees is certainly related to the way the state government in Indiana would deal with the void in tobacco excise tax revenues due to tobacco products not being consumed in Indiana in the tobacco-free scenario. In our modeling we assume that state and local government spending declines by the full amount of lost tobacco excise tax revenues. The decrease in retail trade employment is not only a function of tobacco products no longer being sold in retail outlets, but is also a function of shifting patterns of consumer spending in the tobacco-free Indiana economy. After twenty years, retail trade employment is very close to the status quo employment and the state and local government employees estimate is actually 320 employees higher than the status quo forecast. Employment figures for Marion County, Indiana and the rest of Indiana can be found in the appendix.

Table 2. Employment Impacts of Removing Tobacco from Indiana, by Industry				
	2023 (1 Year)	**2027 (5 Year)**	**2032 (10 Year)**	**2042 (20 Year)**
Forestry, fishing, and hunting	72	32	37	23
Mining	32	33	30	20
Utilities	43	48	50	41
Construction	914	1,910	1,136	838
Manufacturing	1,308	1,794	1,704	1,554
Wholesale trade	-243	21	99	198
Retail trade	-3,805	-1,801	-1,100	-86
Transportation and warehousing	-27	292	368	396
Information	52	73	70	61
Finance and insurance	295	347	379	344
Real estate and rental and leasing	196	470	454	487
Professional, scientific, and technical services	-323	-81	-20	55
Management of companies and enterprises	22	24	25	19
Administrative, support, waste management, and remediation services	-755	-463	-390	-277
Educational services; private	135	162	185	165

Health care and social assistance	844	1,249	1,408	1,728
Arts, entertainment, and recreation	208	264	292	237
Accommodation and food services	211	607	775	862
Other services (except public administration)	842	1,038	1,003	953
State and Local Government	-2,088	-1,551	-791	320
Federal Civilian	4,766	5,063	5,454	5,968
Federal Military	0	0	0	0
Farm	-36	-33	-31	-25
Total	2,661	9,498	11,136	13,879
Net Changes in Individual Jobs				

3.2. Personal Income

Personal incomes would be significantly higher if Indiana would be tobacco-free. In the first year alone (2023), disposable personal income (i.e., after-tax income received by persons available for spending or saving) would be $302 million dollars higher compared to the status quo forecast. In years five, ten, and twenty, disposable personal income would be $769 million, $1.05 billion, and $1.6 billion dollars higher compared to the status quo forecast. After two decades, the cumulative gain in disposable personal income in Indiana would be $20.77 billion as compared to the status quo forecast. On a per-capita basis, disposable personal income would be $31 more (in constant 2020 dollars) in 2023 as compared to the status quo scenario. In years five and ten per capita income would be $29 and $2 more, respectively, than the status quo forecast. However, by year twenty, per-capita disposable personal income would be $11 less as compared to the status quo scenario. As disposable personal income is $1.6 billion dollars higher compared to the status quo forecast in twenty years, the decline in per-capita disposable income relative to the status quo forecast is a function of the population increase

associated with Indiana being tobacco-free. The cumulative per-capita disposable income over the entire twenty-year forecast period would be $152 more than the status quo scenario.

As can be seen in Table 3, the largest force propelling income growth in the tobacco-free relative to the status quo scenario is higher wages and salaries. In 2023, workers would be paid $267 million more in the tobacco-free forecast compared to the status quo forecast. In five, ten, and twenty years, workers would be paid $636 million, $780 million, and $1.04 billion more in the tobacco-free forecast compared to the status quo forecast. The cumulative excess amount of wages and salaries that workers in a tobacco-free forecast would make compared to the status quo forecast over the entire 20 year period would be $15.2 billion.

Table 3. Impacts on Income of Removing Tobacco from Indiana

	2023 (1 Year)	2027 (5 Year)	2032 (10 Year)	2042 (20 Year)
Total Earnings by Place of Work	406	919	1,095	1,440
Total Wages and Salaries	267	636	780	1,040
Supplements to Wages and Salaries	130	225	292	398
Employer contributions for employee pension and insurance funds	88	151	196	267
Employer contributions for government social insurance	42	74	96	130
Proprietors' income with inventory valuation and capital consumption adjustments	8	58	24	2
Less: Contributions for Government Social Insurance	67	134	166	220
Employee and Self-Employed Contributions for Government Social Insurance	24	60	70	89
Employer contributions for government social insurance	42	74	96	130
Plus: Adjustment for Residence	-1	-15	-13	-12
Gross Inflow	5	64	89	146
Gross Outflow	6	79	103	157
Equals: Net Earnings by Place of Residence	338	770	916	1,209
Plus: Property Income	10	66	131	250
Personal Dividend Income	4	22	38	71
Personal Interest Income	4	32	70	139
Rental Income of Persons	2	12	23	39
Plus: Personal Current Transfer Receipts	5	70	165	358

Equals: Personal Income	353	907	1,213	1,817
Less: Personal Current Taxes	52	138	168	240
Equals: Disposable Personal Income	302	769	1,045	1,577
Net Changes in Millions of 2020 Dollars				

The breakdown of earning effects by industry associated with a tobacco-free Indiana are presented in Table 4; these numbers can be compared to the total earnings by place of work data shown in Table 3. Most of the industries in a tobacco free Indiana will experience gains in earnings compared to the status quo economy, and the overall impact on earnings across all industries is significant and positive. The two largest exceptions that experience a decrease in earnings parallel the employment findings. That is, the state and local government and retail trade industries experience initial decreases in earnings, but by twenty years retail trade earnings approach the status quo earnings and state and local government earnings are higher in the tobacco-free forecast as compared to the status quo forecast. Earnings figures for Marion County, Indiana and the rest of Indiana can be found in the appendix.

Table 4. Impact on Earnings of Removing Tobacco from Indiana, by Industry

	2023 (1 Year)	**2027 (5 Year)**	**2032 (10 Year)**	**2042 (20 Year)**
Forestry, fishing, and hunting	4	2	2	2
Mining	2	3	3	2
Utilities	7	9	11	10
Construction	68	149	92	69
Manufacturing	59	120	124	114
Wholesale trade	-25	4	13	31
Retail trade	-157	-83	-60	-9
Transportation and warehousing	4	25	31	36
Information	3	6	7	7
Finance and insurance	22	29	30	27
Real estate and rental and leasing	4	29	31	42
Professional, scientific, and technical services	-23	1	7	16
Management of companies and enterprises	3	5	6	6

Administrative, support, waste management, and remediation services	-34	-20	-18	-16
Educational services; private	6	7	8	7
Health care and social assistance	59	103	123	171
Arts, entertainment, and recreation	6	9	10	9
Accommodation and food services	6	18	24	28
Other services (except public administration)	30	44	46	48
State and Local Government	-136	-104	-53	44
Federal Civilian	501	565	663	800
Federal Military	0	0	0	0
Farm	-2	-1	-2	-2
Total	406	919	1,095	1,440
Net Changes in Millions of 2020 Dollars				

3.3. Population

A major economic consequence of the elimination of tobacco in Indiana pertains to the state's population. Indiana's yearly death total would be much lower in the tobacco free scenario as compared to the status quo scenario. The decrease in deaths affects life expectancy and hence the survival rate at each age in the simulations.[3] Moreover, a tobacco-free state increases the attractiveness of Indiana as a place to live and work. This coupled with higher wages results in positive migration by workers into Indiana. Furthermore, the decreased costs to businesses due to the elimination of tobacco leads more companies to move to Indiana and additional in-migration of workers. The result of the elimination of tobacco is a significant increase in state residents in the tobacco-free scenario as compared to the status quo scenario. As can be seen in Table 5, in the first year alone (2023), the population of a tobacco-free Indiana would be 1,824 higher compared to the status quo forecast. After 5, 10, and 20 years, the gain in population in Indiana in a tobacco-free scenario would be 11,007, 18,227, and

[3] The survival rate is defined as [1 - (deaths at a specific age / individuals at a specific age)]

25,217 higher as compared to the status quo forecast, respectively. In the first year (2023), 96.33% of the increase in population in Indiana is a result of migration into Indiana from outside the state's boundary. But as we move further into the simulation period, a smaller and smaller fraction of the population increase is due to in-migration. At five years, the effects of higher survival rates start to show. At year five of the simulation, only 17.0% of the population increase is due to migration into the state, and by year 10, only 3.1% of the of the population increase is due to migration into the state. Estimates for population changes in Marion County, Indiana and the rest of Indiana can be found in the appendix.

Table 5. Impact on Population of Removing Tobacco from Indiana				
	1 Year	**5 Year**	**10 Year**	**20 Year**
Population Before Migrants	67	9,136	17,670	24,997
Total Migrants	1,757	1,871	557	220
Ending Population	1,824	11,007	18,227	25,217
Net Increase in Number of Individuals				

4. Discussion

The tobacco industry argues that tobacco products play a significant role in state economies, generating employment, income, and creating revenue for government. The industry contends that public policies that reduce tobacco consumption will lead to less employment, lower incomes, and reduced revenue. However, when making these predictions, the tobacco industry treats the resources used for the production and distribution of tobacco as simply vanishing from the economy if tobacco consumption declines or disappears entirely. In reality, if individuals decrease their consumption of tobacco or cease tobacco consumption

entirely, the economic activity associated with tobacco sales would be redistributed to other parts of the economy, as consumers would use the money they would have spent on tobacco to purchase a different set of goods and services. This alternate set of goods and services would generate employment and income and create revenue for government through the sale, production, and distribution of these goods and services.

The research presented in this report used a state-of-the-art macroeconomic model produced by REMI to examine the impact of tobacco on three economic outcomes in Indiana: employment, income, and population. REMI produced two projections of economic activity in the state of Indiana and separately for Marion County, Indiana and the remainder of Indiana. The first projection was a status quo projection that uses baseline data in Indiana and allowed tobacco consumption and production to continue on as expected in the state. The second projection removed the consumption and production of tobacco from the state economy. The difference between the two projections identified the impact of tobacco on the economy of Indiana. We found that a tobacco-free Indiana would have more overall employment, higher personal incomes and earnings, and a larger population compared to the status quo Indiana. In particular, within five years, a tobacco-free Indiana would have 9,498 more jobs, disposable personal income would be $769 million higher, wages and salaries would be $636 million higher, and the population of Indiana would be 11,007 higher. By the year 2042, a tobacco-free Indiana would have 13,879 more jobs, disposable personal income would be $1.58 billion higher, wages and salaries would be $1.04 billion higher, and the population of Indiana would be 25,217 higher.

It has long been known that tobacco consumption causes an enormous amount of death and disease. Our findings suggest that tobacco is not only a killer of people, but is also a killer of jobs, incomes and earnings, and population growth. Public policies proven to reduce tobacco consumption, including increasing tobacco taxes, funding comprehensive tobacco control programs, enacting new comprehensive smoke-free air laws, will not only improve the public's health, but can also put the enacting state into an economic competitive advantage by producing jobs and increasing incomes and earnings.

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6. Appendix

Table 6. Economic Impact Summary of Removing Tobacco in Marion County, IN				
	2023 (1 Year)	**2027 (5 Year)**	**2032 (10 Year)**	**2042 (20 Year)**
Total Employment (Individual Jobs)	-725	580	800	1533
Private Non-Farm Employment (Individual Jobs)	-794	313	308	689
Personal Income (Millions of 2020 Dollars)	7	84	94	156
Disposable Person Income (Millions of 2020 Dollars)	6	71	81	136
Disposable Personal Income Per Capita (Dollars Per Person)	7	30	7	-8
Population (Individuals)	-25	696	1,163	1,938
Net Changes				

Table 7. Economic Impact Summary of Removing Tobacco in the Rest of Indiana				
	2023 (1 Year)	**2027 (5 Year)**	**2032 (10 Year)**	**2042 (20 Year)**
Total Employment (Individual Jobs)	3,386	8,918	10,336	12,346
Private Non-Farm Employment (Individual Jobs)	813	5,706	6,196	6,927
Personal Income (Millions of 2020 Dollars)	346	823	1,119	1,661
Disposable Person Income (Millions of 2020 Dollars)	296	698	964	1,441
Disposable Personal Income Per Capita (2020 Dollars)	35	31	4	-9
Population (Individuals)	1,848	10,311	17,063	23,279
Net Changes				

Table 8. Employment Impacts of Removing Tobacco in Marion County, IN, by Industry				
	2023 (1 Year)	**2027 (5 Year)**	**2032 (10 Year)**	**2042 (20 Year)**
Forestry, fishing, and hunting	4	0	8	0
Mining	0	1	1	1
Utilities	3	3	3	2
Construction	75	232	98	112
Manufacturing	44	97	92	56
Wholesale trade	-110	-42	-28	3
Retail trade	-627	-342	-260	-114
Transportation and warehousing	-70	7	16	38
Information	4	13	12	15
Finance and insurance	36	68	64	74
Real estate and rental and leasing	-1	39	43	57
Professional, scientific, and technical services	-118	-50	-42	-11
Management of companies and enterprises	2	4	3	3
Administrative, support, waste management, and remediation services	-241	-148	-134	-84
Educational services; private	24	35	40	41
Health care and social assistance	71	179	192	282
Arts, entertainment, and recreation	16	29	28	28
Accommodation and food services	-6	47	50	63
Other services (except public administration)	99	140	123	122
State and Local Government	-536	-375	-201	86
Federal Civilian	605	643	693	758
Federal Military	0	0	0	0
Farm	0	0	0	0
Total	-725	580	800	1533
Net Changes in Individual Jobs				

Table 9. Employment Impacts of Removing Tobacco in the Rest of Indiana, by Industry				
	2023 (1 Year)	**2027 (5 Year)**	**2032 (10 Year)**	**2042 (20 Year)**
Forestry, fishing, and hunting	68	32	29	22
Mining	32	32	29	19
Utilities	40	44	47	39
Construction	839	1,678	1,038	725
Manufacturing	1,263	1,697	1,612	1,498
Wholesale trade	-134	63	127	195
Retail trade	-3,178	-1,459	-839	28
Transportation and warehousing	43	285	352	358
Information	48	60	58	46
Finance and insurance	259	279	315	269
Real estate and rental and leasing	198	431	411	429
Professional, scientific, and technical services	-205	-30	21	66
Management of companies and enterprises	20	20	21	16
Administrative, support, waste management, and remediation services	-515	-315	-255	-193
Educational services; private	111	127	145	124
Health care and social assistance	773	1,070	1,216	1,446
Arts, entertainment, and recreation	192	235	264	209
Accommodation and food services	217	560	725	799
Other services (except public administration)	743	898	880	831
State and Local Government	-1,552	-1,175	-590	234
Federal Civilian	4,161	4,420	4,761	5,210
Federal Military	0	0	0	0
Farm	-36	-33	-31	-25
Total	3,386	8,918	10,336	12,346
Net Changes in Individual Jobs				

Table 10. Impacts on Income of Removing Tobacco in Marion County, IN				
	2023 (1 Year)	2027 (5 Year)	2032 (10 Year)	2042 (20 Year)
Total Earnings by Place of Work	-19	101	127	224
Total Wages and Salaries	-18	62	82	150
Supplements to Wages and Salaries	5	23	32	55
Employer contributions for employee pension and insurance funds	3	15	21	36
Employer contributions for government social insurance	2	8	11	19
Proprietors' income with inventory valuation and capital consumption adjustments	-6	16	13	19
Less: Contributions for Government Social Insurance	0	14	18	31
Employee and Self-Employed Contributions for Government Social Insurance	-2	6	7	12
Employer contributions for government social insurance	2	8	11	19
Plus: Adjustment for Residence	26	-13	-36	-86
Gross Inflow	15	26	27	31
Gross Outflow	-11	39	63	117
Equals: Net Earnings by Place of Residence	7	74	73	107
Plus: Property Income	0	5	9	21
Personal Dividend Income	0	2	3	6
Personal Interest Income	0	2	5	12
Rental Income of Persons	0	1	2	3
Plus: Personal Current Transfer Receipts	0	5	11	28
Equals: Personal Income	7	84	94	156
Less: Personal Current Taxes	1	12	13	20
Equals: Disposable Personal Income	6	71	81	136
Net Changes in Millions of 2020 Dollars				

Table 11. Impacts on Income of Removing Tobacco in the Rest of Indiana				
	2023 (1 Year)	2027 (5 Year)	2032 (10 Year)	2042 (20 Year)
Total Earnings by Place of Work	425	818	968	1,217
Total Wages and Salaries	285	574	698	890
Supplements to Wages and Salaries	125	202	259	343
Employer contributions for employee pension and insurance funds	85	136	175	231
Employer contributions for government social insurance	41	66	84	112
Proprietors' income with inventory valuation and capital consumption adjustments	15	42	11	-16
Less: Contributions for Government Social Insurance	67	120	147	188
Employee and Self-Employed Contributions for Government Social Insurance	26	54	63	77
Employer contributions for government social insurance	41	66	84	112
Plus: Adjustment for Residence	-27	-1	23	74
Gross Inflow	-10	38	62	114
Gross Outflow	17	39	39	40
Equals: Net Earnings by Place of Residence	331	696	844	1,103
Plus: Property Income	10	62	121	229
Personal Dividend Income	4	20	35	65
Personal Interest Income	4	30	65	128
Rental Income of Persons	2	11	21	36
Plus: Personal Current Transfer Receipts	5	65	154	330
Equals: Personal Income	346	823	1,119	1,661
Less: Personal Current Taxes	51	125	155	220
Equals: Disposable Personal Income	296	698	964	1,441
Net Changes in Millions of 2020 Dollars				

Table 12. Impact on Earnings of Removing Tobacco in Marion County, IN, by Industry				
	2023 (1 Year)	2027 (5 Year)	2032 (10 Year)	2042 (20 Year)
Forestry, fishing, and hunting	0	0	0	0
Mining	0	0	0	0
Utilities	0	1	0	0
Construction	6	21	9	10
Manufacturing	-1	7	8	3
Wholesale trade	-12	-5	-4	0
Retail trade	-32	-20	-17	-10
Transportation and warehousing	-3	2	2	4
Information	0	1	1	2
Finance and insurance	5	8	7	8
Real estate and rental and leasing	-2	16	19	27
Professional, scientific, and technical services	-12	-4	-3	2
Management of companies and enterprises	0	1	1	1
Administrative, support, waste management, and remediation services	-13	-9	-9	-7
Educational services; private	1	1	2	2
Health care and social assistance	6	19	21	37
Arts, entertainment, and recreation	1	2	2	2
Accommodation and food services	0	2	2	2
Other services (except public administration)	4	6	6	7
State and Local Government	-41	-32	-19	11
Federal Civilian	76	85	100	121
Federal Military	0	0	0	0
Farm	0	0	0	0
Total	-19	101	127	224
Net Changes in Millions of 2020 Dollars				

Table 13. Impact on Earnings of Removing Tobacco in the Rest of Indiana, by Industry				
	2023 (1 Year)	**2027 (5 Year)**	**2032 (10 Year)**	**2042 (20 Year)**
Forestry, fishing, and hunting	4	2	2	2
Mining	2	3	3	2
Utilities	7	9	10	10
Construction	62	128	83	58
Manufacturing	60	113	116	111
Wholesale trade	-12	9	18	30
Retail trade	-126	-64	-42	1
Transportation and warehousing	7	23	29	32
Information	3	5	6	5
Finance and insurance	17	21	23	19
Real estate and rental and leasing	6	13	13	14
Professional, scientific, and technical services	-10	5	9	14
Management of companies and enterprises	3	4	5	5
Administrative, support, waste management, and remediation services	-21	-11	-9	-9
Educational services; private	5	6	6	5
Health care and social assistance	53	85	102	134
Arts, entertainment, and recreation	5	7	8	7
Accommodation and food services	6	17	22	25
Other services (except public administration)	26	37	40	40
State and Local Government	-94	-72	-35	34
Federal Civilian	425	480	563	679
Federal Military	0	0	0	0
Farm	-2	-1	-2	-2
Total	425	818	968	1217
Net Changes in Millions of 2020 Dollars				

Table 14. Impact on Population of Removing Tobacco in Marion County, IN				
	1 Year	**5 Year**	**10 Year**	**20 Year**
Population Before Migrants	6	524	1,132	1,898
Total Migrants	-31	172	31	40
Ending Population	-25	696	1,163	1,938
Net Changes in Number of Individuals				

Table 15. Impact on Population of Removing Tobacco in Rest of Indiana				
	1 Year	**5 Year**	**10 Year**	**20 Year**
Population Before Migrants	61	8,612	16,538	23,099
Total Migrants	1,787	1,699	525	180
Ending Population	1,848	10,311	17,063	23,279
Net Changes in Number of Individuals				