REMI

Regional Economic Models, Inc.

Economic Impacts of Medicaid Cuts & Expansion in Wyoming

July 2025

Commissioned by:
Natrona Collective Health Trust
Wyoming Community Foundation
Wyoming Hospital Association
American Cancer Society Cancer Action Network
Banner Wyoming Medical Center

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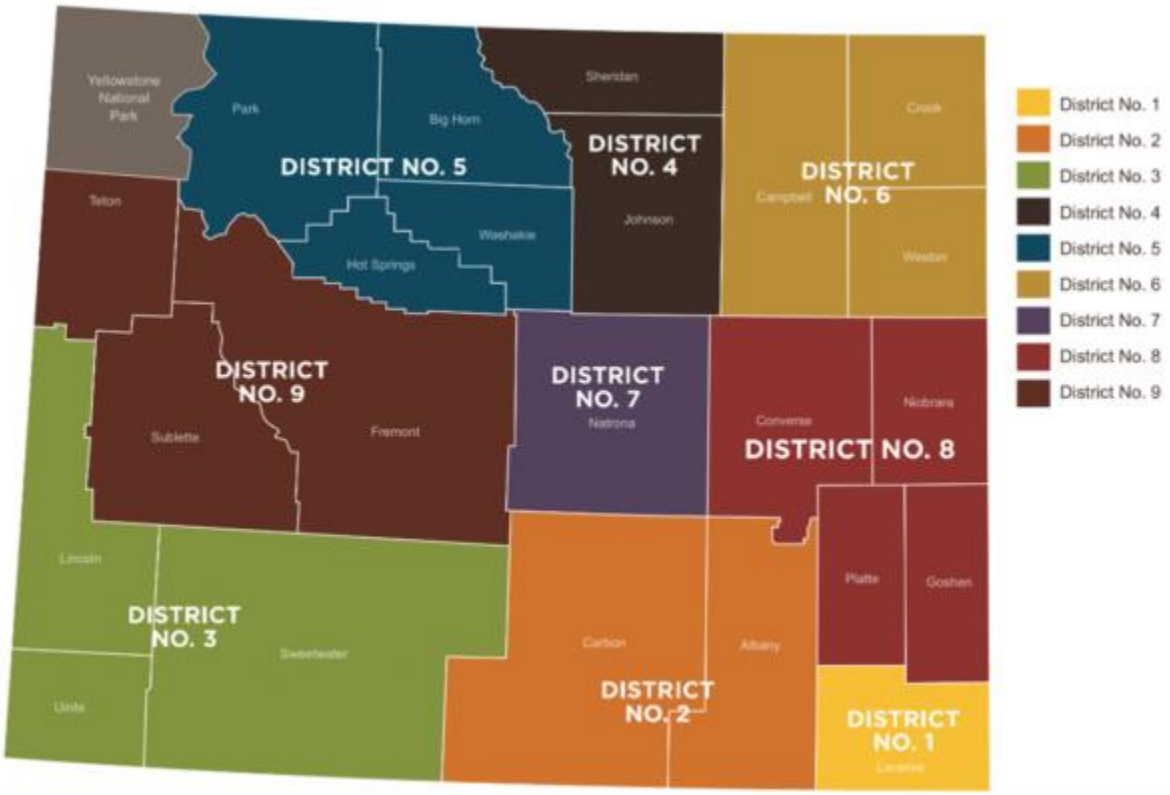
Executive Summary

Natrona Collective Health Trust and partners commissioned Regional Economic Models, Inc. (REMI) to analyze the state-level and regional economic impacts of both worst-case Medicaid cuts and Medicaid expansion scenarios in Wyoming during the 2026-2030 study period.

REMI based its analysis on KFF data and issue briefs as well as Wyoming Department of Health (WDH) reports. Based on the KFF data and issue briefs, in combination with the WDH reports, REMI estimated direct impacts of Medicaid cuts on health care provider revenue by industry. Drawing upon the WDH reports, REMI estimated direct impacts of Medicaid expansion on health care provider revenue by industry and on state government finances. REMI used a Judicial District-level PI+ economic model of Wyoming, leveraging the model's detailed baseline forecast to help distribute the direct impacts geographically. The figure below shows a map of the nine Judicial Districts.

Executive Summary Figure: Map of the Judicial Districts of Wyoming



REMI found the following key results that are summarized in the corresponding tables:

Medicaid Cuts:

- On average over the next five years, Medicaid cuts in Wyoming would lower employment growth by as much as 192 jobs statewide.

- Approximately 53 percent of the affected jobs would be health care related, including 83 focused on outpatient care, 16 focused on inpatient care in hospitals, and 2 focused on purchases in pharmacies and medical supply stores.

- A large minority of the affected jobs (47 percent) would not be health care related, but would be spread widely across the state economy, including an average of up to 22 jobs in construction, 8 jobs in restaurants and similar establishments, and 5 jobs in administrative and support services.

- The cuts would hamper growth in consumer spending (non health care related), supply chain demand, investment activity, and state and local government spending, among other effects.

- The growth of the state economy would slow by as much as $27.8 million in Gross Domestic Product (GDP) on average each year during the next five years.

- Wyoming residents would see an aggregate decrease in disposable personal income of as much as $14.6 million in an average year, representing almost $60 per household.

- The Wyoming population would decrease by an annual average of up to 115 individuals.

- The metro areas (Laramie County, comprising Judicial District 1, containing Cheyenne; and Natrona County, comprising Judicial District 7, containing Casper) would combine to see approximately 42 percent of the employment, GDP, disposable personal income, and population impacts.

Executive Summary Table 1: Medicaid Cuts

Results (5 Year Averages)	State	Metropolitan	Non-Metropolitan
Total Employment	-192	-82	-110
Selected Key Industries			
Ambulatory health care services	-83	-36	-48
Construction	-22	-10	-12
State and local government	-17	-7	-10
Hospitals	-16	-5	-11
Retail trade	-11	-4	-6
Food services and drinking places	-8	-4	-4
Administrative and support services	-5	-2	-2
Wholesale trade	-1	-1	-1
Gross Domestic Product (GDP)	-27.8	-11.7	-16.1
Disposable Personal Income	-14.6	-6.0	-8.6
Population	-115	-49	-66

**Units: Total Employment in Jobs; GDP and Disposable Personal Income in Millions of Nominal Dollars; Population in Individuals. Totals may not correspond to components due to rounding. Retail trade includes pharmacies and medical supply stores, so a portion of that industry's impact is health care related. However, it is a broad industry, so a portion of its impact is also not health care related.*

Medicaid Expansion:

- On average over the next five years, Medicaid expansion in Wyoming would raise employment by 440 jobs statewide.

- Approximately 41 percent of the affected jobs would be health care related, including 145 focused on outpatient care, 27 focused on inpatient care in hospitals, and 10 focused on purchases in pharmacies and medical supply stores.

- The majority of the affected jobs (59 percent) would not be health care related, but would be spread widely across the state economy, including an average of 60 jobs in construction, 22 jobs in restaurants and similar establishments, and 10 jobs in administrative and support services.

- The state economy would grow by $60.9 million in GDP on average each year during the next five years.

- Wyoming residents would see an aggregate increase in disposable personal income of $41.5 million in an average year, representing more than $160 per household.

- The Wyoming population would increase by an annual average of 246 individuals.

- The metro areas would combine to see approximately 50 percent of each of the employment, GDP, and population impacts, and more than 60 percent of the disposable personal income impacts.

Executive Summary Table 2: Medicaid Expansion

Results (5 Year Averages)	State	Metropolitan	Non-Metropolitan
Total Employment	440	229	211
Selected Key Industries			
Ambulatory health care services	145	65	80
Construction	60	37	23
Retail trade	39	20	19
State and local government	38	19	19
Hospitals	27	8	18
Food services and drinking places	22	12	10
Administrative and support services	10	6	5
Wholesale trade	4	2	1
Gross Domestic Product (GDP)	60.9	30.3	30.7
Disposable Personal Income	41.5	25.2	16.4
Population	246	124	122

**Units: Total Employment in Jobs; GDP and Disposable Personal Income in Millions of Nominal Dollars; Population in Individuals. Totals may not correspond to components due to rounding. Retail trade includes pharmacies and medical supply stores, so a portion of that industry's impact is health care related. However, it is a broad industry, so a portion of its impact is also not health care related.*

Comparing Medicaid Cuts and Expansion:

- On average over the next five years, Medicaid cuts in Wyoming would lower employment growth by as much as 632 jobs statewide relative to Medicaid expansion.

- Medicaid cuts would slow the growth of the state economy by as much as $88.8 million in GDP on average each year during the next five years relative to Medicaid expansion.

- Under Medicaid cuts, Wyoming residents would see an aggregate decrease in disposable personal income of as much as $56.1 million in an average year relative to Medicaid expansion, representing more than $220 per household.

- Under Medicaid cuts, the Wyoming population would decrease by an annual average of up to 361 individuals relative to Medicaid expansion.

Executive Summary Table 3: Medicaid Cuts Relative to Medicaid Expansion

Results (5 Year Averages)	State	Metropolitan	Non-Metropolitan
Total Employment	-632	-311	-321
Gross Domestic Product (GDP)	-88.8	-42.0	-46.8
Disposable Personal Income	-56.1	-31.2	-25.0
Population	-361	-173	-188

**Units: Total Employment in Jobs; GDP and Disposable Personal Income in Millions of Nominal Dollars; Population in Individuals. Totals may not correspond to components due to rounding.*

Regional Economic Models, Inc. (REMI)

Regional Economic Models, Inc. (REMI) is an independent company with offices in Amherst, MA and Washington, D.C. that provides non-partisan economic analysis and modeling software to its clients, who include federal, state, and local government agencies, non-profit organizations, universities, and private companies. With approximately 45 years of experience, REMI is a worldwide leader in providing dynamic regional U.S. macroeconomic and demographic models used to evaluate health care as well as many other policy issues such as economic development, taxes, transportation, energy, and trade. REMI modeling software and consultative services have been utilized extensively nationwide and in Wyoming specifically, including by the Wyoming Department of Administration & Information and the University of Wyoming, and for a series of Medicaid expansion reports regarding at least fifteen other states.

Report Glossary

Total Employment: The number of jobs, full-time plus part-time, by place of work for all industries.

Gross Domestic Product (GDP): The amount of economic production excluding all intermediate goods and services purchased. This can also be thought of as the market value of final goods and services produced by labor and property, or as the sum of value-added across all industries.

Disposable Personal Income: Total after-tax income received by persons; it is the income available to persons for spending or saving. Pre-tax income is the sum of wages and salaries, supplements to wages and salaries, proprietors' income, rental income, asset income, and personal current transfer receipts, net of contributions for government social insurance.

Population: Mid-year estimates of people, including survivors from the previous year, births, special populations, and three types of persons entering or exiting the state (economically motivated domestic, international, and retired). Only the first type impacts this report's estimates.

Introduction

Federal lawmakers are currently considering reductions in federal funding of Medicaid, with the exact size of such cuts uncertain but likely falling within certain bounds. Separately, the Patient Protection and Affordable Care Act (ACA) allowed states to expand their Medicaid programs to serve adults earning up to 138 percent of the federal poverty level. Since 2020, the federal government has paid 90 percent of the costs for the expansion population, with the state covering the remaining 10 percent. Relatedly, the American Rescue Plan Act of 2021 stipulated that states receive an additional 5 percentage point federal match towards the costs of their existing enrollees during the first two years of a new expansion.

On behalf of the Natrona Collective Health Trust (NCHT) and partners, Regional Economic Models, Inc. (REMI) performed a state-level and regional economic impact analysis in Wyoming of both a worst-case Medicaid cuts and a Medicaid expansion scenario.

REMI used KFF data and issue briefs to inform upper bound forecasts of the top-line state-level Medicaid spending cuts. REMI also leveraged Wyoming Department of Health (WDH) reports to help generate forecasts for 2026-2030 of the changes in health care provider revenue by industry in both scenarios and the changes in the state's budgetary position in the expansion scenario. REMI ran these forecasts in a 9-region Judicial District-level PI+ economic model of Wyoming, using the model's detailed baseline forecast to help distribute them geographically.

REMI found economically and geographically diversified economic impacts in both types of scenarios. In the worst-case cuts scenario, the impacts include average annual decreases in growth of almost 200 jobs, almost $30 million in Gross Domestic Product (GDP), approximately $15 million in disposable personal income, and 115 in population. Metropolitan areas see aggregated impacts of more than 80 fewer jobs, more than $10 million less of GDP, more than $5 million less of disposable personal income, and an almost 50 person smaller population.

While health care accounts for more than 100 of the affected jobs, almost half come from outside that sector of the economy, including more than 20 fewer construction jobs, almost 10 fewer jobs in restaurants and similar establishments, and 5 fewer administrative and support services jobs. This is because the cuts create an economic slowdown, with decreased disposable personal income allowing for less consumer spending, less business activity weakening demands on supply chains and not requiring as much investment, and slower economic and population growth necessitating less state and local government spending on services.

In the expansion scenario, these include average annual increases of almost 450 jobs (more than 600 jobs when compared with cuts), more than $60 million in GDP (almost $90 million when compared with cuts), more than $40 million in disposable personal income (almost $60 million when compared with cuts), and almost 250 in population (almost 400 when compared with cuts). Metropolitan areas see aggregated impacts of more than 225 additional jobs, more than $30 million in GDP, more than $25 million in disposable personal income, and almost 125 in population. Health care accounts for approximately 180 of the affected jobs.

Methodology

To assess the economic impacts of cutting or expanding Medicaid in Wyoming during the 2026-2030 study period, REMI used a 9-region, 70-industry PI+ v3.2 model of Wyoming. The model was divided into the state's nine Judicial Districts.[1] PI+ is a sophisticated dynamic regional macroeconomic and demographic policy model that simulates the year-by-year effects of public policy initiatives, and is widely used by state and local agencies, legislatures, universities, and other organizations and experts, both in Wyoming and across the U.S. More detailed information is available about the model in the Appendix.

Medicaid Cuts

For the Medicaid cuts scenario, REMI first generated an upper bound estimate of the cuts to Wyoming using historical data and an issue brief from KFF. Specifically, REMI used a ten-year estimate of $880 billion in federal Medicaid cuts[2], which translates to $88 billion annually. Then, REMI pulled Wyoming-specific and total U.S. Medicaid spending from 2023[3], calculated their ratio, and applied it to the $88 billion. REMI forecasted the cuts into the future using a growth rate based on historical Medicaid spending data from a WDH report titled "Wyoming Medicaid and CHIP Monthly Snapshot".[4] Finally, REMI converted these cuts into decreases in health care provider revenue by Judicial District for the ambulatory health care services, hospital, and retail trade industries.

In order to do so, REMI first calculated the effect of the cuts on total health care provider revenue. This decrease did not sum up to the total Medicaid cuts given countervailing effects. For example, to the extent that individuals move from Medicaid to private insurance, providers generally receive higher reimbursement rates, mitigating the effect of the overall declines in health care spending caused by the increase in the uninsured population. REMI drew upon estimates of these net effects from a WDH report titled "Medicaid Expansion in Wyoming: Enrollment and Cost Projections".[5]

This report also included two-year forecasts of the increase in in-state health care expenditures by type under Medicaid expansion, which REMI converted into shares of total health care provider revenue across three industries: ambulatory health care services (outpatient), hospitals (inpatient), and retail trade (pharmacies and medical supply stores).[6]

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[1] The county composition of the Judicial Districts is mapped in the Executive Summary and listed on the final page of this Annual Statistial Report: https://www.wyocourts.gov/app/uploads/2025/03/Circuit_AnnualStatisticalReport_FY24.pdf.
[2] Source: https://www.kff.org/medicaid/issue-brief/putting-880-billion-in-potential-federal-medicaid-cuts-in-context-of-state-budgets-and-coverage/.
[3] Source: https://www.kff.org/medicaid/state-indicator/total-medicaid-spending/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D.
[4] Report version available online, dated December 9, 2024: https://wyoleg.gov/InterimCommittee/2024/02-20241209048-DOH-054-MedicaidSnapshot.pdf. WDH provided the April 23, 2025 version to REMI offline. There were nine years of data, which REMI broke into three groups of three years. Within each group, REMI calculated the compound annual growth rate (CAGR). Then, REMI took a weighted average of the CAGRs, with each of the two more recent groups weighted twice as much as its immediate predecessor.
[5] Report: https://health.wyo.gov/wp-content/uploads/2023/01/J-2023-118-WDH-Medicaid-Expansion-Estimates-2023.pdf.
[6] REMI only counted a 31.6% retail markup on the prescription drug and medical supply spending.

For the ambulatory health care services and retail trade industries, REMI distributed revenue decreases across Judicial Districts using the model's baseline forecast. For the hospital industry, REMI distributed revenue decreases across Judicial Districts using a WDH report titled "The Financial Health of Wyoming's Health and Human Service Providers"[7], which contains data on 2023 revenues by hospital.[8] Table 1 summarizes the health care provider revenue estimates.

Table 1: Health Care Provider Revenue Estimates

Categories	2026	2027	2028	2029	2030
Total Health Care Provider Revenue	-24.5	-17.7	-18.4	-19.1	-19.8
Ambulatory health care services	-17.9	-13.0	-13.5	-14.0	-14.5
Hospitals	-6.1	-4.5	-4.6	-4.8	-5.0
Retail trade	-0.4	-0.3	-0.3	-0.3	-0.3

**Units: Millions of Nominal Dollars. Totals may not correspond to components due to rounding.*

Medicaid Expansion

For the expansion scenario, REMI used the two-year forecasts of the increase in in-state health care expenditures by type as well as the net savings in state government revenue from the WDH report titled "Medicaid Expansion in Wyoming: Enrollment and Cost Projections". REMI categorized the former into increases in health care provider revenue across ambulatory health care services, hospitals, and retail trade, which were spread across regions as above. With regards to state government revenue, the additional 5 percentage point federal match for existing enrollees during the first two years of a new expansion turned what would otherwise be estimated net losses into estimated net savings.

In order to generate estimates for the remainder of the study period, REMI used the WDH report titled "Wyoming Medicaid and CHIP Monthly Snapshot", which contains historical data on per-member per-month (PMPM) cost by eligibility group, specifically Family-Care Adults, which is most comparable to the expansion population. REMI calculated an annual growth rate based on this data and applied it to the industry revenue and state government revenue impacts starting with the second year, except for the additional 5 percentage point federal match that only applies for two years.[9]

REMI modeled the net savings in state government revenue during the first two years as short-term property tax relief, which would increase disposable personal income. REMI modeled the net losses in state government revenue during the last three years as decreases in state government spending, given the need to shift expenditures into the Medicaid program and therefore away from other priorities given the state's balanced budget requirement. Table 2 summarizes the health care provider revenue and net state government revenue estimates.

[7] WDH provided the report to REMI offline, dated September 26, 2024.

[8] In order to mitigate outliers in the translation of industry revenue into employment and the translation of industry employment into earnings, REMI adjusted the model baseline forecasts of the hospital industry labor productivity and earnings rate in Judicial Districts 1, 4, and 6 to the rest of state average.

[9] REMI used the same methodology as it did when estimating the growth rate of historical Medicaid spending. The PMPM growth rate was appropriate to use on its own, as WDH informed REMI that they forecasted basically flat enrollment growth after the second year of expansion. Thus, there would be no additional spending growth via continued increases in enrollment.

Table 2: Health Care Provider Revenue and Net State Government Revenue Estimates

Categories	2026	2027	2028	2029	2030
Total Health Care Provider Revenue	21.4	35.8	37.0	38.3	39.7
Ambulatory health care services	15.1	25.2	26.1	27.0	28.0
Hospitals	5.2	8.7	9.0	9.3	9.6
Retail trade	1.1	1.9	2.0	2.0	2.1
Net State Government Revenue	12.0	20.0	-14.3	-14.8	-15.3

**Units: Millions of Nominal Dollars. Totals may not correspond to components due to rounding.*

REMI produced results for total employment, GDP, disposable personal income, and population.

Results

Medicaid Cuts

Table 3 displays the state-level economic impacts of worst-case Medicaid cuts. Over the next five years, they are forecasted to create an average annual decrease in employment growth of 192 jobs statewide. Spending cuts also create a smaller economy, as measured by the negative average annual impact of $27.8 million on GDP, as well as lower levels of disposable personal income in the amount of $14.6 million per year and a population that averages 115 fewer people.

Table 3: State-Level Economic Impacts

State Results	2026	2027	2028	2029	2030	Average
Total Employment	-235	-181	-184	-182	-179	-192
Selected Key Industries						
Ambulatory health care services	-111	-77	-77	-76	-76	-83
Construction	-22	-23	-23	-21	-19	-22
State and local government	-13	-16	-18	-19	-19	-17
Hospitals	-21	-15	-15	-15	-15	-16
Retail Trade	-13	-10	-10	-10	-10	-11
Food services and drinking places	-9	-7	-8	-8	-8	-8
Administrative and support services	-6	-4	-4	-4	-4	-5
Wholesale Trade	-2	-1	-1	-1	-1	-1
Gross Domestic Product (GDP)	-29.2	-26.6	-27.2	-27.9	-28.3	-27.8
Disposable Personal Income	-14.4	-12.8	-14.3	-15.3	-16.2	-14.6
Population	-65	-96	-120	-139	-154	-115

**Units: Total Employment in Jobs; GDP and Disposable Personal Income in Millions of Nominal Dollars; Population in Individuals. Totals and averages may not correspond to components due to rounding.*

The health care related industries, which include ambulatory health care services (totaling 83 fewer jobs), hospitals (totaling 16 fewer jobs), and pharmacies and medical supply stores (totaling 2 fewer jobs), bear approximately 53 percent of the employment impact.

This means that a large minority of the economic stimulus is spread throughout the rest of the economy due to a variety of important secondary effects. First, the retail trade (outside of pharmacies and medical supply stores) and restaurant[10] industries exemplify the effects of decreased consumer spending, which is driven by lower disposable personal income associated with weaker job creation. Second, the administrative and support services and wholesale trade industries are well-represented in many industries' supply chains, and consequently serve as two key examples of decreased supply chain demands that subtract from employment. Third, this kind of generalized economic slowdown necessitates less investment, which primarily affects construction jobs. Finally, the state and local government industry responds to the slower economic and population growth and consequent diminished need for public services.

[10] This industry also includes similar establishments.

Table 4 displays the state-level and regional economic impacts. The metropolitan regions, consisting of Judicial District 1 (Laramie County, containing Cheyenne) and Judicial District 7 (Natrona County, containing Casper), combine to average approximately 42 percent of the employment, GDP, disposable personal income, and population impacts (i.e., 82 out of 192 jobs, $11.7 million out of $27.8 million in GDP, $6.0 million out of $14.6 million in disposable personal income, and 49 out of 115 people).

Table 4: State-Level and Regional Economic Impacts

Results (5 Year Averages)	Total Employment	Gross Domestic Product (GDP)	Disposable Personal Income	Population
State	-192	-27.8	-14.6	-115
Judicial District 1	-47	-6.1	-3.2	-26
Judicial District 2	-12	-1.9	-1.0	-10
Judicial District 3	-19	-2.4	-1.2	-10
Judicial District 4	-14	-1.8	-1.0	-7
Judicial District 5	-18	-2.5	-1.1	-11
Judicial District 6	-13	-2.0	-0.9	-6
Judicial District 7	-36	-5.7	-2.8	-23
Judicial District 8	-8	-1.2	-0.6	-7
Judicial District 9	-26	-4.2	-2.8	-14

**Units: Total Employment in Jobs; GDP and Disposable Personal Income in Millions of Nominal Dollars; Population in Individuals. Totals may not correspond to components due to rounding.*

Medicaid Expansion

Table 5 displays the state-level economic impacts of Medicaid expansion. Over the next five years, it is forecasted to create an average annual increase in employment of 440 jobs statewide. Expansion also creates a larger economy, as measured by the average annual impact of $60.9 million on GDP, as well as higher levels of disposable personal income in the amount of $41.5 million per year and a population that averages 246 more people.

Table 5: State-Level Economic Impacts

State Results	2026	2027	2028	2029	2030	Average
Total Employment	303	515	463	464	454	440
Selected Key Industries						
Ambulatory health care services	102	164	155	154	153	145
Construction	34	66	70	68	62	60
Retail trade	30	50	38	38	37	39
State and local government	16	36	43	47	48	38
Hospitals	18	29	29	28	28	27
Food services and drinking places	16	27	21	22	23	22
Administrative and support services	8	12	11	11	10	10
Wholesale trade	3	5	3	3	3	4
Gross Domestic Product (GDP)	35.4	66.4	66.3	67.9	68.7	60.9
Disposable Personal Income	23.4	42.2	44.3	47.7	50.1	41.5
Population	83	197	267	321	361	246

**Units: Total Employment in Jobs; GDP and Disposable Personal Income in Millions of Nominal Dollars; Population in Individuals. Totals and averages may not correspond to components due to rounding.*

When compared to the worst-case cuts scenario, this expansion generates a difference of 632 jobs, $88.8 million in GDP, $56.1 million in disposable personal income, and 361 in population.

The health care related industries, which include ambulatory health care services (i.e., doctors, dentists, and other outpatient services, totaling 145 more jobs), hospitals (totaling 27 more jobs), and pharmacies and medical supply stores (totaling 10 more jobs), enjoy approximately 41 percent of the employment impact. This means that a majority of the economic slowdown is spread throughout the rest of the economy.

Table 6 displays the state-level and regional economic impacts. The metropolitan regions combine to average approximately 50 percent of the employment, GDP, and population impacts (i.e., 229 out of 440 jobs, $30.3 million out of $60.9 million in GDP, and 124 out of 246 people) but approximately 64 percent of the disposable personal income impact (i.e., $25.2 million out of $41.5 million).

Table 6: State-Level and Regional Economic Impacts

Results (5 Year Averages)	Total Employment	Gross Domestic Product (GDP)	Disposable Personal Income	Population
State	440	60.9	41.5	246
Judicial District 1	163	19.9	20.1	84
Judicial District 2	24	3.7	1.9	19
Judicial District 3	35	4.5	2.2	18
Judicial District 4	30	3.9	2.4	15
Judicial District 5	32	4.5	2.0	20
Judicial District 6	24	3.6	1.4	10
Judicial District 7	65	10.4	5.1	40
Judicial District 8	16	2.4	1.2	13
Judicial District 9	50	8.1	5.3	26

**Units: Total Employment in Jobs; GDP and Disposable Personal Income in Millions of Nominal Dollars; Population in Individuals. Totals may not correspond to components due to rounding.*

Conclusion

REMI analyzed the state-level and regional economic impacts of Medicaid cuts and Medicaid expansion in Wyoming on behalf of the NCHT and partners.

In the worst-case cuts scenario, the state would see average annual negative impacts of 192 jobs, $27.8 million in GDP, $14.6 million in disposable personal income, and 115 in population. The metropolitan regions would combine for less than half of the economic and population impacts.

In the expansion scenario, the state would see average annual positive impacts of 440 jobs, $60.9 million in GDP, $41.5 million in disposable personal income, and 246 in population. The metropolitan regions would combine for less than two-thirds of the economic and population impacts.

Taken together, the scenarios point to both risk and opportunity for Wyoming. Medicaid cuts would shrink the economy and population across a wide variety of different industries and regions within the state, while Medicaid expansion would create economic growth in a similarly broad-based manner. The quantitative comparison of the two scenarios (i.e., 632 jobs, $88.8 million in GDP, $56.1 in disposable personal income, and 361 in population) just serves to reinforce that divergence in outcomes.

Appendix: REMI Model Framework

The model consists of thousands of simultaneous equations with a structure that is relatively straightforward. The exact number of equations used varies depending on the extent of industry, demographic, demand, and other detail in the specific model being used. The overall structure of the model can be summarized in five major blocks: (1) Output and Demand, (2) Labor and Capital Demand, (3) Population and Labor Supply, (4) Compensation, Prices, and Costs, and (5) Market Shares. The blocks and their key interactions are shown in Figures A1-2.

Figure A1: REMI Model Linkages

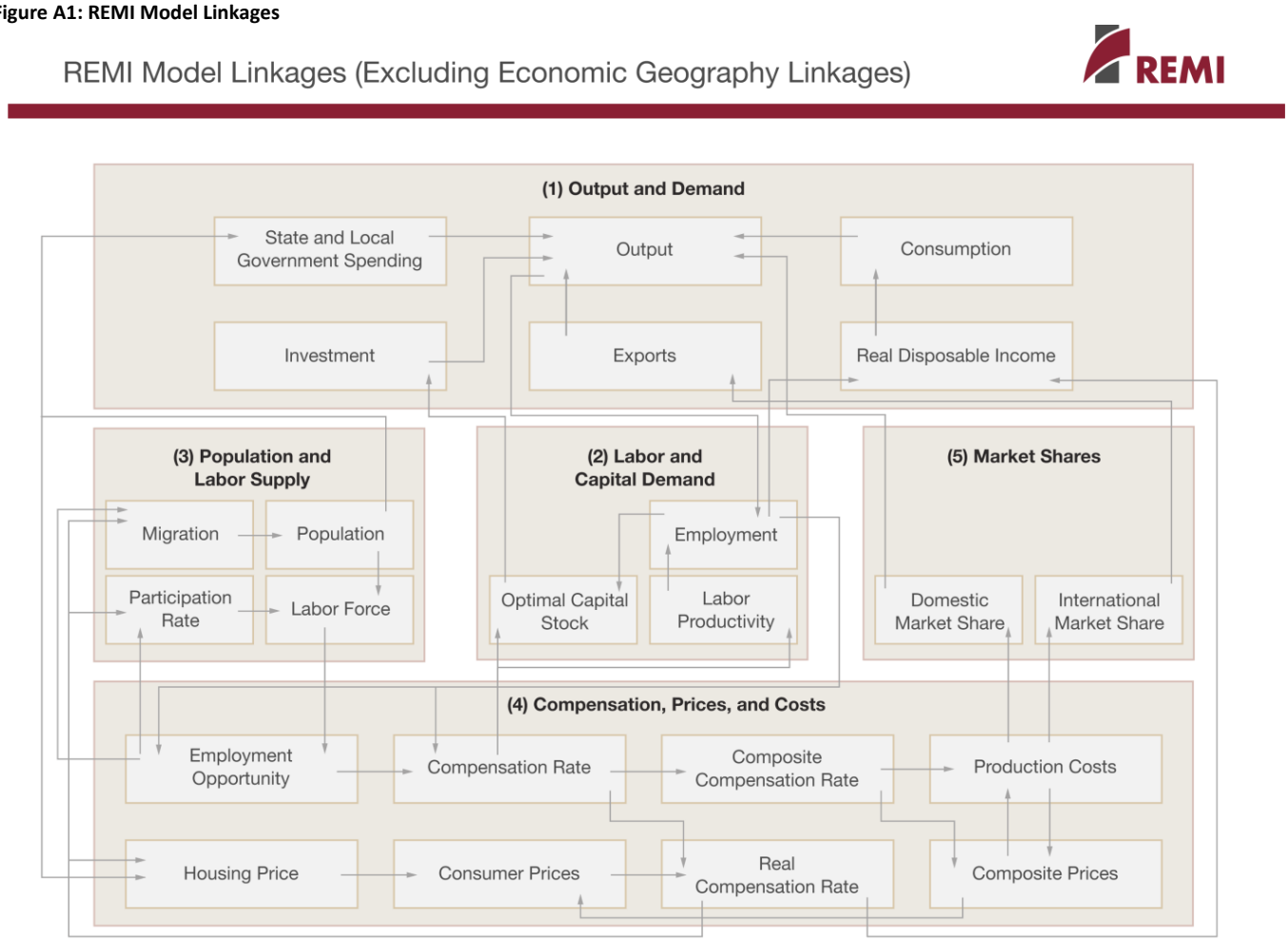
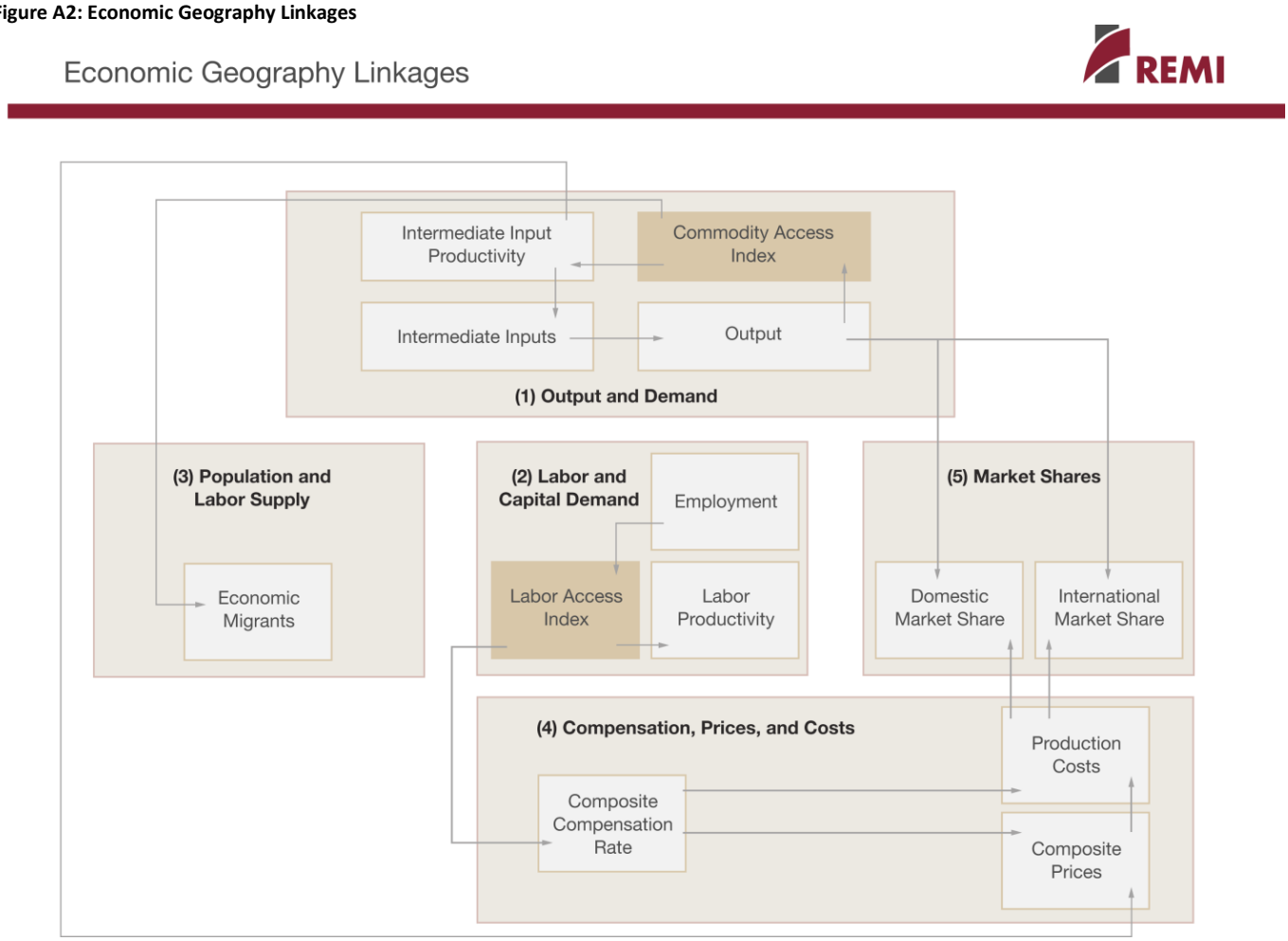


Figure A2: Economic Geography Linkages

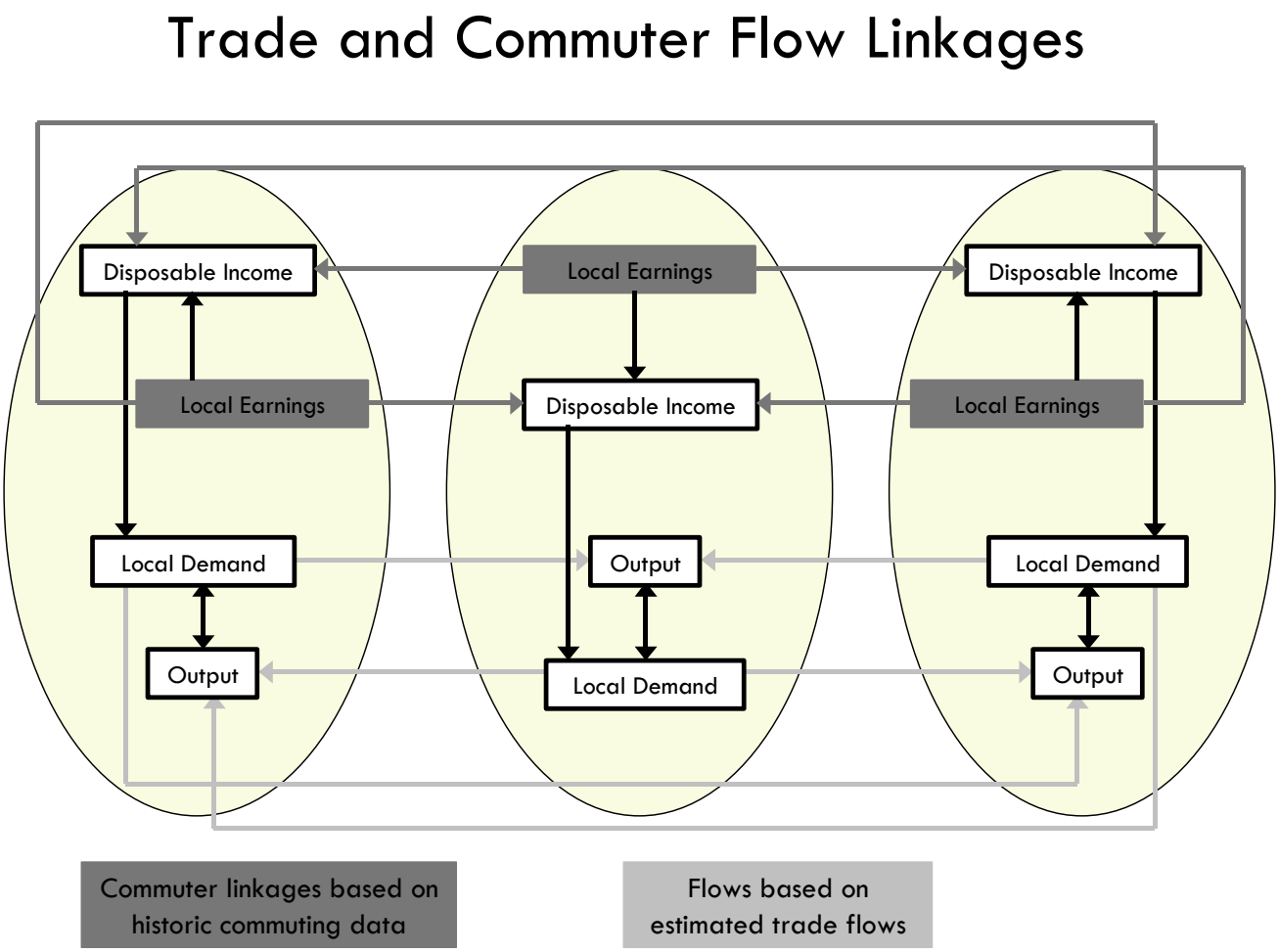


The Output and Demand block consists of output, demand, consumption, investment, government spending, exports, and imports, as well as feedback from output change due to the change in the productivity of intermediate inputs. The Labor and Capital Demand block includes labor intensity and productivity as well as demand for labor and capital. Labor force participation rate and migration equations are in the Population and Labor Supply block. The Compensation, Prices, and Costs block includes composite prices, determinants of production costs, the consumption price deflator, housing prices, and the compensation equations. The proportion of local, inter-regional, and export markets captured by each region is included in the Market Shares block.

Models can be built as single-region, multi-region, or multi-region national models. A region is defined broadly as a sub-national area, and could consist of a state, province, county, or city, or any combination of sub-national areas.

Single-region models consist of an individual region, called the home region. The rest of the nation is also represented in the model. However, since the home region is only a small part of the total nation, the changes in the region do not have an endogenous effect on the variables in the rest of the nation. Multi-region models have interactions among regions, such as trade and commuting flows. These interactions include trade flows from each region to each of the other regions. These flows are illustrated for a three-region model in Figure A3.

Figure A3: Trade and Commuter Flow Linkages



Multi-region national models also include a central bank monetary response that constrains labor markets. Models that only encompass a relatively small portion of a nation are not endogenously constrained by changes in exchange rates or monetary responses.

Block 1: Output and Demand

This block includes output, demand, consumption, investment, government spending, import, commodity access, and export concepts. Output for each industry in the home region is determined by industry demand in all regions in the nation, the home region's share of each market, and international exports from the region.

For each industry, demand is determined by the amount of output, consumption, investment, and capital demand on that industry. Consumption depends on real disposable income per capita, relative prices, differential income elasticities, and population. Input productivity depends on access to inputs because a larger choice set of inputs means it is more likely that the input with the specific characteristics required for the job will be found. In the capital stock adjustment process, investment occurs to fill the difference between optimal and actual capital stock for residential, non-residential, and equipment investment. Government spending changes are determined by changes in the population.

Block 2: Labor and Capital Demand

The Labor and Capital Demand block includes the determination of labor productivity, labor intensity, and the optimal capital stocks. Industry-specific labor productivity depends on the availability of workers with differentiated skills for the occupations used in each industry. The occupational labor supply and commuting costs determine firms' access to a specialized labor force.

Labor intensity is determined by the cost of labor relative to the other factor inputs, capital and fuel. Demand for capital is driven by the optimal capital stock equation for both non-residential capital and equipment. Optimal capital stock for each industry depends on the relative cost of labor and capital, and the employment weighted by capital use for each industry. Employment in private industries is determined by the value added and employment per unit of value added in each industry.

Block 3: Population and Labor Supply

The Population and Labor Supply block includes detailed demographic information about the region. Population data is given for age, gender, and race, with birth and survival rates for each group. The size and labor force participation rate of each group determines the labor supply. These participation rates respond to changes in employment relative to the potential labor force and to changes in the real after-tax compensation rate. Migration includes retirement, military, international, and economic migration. Economic migration is determined by the relative real after-tax compensation rate, relative employment opportunity, and consumer access to variety.

Block 4: Compensation, Prices and Costs

This block includes delivered prices, production costs, equipment cost, the consumption deflator, consumer prices, the price of housing, and the compensation equation. Economic geography concepts account for the productivity and price effects of access to specialized labor, goods, and services.

These prices measure the price of the industry output, taking into account the access to production locations. This access is important due to the specialization of production that takes place within each industry, and because transportation and transaction costs of distance are significant. Composite prices for each industry are then calculated based on the production costs of supplying regions, the effective distance to these regions, and the index of access to the variety of outputs in the industry relative to the access by other uses of the product.

The cost of production for each industry is determined by the cost of labor, capital, fuel, and intermediate inputs. Labor costs reflect a productivity adjustment to account for access to specialized labor, as well as underlying compensation rates. Capital costs include costs of non-residential structures and equipment, while fuel costs incorporate electricity, natural gas, and residual fuels.

The consumption deflator converts industry prices to prices for consumption commodities. For potential migrants, the consumer price is additionally calculated to include housing prices. Housing prices change from their initial level depending on changes in income and population density.

Compensation changes are due to changes in labor demand and supply conditions and changes in the national compensation rate. Changes in employment opportunities relative to the labor force and occupational demand change determine compensation rates by industry.

Block 5: Market Shares

The market shares equations measure the proportion of local and export markets that are captured by each industry. These depend on relative production costs, the estimated price elasticity of demand, and the effective distance between the home region and each of the other regions. The change in share of a specific area in any region depends on changes in its delivered price and the quantity it produces compared with the same factors for competitors in that market. The share of local and external markets then drives the exports from and imports to the home economy.