



# The Economic Impact of Medicaid Expansion in Montana

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## **Abstract**

Medicaid expansion has a substantial effect on Montana's economy. Assuming that enrollment plateaus near current levels, Medicaid expansion will introduce approximately \$350 million to \$400 million of new spending to Montana's economy each year. This spending ripples through Montana's economy, generating approximately 5,000 jobs and \$270 million in personal income in each year between 2018 and 2020. In addition to generating economic activity, Medicaid expansion appears to improve outcomes for Montanans—reducing crime, improving health, and lowering debt. 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 study, we describe the economic impacts of Medicaid expansion on Montana's economy. That is, we investigate "How many jobs and how much income stems from Medicaid expansion?" Our analysis covers the period 2016-2020. 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 years, Medicaid expansion provided beneficiaries more than \$800 million 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 75 to 80 percent of Medicaid spending is new money in Montana. This means that new spending on Medicaid expansion is approximately 33 percent larger than Montana's beverage manufacturing industry (e.g., craft brewing, distilling, wineries, etc.) and only 10 percent smaller than the total budget for University of Montana system.

Medicaid expansion spending enters Montana's economy in two ways. First, it supports new health care spending. Nearly one in 10 Montanans was enrolled in Medicaid expansion as of March 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 care. Without expansion, the state, the federal government, employers, hospitals and providers, and the beneficiaries themselves all contributed to paying for care for people whose care is now paid for via Medicaid. With expansion, the federal government pays for nearly all of health care provided to beneficiaries.

As a result, Medicaid expansion stimulates economic activity. We estimate that, between 2018 and 2020, it will generate approximately 5,000 jobs and \$270 million in personal income annually (see Table 1).<sup>1</sup> This represents slightly less than 1 percent of

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<sup>1</sup> It is useful to note that our analysis does not say that the expansion creates 5,000 in one year and then a different additional 5,000 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) 5,000 in 2020.

Montana’s employment and income. During its first five years, Medicaid expansion is expected to generate a total of about \$1.2 billion in personal income and \$2.6 billion in output or new sales. Consistent with our model, between June 2015 (when the HELP Act was signed into law) and September 2017, Montana added more than 6,200 health care jobs.

**Table 1: Summary of Economic Impacts of Medicaid Expansion in Montana/Year and Cumulative (income and sales in millions of 2016 dollars)**

	2016	2017	2018	2019	2020	Cumulative
<b>Jobs</b>	3,161	5,071	5,326	5,165	4,975	
<b>Personal Income</b>	\$147	\$241	\$265	\$272	\$279	\$1,204
<b>New Sales (i.e., output)</b>	\$336	\$551	\$587	\$576	\$566	\$2,616
<b>Population</b>	968	2,229	3,263	4,036	4,672	

The economic impacts of Medicaid expansion are not limited to the jobs and income it directly or indirectly 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.<sup>2</sup> This is consistent with a larger body of literature that finds that insurance expansions improve mental health and reduce mortality.<sup>3</sup>
- **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.<sup>4</sup>
- **Reduces crime.** Medicaid expansion reduced crime by more than 3 percent, generating social benefits of more than \$10 billion-\$13 billion annually.<sup>5</sup>

<sup>2</sup> 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.

<sup>3</sup> 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).

<sup>4</sup> 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).

<sup>5</sup> 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.,

Furthermore, Medicaid expansion, along with the associated HELP-Link workforce development program, may have improved labor market outcomes for low-income Montanans. Following expansion, participation in the labor force among low-income Montanans ages 18-64 increased by 6 to 9 percentage points. Similar gains in labor force participation did not occur among low-income populations in other states or 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 10 percent in the expansion, this saved the state more than \$40 million during the first two years. Medicaid expansion also saved \$7.7 million in FY2017 by reducing the cost of inmate care, and through increased economic activity and state revenues. As shown in Table 2, cost savings and increased revenue more than offsets expansion costs. This will remain true even after the state's share of Medicaid expansion costs rises to 10 percent in 2020.

**Table 2: Fiscal Effects of Medicaid Expansion in Montana/Year (in millions of 2016 dollars)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
<b>Total Savings</b>	\$18	\$38.9	\$40.1	\$41.1	\$42.1
<b>Total Costs</b>	\$5.3	\$33.0	\$39.6	\$43.0	\$60.9
<b>Net Fiscal Impact (revenue growth minus expenditure growth)</b>	\$32.7	\$48.7	\$46.0	\$40.2	\$35.3
<b>Net (savings + fiscal impact - costs)</b>	\$45.4	\$54.6	\$46.5	\$38.4	\$16.5

## 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 most of the costs. Specifically, the federal government paid 100 percent of costs for

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Garfield, R., Rudowitz, R., and Artiga, S., "The Effects of Medicaid Expansion Under the ACA: Updated Findings from a Literature Review," (2017).



eligible enrollees in 2016 and 95 percent in 2017. It will pay 94 percent in 2018, 95 percent in 2019, and 90 percent in 2020 and beyond.<sup>6</sup>

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.

More than 40,000 Montanans had enrolled in Medicaid through the expansion by January 2016, and enrollment has climbed to 93,950 by March 2018. Medicaid expansion spending in Montana was \$145 million during FY2016 (which covered January-June 2016), \$442 million in FY2017, and \$215 million during the first half of FY 2018 (July-December 2017). Thus, during its first two years, Medicaid expansion spending totaled \$802 million.

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.<sup>7</sup> 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.

There are two ways to think about the marginal cost to the federal government associated with Montana's decision to expand Medicaid. First, the ACA was written in such a way that 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 is 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

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<sup>6</sup> 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).

<sup>7</sup> A large amount of literature establishes that Montana's 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/doi/10.1377/hblog20160321.054035/full/>; Brown, et al., "Assessing the Economic and Budgetary Impact of Medicaid Expansion in Colorado," (2016).

one views Montana's Medicaid expansion as a marginal federal expenditure that must be offset with higher federal revenues at some point, the increased revenue required to pay for Montana's expansion will be passed onto all Americans. Given that Montanans provide less than 1 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.

Medicaid expansion impacts Montana's economy in the same way that a Montana company winning a government contract. It brings money into Montana's economy that would not otherwise be there, and this money ripples through the state's economy creating jobs and income.

### III. Model Inputs and Assumptions

We calculate the impact of Medicaid expansion on Montana's economy using 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.

There are three essential components to estimating the economic impact of Medicaid spending:

- **Direct impacts** – The spending (e.g., benefits and claims) and activity directly tied to expansion
- **Indirect impacts** – The spending of other entities that are carried out because of Medicaid spending
- **Induced impacts** – The ripple effects that occur as the direct and indirect spending impacts propagate through the economy

In this section, we briefly outline the assumptions used to quantify the direct impacts that enter the REMI model. A more complete description of our assumptions and their justification are included in the Appendix.

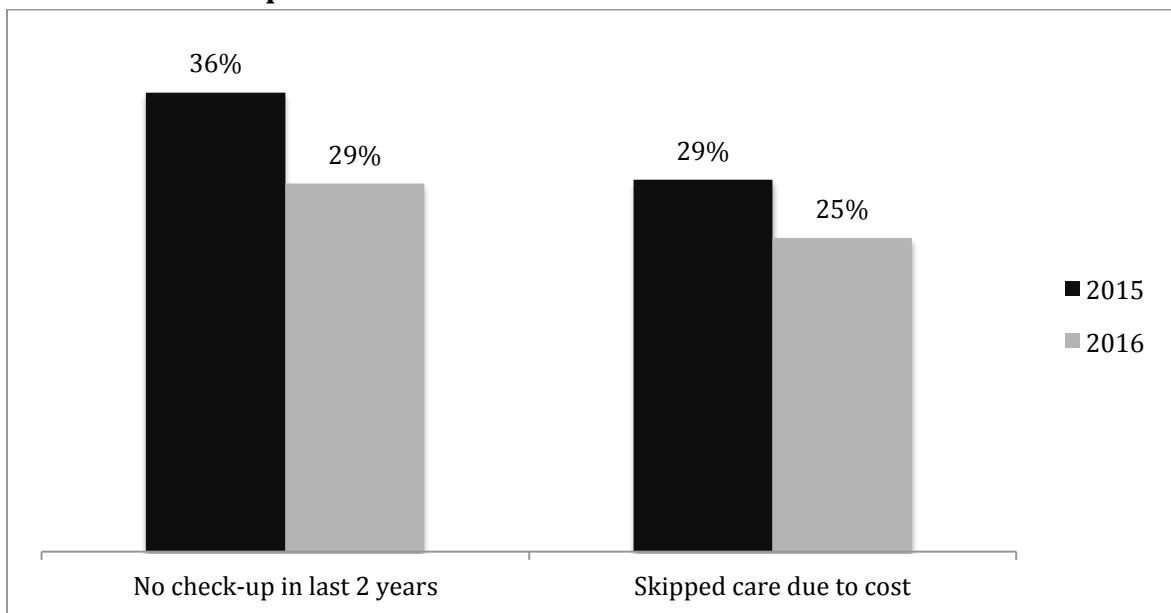
We divide the direct effects of Medicaid expansion spending into two categories. First, there is new spending, which includes spending on health care services that would not have occurred without Medicaid expansion. Second, there is pre-existing spending, which

includes spending for health care that would have occurred regardless of Medicaid expansion.

## A. New Spending

Expanding Medicaid increases health care use and health care spending.<sup>8</sup> For instance, after Medicaid expansion, the share of low-income Montanans who skipped care due to cost fell by 16 percent. Similarly, the share who had not had a check-up within the past two years fell by 20 percent (see Figure 1). These data cover only the first year of Medicaid expansion in Montana. A similar analysis of states that expanded Medicaid in 2014 shows that these effects grow over time.

**Figure 1 – Change in Health Care Access Among Low-Income Montanans Before and After Medicaid Expansion**



Source: BBER analysis of 2015 and 2016 Behavioral Risk Factor Surveillance System data.

These data suggest that Medicaid expansion increases health care use, but they do not speak to the total increase in health care use or spending. To estimate the net increase in health care spending, we analyzed the relationship between health care spending per

<sup>8</sup> 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., Dusetzina, 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.

capita and health insurance coverage between 2008-2014. As detailed in the Appendix, we find a clear relationship between changes in health insurance coverage and total health care spending. We estimate that approximately 50 percent (\$132 million) of Medicaid expansion spending in 2016 represented a net increase in spending.<sup>9</sup> This amounts to a net increase in health care spending of approximately \$2,500 for each expansion enrollee or \$5,000 for each enrollee who likely would not have had insurance in 2016 without Medicaid expansion.

The net increase in spending can be divided into two parts.<sup>10</sup> Part of it reflects spending on more health care. That is, it reflects care that would not have occurred but for expansion. Part of it reflects a reduction in uncompensated care. The spending data in the above analysis is based, in part, on net patient revenue.<sup>11</sup> Since some uncompensated care absorbed by providers is not counted, part of the increase in spending reflects reduced uncompensated care.

Medicaid expansion reduced uncompensated care. A forthcoming report by Manatt reports that hospital uncompensated care in Montana declined by over 45% between 2015 and 2016. Similarly, one national study found that “Medicaid expansion cut every dollar that a hospital spent on uncompensated care by 41 cents between 2013 and 2015.”<sup>12</sup>

Formally, we model both new spending and the reduction in uncompensated care absorbed by providers as increased health care output. Economic accounts do not include the provider portion of uncompensated care as economic output.<sup>13</sup> Thus, to maintain

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<sup>9</sup> We estimate that a 1pp decline in the share of people without insurance increases total health care spending per capita by \$46. Montana’s uninsured rate fell by 3.5 percentage points in 2016. Non-expansion states saw a 0.7pp decline in 2016. As such, we assume that in the absence of expansion, Montana’s uninsured rate would have fallen by 0.7pp. Thus, we attribute 2.8pp of the decline to the expansion in 2016. Then,  $\$46 * 2.8 * 1.028$  million (Montana’s 2016 population) = \$132 million.

<sup>10</sup> Technically, there is a third part that includes reductions in health care spending related to shifting people from higher-priced private insurance to lower-priced Medicaid. Throughout this report, we focus on the net increase, new spending less reduced prices.

<sup>11</sup> Determining who pays for uncompensated care is complicated. Some is covered by federal, state, or local programs. Some may be passed onto other consumers through higher rates. However, evidence suggests that a substantial proportion is “paid” by providers. For instance, one recent study estimated that local hospitals incurred costs equal to \$800 per uninsured person in their area. (See: Garthwaite, C., Gross, T., and Notowidigdo, M. J., “Hospitals as Insurers of Last Resort,” *American Economic Journal: Applied Economics* 10, no. 1 (2018): 1-39.)

<sup>12</sup> Dranove, D., Gartwaite, C., and Ody, C., “The Impact of the ACA’s Medicaid Expansion on Hospitals’ Uncompensated Care Burden and the Potential Effects of Repeal,” *Issue brief (Commonwealth Fund)* 12 (2017): 1-9.

<sup>13</sup> See <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/DSM-16.pdf>.

consistency with the definitions used in our model, we treat reductions in the provider portion of uncompensated care as increased health care output or increased sales.

Consistent with the evidence that Medicaid expansion spending spikes in the second year due to “pent-up demand” effects, we assume new Medicaid spending rose to 57 percent in 2017 and will then fall back down to 50 percent by 2019. On average, we assume that 52 percent of Medicaid spending represents new spending.

## **B. Pre-existing Spending**

As discussed in the prior section, about 50 percent of Medicaid expansion spending would have existed without Medicaid expansion. We refer to the care that beneficiaries would have consumed regardless of expansion as pre-existing spending.

In the absence of expansion, a variety of sources would have paid for pre-existing spending. In the absence of 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<sup>14</sup>) 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.

With Medicaid expansion, the federal government, state government, and individual beneficiaries pay for the care that beneficiaries would have consumed regardless of expansion. As a result, the money that the federal government, state government, employers, and individuals would have spent on pre-existing spending can be spent on other things. Some of this repurposed spending is new spending in Montana and generates economic impacts

For instance, consider an individual who, in the absence of expansion, would have obtained insurance via the health insurance exchanges. With expansion, the federal government no longer spends money on premium subsidies for this individual, and the individual spends less on premiums and out-of-pocket payments. The federal government can redirect the spending for premium subsidies elsewhere (e.g., Medicaid expansion). The individual can spend the money they would have otherwise spent on premiums and out-of-

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<sup>14</sup> Individuals with incomes between 100 percent and 138 percent of the FPL are eligible for exchange subsidies and CSRs in states that have not expanded Medicaid.

pocket expenses on food, rent, etc. The repurposed individual spending constitutes new spending in Montana’s economy and generates economic impacts.

To estimate the economic impacts of the shift in spending on pre-existing care, we need to understand who benefits from it. Unfortunately, it is difficult to estimate the shift in health care spending due to Medicaid expansion. The available data does not describe who would have paid for existing care had Montana not expanded Medicaid. The data that exist are incomplete and sometimes contradictory.

Figure 2 presents our estimate for the shifts in existing spending. The bar on the left represents spending with Medicaid expansion. The money spent on Medicaid expansion in Montana comes from three sources—the federal government, state government, and beneficiaries (in the form of premiums). While the share paid by federal and state governments varies each year, in 2020, the federal government will pay approximately 89 percent of the cost, the state will pay 10 percent, and beneficiary premiums provide the remaining 1 percent.<sup>15</sup>

The bar on the right represents spending without Medicaid expansion. Two things stand out when comparing the bars. First, the colored portion of the bar on the right (i.e., the non-white part) is much smaller. The gap between the bars captures the net increase in health care spending associated with Medicaid expansion discussed in section III.A.. Second, who pays for pre-existing spending differs from expansion spending.

For instance, regardless of expansion, the federal government pays for some of the health care consumed by some expansion beneficiaries. Most of these funds come from two sources—traditional Medicaid and health insurance exchange subsidies and cost sharing reductions.<sup>16</sup> Money that the federal government would have spent on health care regardless of expansion is not new spending in Montana, but rather it is simply a transfer from one federal program to another. We estimate that approximately 19 percent of

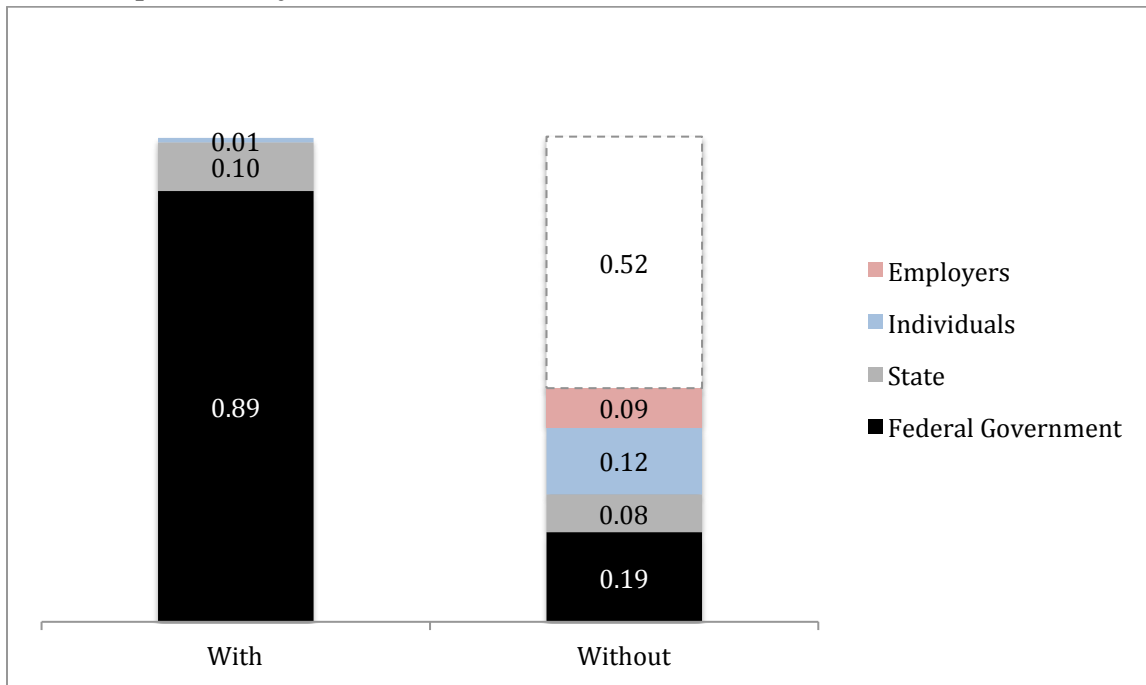
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<sup>15</sup> During 2016 and 2017, beneficiaries paid \$6.7 million in premiums. This represents 0.84 percent of the \$802 million in total benefits. Consistent with Bachrach et al., (2016), we assume that premiums paid by beneficiaries offset part of the state’s share and part of the federal share. <https://www.statenetwork.org/wp-content/uploads/2016/12/State-Network-Manatt-Assessment-Tool-State-Budget-Impact-of-Medicaid-Expansion-December-2016.pdf>

<sup>16</sup> There are some additional sources of federal spending that may directly respond to Medicaid expansion, particularly federal payments for uncompensated care (e.g., Disproportionate Share Hospital (DSH) payments). These respond in complicated ways to changes in uninsured rates, federal policy, etc. For instance, DSH payments were scheduled to be cut by specific amounts as part of the ACA. However, Congress has continued to delay implementation of the cuts. (See: <https://www.macpac.gov/subtopic/disproportionate-share-hospital-payments/>; <https://www.macpac.gov/wp-content/uploads/2017/03/Analyzing-Disproportionate-Share-Hospital-Allotments-to-States.pdf>.)

Medicaid expansion spending represents a transfer from one federal program to another. We exclude these transfers from our calculation.

**Figure 2: Spending on Medicaid Expansion Beneficiaries’ Health Care “With and Without” Expansion by Source**



The situation for state government is similar, albeit smaller. In the absence of expansion, the state would have paid for some health care that is now paid for by the expansion. For instance, in the absence of expansion, traditional Medicaid would have paid for some care for some beneficiaries. DPHHS reports that moving people from traditional Medicaid saved the state \$40 million during the first two years of expansion.<sup>17</sup> In addition, the Montana Department of Corrections reports that Medicaid expansion reduced its spending on health care by \$7.66 million in FY2017.<sup>18</sup> The state may also realize savings from reduced payments for mental health services or substance abuse services for low-income individuals.<sup>19</sup> A recent report from Manatt that looked at substance use disorder spending in Montana argues that the state may realize \$3 million of annual savings as a

<sup>17</sup> These savings stem from the fact that the state pays 35 percent of the costs for traditional Medicaid, but 0 percent (in 2016) or 5 percent (in 2017) or less for the expansion.

<sup>18</sup> Medicaid expansion allowed the Department of Corrections (DOC) to shift more of its hospitalizations to Medicaid. Prior to expansion, DOC was paying rates determined by Blue Cross/Blue Shield. Without expansion, DOC estimates it would have spent \$12.3 million. With Medicaid expansion, DOC pays Medicaid rates. It reports Medicaid expansion reduced payments by \$7.66 million during FY2017.

<sup>19</sup> Bachrach, et al., *Repealing the Medicaid Expansion: Implications for Montana*, (2017): 8-9.

result of Medicaid expansion.<sup>20</sup> The state may also see reductions in payments for uncompensated care. One study estimated that states' savings from reducing uncompensated care could equal 13 percent to 25 percent of their Medicaid expansion costs.<sup>21</sup>

We estimate that Medicaid expansion reduces state spending for health care by an average of 8 percent of total Medicaid expansion spending. This includes the demonstrated savings from traditional Medicaid, the Department of Corrections, and the expected reduction in spending on substance use disorders. We subtract this amount from the amount that the state pays for Medicaid expansion.

In the absence of Medicaid expansion, beneficiaries would have paid for much of the care they received. Roughly 15 percent of Medicaid beneficiaries would likely have had some form of private insurance in the absence of expansion. These individuals would have paid premiums and made out-of-pocket payments. In addition, those remaining uninsured in the absence of expansion would have paid for some of their care out of pocket. For instance, one recent study found that the uninsured paid \$500 per year out of pocket for their health care.<sup>22</sup> A different study showed that Medicaid expansion reduced out-of-pocket spending for the average newly enrolled Medicaid expansion family by \$3,000 per year.<sup>23</sup>

We assume that 12 percent of total Medicaid spending covers what individuals would have paid themselves. Beneficiaries can now spend this money on other things, and they may also benefit from lower interest payments on debt incurred to pay for medical care and lower interest rates for other borrowing. These pathways may generate additional economic impacts, but we did not include these potential effects in our analysis.

Employers may also benefit from Medicaid expansion because some of those who enroll may have obtained employer-provided insurance in the absence of expansion.<sup>24</sup> As such,

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<sup>20</sup> Grady, Bachrach, and Boozang, *Medicaid's Role in the Delivery and Payment of Substance Use Disorder Services in Montana* (2017).

<sup>21</sup> Buettgens, M., Holahan, J., and Recht, H., "Medicaid Expansion, Health Coverage, and Spending: An Update for the 21 States That Have Not Expanded Eligibility," (2016).

<sup>22</sup> Coughlin, T., Holahan, J., and Caswell, K., "Uncompensated Care for the Uninsured in 2013: A Detailed Examination. 2014," *The Henry J. Kaiser Family Foundation: The Kaiser Commission on Medicaid and the Uninsured* (2017).

<sup>23</sup> Glied, S., Chakraborty, O., and Russo, T., "How Medicaid Expansion Affected Out-of-Pocket Health Care Spending for Low-Income Families," *Issue brief (Commonwealth Fund)*, (2017): 1-9.

<sup>24</sup> Several recent studies do not find that Medicaid expansion leads to large reductions in employer-sponsored insurance. This suggests that crowd-out effects are likely small. See 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



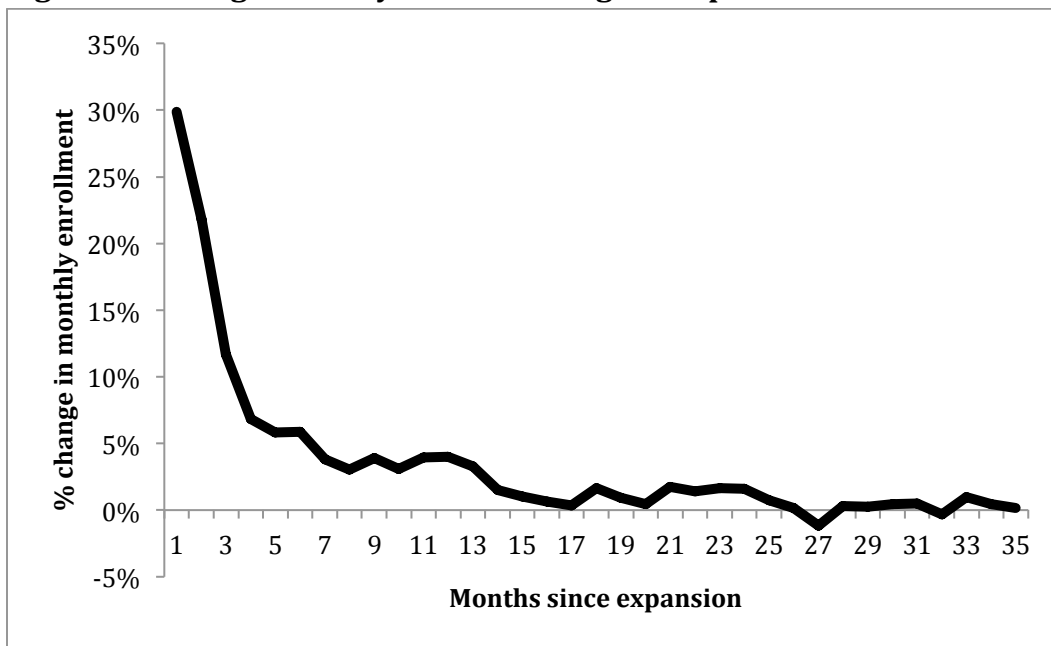
these employers save what they would have contributed toward the employee’s health care costs. For purposes of this analysis, we assume that these savings equal 9 percent of total Medicaid spending. Depending on market conditions, employers may pass some of these savings to employees as higher compensation. We assume that they do, but that they also keep some.

## D. Trends

### 1. Enrollment

Medicaid enrollment grew from 40,000 in the first month of Medicaid expansion to nearly 94,000 by March 2018. Based on evidence from other Medicaid expansion states, enrollment tends to plateau by 24 months after expansion (see Figure 4). For purposes of our analysis, we assume that enrollment grows slightly to 94,000 and remains constant at that level for the next several years. Given that one crude estimate places the size of the potential expansion population at approximately 100,000, it seems unlikely that Montana can enroll substantially more people in the expansion.<sup>25</sup> In the Appendix section L, we present results that assume that enrollment continues to grow to 105,000.

**Figure 4: Average Monthly Percent Change in Expansion Enrollment**



Source: BBER analysis of MBES Enrollment Report data.

Medicaid on Health Insurance Coverage and Labor Market Outcomes,” *International Journal of Health Economics and Management*, (2016): 1-23.

<sup>25</sup> See Appendix section G for additional details.

## 2. Spending

Medicaid spending per newly eligible individual in Montana was roughly \$5,315 during 2016 and rose to \$6,387 in 2017. These levels are roughly in line with spending observed in other Medicaid expansion states in their first two years: nationally, expansion spending per beneficiary was \$5,511 in 2014 and \$6,395 in 2015. This initial increase in spending per beneficiary is expected to subside as individuals' pent-up demand is satisfied.<sup>26</sup> A recent report by the Medicaid actuary suggests that spending per member for those newly eligible for Medicaid expansion was expected to fall to \$5,370 in 2018 before rising to \$5,981 by 2020.<sup>27</sup> For purposes of this analysis, we assume that Medicaid expansion spending per beneficiary in Montana catches up with and then follows the federal forecast.

## IV. REMI Model Results

The discussion in the prior section outlines the net direct impact of Medicaid expansion. Combined, approximately 75 percent to 80 percent of total spending on Medicaid expansion benefits and claims represents new spending in Montana. 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.<sup>28</sup> We further allocate spending across Montana regions in proportion to Medicaid enrollment.<sup>29</sup>

To compute the indirect and induced impacts, we use the REMI model, an economic model, calibrated to represent the interactions in the Montana economy, leased from Regional Economic Models, Inc. The REMI model is one of the best known and most respected analytical tools in the policy analysis arena that 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.<sup>30</sup>

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<sup>26</sup> Centers for Medicare and Medicaid Services. 2016 Actuarial Report on the Financial Outlook for Medicaid, (2016).

<sup>27</sup> Ibid.

<sup>28</sup> <http://dphhs.mt.gov/Portals/85/Documents/healthcare/MedicaidExpansionHealthCareServicesProfile.pdf>

<sup>29</sup> 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>

<sup>30</sup> 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.

We estimate impacts using the following process. First, a baseline projection of the economy is produced using the 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 baseline and alternative scenarios of the economy represents the economic impact of Medicaid expansion.

## A. Statewide

Table 3 presents the statewide effects of Medicaid expansion. Under the conditions and assumptions outlined, we estimate that Medicaid expansion added 3,161 jobs, \$147 million in personal income, and \$336 million in new sales (or output) to Montana’s economy in 2016. We project that these effects will peak in 2018 and will remain largely constant through 2020. In 2020, Medicaid expansion is expected to support 4,975 jobs, \$279 million in personal income, and \$566 million in new sales (or output).

By the end of its first five years, Medicaid expansion is expected to create a total of about \$1.2 billion in personal income and more than \$2.6 billion in output. 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. That is, we estimate that Montana will have roughly 5,000 more jobs each year than it would in the absence of the expansion.<sup>31</sup>

**Table 3: Summary of Economic Impacts of Medicaid Expansion in Montana (income and sales in millions of \$2016)**

	2016	2017	2018	2019	2020	Cumulative
<b>Jobs</b>	3,161	5,071	5,326	5,165	4,975	
<b>Personal Income</b>	\$147	\$241	\$265	\$272	\$279	\$1,204
<b>New Sales (i.e., output)</b>	\$336	\$551	\$587	\$576	\$566	\$2,616
<b>Population</b>	968	2,229	3,263	4,036	4,672	

Table 4 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

<sup>31</sup> Our analysis does not say that the expansion creates 5,000 in one year and then a different additional 5,000 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) 5,000 in 2020.

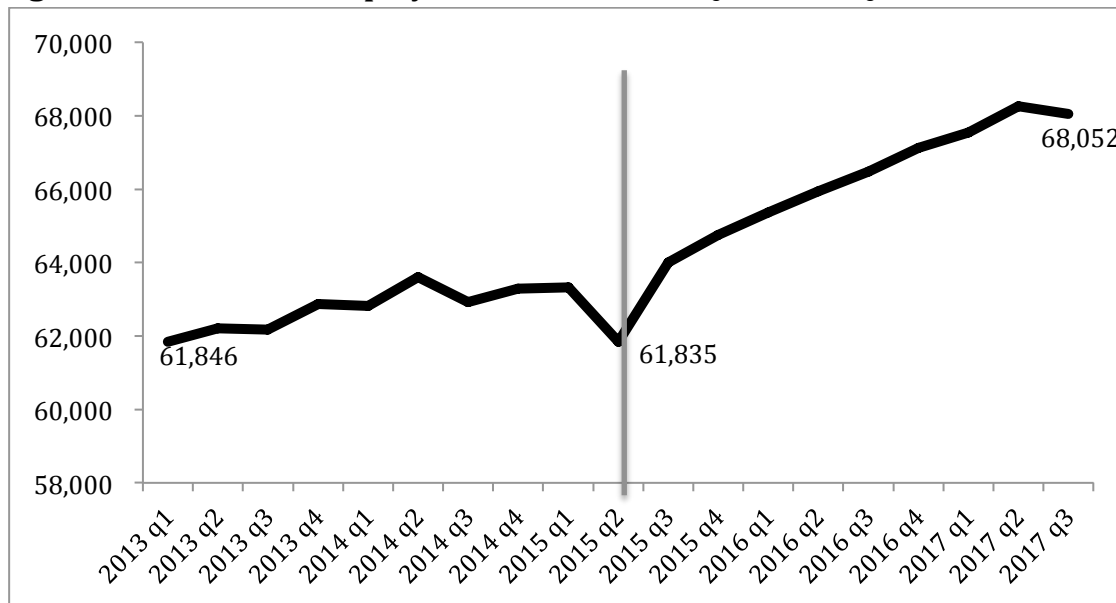
create approximately 2,000 additional health care jobs. However, there are also fairly significant effects on retail trade (more than 800 jobs) and construction (more than 600 jobs).

**Table 4: Industry Breakdown of Employment Impacts**

	2016	2017	2018	2019	2020
<b>Health Care and Social Assistance</b>	1,183	2,033	2,085	2,030	2,142
<b>Retail Trade</b>	469	788	828	814	825
<b>Construction</b>	320	568	652	628	549
<b>Accommodation and Food</b>	160	266	289	294	303
<b>Other Services, Except Public Administration</b>	152	266	289	294	303
<b>Professional, Scientific, and Technical Services</b>	95	159	172	171	168
<b>Real Estate and Rental</b>	75	126	137	137	136
<b>Administrative and Waste Management Service</b>	84	137	141	136	134
<b>Other</b>	261	418	405	364	337

Consistent with the model, health care employment growth in Montana accelerated following Medicaid expansion (see Figure 5). Between second quarter 2015 (when the HELP Act was passed) and third quarter 2017, Montana’s health care sector added more than 6,200 jobs. Furthermore, since 2014, states that saw larger increases in insurance coverage saw larger increases in health care employment (see Appendix section I).

**Figure 5: Health Care Employment in Montana, Q1 2013 – Q3 2017**



Source: BBER analysis of QCEW data for NAICS 62.

## B. By Region

Table 5 summarizes the economic impacts of Medicaid expansion across five Montana regions: Northeast, Southwest, Central, North Central, and East.<sup>32</sup> Medicaid enrollment does not deviate that much from population. As such, economic impacts across regions are somewhat proportional to population.

**Table 5: Economic Impacts by Region, 2018 and Cumulative (income and sales in millions of \$2016)**

	NW		SW		Central	
	2018	Cumul.	2018	Cumul.	2018	Cumul.
<b>Jobs</b>	1,920		1,190		1,091	
<b>Personal Income</b>	\$89	\$403	\$61	\$277	\$59	\$269
<b>New Sales/Output</b>	\$202	\$902	\$123	\$584	\$130	\$581
<b>Population</b>	1,132		766		682	

	N. Central		East	
	2018	Cumul.	2018	Cumul.
<b>Jobs</b>	877		247	
<b>Personal Income</b>	\$43	\$194	\$13	\$59
<b>New Sales/Output</b>	\$96	\$427	\$27	\$120
<b>Population</b>	547		138	

## V. Other Economic Effects of Medicaid Expansion

The results above focus on economic impacts and do not account for many other expansion benefits. For instance, Medicaid expansion may improve health outcomes. One study found that Medicaid expansion was associated with a 5.1 percentage point (23%)

<sup>32</sup> 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.

increase in the share of low-income adults in excellent health.<sup>33</sup> Analyses of other insurance expansions have found that providing health insurance improves depression outcomes and reduces mortality.<sup>34</sup>

Medicaid expansion also generates major improvements in financial security. It reduces debt collections, reduces bankruptcies, and improves credit scores.<sup>35</sup> 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.<sup>36</sup> The interest savings from these improvements were worth \$280 per treated person or \$520 million overall. These financial benefits double the value of expansion to uninsured individuals relative to a simple calculation based on the change in out-of-pocket costs.

Multiple recent studies find that Medicaid expansion reduced both violent and property crime.<sup>37</sup> 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.

Some worry that expanding Medicaid will reduce work incentives. However, several studies find no evidence that Medicaid expansion depresses employment.<sup>38</sup> One study even found that Medicaid expansion increased employment among people with disabilities.<sup>39</sup>

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<sup>33</sup> 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.

<sup>34</sup> Sommers, B. D., Gawande, A. A., and Baicker, K., “Health Insurance Coverage and Health—What the Recent Evidence Tells Us,” (2017).

<sup>35</sup> 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).

<sup>36</sup> Brevoort, et al., (2017).

<sup>37</sup> 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, e.g. 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.

<sup>38</sup> 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.

Data from Montana also show no adverse effect of Medicaid expansion on the employment of low-income Montanans. In fact, Montana saw a substantial increase in low-income labor force participation following Medicaid expansion. Labor force participation among non-disabled Montanans ages 18-64 with incomes below 138 percent FPL rose from 58 percent to 64 percent. As shown in Table 6, 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 (8.5 percentage points).

**Table 6 – Labor Force Participation Among People Ages 18-64, Before and After Expansion**

	<b>Before (2013-2015)</b>	<b>After (2016- 2017)</b>	<b>Difference (after minus before)</b>	<b>Difference in Difference (MT difference minus rest difference)</b>
<b>0-138% FPL</b>				
<b>Montana</b>	58.2%	64.2%	6%	
<b>Rest of U.S.</b>	57.1%	54.6%	-2.5%***	8.5%*
<b>&gt;138% FPL</b>				
<b>Montana</b>	86.2%	84.1%	-2.0%	
<b>Rest of U.S.</b>	83.4%	83.5%	0.1%	-2.1%

Source: BBER analysis of Current Population Survey ASEC, data obtained from IPUMS-CPS. \*\*\*=p<0.01, \*=p<0.05. See Appendix for additional details.

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 accounted for factor. However, we note that a recent analysis of a program in Nevada, similar to HELP-Link, that provided

<sup>39</sup> Hall, J. P., Shartzter, 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.

eligibility review and job counseling services to randomly selected unemployment insurance recipients led to persistent increases in long-term employment and earnings.<sup>40</sup>

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.<sup>41</sup> We describe the effects of Medicaid expansion on health care providers in a forthcoming report.

## 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 covered a 0 percent share of total benefits and claims in 2016, but that share will rise to 10 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). To date, these costs comprise nearly 5 percent of total expansion spending. Premiums charged to expansion beneficiaries also offset state costs very slightly. On net, we estimate that the state of Montana will pay 10.24 percent of Medicaid expansion costs in 2020.

The state also must pay to administer the program. In 2017, the Legislative Fiscal Office estimated that total administrative costs associated with Medicaid expansion would equal approximately 1 percent of total benefits and claims.<sup>42</sup> As such, by 2020, the state's Medicaid expansion costs will equal approximately 11 percent of total Medicaid expenses.

These costs are more than offset by the cost savings and increased revenues. 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. We estimate that these savings average approximately 8 percent of total Medicaid expansion

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<sup>40</sup> 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).

<sup>41</sup> 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.

<sup>42</sup> These projections include payments for the third-party administrator (TPA). In 2017, SB261 canceled third-party administration in an effort to save money. While this change was intended to reduce costs, it remains to be seen how much this shift will save. For purposes of this analysis, we continue to assume that administrative costs will equal 1 percent of total benefits and claims.



spending, and could end up higher depending on the extent to which the state is able to reduce spending for other health services or uncompensated care.

As shown in Table 7, comparing costs to savings, we estimate that Medicaid expansion had or will have a positive or close to neutral impact on the state's budget in 2016, 2017, 2018, and 2019. For instance, in 2017, Medicaid expansion reduced the state's spending on traditional Medicaid, inmate care, and substance use disorders by approximately \$39 million (\$2016), and it cost approximately \$33 million. Thus, on net, not counting for revenue or other impacts, Medicaid expansion saved the state \$6 million in 2017.

By 2020, however, savings may no longer offset costs. On net, the state will have to pay approximately 2.8 percent of total Medicaid expansion spending in 2020. Thus, the question is whether the increased economic activity associated with Medicaid expansion will generate net positive budget effects sufficient to cover these remaining costs. We estimate that they will.

Using the Fiscal Impact Assessment Tool (FIAT), a module that estimates state revenue and expenditure impacts based on the output from the REMI model, we find that taxes and other state revenues rise by an amount sufficient to pay for the remaining Medicaid expansion costs in 2020.<sup>43</sup>

As shown in Table 7, total state revenues from all sources (including intergovernmental transfers) are expected to increase by \$40 million to \$50 million per year. If we restrict the calculation to include only taxes, state tax revenues rise by approximately \$21 million per year. These tax revenues are sufficient to pay for the \$16 million in Medicaid expansion costs not covered by budget savings in 2020.

However, it is important to look beyond the impact of Medicaid expansion on revenues. Our model suggests that Medicaid expansion will increase economic activity and increase population. These increases may also impact state expenditures. Combining both revenue and expenditure effects still yields a large positive net effect on the state budget.<sup>44</sup> The net fiscal impact in 2020 is estimated to be \$35 million. Again, this is more than enough to cover the \$16 million in remaining Medicaid expansion costs in 2020.

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<sup>43</sup> 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.

<sup>44</sup> The net fiscal impact is larger than revenues in the first few years because the model assumes that the gains in employment from increased activity will reduce spending on various public welfare and insurance programs.

**Table 7: Fiscal Effects of Medicaid Expansion in Montana (all values in millions of \$2016)**

	2016	2017	2018	2019	2020
<b>Savings</b>					
Traditional Medicaid	15.2	28.4	29.3	30.1	30.9
Corrections	1.3	7.6	7.8	8.0	8.2
Substance Use Disorders	1.5	3	3	3	3
<b>Total Savings</b>	<b>18</b>	<b>38.9</b>	<b>40.1</b>	<b>41.1</b>	<b>42.1</b>
<b>Costs</b>					
Benefits and Claims	2.4	28.0	32.9	36.3	53.1
Administration	2.9	5.1	5.1	4.9	5.2
<b>Total Costs</b>	<b>5.3</b>	<b>33.0</b>	<b>38.0</b>	<b>41.2</b>	<b>58.3</b>
<b>Savings Minus Costs</b>	<b>12.7</b>	<b>5.9</b>	<b>2.1</b>	<b>-0.1</b>	<b>-16.2</b>
<b>Revenues</b> (all sources)	22.2	38.4	44.1	46.8	49.1
Revenues, Taxes Only	11.5	19.3	21.1	21.4	21.8
<b>Expenditures</b>	-10.5	-10.3	-1.9	6.6	13.9
<b>Net Fiscal Impact</b> (revenues minus expenditures)	32.7	48.7	46.0	40.2	35.3
<b>Total Savings + Net Fiscal Impact</b>	50.7	87.6	86.1	81.4	77.4
<b>Net (savings + revenues - costs)</b>	<b>45.4</b>	<b>54.6</b>	<b>48.1</b>	<b>40.2</b>	<b>19.1</b>

These results come with an important caveat. They are based on the historical average relationships between economic activity and state revenues and spending. However, given federal tax reform, state budget shortfalls, etc., these historical relationships may not accurately describe how future economic activity will affect Montana’s state budget. Ultimately, the FIAT tool provides a simple intuitive answer to the question, “How does Medicaid expansion affect the state’s budget?” However, we note that state budgets are very flexible and respond to shocks like Medicaid expansion in complicated ways.<sup>45</sup> As such, it is difficult to isolate the effects of Medicaid expansion throughout the whole budget (both revenues and expenses).

Our finding that Medicaid expansion pays for itself is consistent with several other studies that have examined the impact of Medicaid expansion on state budgets. For

<sup>45</sup> 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).

instance, a recent study of Medicaid expansion in Michigan found "state-budget gains outweigh the added cost."<sup>46</sup> Similarly, an analysis of budget savings and revenue gains across 11 expansion states argued that "projected expansion related savings and revenue gains are expected to offset costs of expansion in many states for several years."<sup>47</sup> This study notes that comprehensive analyses of spending in Arkansas and Kentucky show savings and revenue gains sufficient to offset costs at least through 2021.

### **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 Affordable Care Act 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."<sup>48</sup> Similarly, our own analysis of woodwork effects in late-expansion states (see Appendix section K) 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.

## **VII. Conclusion**

Medicaid expansion has had a substantial positive effect on Montana's economy. While effects vary from year-to-year, it brings approximately \$350 million to \$400 million of new spending to Montana's economy each year. This spending ripples through Montana's

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<sup>46</sup> 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.

<sup>47</sup> Bachrach, D., Boozang, P., Herring, A., and Reyneri, D. G., "States Expanding Medicaid See Significant Budget Savings and Revenue Gains," *Princeton: Robert Wood Johnson Foundation* (2016).

<sup>48</sup> 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.

economy, generating approximately 5,000 jobs and \$270 million in personal income in each year between 2018-2020. 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. We present the results from two of these analyses in Appendix section L.

In general, these additional analyses yield results similar to those described here. Medicaid expansion generates several thousand additional jobs and several hundred million in additional income. It also pays for itself, since the savings generated plus additional revenues (or other reduced expenditures) 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. Change in Utilization Associated With Medicaid Expansion

To illustrate the impact of Medicaid expansion on health care utilization in Montana, we obtained Behavioral Risk Factor Surveillance System (BRFSS) microdata from the Centers for Disease Control and Prevention for the years 2013-2016.<sup>49</sup> We imported these data into STATA 13.1 and completed all analyses using STATA's survey (svy) commands to account for BRFSS survey design and sample weights.

The BRFSS includes a handful of questions that measure health care access. Specifically, we examined two questions:

- Was there a time in the past 12 months when you needed to see a doctor but could not because of cost?
- About how long has it been since you last visited a doctor for a routine checkup?<sup>50</sup>

These questions provide a very crude indication of health care use.

To identify the effects of Medicaid expansion, we restricted our analysis to low-income residents who may be Medicaid expansion eligible. The BRFSS does not report Medicaid eligibility or income relative to poverty. To identify people who may be Medicaid eligible, we imputed income equal to the midpoint of the reported income categories (from variable `_income2`). We then computed household size by summing the number of children and adults in the home (from the variables `children`, `numadult`, and `hhadult`). We obtained the poverty level by household size for each year from the Department of Health and Human Services.<sup>51</sup> Then, we computed imputed income as a percent of FPL for each individual and examined results for all individuals with incomes less than 150 percent FPL.<sup>52</sup>

The results for Montana and for states that saw large Medicaid expansion impacts are as follows. Medicaid expansion in Montana led to a large increase in Medicaid enrollment

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<sup>49</sup> [https://www.cdc.gov/brfss/annual\\_data/annual\\_data.htm](https://www.cdc.gov/brfss/annual_data/annual_data.htm).

<sup>50</sup> We recode the responses to both questions to exclude don't know, refused, or missing. We also recode the time since last check-up to equal 1 if the respondent had a check-up within the last two years, and 0 otherwise.

<sup>51</sup> <https://aspe.hhs.gov/poverty-guidelines>.

<sup>52</sup> Given the imprecision of our poverty measure, we expand the bounds of our analysis to 150 percent FPL.

and a corresponding large decrease in the share of people without insurance. Not every state experienced effects similar to those in Montana. The impacts of Medicaid expansion across states vary. Some states already offered Medicaid to a larger share of people prior to the ACA. In these states, the impact of the expansion on health insurance coverage and health care access is smaller. Thus, to better illustrate the effects of expanding Medicaid in an environment more similar to Montana, we examined effects in states that expanded Medicaid in 2014 and saw large increases in Medicaid (>5 percentage point increase in share of population with Medicaid between 2013 and 2016) and large increases in the share of people with health insurance (>8 percentage points). The states meeting these criteria include: Washington, Oregon, California, Nevada, New Mexico, Kentucky, Arkansas, and West Virginia.

**Table A1: Share of Adult Population Reporting Health Care Access in Selected Medicaid Expansion States Before and After Expansion**

	<b>Montana</b>		<b>Other Expansion</b>	
	<b>2015</b>	<b>2016</b>	<b>2013</b>	<b>2016</b>
<b>Skipped Care Due to Cost</b>	0.29	0.25	0.33	0.21
	[0.25-0.34]	[0.21-0.29]	[0.31-0.35]	[0.20-0.23]
<b>No Check-up in Last 2 Years</b>	0.36	0.29	0.28	0.23
	[0.32-0.41]	[0.25-0.33]	[0.26-0.30]	[0.22-0.25]

Source: BBER analysis of BRFSS data, 95% CI in [ ].

## **B. Change in Health Care Spending Associated With Medicaid Expansion**

To estimate the impact of Medicaid expansion (or more precisely the impact of providing health insurance) on health care spending, we obtained data on health care spending by state from the Centers for Medicare and Medicaid Services (CMS).<sup>53</sup> We merged these data with data on health insurance coverage by state from the American Community Survey.<sup>54</sup> To identify the effects of insurance coverage on health care spending, we regressed total per capita health care spending on the share of people with any health insurance, state personal income per capita, and state (and sometimes year) fixed effects. This specification identifies the average change in health care spending associated with a change in the share of people with insurance across all states. We estimated two different versions of this regression. First, we limited the sample to include only 2013 and 2014.

<sup>53</sup> <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsStateHealthAccountsResidence.html>.

<sup>54</sup> <https://www.census.gov/library/publications/2017/demo/p60-260.html> (data from spreadsheet HIC-4).

This specification captures the effects associated with the first year of the Affordable Care Act. Second, we limited the sample to include 2008-2013 (years prior to most ACA effects). We present the results of these regressions in Table A2. Both specifications yield similar effects. A one percentage point increase in health insurance coverage is associated with an approximately \$46 increase in total per person health care spending.

Montana’s uninsured rate fell by 3.5 percentage points in 2016. This suggests that health care spending increased by \$166 million due to the reduction in uninsured. The question is what share of the decrease in uninsured can be attributed to Medicaid expansion. Given that non-expansion states saw a 0.7pp decline in 2016, we assume that in the absence of expansion, Montana’s uninsured rate would have fallen by 0.7pp. Thus, we attribute 2.8pp of the decline to the expansion in 2016. As such,  $\$46 * 2.8\% * 1.028$  million people = \$132 million. Given the margin of error for all of these estimates, this number is crude. However, it provides a useful benchmark for our analysis.

**Table A2: Relationship Between Change in Health Care Spending Per Capita and Change in Insurance Coverage**

	<b>Pre- to Post-ACA Expansion and Exchanges</b>	<b>Pre-ACA</b>
	<b>2013-2014</b>	<b>2008-2013</b>
<b>Percent Any Coverage</b>	45.7*** (10.8)	46.4 (26.0)
<b>Personal Income per Capita</b>	0.11*** (0.02)	0.05*** (0.01)
<b>Constant</b>	-1006 (548)	811 (2448)
<b>N</b>	102	306
<b>State Fixed Effects</b>	Yes	Yes
<b>Year Fixed Effects</b>	No	Yes

Note: standard errors in ( ), \*\*\* p<0.01

### **C. State Spending**

DPHHS reports that moving people from traditional Medicaid to the expansion saved \$8.1 million in FY2016, \$22.3 million in FY2017, and a total of \$40 million during the first two years of expansion. Splitting FY2017 between CY2016 and CY2017 in proportion to total Medicaid spending yields savings of \$15.2 million in 2016 and \$24.8 million in 2017. Montana typically pays 35 percent of the costs for traditional Medicaid. If that rate applies to those who shifted, and Montana paid 0 percent for those in the expansion in 2016 and 5 percent in 2017, we can compute total spending for those who would have remained in

traditional Medicaid in the absence of the expansion. We present the results of this analysis in Table A3.

To understand how this spending would evolve over time, we assume that total spending for this group would grow at 5 percent per year, roughly in line with the rates the Medicaid actuary forecasts Medicaid expansion spending per beneficiary to grow. Traditional Medicaid beneficiaries comprise approximately 16 percent of total spending on Medicaid expansion each year (e.g., the \$82.6 million spent in 2017 is 16 percent of the \$516 million in total expansion spending). The federal government would have paid approximately 10 percent of this and the state the remaining 6 percent.

**Table A3: Within Medicaid Transfers Associated With Expansion**

	<b>Reported Savings to MT (\$millions)</b>	<b>Implied Total Spending (\$millions)</b>	<b>State \$ if Traditional (\$millions)</b>	<b>State \$ if Expansion (\$millions)</b>	<b>State Savings (\$millions)</b>
<b>Savings to MT (2 years)</b>	40				
<b>2016</b>	15.2	43.5	15.2	0.0	15.2
<b>2017</b>	24.8	82.6	28.9	4.1	24.8
<b>2018</b>		86.7	30.4	5.2	25.2
<b>2019</b>		91.1	31.9	6.4	25.5
<b>2020</b>		95.6	33.5	9.6	23.9

As described above, Medicaid expansion also affects spending by the Department of Corrections. DOC reports that the expansion saved them \$7.66 million in FY2017. We also assume that these savings continue and that they grow at 5 percent per year.

Two recent reports sponsored by the Montana Healthcare Foundation and prepared by Manatt suggested that Medicaid expansion also reduces spending on substance use disorders and mental health.<sup>55</sup> These reports document a \$1.5 million reduction in spending on substance use disorders in half of FY2016 and a potential \$1.3 million reduction in spending in the Mental Health Services Program. They further argue that the state may realize \$3 million per year in substance use disorder savings. Given the difficulties inherent in attributing shifts in state spending to particular programs, we assume that the state realizes \$3 million per year in savings in these areas from 2017-2020. Given that this represents less than 0.6 percent of total Medicaid expansion spending, our results are largely unaffected by the inclusion of these savings.

<sup>55</sup> Bachrach, et al., (2017) and Grady, Bachrach, and Boozang (2017).



## D. Shift in Payers

To complete our analysis, it is important to understand what types of insurance, if any, Medicaid expansion beneficiaries would have in the absence of expansion. How many of those who enroll through the expansion would have insurance without it? Of those who would have insurance, what kind of insurance would they have (e.g., traditional Medicaid, employer sponsored, direct purchase)?

The prior section suggests that approximately 16 percent of Medicaid expansion spending is a transfer from traditional Medicaid. Thus, we assume that 16 percent of Medicaid expansion enrollees are likely transfers within Medicaid.

Among the remainder, the vast majority come from the pool of uninsured. Figure A1 provides a simple way to illustrate this. This figure shows the average change of insurance coverage among the Medicaid expansion eligible between 2013 and 2016. Among states that expanded Medicaid in January 2014 (initial expansion states), 16 percent of the Medicaid eligible gained insurance coverage in the average expansion state. While there was some increase in direct purchase insurance and Medicare, the vast majority of this increase came from growth in the share of people with Medicaid.<sup>56</sup> The share of this population with Medicaid grew by an average 16 percent.

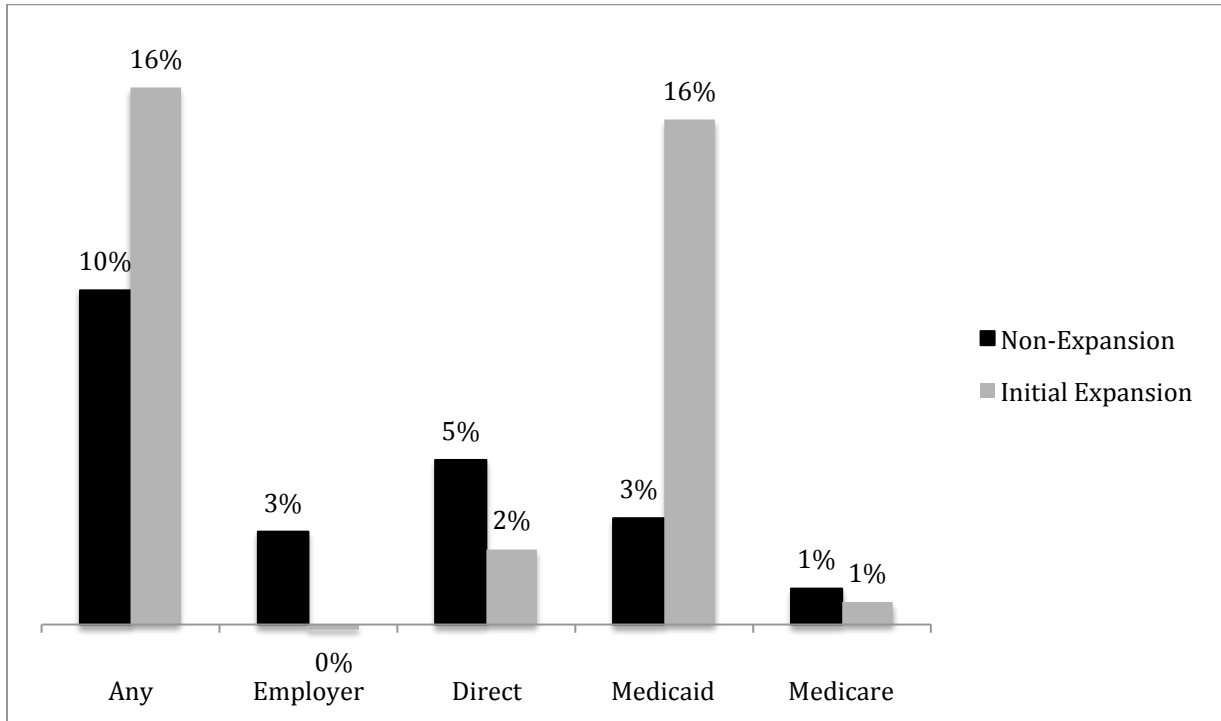
This is consistent with the literature that finds that enrollment in direct purchase insurance grew relatively little in Medicaid expansion states (average growth of 2 percentage points) and that Medicaid expansion did not crowd out employer sponsored insurance (average decline of less than 1 percentage point).<sup>57</sup>

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<sup>56</sup> The change in share can sum to more than the change in coverage because some people report more than one type of insurance.

<sup>57</sup> E.g., Duggan, et al., (2017)

**Figure A1: Average Percent Change in Insurance Coverage 2013-2016 Among People 0%-138% FPL Ages 18-64, by Type of Insurance Coverage and Expansion Status**



Source: BBER analysis of American Community Survey data.

We assume that 68 percent of Medicaid expansion beneficiaries would be uninsured in the absence of Medicaid expansion. We compute this using the following:

$$\text{Change in Medicare} + \text{Change in Direct} + \text{Change Employer} = 0.007 + 0.023 - 0.001 = 0.029$$

$$\text{Change in Any} - \text{Change in Medicaid} = .165 - .155 = 0.01$$

⇒ assume 0.01 of the 0.029 led to increased coverage and 0.019 switched to Medicaid

⇒  $1 - (0.019 / 0.155) = 0.88$  of Medicaid coverage in initial expansion states comes from the uninsured

However, Montana was late to expand Medicaid. As such, more Medicaid eligibles gained direct purchase coverage from the exchanges between 2013 and 2015. We expect more of those who gain Medicaid via the expansion in Montana to come from the direct purchase pool. Given that the average non-expansion state saw a 3 percentage point greater increase in the share of Medicaid eligible who gained direct purchase insurance (see Figure A1), we

assume an additional 3 percentage points of Montana's Medicaid expansion eligible switch from other forms of insurance:

$$\Rightarrow 1 - ((0.019 + 0.03) / 0.155) = 0.68.$$

Combined, these analyses suggest that 68 percent of the increase in Medicaid coverage in Montana may come from the uninsured.

This implies that 16 percent of Medicaid expansion enrollees come from either employer-sponsored insurance or direct purchase insurance. We assume that, in the absence of Medicaid expansion, 40 percent of these people would have direct purchase insurance and 60 percent would have employer-sponsored insurance. Prior to Medicaid expansion in Montana (2015), among low-income people who had either direct purchase insurance or employer sponsored insurance, 40 percent had direct purchase insurance and 60 percent had employer-sponsored insurance.

This suggests that approximately 5,800 people switched from direct purchase insurance. Given that following the implementation of the exchanges, Montana saw a 2 percentage point increase in the share of low-income people with direct purchase insurance, this assumption implies that all of the net increase in direct purchase insurance (plus some) switches to Medicaid expansion.<sup>58</sup> As a result, the share of low-income people with direct purchase insurance returns to slightly below where it was prior to ACA implementation. This is a conservative assumption. On average, initial Medicaid expansion states saw a 1.5 percentage point increase in the share of low-income people with direct purchase insurance two years after ACA implementation. By assuming a larger shift from direct purchase (i.e., the exchanges) we reduce the magnitude of the economic impact.<sup>59</sup>

The remaining approximately 8,700 Medicaid enrollees are assumed to have switched from employer-sponsored insurance. This small number is consistent with the broader

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<sup>58</sup> This level of switching is also roughly consistent with a different approach to estimated likely switching between Medicaid and direct purchase. On average, according to ACS data, states that expanded Medicaid in 2014 saw little increase in the share of people ages 18-64 with incomes between 100 percent and 138 percent FPL with direct purchase insurance. In contrast, states that did not initially expand Medicaid, like Montana, saw large increases. In 2016, nearly 17 percent of Montanans in this group still had direct purchase insurance, while only 9 percent of people in initial expansion states did. If we assume that Medicaid expansion brings the share of low-income Montanans ages 18-64 with direct purchase insurance to a level in line with the average in initial expansion states or to the level in line with where Montana was prior to expansion (10%), then we would expect to observe approximately 3,400 fewer Montanans with direct purchase insurance.

<sup>59</sup> This is because we assume 100 percent of these people would enroll in the exchanges and receive federal subsidies. As such, Medicaid spending on people who would otherwise enroll in the exchanges does not generate new federal spending in Montana.

literature, which finds the Medicaid expansion did not substantially reduce employer-provided insurance.

## D. Federal Government

Based on the calculation shown in Table A3, the federal government would have paid an amount equal to 11 percent of Medicaid expansion spending via traditional Medicaid regardless of the decision to expand.

In addition, as discussed in Appendix section C, in the absence of expansion, some of those eligible for Medicaid expansion would have had direct purchase insurance. If they purchased from the exchanges, those with incomes between 100 percent and 138 percent FPL would have been eligible for premium subsidies and cost sharing reductions. Determining the magnitude of federal spending on these individuals is difficult. We need to know both how many people who enroll in Medicaid expansion would have obtained coverage from the exchange, and how much the government provided to each of these individuals via subsidies and cost sharing.

As described in Appendix section C, we assume that as of 2018, approximately 5,800 Medicaid expansion enrollees would otherwise have direct purchase insurance. We assume that 100 percent of these people would have enrolled via the exchanges and would have received federal subsidies. As such, we assume that all of these people have incomes between 100 percent and 138 percent FPL.

Given that DPHHS data show that 10,994 Medicaid expansion beneficiaries had incomes between 100 percent and 138 percent FPL as of March 2018, we assume that 53 percent of those eligible for subsidies would have received them in the absence of Medicaid expansion.

For those who would have enrolled in the exchange and received some amount of subsidy/CSR, it is difficult to estimate the magnitude of these subsidies. For all Montanans, the average subsidy (premium tax credit) was \$3,600 in 2016 and \$5,700 in 2017.<sup>60</sup> In addition, the average CSR for individuals with a 94 percent actuarial value CSR (those with incomes between 100 percent and 150 percent FPL) was approximately \$1,500.<sup>61</sup> However, the average exchange consumer and the average Medicaid beneficiary with

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<sup>60</sup> CMS 2017 Effectuated Enrollment Snapshot (June 12, 2017).

<sup>61</sup> "Health Insurance Marketplace Cost Sharing Reduction Subsidies by Zipcode and County 2016, ASPE, U.S. Department of Health & Human Services.

incomes between 100 percent and 138 percent FPL likely differ. Therefore, it is not clear that the average subsidy and CSR apply to the Medicaid eligible population.

To estimate the size of the subsidy, we used 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, 2016, 2017, and 2018. We average these amounts weighting by the share of Medicaid expansion beneficiaries in each age group.<sup>62</sup> To this amount, we add \$1,500, the average approximate annual CSR in Montana in 2016.<sup>63</sup> For future years, we increase this amount by 5 percent.

Table A4 presents our estimates for federal spending on subsidies by year. This spending represents between 4.4 percent and 8.3 percent of total spending on Medicaid expansion. Combined with what the federal government would have spent on traditional Medicaid, approximately 19 percent of total Medicaid expansion spending is simply transferred within the federal government. We do not include any of this transferred money in our economic impact analysis.

**Table A4: Change in Federal Spending on Exchange Subsidies in Montana Without Expansion**

<b>Year</b>	<b>Assumed Federal Spending per Enrollee (subsidy + CSR)</b>	<b>Assumed People With Subsidies w/o Expansion</b>	<b>Total Federal Spending</b>	<b>Federal Spending as Share of Medicaid Expansion Spending</b>
<b>2016</b>	5,018	3,339	16,758,341	0.059
<b>2017</b>	6,240	5,009	31,257,552	0.061
<b>2018</b>	7,057	5,828	41,128,196	0.078
<b>2019</b>	7,410	5,828	43,184,606	0.083
<b>2020</b>	7,780	5,828	45,343,836	0.081

<sup>62</sup> <http://dphhs.mt.gov/Portals/85/Documents/healthcare/MedicaidExpansionMemberProfile.pdf>.

<sup>63</sup> 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.

## E. Employers

Some share of Medicaid expansion beneficiaries may have been covered by their employer in the absence of Medicaid expansion. As discussed in Appendix section C, we assume that by 2018, approximately 8,700 Medicaid expansion beneficiaries would have had employer-sponsored insurance.

We assume that the employer share of premiums equaled \$5,075 in 2016.<sup>64</sup> We assume employer premiums grow by 4 percent per year.<sup>65</sup> Combined, we assume that employers capture approximately 9 percent of total Medicaid expansion spending.

It's hard to say what employers will do with these savings. Some argue that the market will force employers to maintain total compensation.<sup>66</sup> As such, reduced spending on one type of benefit should increase wages or other benefits. However, it is also possible that employers will keep some of these savings, particularly in a scenario where only some of their employees are opting out of coverage. We assume a 50-50 split.

## F. Individuals

Individuals benefit from reduced out-of-pocket costs and reduced premiums. We assume that individuals capture 12 percent of total Medicaid expansion spending. We derive this number by applying estimates for premiums and out-of-pocket spending for different groups to their estimated population size.<sup>67</sup>

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<sup>64</sup> This is based on Medical Expenditure Panel Survey (MEPS) data. Average annual single premium per enrolled employee for employer-based health insurance. (<https://www.kff.org/other/state-indicator/single-coverage/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D>)

<sup>65</sup> This is inline with recent growth. Collins, S. R., Radley, D. C., Gunja, M. Z., and Beutel, S., "The Slowdown in Employer Insurance Cost Growth: Why Many Workers Still Feel the Pinch," *Issue Brief (Commonwealth Fund)* 36 (2016): 1-22.

<sup>66</sup> Blumberg, L. J., "Perspective: Who Pays for Employer-Sponsored Health Insurance?" *Health Affairs* 18, no. 6 (1999): 58-61.

<sup>67</sup> Information on premiums and out-of-pocket costs obtained from Collins, S. R., Radley, D. C., Gunja, M. Z., and Beutel, S., "The Slowdown in Employer Insurance Cost Growth: Why Many Workers Still Feel the Pinch," *Issue Brief (Commonwealth Fund)* 36 (2016): 1-22; Coughlin, T. A., "Uncompensated Care for the Uninsured in 2013: A Detailed Examination (2014); and Average Annual Single Premium per Enrolled Employee for Employer-Based Health Insurance (<https://www.kff.org/other/state-indicator/single-coverage/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D>).

## G. Enrollment Forecast

Our enrollment forecast is based on the experience of initial Medicaid expansion states. On average, Medicaid enrollment plateaus approximately two years after expansion. As such, we assume that enrollment will resemble current enrollment. See discussion in III.D.1.

We also note that under current economic conditions, Montana may have limited room to expand enrollment further. Table A5 presents the estimated size of Montana's population ages 18-64 with income between 0 percent and 138 percent FPL. As of March 2017, the Current Population Survey suggested that roughly 95,000 Montanans met the basic eligibility criteria. These survey estimates do not gather sufficient information to precisely estimate the size of the eligible population. Furthermore, with 12-month eligibility, some share of expansion enrollees may fall outside of this range during the month of the survey. However, these data suggest limited room for continued growth in expansion enrollment.

**Table A5: Montana Population Ages 18-64 With Income Between 0% and 138% FPL**

<b>Year</b>	<b>Montanans Ages 18-64 With Income Between 0% and 138% FPL [95% CI]</b>
2015	116,331 [102,865-129,672]
2016	109,617 [98,656-120,579]
2017	95,334 [84,782-105,521]

Source: BBER analysis of CPS ASEC data.

## H. Spending Forecast

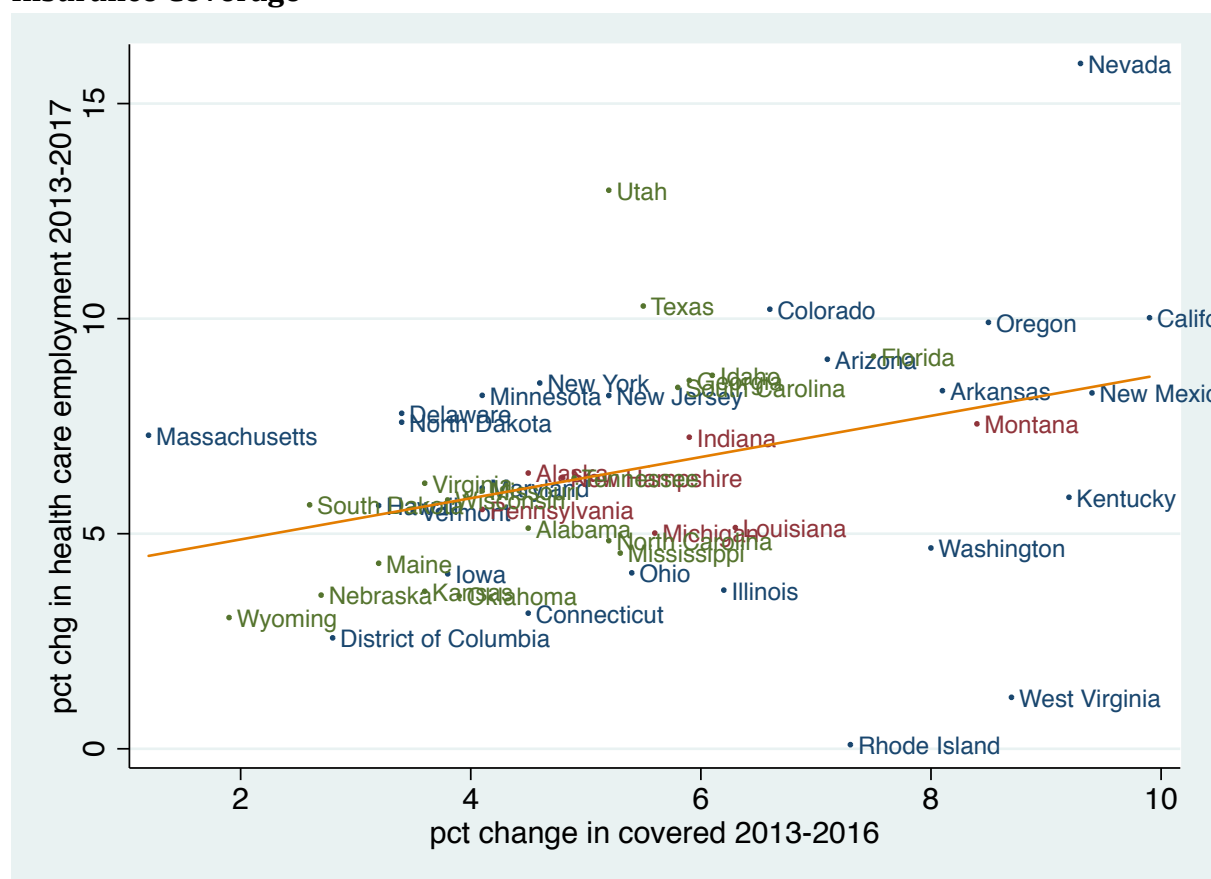
We base our forecast for Medicaid expansion spending per beneficiary on the forecast from the 2016 Actuarial Report on the Financial Outlook for Medicaid.<sup>68</sup> However, we condense the timeline by averaging two years of Medicaid forecast for 2015-16 and 2016-17.

## I. Employment Effects of Medicaid Expansion

<sup>68</sup> <https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/ActuarialStudies/Downloads/MedicaidReport2016.pdf>.

Figure A2 presents an alternative view of the relationship between Medicaid expansion (or increases in insurance coverage) and health care employment. It shows the percent change in health care employment (obtained from the Quarterly Census of Employment and Wages) between January 2013 and June 2017 plotted against the percent change in insurance coverage (obtained from the American Community Survey) between 2013 and 2016. The figure shows that states that increased insurance coverage tended to see larger increases in health care employment. While this analysis is somewhat crude, it is consistent with the results reported by our REMI analysis.

**Figure A2: Correlation Between Growth in Health Care Employment and Growth in Insurance Coverage**



Notes: Blue = initial expansion states, Red = late expansion states, Green = non-expansion states



## J. 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 data from the Current Population Survey Annual Social and Economic Supplement obtained from IPUMS-CPS.<sup>69</sup> The ASEC is administered in March each year.

In the main text, we focus on individuals ages 18-64 with incomes below 138 percent FPL who do not report a disability.<sup>70</sup> We report the percentage of people in this group who report participating in the labor force before Montana expanded Medicaid (2013-2015) and after Montana expanded Medicaid (2016-2017).

In table A5, we report results from a similar differences-in-differences analysis that uses regression analysis to add controls for age, age<sup>2</sup>, sex, race (white non-Hispanic), region (census divisions), and year fixed effects. The effects are similar to those reported in the main text. Relative to low-income people in other states, labor force participation (LFP) increased by nearly 8 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, and it only applies to low-income Montanans. The final column further establishes this. The results in this column are based on a similar analysis, but instead of comparing the change in LFP among low-income Montanans to low-income residents in other states, we compare low-income Montanans to high-income Montanans. The results are similar. They suggest that something increased LFP among low-income Montanans in 2016 that did not similarly affect other low-income Americans (or low-income residents of Mountain states) or higher-income Montanans. Medicaid expansion and HELP-Link provide a plausible explanation for these observed effects.

In Table A6, we show that American Community Survey data depict a similar pattern. We observe large increases in labor force participation among low-income (below FPL) Montanans ages 20-64 after 2016. We observe large increases among people with and without disabilities. We do not observe similar increases in LFP among higher-income Montanans or among people across the United States.

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<sup>69</sup> 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>.

<sup>70</sup> We compute income as a percent of poverty using IPUMS-CPS variables `offtotval` and `offcutoff`.

**Table A5: Differences-in-Differences Regression Analysis of Impact of Medicaid Expansion on Labor Force Participation**

	<b>Low Income (0-138% FPL)</b>	<b>Higher Income (&gt;138% FPL)</b>		<b>Montana Only</b>
<b>Montana</b>	0.006 (0.027)	0.028*** (0.009)	<b>Low Income</b>	-0.255*** (0.027)
<b>After</b>	-0.034*** (0.006)	0.004* (0.002)	<b>After</b>	0.007 (0.016)
<b>Montana * After</b>	0.078* (0.034)	-0.024* (0.011)	<b>Low * After</b>	0.076* (0.035)
<b>Controls</b>	Age, age <sup>2</sup> , sex, white non-Hispanic		<b>Controls</b>	Age, age <sup>2</sup> , sex, white non- Hispanic
<b>Region FE</b>	Yes	Yes	<b>Region FE</b>	N/A
<b>Year FE</b>	Yes	Yes	<b>Year FE</b>	Yes
<b>N</b>	93,988	442,652	<b>N</b>	6,969

Note: Standard errors in ( ), \*\*\* p<0.01, \* p<0.05.

**Table A6: Labor Force Participation by Poverty and Disability**

		<b>With Disabilities</b>			<b>Without Disabilities</b>		
		<b>2015</b>	<b>2016</b>	<b>Change</b>	<b>2015</b>	<b>2016</b>	<b>Change</b>
<b>Montana</b>	<b>Below Poverty</b>	24%	29%	6%	56%	64%	9%
	<b>Above Poverty</b>	56%	56%	0%	86%	87%	1%
<b>U.S.</b>	<b>Below Poverty</b>	23%	22%	-1%	57%	56%	-1%
	<b>Above Poverty</b>	47%	48%	1%	86%	86%	0%

Source: BBER analysis of American Community Survey data obtained from American Fact Finder Table B23024.

## **K. Woodwork Effects**

While the existing literature generally finds limited woodwork effects, most of this research examined initial expansion states. Here, we examined changes in traditional Medicaid enrollment among late expansion states using MBES data, which includes monthly enrollment by state for 2014, 2015, and 2016. Specifically, we performed a differences-in-differences analysis. That is, we regressed the natural log of traditional Medicaid enrollment (computed as total Medicaid enrollment minus the number of newly eligible) on an indicator equal to one for months after the state expanded Medicaid and zero otherwise, and state, year, and month fixed effects. The effects in this analysis are identified by comparing the change in traditional Medicaid enrollment in late expansion states to the change in non-expansion states. We did not find evidence consistent with the

hypothesis that Medicaid expansion increases traditional Medicaid enrollment. We found that enrollment in expansion states increased by 0.3 percent relative to non-expansion states. This result is not statistically significant (p-value = 0.91 not close to standard significance threshold of 0.05).

## L. Alternative REMI Specifications

Table A7 presents statewide results for two alternative REMI specifications. The first specification shows a much more conservative estimate, where we assume that the federal transfer is 25 percent to total spending or 32 percent higher than in the baseline specification. We also reduce enrollment to 92,000, which further shrinks the economic impacts. The second specification presents an estimate with much higher enrollment of 97,000 in 2018 and 105,000 in 2019-2020. The conclusions from these alternative specifications are consistent with those in the main body of the report. Medicaid expansion generates thousands of additional jobs and hundreds of millions of additional income, and combined savings plus increased revenues are sufficient to pay for the state's share of the costs. There are many other possible model specifications, however, selecting models from within a plausible range of assumptions is very likely to yield similar conclusions.

**Table A7: Summary of Economic Impacts of Medicaid Expansion in Montana/Year and Cumulative (income, sales, and net savings in millions of \$2016)**

<b>A. 25% Federal Transfer/92,000 Enrollment Plateau</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Cumulative</b>
<b>Jobs</b>	3,035	4,837	4,972	4,766	4,565	
<b>Personal Income</b>	\$137	\$223	\$240	\$245	\$249	\$1,094
<b>New Sales (i.e., output)</b>	\$324	\$528	\$550	\$534	\$522	\$2,458
<b>Population</b>	932	2,137	3,093	3,792	4,363	
<b>Fiscal Effect:</b>						
<b>Savings+Revenue-Costs</b>	\$43.6	\$51.3	\$44.6	\$36.6	\$15.9	
<b>B. 105,000 Enrollment Plateau</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Cumulative</b>
<b>Jobs</b>	3,161	5,071	5,533	5,668	5,492	
<b>Personal Income</b>	\$147	\$241	\$275	\$297	\$306	\$1,266
<b>New Sales (i.e., output)</b>	\$336	\$551	\$609	\$633	\$625	\$2,754
<b>Population</b>	968	2,229	3,330	4,247	4,999	
<b>Fiscal Effect:</b>						
<b>Savings+Revenue-Costs</b>	\$45.4	\$54.6	\$48.7	\$40.4	\$16.8	