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THE ECONOMIC IMPACT OF MEDICAID EXPANSION IN MONTANA: UPDATED FINDINGS

BRYCE WARD & BRANDON BRIDGE
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For more information, contact:
Bryce Ward
bward@abmjconsulting.com or bryce.ward@mso.umt.edu
ABMJ Consulting
(406) 219-0694
www.abmjconsulting.com

Brandon Bridge
Bureau of Business and Economic Research
Gallagher Business Building, Suite 231
Missoula, MT 59812
(406) 543-5113
www.bber.umt.edu

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Abstract

Medicaid expansion has a substantial effect on Montana's economy. Each year, expansion brings over $600 million into Montana that would not otherwise be here. This money ripples through Montana's economy, generating between 5,900 and 7,500, jobs and between $350-$385 million in personal income each year between 2018 and 2020. These results are consistent with the observed change in economic activity in other expansion states that experienced changes in Medicaid coverage and uninsurance similar to Montana. In addition to generating economic activity, Medicaid expansion appears to improve a variety of other outcomes—reducing crime, improving health, lowering debt, and creating a more robust health care sector. While the state pays a nominal amount for these benefits, the costs to the state budget are more than offset by the savings created by Medicaid expansion and by the revenues associated with increased economic activity.

I. Summary

In this report, we update and replace our April 2018 report on the economic impacts of Medicaid expansion on Montana's economy. This report uses more recent data on Medicaid expansion enrollment and spending, insurance coverage, and employment. While we employ new data and analysis, we reach the same conclusion: **Medicaid expansion has a substantial impact on Montana's economy**.[1]

An economic impact study describes how many jobs and how much income stems from Medicaid expansion. Our analysis covers the period from 2016 to 2020. As such, it also implicitly answers the question: "How would failing to renew Medicaid expansion in 2019 impact Montana's economy?"

Medicaid expansion in Montana—created by the HELP ACT of 2015—infuses a significant amount of money into the state's economy. During its first two and a half years, Medicaid expansion provided beneficiaries with nearly $1.4 billion of health care. The federal government paid for most of this, and most of these federal dollars would not have been spent in Montana without Medicaid expansion. Approximately 85 percent of Medicaid spending represents new money in Montana. This means that the annual infusion of new money into Montana's economy is slightly bigger than the economies in Dawson and Big Horn Counties and slightly smaller than the economies in Stillwater and Lake Counties.[2]

Medicaid expansion spending enters Montana's economy in two ways. First, it supports new health care spending. Nearly one in ten Montanans was enrolled in Medicaid expansion as of October 2018. Most expansion enrollees would have been uninsured in the absence of the expansion. As such, Medicaid expansion provides tens of thousands of uninsured, underinsured, and low-income Montanans with health care they would not otherwise receive. Second, Medicaid expansion spending replaces existing spending. Even without Medicaid expansion, beneficiaries would have received some health care. Medicaid expansion changes who pays for this health care. Without expansion, the state, the federal government, employers, providers, and the beneficiaries themselves all paid for some of the care that is now paid via Medicaid. With expansion, the federal government pays for nearly all expansion beneficiaries' health care.

[1] We include a summary of the differences between this report and our prior report in Appendix H.
[2] The Bureau of Economic Analysis recently released GDP estimates for counties. According to these estimates the GDPs of Dawson, Big Horn, Stillwater, and Lake Counties were $523 million, $546 million, $661 million, and $685 million respectively in 2015 (in $2018). We estimate that Medicaid expansion will infuse over $600 million in new money into Montana's economy each year between 2018 and 2020.

As a result, Medicaid expansion stimulates economic activity. We estimate that it will generate between 5,900 and 7,500 jobs and between $350-$385 million in personal income annually between 2018 and 2020 (see Table 1). This represents approximately one percent of Montana's total employment and income. During its first five years, Medicaid expansion is expected to generate approximately $1.6 billion in personal income and $2.1 billion in gross domestic product.

Table 1: Summary of Economic Impacts of Medicaid Expansion in Montana/Year and Cumulative (income and sales in millions of 2018 dollars)

	2016	2017	2018	2019	2020	Cumulative
Jobs	3,456	6,537	7,442	6,874	5,906	
Personal Income	$168	$325	$385	$377	$348	$1,603
GDP	$229	$440	$509	$478	$420	$2,076
Population	1,066	2,768	4,334	5,376	5,990	

Notes: Details for this analysis in Section III and Appendix B.

These results are consistent with the results from a new differences-in-differences analysis of the effects of Medicaid expansion on states' economies. A differences-in-differences analysis compares the change in outcomes in expansion states to the change in outcomes in non-expansion states. We use a subset of expansion states in this analysis. Specifically, we include states where Medicaid expansion led to large changes in Medicaid coverage and uninsurance, similar to Montana. We find that, on average, Medicaid expansion increases the size of a state's health care sector by approximately three percentage points three to four years after expansion. Furthermore, consistent with the results in Table 1, we find that Medicaid expansion is associated with a one percentage point increase in total employment.

The economic impacts of Medicaid expansion are not limited to the jobs and income it supports. Medicaid expansion also represents a significant investment in Montanans' health and well-being, and these investments pay off. A substantial body of research from around the U.S. has evaluated the effects of Medicaid expansion and found that it:

- **Improves health.** One study found that Medicaid expansion was associated with a 5.1 percentage point increase in the share of low-income adults in

excellent health.[3] This is consistent with a larger body of literature that finds that insurance expansions improve mental health and reduce mortality.[4]

- **Improves financial health.** For instance, one recent study found that Medicaid expansion reduced medical debt by $900 per treated person, prevented 50,000 bankruptcies, and led to better credit terms for borrowers.[5]
- **Reduces crime.** Medicaid expansion reduced crime by more than three percent, generating social benefits worth more than $10-$13 billion annually.[6]
- **Makes the health care sector more robust, particularly in rural areas.** Medicaid expansion led to dramatic reductions in uncompensated care and improvement in provider operating margins, particularly among hospitals in rural areas.

Furthermore, Medicaid expansion, along with the associated HELP-Link workforce development program, may have improved labor market outcomes for low-income Montanans. Following expansion, labor force participation among low-income Montanans—ages 18-64—increased by four to six percentage points relative to the change among the same population in other states or relative to the change among higher-income Montanans. This suggests that Medicaid expansion and HELP-Link improved labor market outcomes for low-income Montanans.

While Montana pays part of the cost of Medicaid expansion, these costs are more than offset by cost savings and increased revenues. Medicaid expansion has allowed some people to switch from traditional Medicaid to the expansion. Because Montana pays 35 percent of the cost for traditional Medicaid but less than ten percent in the expansion, this has saved the state more than $50 million during the first two and a half years. Medicaid expansion also saved approximately $3 million per year by reducing the cost of inmate

[3] Sommers, B. D., Maylone, B., Blendon, R. J., Orav, E. J., and Epstein, A. M., "Three-Year Impacts of the Affordable Care Act: Improved Medical Care and Health Among Low-Income Adults," *Health Affairs* 36, no. 6 (June 1, 2017): 1119-1128.
[4] Sommers, B. D., Gawande, A. A., and Baicker, K., "Health Insurance Coverage and Health—What the Recent Evidence Tells Us," *New England Journal of Medicine* 377, no. 6 (August 10, 2017).
[5] Brevoort, K., Grodzicki, D., and Hackmann, M. B., *Medicaid and Financial Health* (No. w24002), National Bureau of Economic Research (2017); Hu, L., Kaestner, R., Mazumder, B., Miller, S., and Wong, A. *The Effect of the Patient Protection and Affordable Care Act Medicaid Expansions on Financial Wellbeing* (No. w22170), National Bureau of Economic Research (2016).
[6] Vogler, J., "Access to Health Care and Criminal Behavior: Short-Run Evidence From the ACA Medicaid Expansions,"(November 14, 2017); He, Q., "The Effect of Health Insurance on Crime: Evidence From the Affordable Care Act Medicaid Expansion," (2017). For an expansive recent bibliography see: Antonisse, L., Garfield, R., Rudowitz, R., and Artiga, S., "The Effects of Medicaid Expansion Under the ACA: Updated Findings from a Literature Review," (2017).

care[7], and an additional $3 million per year in reduced spending on mental health and substance abuse treatment. It also benefits state coffers by increasing economic activity and state revenues. As shown in Table 2, cost savings and increased revenue more than offset expansion costs. This will remain true even after the state's share of Medicaid expansion costs rises to ten percent in 2020.

Table 2: Fiscal Effects of Medicaid Expansion in Montana/Year (in millions of 2018 dollars)

	2016	2017	2018	2019	2020
Net cost of expansion to MT (cost – savings –premiums)	-$10.2	-$5.3	$3.3	$10.7	$20.4
Estimated tax revenues based estimates in Table 1	$13.7	$26.4	$30.5	$28.7	$25.2
Net effect on state budget	**$23.9**	**$31.7**	**$27.2**	**$18.0**	**$4.8**

Notes: Details for this analysis in Section VI.

II. Background

In 2015, Montana passed the HELP Act, which expanded Medicaid under the Affordable Care Act ("ACA"). Starting in 2016, Montanans with incomes below 138 percent of the Federal Poverty Level ("FPL") could enroll in Medicaid, and the federal government would pay for most of the costs. Specifically, the federal government paid 100 percent of costs for eligible enrollees in 2016 and 95 percent in 2017. It will pay 94 percent in 2018, 93 percent in 2019, and 90 percent in 2020 and beyond.[8]

The HELP Act added some provisions to the typical Medicaid expansion. For instance, it required enrollees to pay premiums and make co-payments for some services, and enrollees may be disenrolled if they fail to pay their premiums. It also included 12-month continuous eligibility, which allows enrollees to maintain Medicaid coverage for up to one year, regardless of changes to income or family status. Additionally, the HELP Act authorized a workforce development program (HELP-Link) to improve employment outcomes for Medicaid expansion beneficiaries.

[7] Pre-Medicaid expansion annual outside medical costs for the Department of Corrections totaled $8.3 million. After expansion, they totaled $5.5 million. Thus, spending for outside medical care fell by $2.8 million.

[8] The share paid by the federal government in Montana differs slightly from these amounts. In exchange for allowing Montana to offer 12-month continuous eligibility, the federal government lowered the share it pays by less than one percentage point. However, some of this is offset by the fact that the federal government pays for 100 percent of certain costs (e.g., Indian Health Services). According to projections by the Legislative Fiscal Division the state will pay 8.9 percent of the total costs of Medicaid expansion in FY2021. https://leg.mt.gov/content/Publications/fiscal/BA-2021/2021BienniumVolume1_Final.pdf [accessed December 22, 2018]

More than 40,000 Montanans had enrolled in Medicaid through the expansion by January 2016, and enrollment plateaued at approximately 96,000 in May 2018. Medicaid expansion spending on benefits and claims in Montana was $130 million during FY2016 (which covered January-June 2016), $558 million in FY2017, and $693 million during FY 2018. Thus, during its first two and a half years, Medicaid expansion spending on benefits and claims totaled nearly $1.4 billion.

This report computes the economic impacts generated by Medicaid expansion. An economic impact analysis is appropriate to study Medicaid expansion because, from Montana's perspective, the decision to expand Medicaid brings federal dollars into the state that are not offset by increased payments to the federal government.[9] That is, when Montana agreed to expand Medicaid, the federal government did not impose a special tax on Montanans to pay for the costs of the expansion in Montana. States that do not expand Medicaid do not receive a special tax break or grant equal to the amount of federal Medicaid dollars foregone. Thus, at the margin, the decision to expand Medicaid is, in part, a decision to bring a substantial amount of money (and the associated economic activity) into Montana's economy.

There are two ways to think about the marginal cost to the federal government that is associated with Montana's decision to expand Medicaid. First, as written, the ACA was paid for; it raised sufficient revenue to pay the expected costs of expanding Medicaid in all 50 states. As such, one could argue that the marginal costs associated with Montana expanding Medicaid are zero. The federal government does not need to raise any additional funds from Montanans or others to pay for the cost of Montana's expansion. Alternatively, if one views Montana's Medicaid expansion as a marginal federal expenditure that must be offset at some point with higher federal revenues, the increased revenue required to pay for Montana's expansion will be passed onto all Americans. Given that Montanans provide less than one percent of federal revenues, more than 99 percent of the federal marginal costs associated with Montana's Medicaid expansion are passed on to taxpayers in other states. Thus, the total marginal cost to Montanans associated with the decision to expand Medicaid is limited to the share paid directly by the state plus, at most, Montana's share of all federal revenues.

[9] A large amount of literature establishes that Medicaid expansion spending generates a marginal increase in economic activity that can be evaluated using an economic impact analysis. See, for instance, Ayanian, J. Z., Ehrlich, G. M., Grimes, D. R., and Levy, H., "Economic Effects of Medicaid Expansion in Michigan," *New England Journal of Medicine* 376, no. 5 (2017): 407-410; Deloitte Development LLC. Medicaid Expansion Report: 2014. Commonwealth of Kentucky (2015); Chernow, M., "The Economics of Medicaid Expansion," (2016) https://www.healthaffairs.org/do/10.1377/hblog20160321.054035/full/; Brown, et al., "Assessing the Economic and Budgetary Impact of Medicaid Expansion in Colorado," (2016).

Some have argued that Medicaid expansion cannot generate economic impacts and boost economic growth.[10] This argument is rooted in the notion that health care is part of the local (or non-traded) sector. Demand for local sector industries comes from local residents. Therefore, growth in the local sector reflects growth in the broader economy. It is not a cause of it. While this logic may apply to parts of health care, it does not apply to Medicaid expansion. The bulk of the money that pays for Medicaid expansion comes from outside of Montana. As such, the impact of Medicaid expansion on Montana's economy is similar to a new factory or a new government contract. Medicaid expansion brings money into Montana's economy that would not otherwise be here, and this money ripples through the state's economy creating jobs and income.

To estimate the economic impact of Medicaid expansion, we need to compare what has happened (and what is forecast to happen) with expansion to what likely would have happened in its absence. Of course, we do not observe what would have happened had Montana not expanded Medicaid. This world must be constructed using statistical analyses and assumptions.

We use two methods to identify the impact of Medicaid expansion on Montana's economy. First, we use the REMI model, an economic model calibrated to represent the interactions in Montana's economy, leased from Regional Economic Models, Inc. Using the model we compute a baseline model of Montana's economy without Medicaid expansion. Then, we compute the same model adding Medicaid expansion. The economic impact of Medicaid expansion is the difference between these two scenarios.

Second, we use a statistical approach to estimate the effect of Medicaid expansion on the health care sector (where the bulk of the economic impacts are generated) and the whole economy. The statistical approach we employ (called a differences-in-differences analysis) compares the change in outcome (e.g., health care employment) in states that expanded Medicaid to the change in outcome in states that did not. If the change in outcome is larger (or smaller) in expansion states relative to non-expansion states, this difference plausibly reflects the effects of Medicaid expansion.

[10] See for instance, comments provided by the Montana Policy Institute to the Children and Family Interim Committee in May 2018.

III. REMI Model

First, we calculate the impact of Medicaid expansion using the REMI model. The REMI model is an economic model calibrated to represent the interactions in the Montana economy. The REMI model is one of the best known and most respected analytical tools in the policy analysis arena, and has been used in more than 100 previous studies as well as dozens of peer-reviewed articles in scholarly journals. It is a state-of-the-art econometric forecasting model that incorporates dynamic feedbacks between economic and demographic variables. The REMI model forecasts employment, income, expenditures, and populations for counties and regions based on a model containing more than 100 stochastic and dynamic relationships as well as a number of identities.[11]

A. Direct impacts

To complete the REMI model, we first estimate the direct impacts of the Medicaid expansion. That is, we determine how much money gets added or subtracted from various parts of the economy as a direct result of expansion.

In this section, we briefly outline the assumptions used to quantify the direct impacts of Medicaid expansion. A more complete description of our assumptions and their justifications are included in Appendix A-C.

The direct impacts of expansion stem from the three major changes it causes:

(1) Medicaid expansion increases Medicaid coverage and reduces uninsurance and other forms of coverage;
(2) Medicaid expansion increases low-income Montanans' health care spending; and
(3) Medicaid expansion shifts who pays for the bulk of low-income Montanans' health care from a variety of largely Montana-based sources to the federal government.

More specifically, Medicaid expansion:

(a) Increases total spending on health care in Montana by increasing health care consumption and reducing uncompensated care;

[11] A full explanation of the design and operation of the model can be found in: Treyz, G. I., Rickman, D. S., & Shao, G. (1991). The REMI economic-demographic forecasting and simulation model. *International Regional Science Review*, *14*(3), 221-253.

(b) Increases federal government spending in Montana by an amount equal to the federal share of expansion spending minus the change in federal spending on other programs like traditional Medicaid or exchange subsidies;
(c) Increases state government spending by an amount equal to the state share of expansion costs (including administration costs) minus the change in spending on other programs like traditional Medicaid, corrections health care, and other programs that provide health care for low-income populations;
(d) Reduces individuals' (or households') health care spending by an amount equal to their spending on Medicaid expansion premiums and out-of-pocket costs minus what they would have spent on premiums and out-of-pockets costs without expansion (individual/household spending on other goods and services then increases by a proportional amount);[12,13] and
(e) Reduces employers' health care spending by an the amount they spend on health insurance premiums with expansion minus what they would have spent in the absence of expansion (owner and/or worker income increases by an equal amount).[14,15,]

The net effect of these changes is a large infusion of new money into Montana's economy. These are the direct effects of Medicaid expansion.

There are a variety of direct effects of expansion that we do not include in the model. For instance, a new report from the Montana Department of Revenue and the Montana Department of Labor and Industries suggests that Medicaid expansion allowed Montana business to avoid $11.1-16.7 million dollars of penalties related to the ACA's employer mandate.[16] We do not include these effects in the analysis. Similarly, we do not include the effect that individuals with better credit/less debt could have on Montana's economy or individual mandate penalties (while they applied). These omissions may lead us to slightly understate expansion's impacts.

[12] The impact of Medicaid expansion on the state and federal government is further offset by the amount of consumption taxes paid on this spending.
[13] The net change in individual/household spending may be further reduced if the federal or state government levy taxes on Montanans to pay for increased spending due to expansion; however, individual/household spending may increase as a result of lower debt and improved credit.
[14] Since employer payments for health insurance premiums are untaxed, the impact of Medicaid expansion on the state and federal government is further offset by the amount of income taxes paid on this income.
[15] The net change in employer/worker spending may be further reduced if the federal or state government levy taxes on Montanans to pay for increased spending due to expansion.
[16] http://lmi.mt.gov/Portals/193/Publications/LMI-Pubs/Special%20Reports%20and%20Studies/MT-Medicaid_Report.pdf [accessed January 8, 2019]

In Appendix B, we detail our assumptions for each of these effects. In brief, approximately 85 percent of Medicaid expansion spending would not be spent in Montana's economy without expansion.

Between 48-60 percent of Medicaid spending pays for new health care services. This spending includes doctor's visits and treatments that would not occur in the absence of Medicaid expansion. It also includes reductions in uncompensated care.[17]

The remaining spending is transferred to those that would have paid Medicaid expansion beneficiaries' care without expansion. Without expansion, some expansion beneficiaries would have enrolled in traditional Medicaid. The state and federal governments would have paid for this care. Some would have enrolled in an individual insurance plan (e.g., an exchange plan). The federal government (via exchange subsidies, for those who qualify[18]) and the individuals (via premiums and out-of-pocket payments) would have paid for this care. Some would have obtained insurance via their employer. The employer (via the employer's share of premium costs) and the employee (via the employee's share of premiums and out-of-pocket payments) would have paid for this care.

For instance, an uninsured individual who may have spent $1,700 out-of-pocket on health care in the absence of expansion can still consume this care with expansion. However, the federal government pays for most of this care. The $1,700 stays with the individual and can be spent on other items. Similarly, for an individual who would have had employer coverage with employer premiums of $5,600, employee contributions of $1,100, and out-of-pocket spending of $800, Medicaid expansion allows the employer to redirect $5,600 to other things (including proprietor income or worker income) and allows the individual to redirect most of the $1,900 dollars toward other goods and services.[19]

Table 3 summarizes one scenario for how Medicaid expansion directly impacts Montana's economy in 2020.[20] We estimate that expansion increases net federal spending in Montana by approximately $617 million. Net state spending will increase by approximately $20 million. Individual spending on health care will fall (and spending on

[17] We include uncompensated care as "new" spending because uncompensated care absorbed by providers is not counted in health care expenditure data. As such, from the perspective of the REMI model, this is new spending.
[18] Individuals with incomes between 100 percent and 138 percent of the FPL are eligible for exchange subsidies and cost-sharing reduction ("CSRs") in states that have not expanded Medicaid.
[19] In Montana, expansion beneficiaries may still pay some amount toward premiums and out-of-pocket costs.
[20] As discussed in the Appendix C, given uncertainty about different assumptions, we explore a range of outcomes. This example corresponds to one illustrative scenario. Other scenarios differ slightly.

other goods and services will increase) by roughly $185 million. Employer spending on health care will fall (and proprietor and/or employee income will increase) by $93 million.

Table 3: Illustrative estimates for main components of the direct effects of Medicaid expansion ($ millions)

	Spending 2020
Total federal spending on expansion	$682
Reductions in federal spending due to expansion (e.g., traditional Medicaid, exchange subsidies)	-$60
Federal share of HELP premiums	-$5
Net change federal spending	**$617**
Total state spending on expansion	$58
Reductions in state spending due to expansion	-$43
State share of HELP premiums	-$0.4
Net change state spending	**$20**
Individual spending to pay for expansion (e.g., premiums)	$5.5
Reductions in individual spending (e.g., insurance premiums and out-of-pocket spending)	-$191
Net change in individual spending	**-$185**
Employer spending to pay for expansion	-
Reductions in spending employer spending (e.g., premiums)	-93
Net change in employer spending	**-93**

To compute the economic impacts of Medicaid expansion, we input similar values into the REMI model to estimate how Montana's economy would differ without these changes. We allocate these direct impacts across providers, government, business, and individuals as described above. New spending on health care is allocated across health care sectors in proportion to reported Medicaid expansion spending.[21] We further allocate spending across Montana regions in proportion to Medicaid enrollment.[22]

We estimate impacts using the following process. First, a baseline projection of the economy is produced using the REMI model, utilizing inputs and assumptions that extrapolate growth and conditions of recent history in the absence of Medicaid expansion. The model is then used a second time with identical inputs, except that Medicaid expansion is added. Thus, Medicaid expansion produces a different economy, reflecting not only the expansion, but also how the rest of the economy reacts to it. The difference between the

[21] http://dphhs.mt.gov/Portals/85/Documents/healthcare/MedicaidExpansionHealthCareServicesProfile.pdf
[22] We allocate Medicaid enrollment by county into the five regions available in the REMI model. http://dphhs.mt.gov/Portals/85/Documents/healthcare/MedicaidExpansionMemberProfile.pdf

baseline and alternative scenarios of the economy represents the economic impact of Medicaid expansion.

B. Statewide results

Table 4 presents the statewide effects of Medicaid expansion.[23] Under the conditions and assumptions outlined, we estimate that Medicaid expansion added 3,456 jobs, $168 million in personal income, and $229 million in GDP to Montana's economy in 2016. We project that these effects peaked along with expansion spending in 2018 and will decline some through 2020. In 2020, Medicaid expansion is expected to support 5,906 jobs, $348 million in personal income, and $420 million in GDP.

By the end of its first five years, Medicaid expansion is expected to create a total of about $1.6 billion in personal income and $2.1 billion in GDP. We exclude jobs and population from the cumulative total because they are not additive across years. They represent the difference in employment (or population) relative to no expansion in each year.[24]

Table 4: Summary of Economic Impacts of Medicaid Expansion in Montana/Year and Cumulative (income and sales in millions of 2018 dollars)

	2016	2017	2018	2019	2020	Cumulative
Total expansion spending	$332	$693	$798	$759	$745	
Jobs	3,456	6,537	7,442	6,874	5,906	
Personal Income	$168	$325	$385	$377	$348	$1,603
GDP	$229	$440	$509	$478	$420	$2,076
Population	1,066	2,768	4,334	5,376	5,990	

Notes: Total expansion spending estimates obtained from LFD budget estimates. We translate FY to CY based on enrollment at the time. https://leg.mt.gov/content/Publications/fiscal/BA-2021/2021BienniumVolume1_Final.pdf.

Table 5 shows the breakdown of employment by industry. As one might expect, the largest impacts are in health care. Our analysis suggests that Medicaid expansion will create approximately 2,500 additional health care jobs. However, there are also significant effects on retail trade (more than 1,000 jobs) and construction (more than 600 jobs).

[23] These results reflect one (fairly conservative) set of plausible assumptions. We present a range of alternatives in Appendix C.

[24] Our analysis does not say that the expansion creates 6,000 jobs in one year and then a different additional 6,000 new jobs the next year. Many of the jobs are created in one year and then persist. For instance, a nursing position created as a result of expansion in 2017 that persists through 2020 would be part of the (approximately) 6,000 in 2020.

Table 5: Industry Breakdown of Employment Impacts

	2016	2017	2018	2019	2020
Health Care and Social Assistance	1,261	2,574	2,874	2,631	2,441
Retail Trade	596	1,193	1,354	1,257	1,140
Construction	341	702	878	837	667
Accommodation and Food	203	399	465	448	416
Other Services, Except Public Administration	201	386	424	380	332
Professional, Scientific, and Technical Services	105	207	243	232	206
Real Estate and Rental	90	178	208	198	179
Administrative and Waste Management Service	94	180	202	184	160
Other	565	718	794	707	365

C. By Region

Table 6 summarizes the economic impacts of Medicaid expansion across five Montana regions: Northwest, Southwest, Central, North Central, and East.[25] Medicaid enrollment does not deviate that much from population. As such, economic impacts across regions are somewhat proportional to population.

[25] The Northwest region includes Flathead, Granite, Lake, Lincoln, Mineral, Missoula, Powell, Ravalli, and Sanders counties. The Southwest region includes Beaverhead, Broadwater, Deer Lodge, Gallatin, Jefferson, Madison, Meagher, Park, and Silver Bow counties. The North Central region includes Blaine, Cascade, Chouteau, Glacier, Hill, Lewis and Clark, Liberty, Pondera, Teton, and Toole counties. The Central region includes Big Horn, Carbon, Fergus, Golden Valley, Judith Basin, Musselshell, Petroleum, Stillwater, Sweet Grass, Treasure, Wheatland, and Yellowstone counties. The East region includes Carter, Custer, Daniels, Dawson, Fallon, Garfield, McCone, Phillips, Powder River, Prairie, Richland, Rosebud, Sheridan, Valley, and Wibaux counties.

Table 6: Economic Impacts by Region, 2019 and Cumulative 2016-2020 (income and sales in millions of $2018)

	NW		SW		Central	
	2019	**Cumul.**	**2019**	**Cumul.**	**2019**	**Cumul.**
Jobs	2,557		1,458		1,505	
Personal Income	$128	$549	$84	$356	$89	$378
GDP	$170	$735	$103	$447	$113	$488
Population	1,859		1,207		1,208	

	N. Central		East	
	2019	**Cumul.**	**2019**	**Cumul.**
Jobs	1,033		321	
Personal Income	$56	$241	$19	$80
GDP	$72	$315	$21	$93
Population	817		230	

IV. Empirical estimates

In this section, we estimate the economic impact of Medicaid expansion using a different approach: a differences-in-differences analysis. The differences-in-differences approach uses non-expansion states as a control group, and provides an answer to the question: "How much did the trajectory of economic activity change in expansion states relative to non-expansion states after expansion?"

This statistical approach provides a way to check the reasonableness of the results generated by the REMI model and the assumptions that underlie it. It also provides an independent estimate of the effects of Medicaid expansion that rests on fewer assumptions. Specifically, if one assumes that expansion states and non-expansion states would have followed parallel trends in the absence of expansion, then this approach calculates the effects of Medicaid expansion. In Appendix D, we provide evidence that suggests this assumption is reasonable for the analyses used in this report.

The impact of Medicaid expansion varies widely across expansion states, even on the outcomes most directly affected by expansion – e.g., the share of people covered by Medicaid or the share uninsured. In some expansion states, the share of people with Medicaid barely changed following expansion. In other expansion states, it changed substantially. A variety of factors explain the differences in Medicaid expansion's effects on health insurance coverage (e.g., some states had already expanded Medicaid coverage to childless adults with incomes at or above the poverty line).

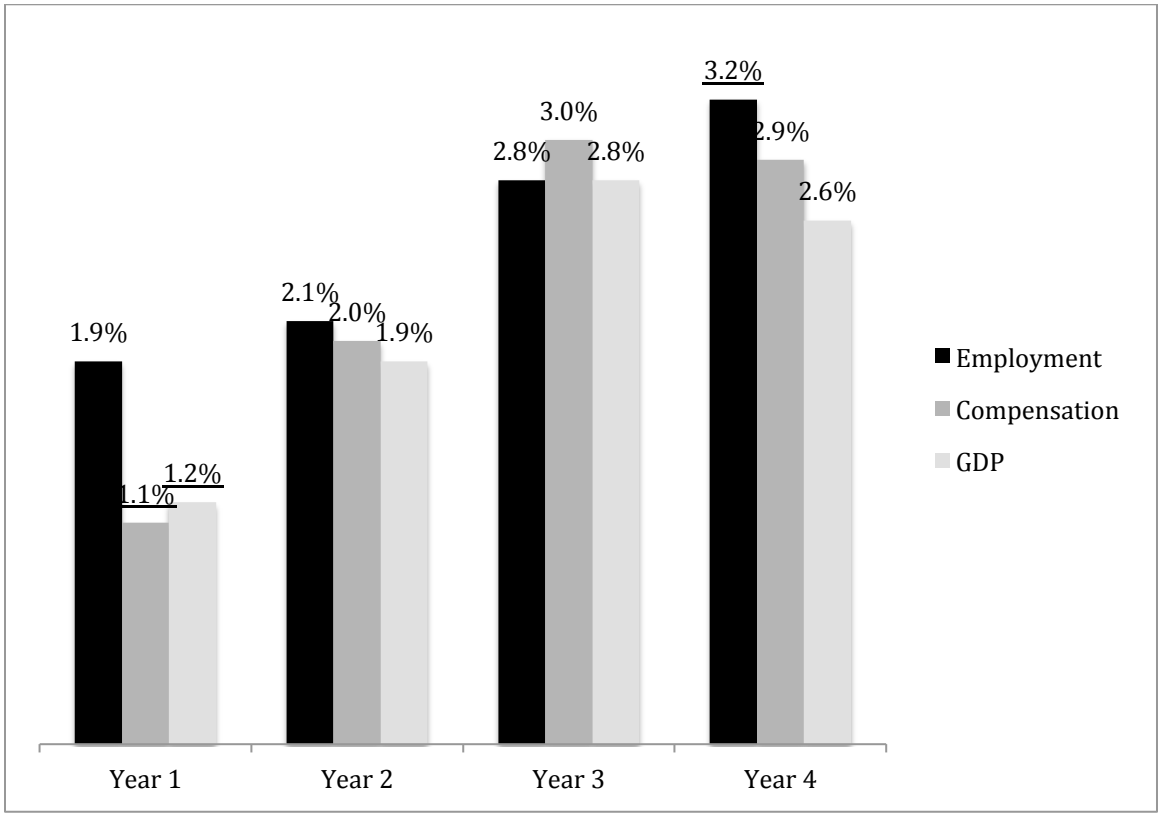
In this report, we focus on the economic impact of Medicaid expansion in Montana, a state where Medicaid expansion had a large effect on Medicaid enrollment. As such, we limit the analysis to include states whose Medicaid expansion experience resembles Montana's. Specifically, we focus on Medicaid expansion states that experienced large changes in the share of the expansion eligible with health insurance and large changes in the share of the expansion eligible with Medicaid after ACA implementation in 2014. The expansion states included in our analysis are: Alaska, Arkansas, California, Illinois, Indiana, Kentucky, Louisiana, Michigan, Montana, Nevada, New Mexico, Oregon, Rhode Island, Washington, and West Virginia.[26] The average change in insurance coverage in these states between the pre-expansion period (2010-2013) and 2017 is roughly equal to the change in Montana. We provide additional details on the selected states in Appendix A.

First, we examine the effect of Medicaid expansion on the health care sector. We present results for three different health care sector outcomes: health care employment, health care compensation, and health care GDP. Our regressions include controls for state, year, total population, population over age 65, population with a disability, population over age 25 with at least a Bachelor's degree, and total employment in the traded sector.[27] A more complete discussion of these regressions is available in Appendix C.

Figure 1 presents the core results from these analyses. These results show that Medicaid expansion is associated with substantial increases in the size of the health care sector in the states examined. The results also show that expansion's impacts grow over the first few years of expansion. For instance, four years after expansion, employment growth in the health care sector was 3.2 percentage points larger in the included expansion states than in the non-expansion states. Similarly, by the fourth year of expansion, the growth in total compensation in the health care sector was 2.9 percentage points larger than in non-expansion states and growth in health care GDP was 2.6 percentage points larger.

[26] Our results do not change substantially when using more or less restrictive criteria for inclusion.
[27] The traded sector is the set of industries that primarily sell to customers outside their local region. States with larger shocks to their traded sector will experience larger changes in economic activity and larger changes in health care activity. We define the traded sector using the results described in Jensen (2012). Specifically, we multiply total employment in each 2-digit NAICS industry obtained from BEA regional economic accounts data by the shares reported in Jenson's Table 2.3 and sum to obtain an estimate for total employment in the traded sector.

Figure 1: Average effect of Medicaid expansion on health care sector growth in included expansion states by years since expansion



Notes: Data presented are coefficients from differences-in-differences regressions; all regressions include state and year fixed effects and controls for ln(population), ln(population with a disability), ln(population over age 65), ln(population over age 25 with Bachelor's degree), ln(total employment in traded sector); all regressions have 272 observations. All coefficients are statistically significant with $p<0.05$, except underlined values. The underlined coefficients are significant at $p<0.06$.

These results align with the results from the REMI model presented in Section III. Applying these results to Montana suggests we should expect Medicaid expansion to create an additional 2,500 health care jobs. The results from the REMI model indicate that Medicaid expansion will increase health care employment by 2,441 jobs in 2020. Similarly, these results suggest Medicaid expansion will increase health care earnings by approximately $130 million. The REMI model calculates that Medicaid expansion will increase health care earnings by $160 million in 2020.

Next, we examine the impact of Medicaid expansion on total employment. Table 7 presents results from regressions with the same specification as above. These results show that Medicaid expansion is associated with significant increases in total employment. For instance, the coefficient of 0.013 in year 4 indicates that growth in total employment in the included expansion states was 1.3 percentage points higher than in the non-expansion states four years after expansion.

Table 7: Differences-in-differences estimates of the effects of Medicaid expansion on total employment in included states

	Ln(total emp.)	Ln(traded sector emp.)	Ln(local sector emp.)
Year 1	0.004	-0.011	0.006
	(0.002)	(0.007)	(0.004)
Year 2	0.006+	-0.011	0.009+
	(0.003)	(0.009)	(0.004)
Year 3	0.009*	-0.002	0.014*
	(0.004)	(0.012)	(0.006)
Year4	0.013**	-0.005	0.020*
	(0.005)	(0.012)	(0.007)

Notes: Cluster-robust standard errors clustered on state in parentheses, + p<0.10, * p<0.05, ** p<0.01; all regressions include state and year fixed effects and controls for ln(population), ln(population with a disability), ln(population over age 65), ln(population over age 25 with Bachelor's degree), the first and third columns include the control ln(total employment in traded sector); all regressions have 272 observations.

Table 7 also presents results that examine the traded and non-traded (local) sectors separately.[28] As described above, Medicaid expansion increases demand for health care and allows individuals to shift money from health care to other consumption. As such, any increase in total employment attributable to Medicaid expansion should be driven by increases in the non-traded (or local) sector. Medicaid expansion should not substantially increase activity in local factories, farms, etc. that primarily sell to non-Montanans. Consistent with this hypothesis, the relationship between Medicaid expansion and traded

[28] In contrast to the traded sector, the non-traded (or local) sector consists primarily of firms and industries that sell goods and services to local consumers. Both traded and local sector entitiies are vital to economic health, but their contribution differs. The traded sector is important primarily because it brings money into the economy from outside. This outside spending circulates through the economy supporting additional jobs and income. The local sector is important because it provides the goods and services that are necessary to make a place a desirable place to live and work. Without a good local sector, firms and workers will not want to locate in a region. For additional discussion of the differences between the traded and local sectors see Ward, B. et al (2012) *The Traded Sector in Portland' Regional Economy* [https://studylib.net/doc/8135122/traded-sector-final] and Ward, B. (2016) *The Contribution of Health Care to Flathead County's Economy* [https://kalispellchamber.com/wp-content/uploads/2017/03/the-contribution-of-health-care-to-flathead-countys-economy-nov-2016.pdf]

sector employment is small and not statistically significant, but the relationship between expansion and local sector employment is positive and statistically significant.[29]

These results suggest the Medicaid expansion is associated with slightly larger effects than projected by the REMI model presented in Section III. A 1.3 percentage point increase in total employment in Montana is over 8,000 jobs. The REMI model projected a total increase of 6,874 jobs in the fourth year of expansion (equal to approximately one percent of total employment). This suggests that the REMI results presented in Table 1 may be conservative.[30]

V. Other Economic Effects of Medicaid Expansion

The results above focus on economic impacts and do not account for many other expansion benefits. In this section, we highlight a few additional findings from the literature and our own analyses. The Kaiser Family Foundation has regularly compiled a summary of the effects of Medicaid expansion. The most recent summary is available at: https://www.kff.org/medicaid/issue-brief/the-effects-of-medicaid-expansion-under-the-aca-updated-findings-from-a-literature-review-march-2018/

A. Health care access and health outcomes

Medicaid expansion improves access to health care and may improve health.[31] For instance, after Medicaid expansion, the share of low-income Montanans who skipped care due to cost fell by 21 percent. Similarly, the share who had not had a check-up within the past two years fell by 17 percent (see Figure 2). These data cover only the first two years of Medicaid expansion in Montana. A similar analysis of states that expanded Medicaid in 2014 shows that these effects grow over time.

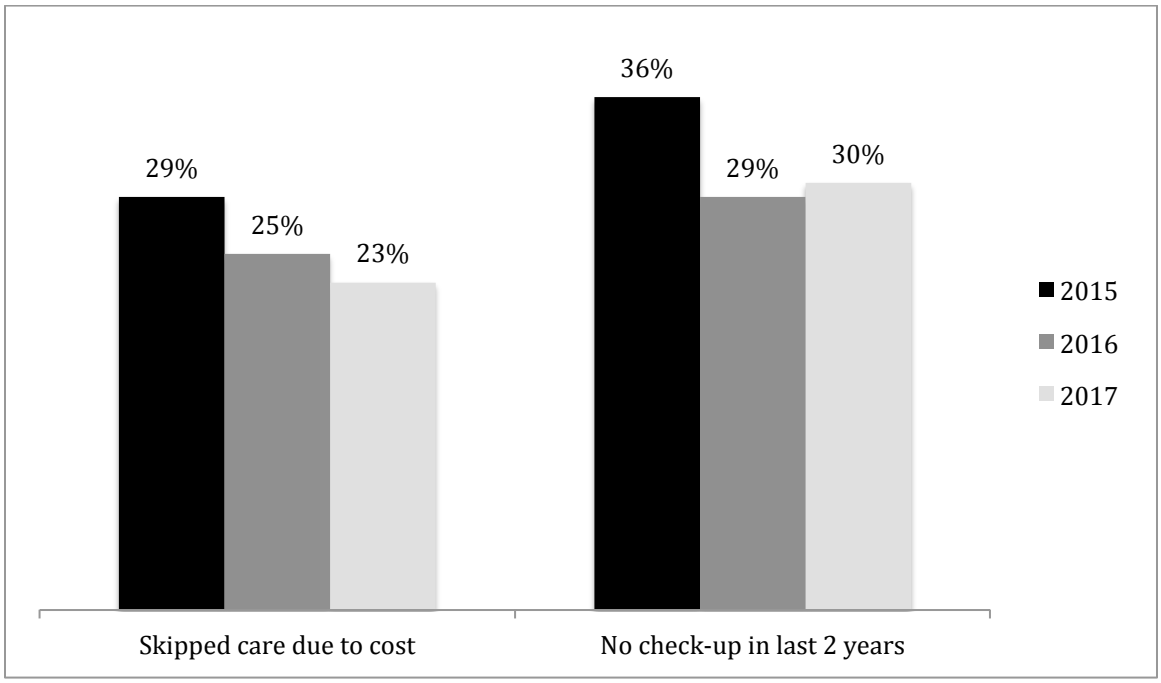
[29] Health care is part of the local sector, but excluding health care employment from the regression does not substantially change the results. For instance, in year 4, excluding health care from local employment only causes the coefficient to fall to 0.018 ($p<0.03$).

[30] An alternative REMI specification that assumes a higher (55 percent instead of 48 percent) share of Medicaid expansion spending is new, generates higher employment estimates (7,256 in year 4), but these estimates still fall below the empirical estimates.

[31] Sommers, B. D., Maylone, B., Blendon, R. J., Orav, E. J., and Epstein, A. M., "Three-Year Impacts of the Affordable Care Act: Improved Medical Care and Health Among Low-Income Adults," *Health Affairs* 36, no. 6 (2017): 1119-1128; Mahendraratnam, N., Dustbin, S. B., and Farley, J. F., "Prescription Drug Utilization and Reimbursement Increased Following State Medicaid Expansion in 2014," *Journal of Managed Care & Specialty Pharmacy* 23, no. 3 (2017): 355-363; Antonisse, L., Garfield, R., Rudowitz, R., and Artiga, S., "The Effects of Medicaid Expansion Under the ACA: Updated Findings From a Literature Review," *Health Affairs* 35, no. 10 (2016): 1810-1815.

Improved health care access may improve health outcomes. While not every study has found that Medicaid expansion improves health outcomes in its first few years, many have. For instance, one study found that Medicaid expansion was associated with a 5.1 percentage point (or 23 percent) increase in the share of low-income adults in excellent health.[32] A different study found that Medicaid expansion was associated with a reduction in the number of poor health days and depression diagnosis among adults with chronic conditions.[33] Analyses of other insurance expansions have found that providing health insurance improves depression outcomes and reduces mortality.[34]

Figure 2: Change in Health Care Access Among Low-Income Montanans Before and After Medicaid Expansion



Source: Authors' analysis of 2015-2017 Behavioral Risk Factor Surveillance System data.

[32] Sommers, B. D., Maylone, B., Blendon, R. J., Orav, E. J., and Epstein, A. M., "Three-Year Impacts of the Affordable Care Act: Improved Medical Care and Health Among Low-Income Adults," *Health Affairs* 36, no. 6 (2017): 1119-1128.
[33] Winkelman, T. N., & Chang, V. W. (2018). Medicaid expansion, mental health, and access to care among childless adults with and without chronic conditions. *Journal of general internal medicine*, *33*(3), 376-383.
[34] Sommers, B. D., Gawande, A. A., and Baicker, K., "Health Insurance Coverage and Health—What the Recent Evidence Tells Us," (2017).

B. Financial security

Medicaid expansion also generates major improvements in financial security. It reduces debt collections, reduces bankruptcies, and improves credit scores.[35] For instance, one recent study found that Medicaid expansion reduced medical debt by $900 per treated person, prevented 50,000 bankruptcies, and led to better credit terms for borrowers.[36] The interest savings from these improvements were worth $280 per treated person or $520 million overall. These financial benefits are on the same magnitude as the reduction in uninsured individuals' out-of-pocket costs.

C. Crime

Multiple recent studies find that Medicaid expansion reduced both violent crime and property crime.[37] One study argues these benefits may stem from increased mental health and substance abuse treatment. Nationally, the benefits of expansion-induced crime reduction may exceed $10 billion annually.

D. Employment

Some worry that expanding Medicaid will reduce work incentives. However, several studies find no evidence that Medicaid expansion depresses employment.[38] One study even found that Medicaid expansion increased employment among people with disabilities.[39] A different study of pre-ACA expansions in Medicaid eligibility found that more generous

[35] Brevoort, K., Grodzicki, D., and Hackmann, M. B., *Medicaid and Financial Health* (No. w24002). National Bureau of Economic Research (2017); Hu, L., Kaestner, R., Mazumder, B., Miller, S., and Wong, A., *The Effect of the Patient Protection and Affordable Care Act Medicaid Expansions on Financial Wellbeing* (No. w22170), National Bureau of Economic Research (2016).

[36] Brevoort, et al., (2017).

[37] Vogler, J., "Access to Health Care and Criminal Behavior: Short-Run Evidence From the ACA Medicaid Expansions (2017); He, Q., "The Effect of Health Insurance on Crime Evidence From the Affordable Care Act Medicaid Expansion (2017). These studies are consistent with research that examined the effects of prior insurance expansions on crime, erg,. Wen, H., Hockenberry, J. M., and Cummings, J. R., "The Effect of Medicaid Expansion on Crime Reduction: Evidence From HIFA-Waiver Expansions," *Journal of Public Economics* 154 (2017): 67-94.

[38] Leung, P., and Mas, A. *Employment Effects of the ACA Medicaid Expansions* (No. w22540). National Bureau of Economic Research (2016); Kaestner, R., Garrett, B., Chen, J., Gangopadhyaya, A., and Fleming, C., "Effects of ACA Medicaid Expansions on Health Insurance Coverage and Labor Supply," *Journal of Policy Analysis and Management* 36, no. 3 (2017): 608-642; Duggan, M., Goda, G. S., and Jackson, E., *The Effects of the Affordable Care Act on Health Insurance Coverage and Labor Market Outcomes* (No. w23607), National Bureau of Economic Research (2017); Frisvold, D. E., and Jung, Y., "The Impact of Expanding Medicaid on Health Insurance Coverage and Labor Market Outcomes," *International Journal of Health Economics and Management* (2016): 1-23.

[39] Hall, J. P., Shartzer, A., Kurth, N. K., and Thomas, K. C., "Effect of Medicaid Expansion on Workforce Participation for People With Disabilities," *American Journal of Public Health* 107, no. 2 (2017): 262-264.

public health insurance increased the probability of someone pursuing riskier, but higher paying jobs.[40]

According to a recent survey of Ohio's Medicaid expansion population, Medicaid expansion makes it easier for people to work.[41] Among employed, continuously enrolled beneficiaries, 83 percent reported that expansion made it easier for them to work, and 60 percent of unemployed, continuously enrolled beneficiaries reported that Medicaid expansion made it easier for them to look for work.

Data from Montana show no adverse effect of Medicaid expansion on the employment of low-income Montanans. In fact, Montana saw an increase in low-income labor force participation following Medicaid expansion. Table 8 shows the change in labor force participation observed in two datasets: the Current Population Survey Annual Social and Economic Supplement ("CPS ASEC") and the American Community Survey ("ACS"). As shown in the table, labor force participation rose in the first-two years after expansion among non-disabled Montanans, ages 18-64, with incomes below 139 percent FPL. Similar increases in labor force participation were not observed among higher-income Montanans or low-income residents in other states. In fact, labor force participation fell in these other groups. If we assume that low-income labor force participation in Montana was expected to follow the trends in other states or among high-income Montanans, then the increase in labor force participation among low-income Montanans is even larger (6.2 percentage points in the CPS data and 3.9 percentage points in the ACS data).

While these results do not prove that Medicaid expansion increased employment, they suggest it might have. This pattern of results is consistent with the hypothesis that Medicaid expansion and Montana's HELP-Link program improved employment outcomes for Montana's Medicaid expansion beneficiaries. These effects could reflect the impact of obtaining health insurance and any associated improvements in health, the impact of HELP-Link, a combination of the two, or some other not yet understood factor. We note, consistent with the interpretation that HELP-link affected employment, a recent analysis of a program in Nevada, similar to HELP-Link, that provided eligibility review and job counseling services to randomly selected unemployment insurance recipients led to persistent increases in long-term employment and earnings.[42]

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[40] Farooq, A., & Kugler, A. (2016). *Beyond job lock: impacts of public health insurance on occupational and industrial mobility*(No. w22118). National Bureau of Economic Research.

[41] Ohio Department of Medicaid (2018). 2018 Ohio Medicaid Group VIII Assessment: A follow-up to the 2016 Ohio Medicaid Group VII Assessment.
https://medicaid.ohio.gov/Portals/0/Resources/Reports/Annual/Group-VIII-Final-Report.pdf

[42] Manoli, D. S., Michaelides, M., and Patel, A., *Long-Term Effects of Job-Search Assistance: Experimental Evidence Using Administrative Tax Data* (No. w24422), National Bureau of Economic Research (2018).

Table 8: Labor Force Participation Among Non-Disabled People Ages 18-64, Before and After Expansion in Montana

Current Population Survey ASEC	Before (2012-2015)	After (2016-2018)	Difference (after minus before)	Difference in Difference (MT difference minus rest difference)
0-138% FPL				
Montana	57.9%	60.7%	2.7%	
Rest of U.S.	57.6%	54.2%	-3.5%***	6.2%***
>138% FPL				
Montana	85.8%	84.0%	-1.7%*	
Rest of U.S.	83.4%	83.6%	0.2%	-2.0%***
American Community Survey	**Before (2012-2015)**	**After (2016-2017)**	**Difference (after minus before)**	**Difference in Difference (MT difference minus rest difference)**
0-138% FPL				
Montana	63.0%	64.2%	1.3%	
Rest of U.S.	59.3%	56.7	-2.7%***	3.9%***
>138% FPL				
Montana	86.0%	86.6%	-1.7%	
Rest of U.S.	85.6%	85.9%	0.1%	0.3%***

Source: Authors' analysis of Current Population Survey ASEC and American Community Survey microdata obtained from IPUMS-CPS and IPUMS-USA. Analyses conducted at the individual level with provided person weights. Sample limited to include people ages 18-64 with income <139 percent FPL and no disability, ***=p<0.01, *=p<0.05. Difference-in-difference results obtained from regression with state and year fixed effects. Standard errors clustered at state level. See Appendix E for additional details.

F. Health care sector

Finally, as discussed above, Medicaid expansion represents a significant investment in Montana's health care system, particularly its critical access hospitals and rural providers. It also significantly improves the financial health of safety-net hospitals.[43] A more robust health care sector benefits all residents. For instance, if a rural hospital closes, all residents suffer. Thus, to the extent expansion preserves or expands the range of services available in an area, all residents benefit.

[43] Dobson, A., DaVanzo, J. E., Haught, R., and Phap-Hoa, L., "Comparing the Affordable Care Act's Financial Impact on Safety-Net Hospitals in States That Expanded Medicaid and Those That Did Not," *Issue Brief (Commonwealth Fund)*, (2017): 1-10.

A handful of studies have examined the effect of Medicaid expansion on the financial performance of the health care sector. These studies generate a consistent picture of Medicaid expansion's effects – Medicaid expansion improves hospitals' financial health and reduces the odds that hospitals close. The effects of Medicaid expansion are particularly strong in rural areas and in areas with substantial numbers of uninsured adults prior to expansion.

One set of articles examined the impact of Medicaid expansion on hospital finances through 2015.[44] These studies find that, relative to non-expansion states, hospitals in Medicaid expansion states:

- Reduced uncompensated care relative to a FY11-FY13 baseline by 34 percent and reduced uncompensated care as a percentage of expenses by 1.7 percentage points;
- Increased Medicaid revenue by 18.2 percent;
- Improved operating margins by 2.5 percentage points (67.3 percent); and
- Improved excess margins by 1.7 percentage points (41.4 percent).

These studies also find that the impacts on non-metro hospitals were larger, particularly on their profit margins. Hospitals outside metro-areas in expansion states saw operating margins increase by 4.0 percentage points and excess margins increased by 2.3 percentage points relative to non-metro hospitals in non-expansion states.

We quasi-replicated these analyses using data that extend into 2017 and found similar results (see Appendix E for details). The passage of time has tended to increase the estimates of the effects of Medicaid expansion. For instance, we estimate that the impact of Medicaid expansion on uncompensated care grew from 1.5 percent to 2.6 percent of total expenses between the first and third years following expansion.

We also estimate that effects are much larger for providers in states (like Montana) with above-average Medicaid expansion enrollment. Providers in high enrollment states saw much larger increases in net Medicaid revenue, much larger decreases in uncompensated care, and more robust improvement in operating margins.

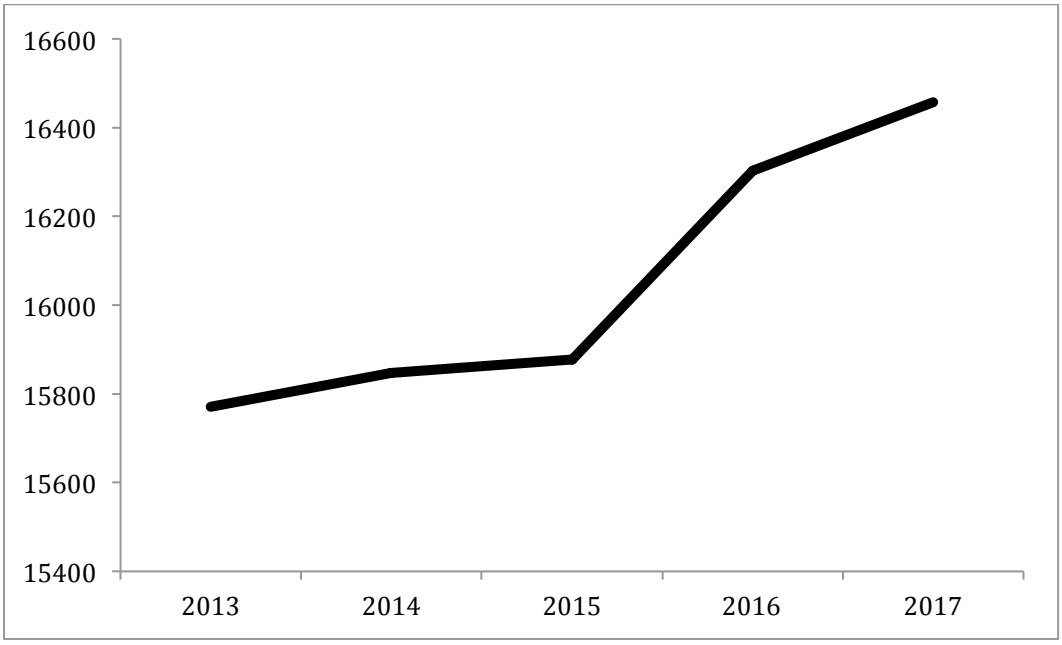
A different study examined the impact of Medicaid expansion on hospital closures using data from 2008-2016.[45] This study found that:

[44] Blavin, F. (2017). How Has the ACA Changed Finances for Different Types of Hospitals? Updated Insights from 2015 Cost Report Data; Blavin, F. (2016). Association between the 2014 Medicaid expansion and US hospital finances. *Jama*, *316*(14), 1475-1483.

> "the ACA's Medicaid expansion was associated with improved hospital financial performance and substantially lower likelihoods of closure, especially in rural markets and counties with large numbers of uninsured adults before Medicaid expansion."

In particular, this study shows that hospitals in expansion states were six times less likely to close than hospitals in non-expansion states. It also finds that the impact of Medicaid expansion is stronger in counties that had more uninsured prior to expansion. In counties where over 30 percent of adults were uninsured prior to expansion, Medicaid expansion is associated with a 90 percent reduction in the odds of hospital closure. Similar to the analysis described above, this study also finds that Medicaid expansion improves profit margins in rural areas by a larger amount.

Figure 3: Total health care employment outside Montana's metro-area and micro-areas, 2013-2017



Notes: Author's analysis of Quarterly Census of Employment and Wages (QCEW) data. Figure represents total statewide employment minus employment in Yellowstone, Missoula, Cascade, Gallatin, Flathead, Lewis and Clark, and Silver Bow counties.

Figure 3 helps illustrate the impact of Medicaid expansion on the health care sector in rural areas in Montana. Consistent with improvements in rural providers' financials, health

[45] Lindrooth, R. C., Perraillon, M. C., Hardy, R. Y., & Tung, G. J. (2018). Understanding The Relationship Between Medicaid Expansions And Hospital Closures. *Health Affairs*, *37*(1), 111-120.

care employment in Montana's rural areas began growing once Montana expanded Medicaid. In the two years prior to expansion, total health care employment in rural Montana grew barely at all, less than one percent, only 100 total new jobs. However, once Medicaid expanded, rural health care grew, adding nearly 600 jobs in two years.

VI. Fiscal Effects

Medicaid expansion also affects the state's budget. While it reduces some state costs, it imposes others. As noted previously, the state's share of expansion costs will rise to ten percent in 2020 and beyond. Technically, the cost to the state is more complicated than this. Because Montana offers 12-month continuous eligibility, it must pay a slightly higher share of costs. However, the federal government pays for 100 percent of certain expansion costs (e.g., costs of services provided by the Indian Health Service). According to the Legislative Fiscal Division's 2021 Biennium Budget Analysis, the General Fund cost of Medicaid expansion rises to 8.9 percent of the total Medicaid cost in FY2021.[46]

A substantial proportion of the cost to the state is offset by various savings. As discussed above, Medicaid expansion reduces the cost of traditional Medicaid, health care spending by the Department of Corrections, and spending on substance use disorders and mental health.[47] Premiums paid by HELP beneficiaries also help offset cost to the state general fund.[48] In total, we estimate these savings offset 71 percent of the expected general fund costs in FY2020 and 64 percent of the expected general fund costs in FY2021. As such, the expected cost to the state general fund net of these savings is approximately $17 million in FY2020 and $23.7 million in FY2021.

However, as described in Sections III and IV, Medicaid expansion also increases economic activity. Increased activity will increase state revenues. The increase in state revenues attributable to Medicaid expansion will likely exceed the remaining cost of

[46] https://leg.mt.gov/content/Publications/fiscal/BA-2021/2021BienniumVolume1_Final.pdf [accessed December 22, 2018]

[47] We use estimates frm Medicaid Expansion: How it affects Montana's state budget, economy, and residents. https://mthcf.org/wp-content/uploads/2018/06/Manatt-MedEx_FINAL_6.1.18.pdf for some of these savings; however, for Department of Corrections savings we use a different estimate based on the change in outside medical spending before and after expansion. Pre-Medicaid expansion annual outside medical costs for the Department of Corrections totaled $8.3 million. After expansion, they totaled $5.5 million. Thus, spending for outside medical care fell by $2.8 million. In addition, we assume $2.6 million per year in facility reimbursement savings. We also use the projected traditional Medicaid savings from the LFD report for FY20 and FY21.

[48] As we understand it, premium payments to the federal government are included as part of the total cost to the state, so we subtract the full premium estimate from the state total. Based on correspondence with state officials, we assume premiums will be $4.6 million per year in FY20 and FY21.

Medicaid expansion. Table 9 presents a simple analysis of the net fiscal effects of Medicaid expansion based only on tax revenues. On average, between 2012 and 2016, total state tax revenes equaled six percent of state gross domestic product. As such, we assume that the state recovers 6 percent of the increase in GDP attributable to Medicaid expansion.[49] We apply this value to the increase in GDP presented in Table 1 and to the estimates presented in Appendix C, Table A6 for Alternative 3. This analysis suggests that Medicaid expansion has a positive net effect on Montana's state budget.

For instance, assuming that half of the net cost estimates in each of FY2020 and FY2021 will be incurred in CY2020 the net cost of Medicaid expansion in CY2020 will be $20.4 million. The REMI model estimates presented in Table 1 suggest that Medicaid expansion will add $420 million to gross domestic product in 2020. Applying the 6 percent average tax share to the change in GDP suggests that Medicaid expansion will generate $25.2 million in state tax revenue in CY2020. This exceeds the remaining cost estimate by $4.8 million. The empirical estimates in Section IV and alternative REMI specifications suggest the positive net effect of Medicaid expansion on the state budget may be even larger.

Table 9: Net fiscal effect of Medicaid expansion ($ millions) for calendar years 2016-2020

	2016	2017	2018	2019	2020
Net cost of expansion to MT	-$10.2	-$5.3	$3.3	$10.7	$20.4
Estimated tax revenues based estimates in Table 1	$13.7	$26.4	$30.5	$28.7	$25.2
Net effect on state budget	$23.9	$31.7	$27.2	$18.0	$4.8
Estimated tax revenues based on estimates Table A6 Alt. 3	$14.5	$28.0	$32.4	$30.5	$26.9
Net effect on state budget	$24.7	$33.3	$29.1	$19.8	$6.5

Notes: Tax revenues equal 6 percent of estimated impact on GDP.

The results in Table 9 focus exclusively on the effect of Medicaid expansion on tax revenue. However, the increase in economic activity attributable to Medicaid expansion will likely affect other parts of Montana's budget. It will increase other forms of revenue, and it may change expenditures. The marginal effect of Medicaid expansion on these other aspects of the budget is uncertain. Table 10 presents the results based on a broader approach. These results use the Fiscal Impact Assessment Tool ("FIAT"), a module that estimates state revenue and expenditure impacts based on the output from the REMI

[49] State tax revenue data obtained from the U.S. Census Bureau's Annual Survey of State Government Finances. Gross state product obtained from the Bureau of Economic Analysis.

model. Using the FIAT, we find that by 2020 both total revenues and expenditures rise, but the net effect is a $42.1 million increase in state fiscal resources. This is substantially more than the estimated $20.4 million net cost in 2020.

Table 10: Net fiscal impacts of REMI results in Table 1 using the FIAT (millions of $2018)

	2016	2017	2018	2019	2020
Total Revenues	26.1	53.0	65.3	66.5	63.9
Total Expenditures	-12.4	-15.7	-5.7	8.9	21.8
Net Fiscal Impact	38.5	68.7	71.0	57.6	42.1
Cumulative Fiscal Impact	38.5	107.2	178.2	235.8	277.9

Note: The FIAT model output is in $2012. We inflate to 2018 using the chained PCE index obtained from https://fred.stlouisfed.org/series/PCEPI.

The FIAT model uses historical average relationships between economic activity (particularly population, personal income, and employment) and state revenues and expenditures to project how revenues and expenditures change in response to changing population, personal income, and employment. As such, these results come with an important caveat. They are based on the historical average relationships between economic activity and state revenues and spending. However, the future marginal fiscal impact of Medicaid expansion may differ from the historical average relationship between economic activity and the state budget. Some revenues and expenditures will likely be unaffected by Medicaid expansion. Other aspects of the state budget may move by more than average. Ultimately, it is difficult to isolate the effects of Medicaid expansion throughout the whole budget (both revenues and expenses). State budgets are very flexible and respond to shocks like Medicaid expansion in complicated ways.[50] However, in Montana and in most other states, state revenues and expenditures tend to remain at a relatively constant share of economic activity over long periods of time. As such, the approach in Table 9 and the FIAT approach likely provide a reasonable estimate of Medicaid expansion's fiscal effects.

VII. Conclusion

Medicaid expansion has a substantial positive impact on Montana's economy. While impacts vary from year-to-year, it brings over $600 million of new spending into Montana's economy each year. This spending ripples through Montana's economy, generating thousands of jobs and hundreds of millions in personal income each year. For instance, in

[50] A longer discussion of the challenges of estimating budget impacts of Medicaid expansion can be found in Dorn, S., "The Effects of the Medicaid Expansion on State Budgets: An Early Look in Select States," (2015).

2020, we estimate that it will support nearly 6,000 jobs and $350 million in personal income. In addition to generating economic activity, Medicaid expansion appears to improve outcomes—reducing crime, improving health, and shrinking debt. While the state pays for these benefits, the costs to the state budget are more than offset by the savings created by Medicaid expansion and by the revenues associated with increased economic activity.

Like any study, this study has limitations. The assumptions used to estimate the direct impacts of Medicaid expansion may be undermined by real-world events. Similarly the assumptions that underlie the REMI model may also fail to accurately capture the economic relationships at issue. In order to account for these weaknesses, we conducted several sensitivity analyses. That is, we estimated several additional models using alternative assumptions. In general, these additional analyses yield results similar to those described here.

Across a variety of specifications, Medicaid expansion generates several thousand additional jobs and several hundred million dollars in additional income. The cumulative effect tends to be an approximate one percent increase in employment and income. These results align empirical estimates for the impact of Medicaid expansion on total employment in a set of states where the impact of Medicaid expansion on insurance coverages resembles the change in Montana.

At this level of activity, Medicaid expansion also pays for itself. The savings and additional revenues attributable to Medicaid expansion exceed the costs to the state. While there may be conditions under which Medicaid expansion imposes net costs on the state, we expect such instances to occur rarely, assuming Medicaid expansion retains its current structure.

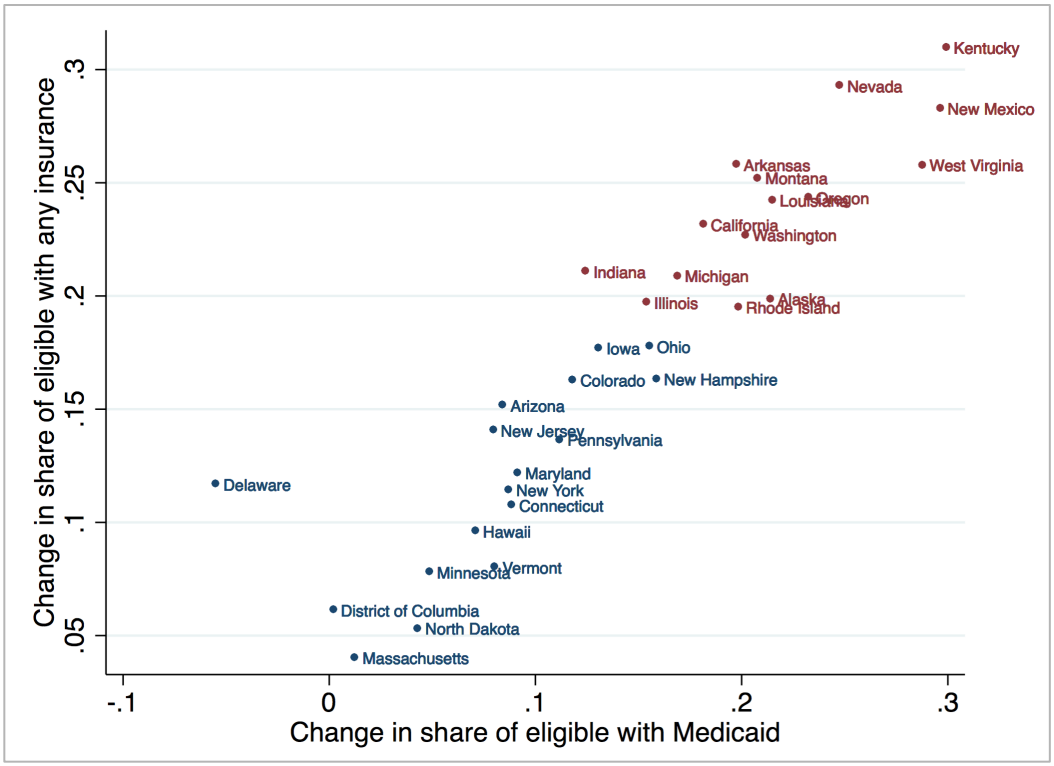
Appendix

A. Selecting comparison states

In the differences-in-differences analysis in Section IV and several similar analyses described in this appendix, we limit the set of expansion states included in the analysis. We limit the set of expansion states examined because states' experiences with Medicaid expansion vary wildly, and Montana's experience is above average.

Figure A1 helps to illustrate the variation across states. It plots the share of expansion eligible (people ages 18-64 with income less than 139 percent of FPL) with Medicaid (horizontal axis) against the share with any insurance (vertical axis).

Figure A1: Change in share with any insurance and share with Medicaid among people ages 18-64 with income <139 FPL in expansion states

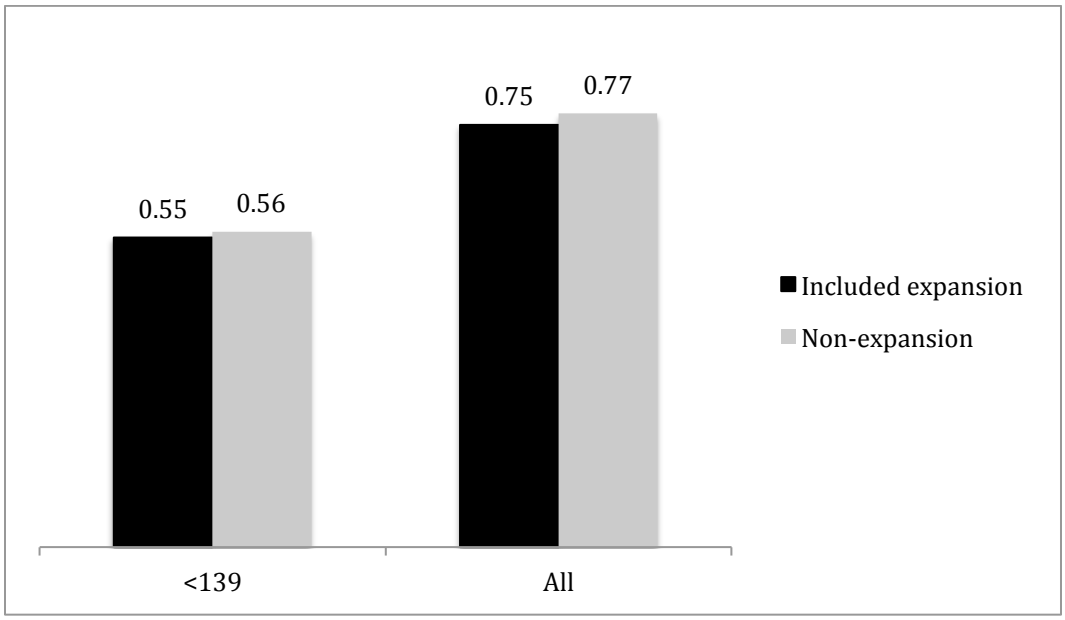


Notes: Author's analysis of American Community Survey microdata obtained from IPUMS-USA. Change = Level 2017 – Avg Level 2010-2013.

We include the states listed in red in our analyses. In these states, the average change along both dimensions is roughly equal to the change in Montana. The included states are also well matched to the control (non-expansion) states. That is, the included states were similar to non-expansion states prior to expansion.

Figure A2 shows the average share of people with any health insurance in the included expansion states and non-expansion states during 2010-2013. The differences are small and statistically insignificant.

Figure A2: Average share of 18-64 year old population with any health insurance 2010-2013 by income level



Notes: Authors' analysis of American Community Survey microdata obtained from IPUMS-USA.

We recognize that one could argue for the inclusion or exclusion of various states around the margins. In light of this, we conducted sensitivity analyses that modified the set of included states. Modifying the set of included states slightly changes the coefficients and levels of statistical significance slightly, but the overall pattern of results is unaffected.

B. Direct effects for REMI model

To estimate the economic impacts of Medicaid expansion, we need to understand the direct effect of Medicaid expansion on Montana's economy. That is, we need to answer the question: "Without Medicaid expansion, which parts of the economy would have more/less money and how much more/less would they have?"

As described in Section III, Medicaid expansion introduces three key changes:

(1) Medicaid expansion changes low-income Montanans' insurance coverage (both whether they are covered and the type of insurance those with coverage have);
(2) Medicaid expansion changes how much health care low-income Montanans consume; and

(3) Medicaid expansion changes who pays for low-income Montanans' health care.

In combination, these three changes produce the direct effects of Medicaid expansion.

1. How does Medicaid expansion change insurance coverage?

Medicaid expansion reduces the number of uninsured people and changes the proportion of people with different types of insurance (e.g., traditional Medicaid, employer sponsored, direct purchase).

A portion of Medicaid expansion beneficiaries would have been enrolled in traditional Medicaid without expansion. This transfer saves the state money. We use savings estimates from the state to estimate the size of this population using the following equation:

$$State\ cost\ shift\ savings_t = (State\ share_{Trad}) * Spending_{trans,t}$$

For purposes of this calculation, we assume that shifting this population from traditional Medicaid to the expansion does not change their total spending. Given these relationships, total spending among this population equals:

$$Spending_{trans,t} = \frac{State\ cost\ shift\ savings_t}{(State\ share_{Trad})}$$

Given this relationship, we estimate the total health care spending among the Medicaid transfer population is approximately 12 percent of total expansion spending. If we assume that the average spending per person in the transfer population equals the average spending per person in the non-transfer population, this suggests that 12 percent of expansion beneficiaries would have enrolled in traditional Medicaid without expansion.

The vast majority of the remaining Medicaid expansion beneficiaries would have been uninsured without expansion. To estimate this share and the share of people who switch from other forms of insurance, we use a differences-in-difference analysis similar to the one presented in Section IV. However, in this analysis, the outcomes are the share of people with Medicaid, any insurance, or private insurance.[51]

[51] For this analysis we use American Community Survey public-use micro data for the years 2010-2017 obtained from IPUMS-USA. We note that the ACS insurance questions have known limitations. E.g., one study found that it systematically undercounts Medicaid enrollment by 23 percent. Bourdreaux, M., K. Thiede Call, J Turner, B. Fried, and B. O'Hara (2013) *Accuracy of Medicaid Reporting in the ACS: Preliminary Results from Linked Data*. SHADAC and US Bureau of Census.

We use the results from this analysis to estimate what types of insurance Medicaid expansion beneficiaries would likely have without expansion. Specifically, we divide the differences-in-differences coefficient for the change in the share of people with a particular type of insurance by the change in the share with Medicaid. Table A1 presents the results from this analysis.

Table A1: Composition of change in Medicaid enrollment for selected populations.

	Comparison States, all 18-64		Montana only, all 18-64	
	Any	**Private**	**Any**	**Private**
Year 1	0.75	0.27	0.88	0.11
Year 2	0.73	0.28	0.81	0.16
Year 3	0.77	0.23		
Year 4	0.74	0.26		
Average	0.75	0.26	0.84	0.13
	Comparison States, 18-64 <139 FPL		**Montana only, 18-64 <139 FPL**	
	Any	**Private**	**Any**	**Private**
Year 1	0.83	0.18	0.62	0.29
Year 2	0.79	0.21	0.80	0.22
Year 3	0.81	0.20		
Year 4	0.75	0.27		
Average	0.80	0.21	0.71	0.25
Average as share of total enrollment, assuming 12 percent within Medicaid transfer				
	Private	**Private**	**Private**	**Private**
All	0.66	0.23	0.74	0.12
<139	0.70	0.19	0.63	0.22

Notes: Authors' analysis of American Community Survey 2010-2017 microdata obtained from IPUMS-USA. Regression coefficients that form basis for listed shares obtained from regressing share with each type of insurance on interactions equal to one if an included expansion state N years after expansion in that state along with state and year fixed effects. The population in these regressions is limited as described in table with an additional restriction that the individual have only one type of insurance.

We report results for four different populations. The top portion of the table examines coverage among the entire 18-64 year-old population, and the bottom portion examines coverage among 18-64 year olds with incomes below 139 percent of the poverty line. The left portion of the table presents results that compare the selected Medicaid expansion states to non-expansion states, and the right portion presents results that compare Montana to non-expansion states. The results vary some, but the general pattern is the same – the vast majority of the growth in Medicaid coverage came from the uninsured population. For instance, in the selected expansion states (i.e., states where uninsurance declined by a similar amount to Montana), approximately 75 percent of the net change in Medicaid enrollment came from the uninsured. The remaining growth in Medicaid

enrollment primarily reflects a reduction in the share of people with some form of private insurance.

These estimates focus on the net change in total Medicaid enrollment. As such, they do not account for within-Medicaid transfers. For purposes of our analysis, we assume that 12 percent of total expansion enrollment are Medicaid transfers. As such, we assume that roughly 60-70 percent of expansion enrollees come from the uninsured population.

We assume the remaining 18-28 percent of Montana Medicaid expansion enrollees switch from some form of private insurance. The allocation of these enrollees between employer-sponsored and direct purchase insurance is more difficult to determine. Analyses of Medicaid expansions effects on the share of people with different types of private insurance do not yield consistent results. Some analyses suggest that 70 percent of the shift from private insurance to Medicaid was among people with employer-sponsored insurance, others suggest that 70 percent of this shift was from people with direct purchase insurance.

For the purposes of this analysis, we also need to identify those who would have received subsidies from the federal government to obtain insurance through the exchange. When these individuals switch to Medicaid, the federal government effectively transfers what it would have spent on subsidies to Medicaid expansion. As such, a portion of Medicaid expansion spending for these individuals does not represent new money in Montana's economy and should not be included as direct impacts.

Unfortunately, the data to estimate movement from the exchange to Medicaid expansion is limited. The survey used in the analyses above does not separate exchange coverage from other forms of direct purchase insurance. Given that subsidies are only available to individuals with income above 100 percent of the federal poverty line, the set of beneficiaries with income above this threshold provide an upper bound estimate for this value. According to DPHHS, 11 percent of expansion beneficiaries have incomes above 100 percent FPL.[52] Of course, it is unlikely that all (or even most of this population) was enrolled on the exchange. According to data from the Medical Expenditure Panel Survey ("MEPS"), only 6 percent of Americans ages 18-64 with income between 100-150 percent of the FPL were enrolled on an exchange in 2016.[53] While these data are not reported by

[52] https://dphhs.mt.gov/Portals/85/Documents/healthcare/MedicaidExpansionMemberProfile.pdf [accessed December 22, 2018]

[53] MEPS data obtained from IPUMS-MEPS include data from 2010-2016. *Lynn A. Blewett, Julia A. Rivera Drew, Risa Griffin, Kari C.W. Williams, and Daniel Backman. IPUMS Health Surveys: Medical Expenditure Panel Survey, Version 1.0 [dataset]. Minneapolis: University of Minnesota, 2018. http://doi.org/10.18128/D071.V1.0*

the state, this value varies only slightly across regions. In the South, where few states had expanded Medicaid in 2016, 6.2 percent of this population was enrolled in an exchange. In the Northeast, where nearly all states had expanded, the share was 5.7 percent. A different analysis of MEPS data suggests that only 3.5 percent of those who gained Medicaid coverage in this population were enrolled in the exchange at any point during the year prior to Medicaid enrollment.

These data suggest that only a small proportion of those who enrolled in the expansion otherwise would have enrolled in the exchange and received subsidies. We use the higher number (6 percent) in order to obtain a more conservative estimate of Medicaid expansion's economic impacts. Given that 11 percent of Montana Medicaid expansion beneficiaries were eligible for subsidies through the exchange, less than one percent of Medicaid beneficiaries likely would have obtained subsidies without expansion.

Table A2 summarizes our assumptions for the type of insurance coverage expansion beneficiaries would have without expansion. To illustrate a range of plausible values, we present two different scenarios.

Table A2: Illustrative allocations of Medicaid expansion beneficiaries to alternative forms of coverage without expansion

Type of insurance		
Uninsured	60%	70%
Traditional Medicaid	12%	12%
Employer Sponsored	17%	11%
Exchange	1%	1%
Other private	10%	6%

2. How does Medicaid expansion change total health care spending?

Individual health spending changes with insurance coverage. For this study, the most important relationship is between any coverage and spending. According to data from the MEPS, low-income (<150 percent of the Federal Poverty Line) individuals aged 18-64 without insurance spent approximately $1,700 on health care in 2016.[54] This is 25 percent of the spending for similar individuals who were insured ($6,700).

Among those with insurance, spending varies by type. Table A3 presents average annual spending for low-income Americans between the ages of 18 and 64 with different

[54] This population has an age distribution that is very similar to Montana's Medicaid expansion. We include people up to 150 percent of the Federal Poverty Line because survey measures of Medicaid expansion eligibility typically fail to accurately identify the full set of Medicaid expansion individuals. This may, in part, reflect things like 12 month eligibility. MEPS data obtained from IPUMS-MEPS.

types of insurance. The MEPS does not separate people with traditional Medicaid from those in the expansion. As such, the Medicaid value blends both populations; however, reported Medicaid spending aligns with reported per beneficiary spending in the expansion population. According the most recent estimates, expansion spending per beneficiary was $6,365 in FY2015 and $5,965 in FY2016.[55]

Table A3: Average health care spending for low-income individuals ages 18-64 by type of health insurance, 2016

	<150	Difference with Medicaid
Uninsured	$1,681	$4,886
Private insurance	$5,613	$948
Group (e.g., employer)	$6,210	$345
Exchange	$4,240	$2,341
Medicaid	$6,411	$0

Notes: Authors' analysis of Medical Expenditure Panel Survey data. For each category, we limit the sample to individuals enrolled in this type of coverage for the full year. The Medicaid category includes both traditional Medicaid and Medicaid expansion.

We obtain an estimate for new health care spending induced by Medicaid expansion by combining the estimates in Table A2 with the estimates in Table A3. Multiplying the difference with Medicaid column from Table A3 by the shares in Table A2, summing these values and dividing by average Medicaid spending suggests that 48-55 percent of Medicaid expansion spending is new spending.

As a robustness check, we also use the MEPS data for 2013-2016 to estimate how individual health expenditures change when someone gains or loses Medicaid coverage. We restrict the sample to people ages 18-64, and we regress the natural log of individual health expenditures on the number of months of Medicaid coverage or an indicator equal to one if the individual was covered by Medicaid in all 12 months along with individual and year fixed effects. Table A4 presents the results.

These results are consistent with the results above. They indicate that, on average, each month of Medicaid coverage is associated with a $267 increase in total health care

[55] 2017 Actuarial Report on the Outlook for Medicaid. https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/ActuarialStudies/Downloads/MedicaidReport2017.pdf [accessed December 30, 2018].

spending. These estimates suggest that obtaining Medicaid more than doubles health care spending. As such, 50-60 percent of Medicaid spending is new spending.[56]

Table A4: Effect of Medicaid coverage on average health care spending

	Total health expenditures	Total health expenditures	Total health expenditures	Total health expenditures
Medicaid months	267***		266***	
	(29)		(43)	
12 months of Medicaid		3,560***		3,637***
		(440)		(637)
Population	All 18-64	All 18-64	Low-income 18-64	Low-income 18-64
N	85,007	78,010	47,228	21,837

Notes: Authors' analysis of MEPS data for years 2013-2016 obtained from IPUMS-MEPS. Results from regression of ln(total health expenditure+1) on Medicaid coverage with individual and year fixed effects for population ages 18-64. Robust standard errors in parentheses. *** indicates statistically significant at 0.001 level. For the regression that focuses on a full-year of Medicaid coverage, we exclude people with a partial year of Medicaid coverage. The Medicaid variable includes both traditional Medicaid and Medicaid expansion.

As an additional robustness check, we use data on total health care spending by state between 2010 and 2014 to conduct an additional differences-in-differences regression.[57] Again, we limit the set of expansion states to the high impact states described above and compare the change in health care spending in that set of states to the change in non-expansion states. Specifically, we regress the natural log of total health spending on an indicator for included expansion states after expansion along with controls for the natural log of total population, the natural log of personal income, the natural log of the population over age 65, the natural log the population with a disability, and state and year fixed effects. This regression suggests that Medicaid expansion increased total health care spending in expansion states during the first year of expansion by 1.6 percent ($p<0.01$). Applying this estimate to expected total health expenditures in Montana in 2016, suggests Medicaid expansion increased total health spending by approximately $150 million, or approximately 48 percent of 2016 Medicaid expansion spending.[58]

[56] E.g., average Medicaid spending in the full 18-64 year-old population averaged approximately $6,200. $267*12/$6,200 = 0.52.

[57] At present, 2014 is the most recent data with state level health care expenditure data available from the National Health Expenditures program.

[58] The most recent data on health expenditures in Montana are for 2014. To obtain an estimate for 2016, we apply the national rate growth rate of personal health care spending in 2015 (6.1 percent) and 2016 (4.9 percent) to the 2014 Montana estimate ($8.409 billion). We then multiply this number by 1.6 percent and divide by total 2016 Medicaid expansion spending on benefits and claims ($315 million).

Collectively, these analyses suggest that total health care spending in Montana increases by an amount equal to between 48-60 percent of total Medicaid expansion spending. In the model presented in the main report, we conservatively assume that 48 percent of expansion spending is new spending.

3. How does Medicaid expansion change who pays for health care?

The final part of determining the direct effects of Medicaid expansion is describing how the source of health care payment changes. With Medicaid expansion, who pays for care is relatively straightforward. The federal government pays for most (roughly 90 percent in 2020), the state pays a little (roughly 10 percent in 2020), and, because Montana has premiums and cost sharing, the beneficiaries pay a little as well (less than one percent).

Without Medicaid expansion, who pays for care is more complicated. Table A2 outlines a range of allocations for the types of insurance expansion beneficiaries would have had without expansion. These estimates provide a crude estimate for who pays for care, but there are complications. First, among the uninsured, most spending is likely out-of-pocket; however, some of their spending may be offset by state or federal government programs or by charitable donations. Second, among those with employer sponsored insurance, individuals pay for part of the cost in the form of premiums and out-of-pocket payments. Furthermore, economists debate who pays the employer share of premiums – the employer or the employee.

a. Federal

The change in federal spending is governed by:

$$Federal_E - Federal_T = F_E(PX + PT + PN - \rho) - (F_T PT + \psi X)$$

where F_E is the FMAP for expansion, PX is expansion spending by people who otherwise would have receieved subsidies to purchase coverage through the exchange, PT is expansion spending by people who would have been covered by traditional Medicaid, PN is expansion spending by everyone else, ρ is premiums paid by expansion beneficiaries, F_T is the FMAP for traditional Medicaid, and ψ is the average exchage subsidy for those who would have received them. Over the long run there may be additional reductions in federal spending attributable to Medicaid expansion (e.g., federal payments for uncompensated care were supposed to be reduced but these reductions have been delayed); however, we have not included these potential reductions in our analysis.

We assume P (average spending per expansion beneficiary) is the same for all groups. We use the stated FMAP for each year. We assume ρ equals 0.6 percent of total spending (based on state budget reports and forecasts). We compute ψ using the Kaiser Family Foundation's Health Insurance Marketplace Calculator to obtain subsidy estimates for someone with an income equal to 125 percent FPL at five-year age intervals for 2015 and 140 percent FPL for 2016-2019. We average these amounts weighting by the share of Medicaid expansion beneficiaries in each age group.[59] To this amount, we add $1,500, the average approximate annual CSR in Montana in 2016.[60] For future years, we increase this amount by 5 percent.

We do not include any change in federal revenues in our calculation. For instance, given that payments for employer-sponsored health insurance ("ESI") are not taxed as income, reduced spending on ESI will (in part) become increased income for workers, proprietors, or owners. This income will be taxed at some level. Such revenue increases offset the cost of expansion to the federal government. However, we have not included such payments as part of our calculation of the direct impacts of expansion.

b. State

The change in state spending is governed by:

$$State_E - State_T = (S_E(PN + PE + PT - \rho) + Fac_E + SUD_E) - (S_T PT + Fac_T + SUD_T)$$

$$= S_E(PN + PE - \rho) + (S_E - S_T)PT + (Fac_E - Fac_T) + (SUD_E - SUD_T)$$

where all variables are defined the same as in the federal equations and S_E and S_T are the state shares for expansion and traditional Medicaid, $(Fac_E - Fac_T)$ is savings to state facilities that can now bill Medicaid for 24 hour inpatient hospitalization and similar savings to the Department of Corrections, and $(SUD_E - SUD_T)$ is savings to the state from reduced spending on mental health and substance abuse. Data for the saving for 24-hour

[59] http://dphhs.mt.gov/Portals/85/Documents/healthcare/MedicaidExpansionMemberProfile.pdf.
[60] The Trump administration canceled federal CSR payments for 2018. However, insurance providers are still obligated to provide them. As such, they have raised premiums. Given the structure of federal subsidies, which limit premiums to a percentage of income for people with incomes less than 400 percent FPL, the federal government still effectively funds most of the CSR payments because the government absorbs most of the increase in premiums. However, some of the burden for the higher CSR payments will fall on individuals with incomes greater than 400 percent FPL who do not qualify for subsidies. Given that Medicaid expansion reduces the need for CSRs, expansion may lower premiums for higher-income Montanans. We do not include these savings in our model.

inpatient admissions comes from the state officials.[61] Data for the size of the savings on mental health and substance abuse treatment comes from a report prepared by Manatt.[62]

We do not include any change in state revenues in our calculation. As discussed above, shifting people into the expansion likely leads to direct changes in tax revenue that may offset part of the cost of expansion to the state. However, we do not include these revenues when computing the direct impact of expansion.

c. Individuals and employers

The change in individual spending is governed by:

$$Ind_E - Ind_T = \rho - O_u U * (O_i + \varsigma_i)I + (O_x + \varsigma_x)X + (O_e + \varsigma_e)E$$

where ρ equals the individual's Medicaid expansion premium, O equals out-of-pocket spending and ς equals the individual's premium contribution for each type of coverage (uninsured (U), unsubsidized direct purchase (I), subsidized exchange purchase (X), employer-sponsored (E)) without expansion.

We use MEPS spending data to capture spending among the uninsured. We use the price of an exchange policy (computed using the same method as was used to compute the size of the exchange subsidy) to compute the premium for individuals with direct purchase insurance. We use data from the MEPS Insurance/Employer Component[63] to compute the individual contribution for an individual employer-sponsored plan in Montana. We grow all values at 5 percent per year.

The change in employer spending equals the employer contribution times the number of people who switch from an employer policy. We also use MEPS-IE to obtain average employer contribution for an individual policy in Montana.

Combined these assumptions guide how we allocate Medicaid expansion spending in the REMI model. Table A5 presents a reasonable range of allocations given the above assumptions. For instance, one set of assumptions assumes that 48 percent of Medicaid expansion spending supports new health care spending, 9 percent represents savings to

[61] In correspondence, state officials document a $2.8 million reduction in outside spending on health care in the Department of Corrections. They also note an additional $2.6 million savings to state facilities that can now bill Medicaid for 24 hour inpatient hospitalization.
[62] Medicaid Expansion: How it affects Montana's state budget, economy, and residents. https://mthcf.org/wp-content/uploads/2018/06/Manatt-MedEx_FINAL_6.1.18.pdf
[63] https://meps.ahrq.gov/data_stats/quick_tables_search.jsp?component=2&subcomponent=2

other federal programs, 5 percent is savings to other state programs, 24 percent represents savings to individuals, and 13 percent represents savings to employers.

Table A5: Range of allocations of Medicaid expansion spending across groups

	Low range	High range
New	48%	55%
Federal	9%	9%
State	5%	5%
Individuals	25%	25%
Employers	13%	7%

C. Results from alternative specifications

Table A6 presents results from several alternative REMI specifications. In each specification, we keep actual and projected Medicaid expansion spending fixed, but we vary the share of spending that supports new health care spending, the share that offsets other federal or state spending, and the share that offsets individual or employer spending. For each specification, we present only the results for the year 2020.

While the assumptions about the allocation of Medicaid expansion spending vary, the basic order of magnitude of the results does not. Given projected spending, the REMI model calculates that Medicaid expansion generates roughly 6,000 jobs, roughly $350 million in personal income, and roughly $430 million in gross domestic product. In the main text, we present the most conservative assumption.

Table A6: Alternative economic impact estimates for 2020 (millions of $2018)

	Table 1	Alternative 1	Alternative 2	Alternative 3
Jobs	5,906	5,977	6,080	6,272
Personal Income	$348	$367	$351	$356
GDP	$420	$428	$435	$449
Assumed allocations beneficiaries of expansion spending	New: 48% Federal: 9% State: 4% Individual: 27% Employer: 12%	New: 52% Federal: 20% State: 9% Individual: 12% Employer: 8%	New: 52% Federal: 15% State: 7% Individual: 14% Employer: 14%	New: 55% Federal: 9% State: 4% Individual: 24% Employer: 9%

D. Differences-in-Differences Model

The differences-in-differences analyses presented in Section IV result from estimating equations with the form:

$$Y_{it} = \beta_0 Exp_{i0} + \beta_1 Exp_{i1} + \beta_2 Exp_{i2} + \beta_3 Exp_{i3} + X_{it}'\delta + S_i + Y_t + \varepsilon_{it}$$

Where the variables are as follows:

- Y_{it} is the outcome of interest: ln(health care employment), ln(health care compensation, ln(health care GDP), ln(total employment). The data for each of these outcomes was obtained from the Bureau of Economic Analysis' Regional Economic Accounts;
- Exp_{ij} is a variable equal to 1 if state i is an expansion state j years since expansion (j = 0 is the first year of expansion), and zero otherwise;
- X_{it} is a vector of control variables that includes ln(total population), ln(traded sector employment), ln(population over age 65), ln(population with a disability), and ln(population over age 25 with at least a Bachelor's degree) for each state and year. The data for total population, over age 65, with a disability, and with a Bachelor's degree were obtained from the Census. Total traded sector employment was obtained by applying estimates for the percent of employment in each 2-digit NAICS industry in the traded sector obtained from Jensen (2012) to state-year 2-digit total employment estimates from the Bureau of Economic Analysis Regional Economic Accounts;[64]
- S_i are state fixed effects; and
- Y_y are year fixed effects.

We estimate this equation using data for the 34 included states during the period 2010-2017.

The core assumption of a differences-in-differences analysis is the parallel trend assumption. That is, this analysis rests on the assumption that, in the absence of Medicaid expansion, the change in outcomes for expansion states would have followed the same trajectory as non-expansion states.

One way to test the reasonableness of this assumption is to examine the change in outcome prior to expansion. If expansion and non-expansion states followed similar trajectories prior to expansion, it is plausible that they would have followed similar trajectories after expansion. As such, one can perform a differences-in-differences analysis in the periods prior to expansion. If one observes statistically significant results in the pre-period, then the expansion states may have been following a different trajectory prior to expansion and the non-expansion states may not provide a reasonable control group.

[64] Jensen, J. B. (2011). *Global trade in services: fear, facts, and offshoring*. Washington, DC: Peterson Institute for International Economics, Table 2.3.

To test this assumption we estimate the following regression:

$$Y_{it} = \beta_{-4}Exp_{i-4} + \beta_{-3}Exp_{i-3} + \beta_{-1}Exp_{i-1} + \beta_0 Exp_{i0} + \beta_1 Exp_{i1} + \beta_2 Exp_{i2} + \beta_3 Exp_{i3} + X_{it}'\delta + S_i + Y_t + \varepsilon_{it}$$

This differences-in-differences analysis compares the change in outcome between expansion and non-expansion state in the periods prior to expansion. We present selected results in Table A7. We do not observe a consistent pattern of statistically significant differences. There is a bit of evidence (though not statistically significant) that expansion states' health care sectors began growing prior to expansion. This may be driven by the handful of states that began expanding Medicaid in 2013; it may reflect providers building capacity in anticipation of expansion; or it may reflect some other effect.[65] To the extent these changes are the result of expansion, our main estimates underestimate the effects of Medicaid expansion.

Table A7: Selected coefficients from tests of parallel trend assumption

	Ln(health care employment)	Ln(health care GDP)	Ln(total employment)	Ln(local sector employment)
4 years pre-expansion	-0.014	-0.003	-0.002	-0.003
	(0.009)	(0.006)	(0.002)	(0.003)
3 years pre-expansion	-0.013	0.000	-0.001	-0.002
	(0.009)	(0.005)	(0.002)	(0.003)
1 year pre-expansion	0.008	0.010	0.001	0.002
	(0.006)	(0.007)	(0.002)	(0.003)

Notes: Cluster-robust standard errors clustered on state in parentheses, + p<0.10, * p<0.05, ** p<0.01; all regressions specified as above and include same controls as main specification.

The interpretation of our differences-in-differences results is further complicated by the facts that not every state expanded at the same time and expansion timing varies with respect to the implementation of other parts of the ACA. As such, we present an additional robustness check where we separate the included expansion states into those that expanded in 2014 and those did not. The results from these analyses show similar effects, in spite of the fact that expansion in these groups occurred at different points relative to other changes induced by the ACA.

[65] Consistent with anticipatory effects, health care employment in Montana began to grow at a faster rate in the quarter following the HELP act's passage (which was two quarters prior to implementation).

Table A8: Differences-in-differences results for 2014 expansion states and post-2014 expansion states

	Ln(health care employment)	Ln(health care employment)	Ln(total employment)	Ln(total employment)
Year 1	0.020+	0.009	0.005	0.000
	(0.012)	(0.006)	(0.003)	(0.002)
Year 2	0.020	0.016**	0.006	0.004+
	(0.013)	(0.006)	(0.004)	(0.002)
Year 3	0.026+	0.021*	0.009*	0.010**
	(0.014)	(0.010)	(0.004)	(0.003)
Year 4	0.031+		0.013*	
	(0.016)		(0.005)	
Expansion states	Initial	Late	Initial	Late

Notes: Cluster-robust standard errors clustered on state in parentheses, + p<0.10, * p<0.05, ** p<0.01; all regressions specified as above and include same controls as main specification.

Finally, we note the standard errors for our coefficients frequently hover right above or below the standard (though arbitrary) 0.05 level. This is not terribly surprising given the small samples and relatively small effect. We note that the coefficients, though, remain consistent. Changing the set of states examined, the set of control variables included, etc. does not change the overall tenor of the results.

E. Impact of Medicaid Expansion/HELP-Link on Labor Force Participation

As discussed in Section V, labor force participation among low-income Montanans increased after Montana expanded Medicaid. These findings are based on an analysis of microdata from the Current Population Survey Annual Social and Economic Supplement and the American Community Survey obtained from IPUMS.[66]

In the main text, we focus on individuals ages 18-64 with incomes below 139 percent FPL who do not report a disability.[67] We report the percentage of people in this group

[66] Flood, S. King, M., Ruggles, S., and Warren, J.R, "Integrated Public Use Microdata Series, Current Population Survey: Version 5.0," [dataset] Minneapolis: University of Minnesota (2017). https://doi.org/10.18128/D030.V5.0; Steven Ruggles, Sarah Flood, Ronald Goeken, Josiah Grover, Erin Meyer, Jose Pacas, and Matthew Sobek. IPUMS USA: Version 8.0 [dataset]. Minneapolis, MN: IPUMS, 2018. https://doi.org/10.18128/D010.V8.0

[67] We compute income as a percent of poverty using IPUMS-CPS variables offtotval and offcutoff.

participating in the labor force before Montana expanded Medicaid (2012-2015) and after Montana expanded Medicaid (2016-2018).

Table A9: Differences-in-Differences Regression Analysis of Impact of Medicaid Expansion on Labor Force Participation

Current Population Survey ASEC

	Low-income (0-138% FPL)	**Higher Income (>138% FPL)**	**Low-income (0-138% FPL)**	**Higher Income (>138% FPL)**
Montana	0.056**	0.043**	0.062*	0.049**
	(0.003)	(0.009)	(0.002)	(0.009)
After	-0.053**	0.007*	-0.043**	0.009**
	(0.008)	(0.002)	(0.006)	(0.002)
Montana * After	0.057**	-0.022**	0.037**	-0.02**
	(0.006)	(0.002)	(0.005)	(0.002)
Controls	Age, age^2, sex, white non-Hispanic, child <18, state and year FE		Age, age^2, sex, white non-Hispanic, child <18, disabled status, state and year FE	
Population	Non-disabled	Non-disabled	All	All
N	129,925	617,458	154,341	658,173

American Community Survey

	Low-income (0-138% FPL)	**Higher Income (>138% FPL)**	**Low-income (0-138% FPL)**	**Higher Income (>138% FPL)**
Montana	0.074**	0.032**	0.079**	0.043**
	(0.002)	(0.009)	(0.001)	(0.000)
After	-0.036**	0.006**	-0.031**	0.007**
	(0.003)	(0.002)	(0.003)	(0.001)
Montana * After	0.032**	0.004**	0.029**	0.005**
	(0.001)	(0.001)	(0.001)	(0.001)
Controls	Age, age^2, sex, white non-Hispanic, child <18, state and year FE		Age, age^2, sex, white non-Hispanic, child <18, disabled status, state and year FE	
Population	Non-disabled	Non-disabled	All	All
N	2,040,660	8,091,695	2,604,575	8,848,404

Note: Robust standard errors clustered at state level in parentheses, ** p<0.01, * p<0.05.

In table A9, we report results from a similar differences-in-differences analysis that uses regression analysis to add controls for age, age^2, sex, race (white non-Hispanic), whether the individual has children less than age 18, and state and year fixed effects. The effects obtained from this specification are similar to those reported in the main text.

Relative to low-income people in other states, labor force participation ("LFP") increased by 3-6 percentage points more in Montana than in other areas. This effect is not observed among higher-income Montanans, suggesting that the change in LFP is not a Montana effect, it only applies to low-income Montanans. Medicaid expansion and HELP-Link provide a plausible explanation for these observed effects.

F. Impact of Medicaid expansion on health care sector

Table A10 presents results that are a quasi-replication of the differences-in-differences results in Blevin (2016, 2017). They are a quasi-replication because our analysis differs in a few ways. First, we present separate results for providers whose fiscal year extends into some part of 2017 (the 2017 group) and those whose fiscal year does not (the 2016 group). Second, Blevin uses provider characteristics obtained from the American Hospital Association in his analysis. We do not have these data, so we limit the sample and use control variables obtained from CMS's POS file. Third, we include late expanders. That is, we include data from states (NH, MI, PA, IA, MT, AK, LA) that expanded after the initial expansion in the analysis. Third, we exclude a larger set of states as "pre-expansion" states. In addition to excluding states that opted into the ACA expansion early, we also exclude states that had expanded Medicaid to a larger set of people prior to 2014.[68] Fourth, we also try and eliminate the influence of outlier data by eliminating the top and bottom one percent of national outcomes; however, we are not certain we eliminated outliers in exactly the same manner as Blevin.

To complete these analyses, we use data obtained the Center for Medicare and Medicaid Services' ("CMS") Healthcare Cost Reporting Information System ("HCRIS") augmented with data from CMS's Provider of Services ("POS") file.[69] All Medicare-certified institutional providers are required to report information on facility characteristics, utilization, and costs to these databases. We restrict our analysis to include non-federal, short-term and critical access hospitals. We also restrict our analysis to include providers who use a consistent 12-month reporting period throughout the period examined (2012-2017).[70]

While these data have some known limitations (e.g., implausible values for some variables), several researchers have employed them to investigate hospital financial

[68] Specifically, we exclude California, Colorado, Connecticut, Delaware, DC, Hawaii, Iowa, Massachusetts, Minnesota, New Jersey, New York, Vermont, and Washington.
[69] HCRIS data obtained from http://www.nber.org/data/hcris.html
[70] Some providers changed their reporting cycle at some point. As a result, these providers report only a partial year in one of their reports. These seven providers are excluded from the analysis because they do not fit consistently into either of the two groups analyzed.

performance.[71] They provide convenient access to a consistent set of variables for a large number of providers.

Hospitals report data to HCRIS using their own fiscal year. This creates a significant challenge for this analysis. Not every observation is clearly pre- or post-expansion. For some providers, Medicaid expansion began in the middle of their fiscal year. Fortunately, for most of these providers, FY2017 is available, so we have at least one full year of post expansion data, one that includes information from 6 to 18-months after the start of expansion. Other providers follow the calendar year. These providers have a cleaner pre-, post-expansion divide; however, we only have data for CY2016 for these providers (CY2017 data is not yet available).

The results in Table A10 are similar to those described in Blevin (2016, 2017). Relative to providers in non-expansion states, providers in expansion states experience rising net Medicaid revenues. The average provider in expansion states enjoyed several million dollars of additional Medicaid revenue. These effects grow over time. Similarly, relative to providers in non-expansion states, the average provider enjoyed a several million dollar reduction in uncompensated care. These effects also grow over time. The average provided saw uncompensated care fall by 2.5 percent of total expenses more than the average provider in non-expansion states.

The average operating margin also improved in expansion states relative to non-expansion states for the nearly two-thirds of providers in the 2016 group. By three years after expansion, the average operating margin had improved by 2.5 percentage points. However, operating margins for providers in the 2017 group do not show similar improvements. The average change in operating margin for this group is small and statistically insignificant.

Table A11 replicates Table A10 but restricts the set of Medicaid expansion states to include states with above average Medicaid growth after 2014. The potential impact of Medicaid expansion is likely larger in these states. Table A2 confirms this. The basic pattern of results is similar to those presented above; however, the size of the coefficients is larger in almost every case.

[71] See Blevin (2016, 2017); Lindrooth et al (2018); Bazzoli, G. J., Fareed, N., & Waters, T. M. (2014). Hospital financial performance in the recent recession and implications for institutions that remain financially weak. *Health Affairs*, *33*(5), 739-745.

Table A10: Differences-in-differences analysis of effect of Medicaid expansion on hospital performance

	Net Medicaid Revenue		Uncompensated Care		Uncomp. Care as % of Total Expenses		Operating Margin	
Yr	**2017 Group**	**2016 Group**	**2017 Group**	**2016 Group**	**2017 Group**	**2016 Group**	**2017 Group**	**2016 Group**
1	950568	1515697+	-617273	-2309174**	-0.006*	-0.015**	-0.003	0.011*
	(740911)	(831667)	(383278)	(518020)	(0.002)	(0.003)	(0.007)	(0.005)
2	4936912**	3086237*	-2554580**	-3174756**	-0.018**	-0.021**	0.009	0.014+
	(1175690)	(1216801)	(921546)	(651988)	(0.005)	(0.003)	(0.007)	(0.008)
3	6736014**	4231590**	-3062830**	-4446721**	-0.021**	-0.026**	0.004	0.024*
	(1485363)	(1214123)	(877254)	(518354)	(0.006)	(0.002)	(0.008)	(0.010)
4	6979139**		-3807065**		-0.023**		0.002	
	(2176856)		(910543)		(0.006)		(0.009)	
N	6481	10711	6334	10378	6332	10377	6347	10447

Notes: Authors' analysis of HCRIS and POS data for short-term and critical access hospitals. All analyses include provider and year fixed effects and controls for rural status, bed count, ownership, and services provided (open heart surgery, alcohol and drug services, burn care, cardiac catheterization, chemotherapy, ob/gyn, and neurosurgical services). Providers in early expansion states are excluded. Top and bottom one percent of outcome measures excluded. All dollar values adjusted for inflation based on CPI for medical expenses. Standard errors clustered at state level. + p<0.10, * p<0.05, ** p<0.01.

Table A11: Differences-in-differences analysis of effect of Medicaid expansion on hospital performance in above average expansion states

	Net Medicaid Revenue		Uncompensated Care		Uncomp. Care as % of Total Expenses		Operating Margin	
Yr	**2017 Group**	**2016 Group**	**2017 Group**	**2016 Group**	**2017 Group**	**2016 Group**	**2017 Group**	**2016 Group**
1	1775868+	3750419**	-1125669**	-2547446**	-0.009**	-0.017**	-0.005	0.012+
	(1003950)	(872646)	(264112)	(403758)	(0.003)	(0.002)	(0.007)	(0.007)
2	9857050**	8346136**	-4579100**	-3702039**	-0.026**	-0.026**	0.018*	0.014+
	(2786093)	(2555012)	(790229)	(498594)	(0.005)	(0.003)	(0.007)	(0.008)
3	11318310**	7535823**	-5097892**	-4253825**	-0.033**	-0.025**	0.015	0.015+
	(2111943)	(2084808)	(634990)	(488114)	(0.005)	(0.003)	(0.010)	(0.008)
4	12657633**		-5220159**		-0.030**		-0.004	
	(3264866)		(480428)		(0.005)		(0.013)	
N	5372	10163	5248	9737	5247	9736	5270	9742

Notes: Authors' analysis of HCRIS and POS data for short-term and critical access hospitals. All analyses include provider and year fixed effects and controls for rural status, bed count, control, and services provided (open heart surgery, alcohol and drug services, burn care, cardiac catheterization, chemotherapy, ob/gyn, and neurosurgical services). Only above average expansion states and non-expansion states included. Top and bottom one percent of outcome measures excluded. All dollar values adjusted for inflation based on CPI for medical expenses. Standard errors clustered at state level. + p<0.10, * p<0.05, ** p<0.01.

G. A Note on Woodwork Effects

Some argue that the costs of Medicaid expansion should include "woodwork" effects, which means that the availability of Medicaid expansion increases enrollment in traditional Medicaid. If so, the cost of Medicaid expansion could include the costs associated with these enrollees.

We do not include woodwork effects in this analysis, primarily because the literature finds that the ACA increased enrollment in traditional Medicaid, but these increases were not related to Medicaid expansion. For instance, one recent study found "similarly-sized woodwork effects in all groups of states, regardless of Medicaid expansion status."[72] Similarly, our own analysis of woodwork effects in late-expansion states does not find evidence that Medicaid expansion increases traditional Medicaid enrollment.

If one were to include woodwork effects, it would be important to include both benefits and costs, such as the effects of increased activity associated with this spending. Furthermore, even if one assumes that there is some level of woodwork effects associated with the implementation of Medicaid expansion, one should not assume that ending Medicaid expansion will eliminate these costs. It is not clear whether those eligible for traditional Medicaid will return to being uninsured if Medicaid expansion were to cease. It seems likely that many would remain.

H. Summary of changes to previous report

This report updates and replaces our April 2018 report, *The economic impact of Medicaid expansion in Montana*. The core message of both reports is the same:

> Medicaid expansion brings a substantial amount of money into Montana's economy. This money circulates through Montana's economy increasing total employment and income by approximately 1 percentage point. In addition to the thousands of jobs and hundreds of millions in income, Medicaid expansion generates other benefits, e.g., improved access to health care, better health, better financial health, and lower crime. In Montana, implementation of Medicaid expansion and the associated HELP-Link program was also associated with improvements in labor force participation among low-income Montanans. Similar improvements were not observed among low-income residents in other states or among higher income Montanans. While the state must pay part of the cost of Medicaid expansion, the

[72] Frean, M., Gruber, J., and Sommers, B. D., "Premium Subsidies, the Mandate, and Medicaid Expansion: Coverage Effects of the Affordable Care Act." *Journal of Health Economics* 53 (2017): 72-86.

combination of budget savings attributable to Medicaid expansion plus the tax revenue from increased economic activity more than offset the expected cost to the state budget.

However, there are differences between the two reports. We summarize the main differences below.

(1) Actual and projected Medicaid expansion spending is higher in the new report. This generates larger economic impacts.

In our first report, we projected Medicaid expansion spending using a combination of data that included expansion spending reported by DPHHS through late 2017[73], an enrollment forecast, and a per member spending forecast.[74]

In this report, we use the actual and projected spending reported by the state on page 13 of the Legislative Fiscal Division's *Legislative Budget Analysis: 2021 Biennium, Volume 1: Statewide Perspectives*.[75]

As shown in Figure 1, spending in the LFD report is higher than we assumed in our prior report. The difference likely reflects a variety of factors: lags in processing claims, higher enrollment in 2018-2020 than we assumed, and higher spending per beneficiary than we we assumed.

Higher spending generates larger economic impacts. In our last report, we reported impacts of roughly 5,000 jobs and $280 million in personal income. In this report, we report impacts of roughly 6,000 jobs and $350 million in personal income. The vast majority of this difference in impact is attributable to the difference in total expansion spending.

(2) The allocation of direct impacts changed based on updated data and additional analyses.

Medicaid expansion adds money to the pockets of five groups: providers (who enjoy increased demand and reduced uncompensated care), the federal government (Medicaid

[73] Specifically, we reported spending on health care services in the Medicaid Expansion Member Profile reports regularly generated by DPHHS. https://dphhs.mt.gov/Portals/85/Documents/healthcare/MedicaidExpansionMemberProfile.pdf

[74] Our spending forecast was largely based on the per Medicaid expansion beneficiary spending forecast included in Centers for Medicare and Medicaid Services. 2016 Actuarial Report on the Financial Outlook for Medicaid, (2016).

[75] https://leg.mt.gov/content/Publications/fiscal/BA-2021/2021BienniumVolume1_Final.pdf

expansion reduces spending on some federal programs), state government (Medicaid expansion reduces spending on some state programs), individuals, and employers. How much expansion spending each group captures affects the REMI results.

Table A12 compares the allocations we used to compute the main results in both reports. First, in this report, we reduced share of expansion spending that represented new health care spending from 52 percent to 48 percent. This change was based on several new analyses conducted for this report. These analyses suggest the Medicaid expansion increased total health care spending by between 48-60 percent. While the value assumed in our previous report falls squarely within this range, we opted to choose the bottom end of the range in order to obtain a more conservative estimate.

Table A12: Allocation of expansion spending between reports

	April 2018	January 2019
New	52%	48%
Federal	19%	9%
State	8%	4%
Individual	12%	27%
Employer	9%	12%

Second, we reduced the assumption for the share of Medicaid expansion spending that was transferred within the federal government from 19 percent to nine percent. In part, this reflects a downward revision in our estimate for the share of people who would have enrolled in traditional Medicaid without expansion. In part, it reflects a downward revision in the share of beneficiaries who would have received exchange subsidies without expansion. The decline in the share of spending in traditional Medicaid mostly stems from the fact that the projected Medicaid savings remained constant but estimates for spending increased. The decline in exchange subsides reflects additional analysis. In our first report, we looked at the change in the share of expansion eligible people with direct purchase. To ensure a more conservative estimate, assumed a large share of such people received subsidies. In this report, we conducted new analyses using longitudinal data from the MEPS that indicate that the share of people who transition between Medicaid and the exchanges is very small. As such, we reduced our assumption for the share of expansion beneficiaries who would have received exchange subsidies.

Third, we reduced our assumption for the share of expansion spending that reduced state spending. The downward revision in the assumed share of within Medicaid transfers described in the previous paragraph drives this result.

Fourth, we increased our assumptions for how much Medicaid expansion spending reduced health care spending among individuals and employers. This is the natural byproduct of reducing the assumed amounts in the other categories. The increase in each of these areas reflects both an increase in the number of people we assume would fall into these categories without expansion and an increase in what we assume each person in these categories would pay in premiums and out-of-pocket costs.

These changes make only a small impact on our results. Table A6 Alternative 1 presents results that apply the old allocation to the new spending levels. The differences in the results are very minor (e.g., less than 100 jobs in 2020).

(3) We present a new analysis that estimates the expected impact of Medicaid expansion in Montana based on the observed changes in other expansion states.

The results from the REMI model rest on a large number of assumptions. First, the REMI model itself is a complicated set of assumptions about how various pieces of the economy interact. Second, we input a variety of assumptions about how Medicaid expansion directly changes Montana's economy. While the REMI model's assumptions have been rigorously investigated and while we endeavored to select reasonable estimates for the direct effects of expansion, it is possible that some of our assumptions miss the mark.

Given that other states expanded Medicaid and most expanded before Montana did, we can look at what happened in these other states to obtain an alternative estimate for Medicaid expansion's effects in Montana. Specifically, we develop a differences-in-differences estimate that compares the change in outcomes in expansion states to the change in outcomes in non-expansion states. These results do not require assumptions about total expansion spending, the share of this spending that is new, etc. They simply provide an answer to the question: "How much did the trajectory of economic activity in expansion states change relative to non-expansion states after expansion?"

To obtain an estimate for the effect of expansion in Montana (as opposed to the average effect of expansion overall), we limit the set of states included to those where expansion's effects on insurance coverage were similar to Montana. Conveniently, the uninsured rate among the eligible population in this set of states more closely resembled that in non-expansion states prior to expansion.

The results from this model are consistent with our REMI results. We estimate that, after three to four years, Medicaid expansion increases the size of the health care sector by roughly three percentage points and total employment by roughly one percentage point.

The consistency between these two approaches provides confidence that our estimates for the economic impacts of expansion in Montana are roughly correct.

(4) We update our analysis of the impact of expansion and HELP-Link on labor force participation among low-income Montanans.

We update the analysis presented in our first report on the change in labor force participation among low-income Montanans by adding an additional year of data from both the Current Population Survey and the American Community Survey. Specifically, we add data from the 2018 Current Population Survey Annual Social and Economic Supplement and the 2017 American Community Survey. Adding this additional data reduced the size of the observed changes from six to nine percent to four to six percent. However, these results remain economically meaningful and statistically significant.

(5) *We updated our review of other expansion effects.*

We reviewed additional literature and highlighted some additional findings of the broader effects of Medicaid expansion. In particular, we added extensive discussion of the impact of expansion on the financial health of providers, particularly in rural areas. Several studies show the Medicaid expansion provides a particularly large boon to rural providers. Consistent with this, we show that health care employment in rural Montana grew quickly following expansion after several years of stagnation.

(6) We updated our analysis of expansion's fiscal effects, but the changes are trivial. We continue to estimate that savings and revenue attributed to expansion exceed expected cost to the state.

In the new report, our estimates for state budget savings attributed to expansion, the expected cost to the state, and the expected revenues from increased activity all change. However, the net effect of these changes is small. We continue to estimate that Medicaid expansion has a positive impact on the state budget.