

The Economic Contribution of ROCKY MOUNTAIN LABORATORIES

April 2023



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Rocky Mountain Laboratories

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About the BBER

The Bureau of Business and Economic Research (BBER) is Montana's preeminent business research organization. Founded in 1948 as the research arm of the University of Montana's College of Business. The BBER's mission statement states:

"The purpose of the Bureau is to serve the general public, as well as people in business, labor, and government, by providing an understanding of the environment in which Montanans live and work."

BBER has become one of the most sought-after sources of information and analysis on the Montana economy. The Bureau has published the Montana Business Quarterly, an award-winning business periodical, since 1962 and has conducted the Montana Economic Outlook Seminars, a half-day program on the economic outlook presented in 9 cities statewide, annually since 1976.

About this Study

The University of Montana Bureau of Business and Economic Research (BBER) conducted this study of the economic contributions of Rocky Mountain Laboratories (RML) in Montana. This study updates an evaluation conducted in 2012, since which time the laboratory has grown both physically and in terms of employment. The principal authors of this report are Derek Sheehan and Dr. Patrick Barkey of BBER. RML sponsored this report and assisted in gathering operating data for fiscal year 2022. All conclusions, omissions, or errors in this report are solely the responsibility of BBER.

RML is a National Institutes of Health (NIH) biomedical research facility located in Hamilton, Montana. This facility is part of the NIH's National Institute of Allergy and Infectious Diseases (NIAID) performing foundational research to better understand, treat, and prevent a host of infectious diseases, including potential pandemic agents. In addition to the global health research impacts of this facility, there are also substantial contributions to the local and state economy due to this facility's operation in the Bitterroot Valley.

This report is an assessment of RML's economic contribution to the broader Montana economy. To make this assessment, we must imagine an economy in which economic activity associated with RML did not take place. To this end we must provide answers to three general questions.

1. What is the spending (e.g. jobs, wages, production, and vendor spending) associated with the operations of RML?
2. What additional investments would not take place if it weren't for RML in Montana?
3. What is the broader impact of the income received by workers, businesses, and government after some fraction flows through the rest of the economy?

The total economic contribution of RML is the sum of these three components often termed the direct, indirect, and induced impacts, respectively. The results presented in this report represent the difference in the current economy receiving the benefits of RML versus a hypothetical economy without RML and its broader economic contribution.

1.1 Summary of Findings

The primary findings of this report are that the presence and operations of RML in Montana lead to a state economy with more high-quality jobs, more economic security, more sales for Montana businesses, and more families than would exist if absent. Comparing the current Montana economy to one without the economic activity of RML, we find that:

- 1,497 permanent, year-round jobs exist in Montana across most industries and regions due to the operations of RML.
- Montana households receive an additional \$89.2 million in after-tax income available for household consumption and investment.
- Montana business and non-business organizations receive \$231.8 million in additional output, or gross receipts, each year.
- Currently, 1,938 additional residents, primarily working-age adults and their children reside in Montana due to RML.

Table 1: The Economic Contributions of Rocky Mountain Laboratories: Summary

Category	Impact	Units
Total Employment	1,497	Jobs
Personal Income	105.1	\$ Millions
Disposable Personal Income	89.2	\$ Millions
Output	231.8	\$ Millions
Population	1,948	People

These contributions represent the substantial ongoing footprint of RML's operations in the state of Montana each year. All results presented here are based on actual operational data provided by RML for the 2022 federal fiscal year. The results presented in this report include the facility's current levels of employment, employee and contractor compensation as well as intermediate demand such as operational inputs, maintenance, and construction spending that occurred over the period.

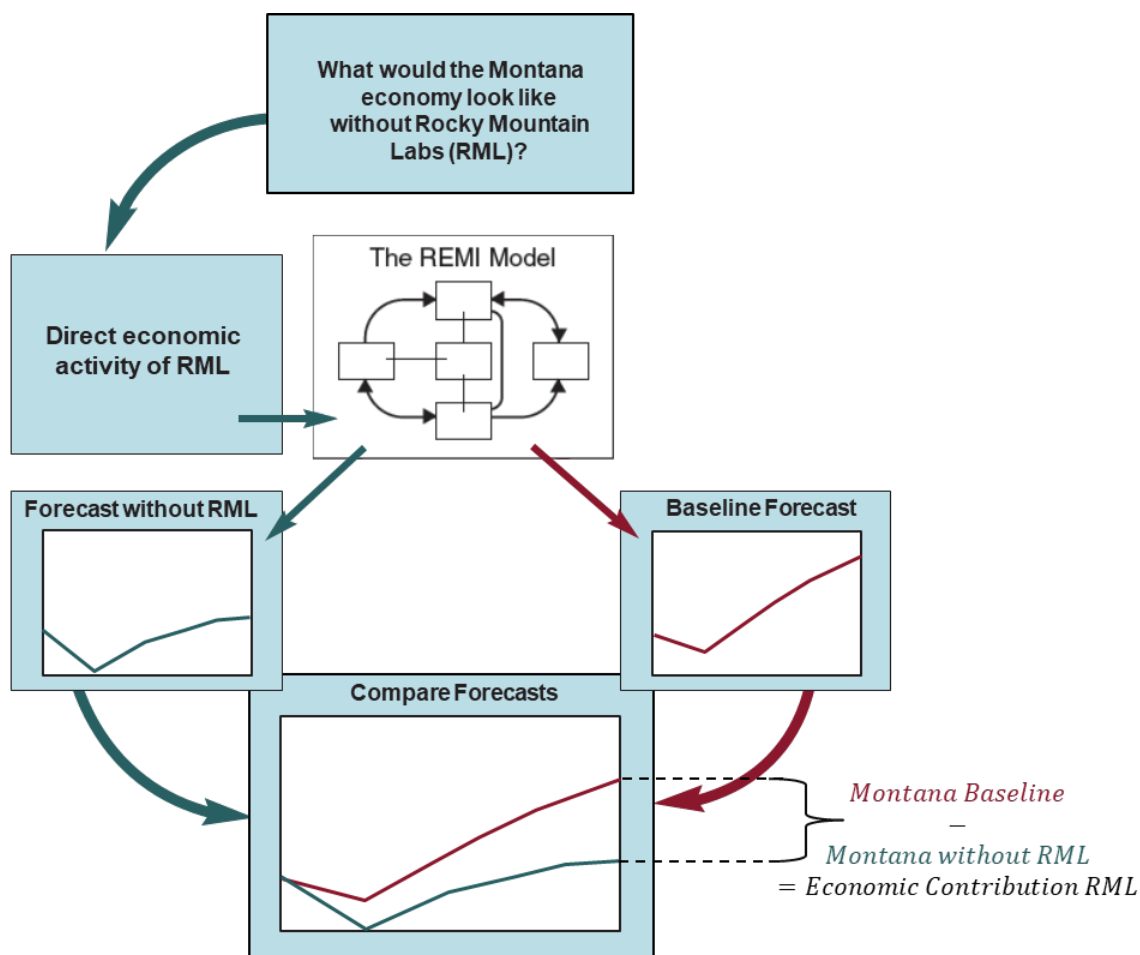
In addition to its current economic contributions, a previous analysis conducted in 2012 found that Rocky Mountain Laboratories (RML) has continued to grow and contribute to the Montana economy. RML now supports 400 more jobs and generates an additional \$9.1 million in disposable personal income each year for Montana households than it did a decade ago. The facility's current ongoing construction is a strong indicator of its potential to continue to contribute to the regional economy in a sustained and meaningful way.

How These Results Were Produced

This study addresses the research question: What would the Montana economy look like if RML did not exist? This is a purely hypothetical question – no shutdowns or closures are contemplated or examined. Its use illustrates and quantifies the connections between facility operations and the state economy. The income received by workers, vendors, and governments is re-spent locally and across the state when the facility operates, boosting jobs, demand, and income in sectors of the economy with no direct relationship with the lab. Thus, an economy without RML is smaller by more than just the direct activity of the laboratory itself.

Since an economy without RML cannot be directly observed, we estimate its size and composition using an economic model leased for this study and constructed specifically for this purpose. The flow of the analysis, illustrated in Figure 1, involves using the economic model (REMI) to produce two different projections of the Montana economy (Treyz, 2013). The first is the status quo scenario that includes the lab's operations. The second, no-RML, scenario is made by removing the laboratory's economic activity and creating a hypothetical projection.

Figure 1: Policy Analysis with REMI



To create the hypothetical, no-Rocky Mountain Laboratories scenario, we needed to collect direct operating information for the laboratory, including employment, compensation, operations, and construction spending. With the assistance of study sponsor RML, we obtained data on the 2022 fiscal year. It is important to note that all data reflects actual, recorded spending. The BBER made no projections or estimates in producing results.

1.2 Introduction

Rocky Mountain Laboratories (RML), located in Hamilton, Montana, is part of the National Institute of Allergy and Infectious Diseases (NIAID) of the National Institutes of Health (NIH). NIAID is a federal research institute tasked with the following:

- Expanding the breadth and depth of knowledge in all areas of infectious, immunologic, and allergic diseases.
- Developing flexible domestic and international research capacities to respond appropriately to emerging and re-emerging disease threats at home and abroad.

The origins of RML trace back more than 100 years. The research facility was initially established to better understand Rocky Mountain Spotted Fever caused by infected ticks in the Bitterroot Valley. The current campus, which opened in 1928, is staffed by world-class scientists working in tightly regulated laboratories. Their research safely advances the understanding of the infectious diseases that affect humans and animals.

True to its roots, RML continues to be well known for research of tick-borne and other vector-borne illnesses. However, its research has expanded to include various pathogens, including chronic wasting disease, COVID-19, Ebola virus, influenza and antibiotic-resistant bacteria. Scientists in the lab perform the foundational research necessary to develop new disease detection, treatment, and prevention methods. For example, in early 2020, RML scientists provided the public with some of the first electron microscope images of the virus responsible for COVID-19 (Missoulain, 2020). The research performed at this facility improves the understanding of and protection from future infectious disease threats, which benefits the broader scientific community, medical professionals and emergency response teams.

Research at RML is directly funded by NIH. As is the case for much federally funded research, the work provides a foundation for the United States' leading role in developing new biomedical technology and associated industries. While the lab is undoubtedly responsible for developing new industries beyond Montana's borders, it has also created new industries in Hamilton. Research performed by RML scientists is directly responsible for the GlaxoSmithKline vaccine manufacturing facility built roughly four miles north. In

addition, the increasing concentration of bioscience expertise in the region has also attracted interest from vaccine manufacturer TONIX to build a facility in Hamilton.

The biomedical research and manufacturing center that is forming around Hamilton is a great example of how having a more diversified economy and attracting a more educated workforce can reverse the trend of rural decline that is seen across much of the country. In recent years, the growth of the Bitterroot Valley has been attributed to the presence of the Rocky Mountain Laboratories (RML), in combination with its natural beauty (Lynch, 2019).

As a consequence, it is essential to note the jobs reported in the following section do not fully capture the more than 200 vaccine manufacturing jobs at the nearby GlaxoSmithKline facility that exist in the area as a direct result of RML (EPA, 2022) or the potential employment at the new TONIX facility. The results herein rather reflect the direct and indirect employment impacts supported by RML but don't consider the additional "spin-off" activity it creates.

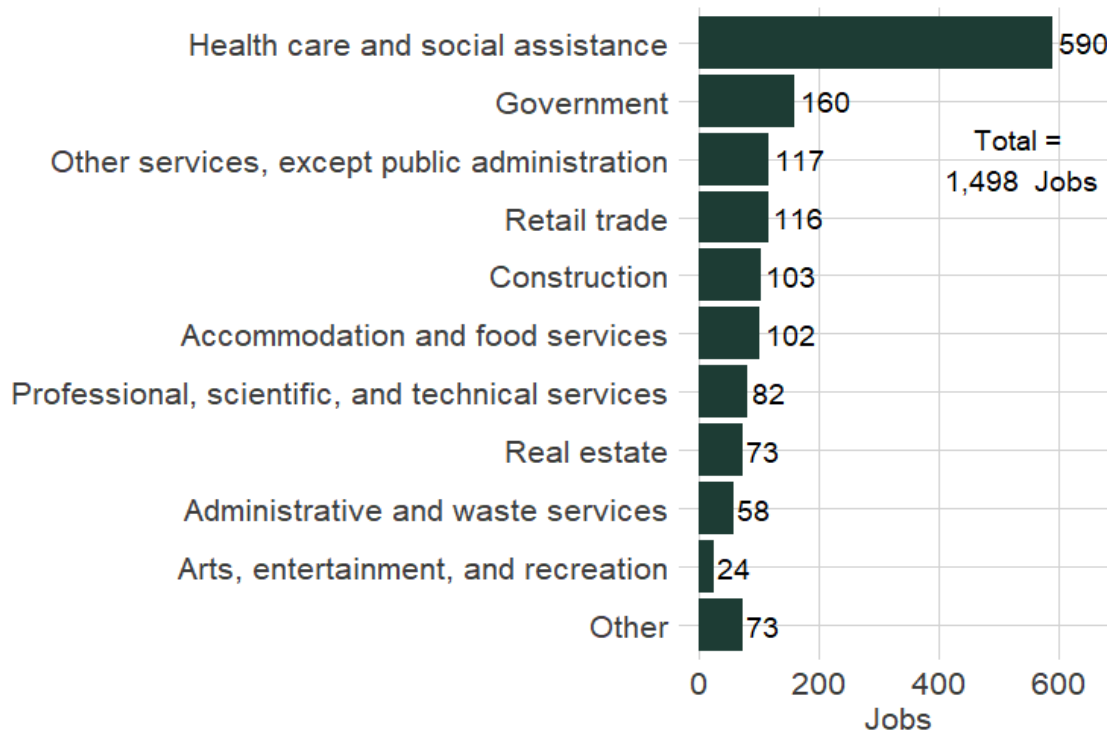
1.3 Employment and Earnings Impacts

In addition to providing employment to 536 employees and contractors, RML creates an additional 962 jobs in the broader economy through operational spending and the spending of earnings by employees. This spending supports employment growth with no direct connection to the facility itself.

The largest impact on employment is in the broad health care and social assistance industry, encompassing the RML facility's medical and diagnostic laboratories and supporting 54 additional jobs in related health care fields. RML's operations also support a substantial amount of state and local government employment, including positions in state government, local law enforcement, and fire and emergency services.

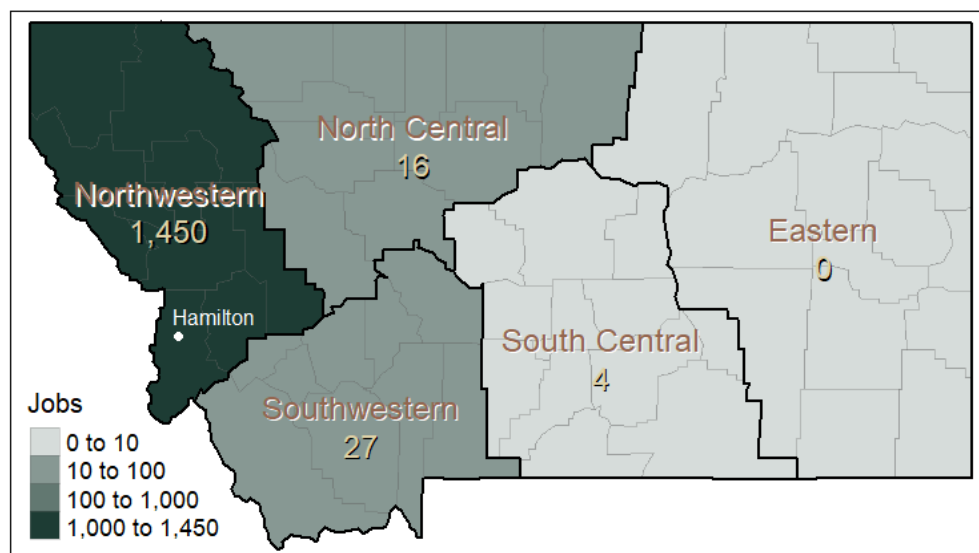
RML also supports businesses and industries through the earnings and expenditures of its employees, including 116 jobs in retail trade (e.g. grocery store employees) and 102 jobs in accommodation and food services. Both industries are represented in the top five largest employment industry sectors in Ravalli County.

Figure 2: Employment Impacts by Industry



While the employment impacts are highly concentrated within Ravalli County and the surrounding northwestern region where the facility is physically located, RML also supports an additional 47 jobs in all but the state's eastern region, as shown in Figure 3.

Figure 3: Employment by Region



The ongoing operation of RML not only supports 1,498 jobs but also supports the substantial wages, compensation, and earnings paid to Montana’s workers. Jobs supported by RML pay \$69.2 million in wages and salaries, or more than \$85.9 million in salaries and benefits. Adding in the income of business proprietors in Montana, total earnings supported by RML exceeds \$96 million annually.

Table 2: Wage, Compensation, and Earnings Impacts

Category	Impact	Units
Wages and Salaries	69.2	\$ Millions
Compensation	85.9	\$ Millions
Earnings	96.1	\$ Millions
Earnings, per New Job	64,195	\$ Dollars

The jobs that exist in the Montana economy because of the presence of RML pay more than the state average. The average annual earnings of the 1,498 jobs supported by RML is \$64,195, over \$12,000 more per job than the state average of \$51,544, in real 2020 dollars (BEA, 2021).

1.4 Personal Income Impacts

The increase in personal income from RML has a positive impact on Montana households. It allows households to cover expenditures, which supports businesses and creates jobs better. It also helps to reduce poverty and improve the quality of life for all Montanans.

A closer look at the personal income contributions of RML's operations reveals that while a significant portion of this income is associated with employment, other sources of income are also supported. These include increased property income and government transfers, as shown in Table 3.

Table 3: Personal Income Impacts

Category	Impact
Total Earnings by Place of Work	96.1
Total Wages and Salaries	69.2
Supplements to Wages and Salaries	16.7
Employer contributions for employee pension and insurance funds	10.3
Employer contributions for government social insurance	6.4
Proprietors' income with inventory valuation and capital consumption adjustments	10.1
Less: Contributions for Government Social Insurance	13.7
Employee and Self-Employed Contributions for Government Social Insurance	7.4
Employer contributions for government social insurance	6.4
Plus: Adjustment for Residence	-0.1
Gross Inflow	0.5
Gross Outflow	0.6
Equals: Net Earnings by Place of Residence	82.2
Plus: Property Income	13.6
Personal Dividend Income	4.1
Personal Interest Income	7.1
Rental Income of Persons	2.4
Plus: Personal Current Transfer Receipts	9.3
Equals: Personal Income	105.1
Less: Personal current taxes	15.9
Equals: Disposable personal income	89.2

Property income in Montana is \$13.6 million higher due to gains in dividends, interest, and rent. Montana households also receive an additional \$9.3 million in government transfer payments, including social security benefits, unemployment insurance, and welfare benefits received by lower-earning households. These payments are largely due to the increase in population and overall size of the state economy.

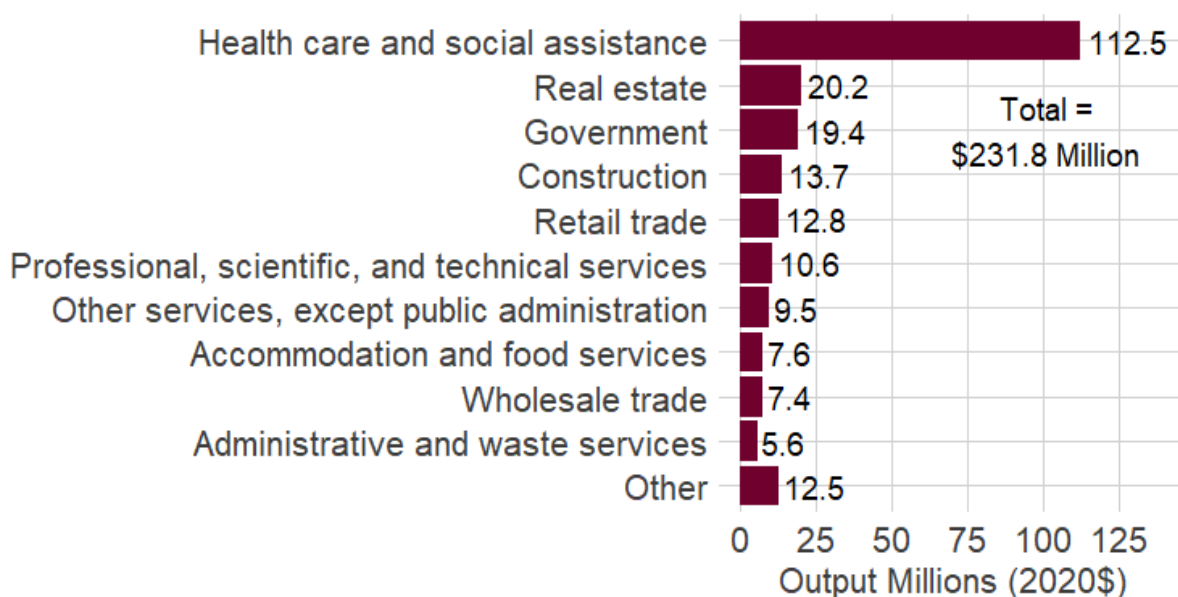
Table 3 also reveals that state, local, and federal government receives an additional \$15.9 million in income tax revenue supports used for government services. This represents just a small slice of the total revenue impacts RML has on government budgets.

1.5 Output Impacts

Another way to measure the amount of economic activity created by RML is the total value of production received by Montana business and non-business institutions due to the existence of the lab. Output is the sum of gross receipts, or the total revenue received by Montana organizations from sales of goods and services. Retail and wholesale trade are two exceptions; for these sectors, output represents only “value-added,” revenue less intermediate spending. In fiscal year 2022, RML supported \$231.8 million in output within the Montana economy.

Examining output by industry reveals that while a majority of the increased output is concentrated in the health care and social assistance industry, which includes RML itself, more than half, \$119.3 million of the total production, is supported directly and indirectly in various industries, as summarized in Figure 4.

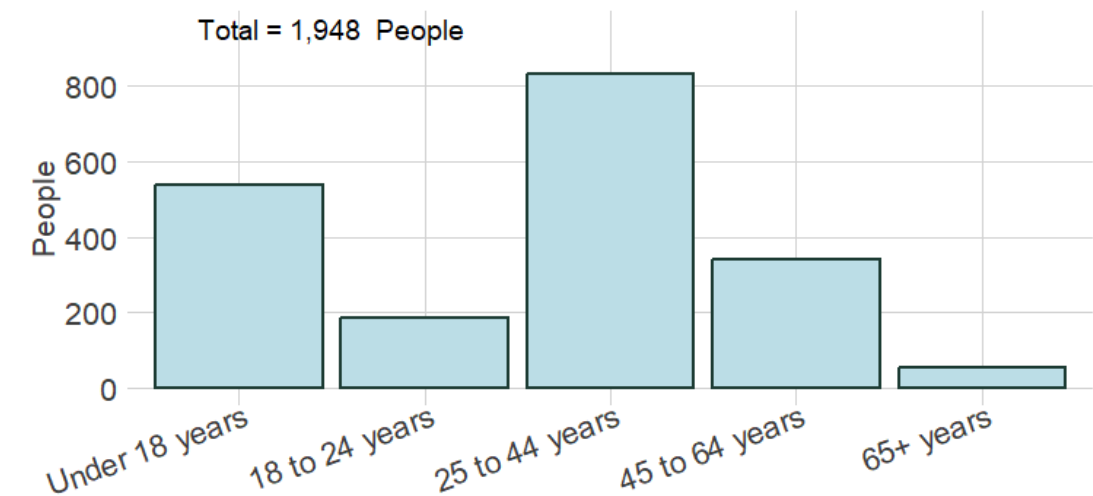
Figure 4: Output Impacts by Industry, Millions of dollars



1.6 Population Impacts

An economy with more high-quality jobs, more income, and more revenue will also contain more people. The increased economic opportunity spurred on by RML improves the economic well-being of current residents who might otherwise choose to leave the state and attracts residents from other states.

Figure 5: Population Impacts



RML’s presence in the Bitterroot Valley results in an additional 1,948 people in Montana that would not exist if it were absent. Figure 5 shows that most of the population supported by the facility is early to mid-career aged, 25 to 44 years, and their children.

1.7 Summary of Economic Contribution

This report finds that because of the existence of RML, the Montana economy is larger by:

- 1,498 permanent, year-round jobs across a majority of important industries and regions in the state;
- \$105.1 million in income received by Montana households, of which \$89.2 million is after-tax income available for household consumption and investment;
- \$231.8 million in additional economic output received by Montana business and non-business organizations each year;
- 1,938 additional residents, made up primarily of working-age adults and their children.

This report focused on just one aspect of RML's broader impacts. That is the sizable economic contribution this facility provides to residents of the Bitterroot Valley and Montana as a whole.

The presence of the lab in Hamilton also directly supports local utility and infrastructure projects as well as support for law enforcement, fire and rescue, and local emergency services that would not exist without the federal facility.

RML continues to have a sizable educational impact in Montana, serving to prepare future bioscience professionals for their scientific careers. This includes the Biomedical Research After School Scholars (BRASS) program, which provides local middle school students with education on topics such as infectious diseases and animal research, and training for university students and recent doctoral degree recipients through NIH's Intramural Research Training Award program.

RML also hosts and provides lectures and seminars to Montana's universities, local high schools, and residents. The Community Lectures that RML hosts twice a year provide free information and discussion from prominent scientific figures, including Nobel Laureates. These efforts broaden the scientific literacy of the general public.

The unique history and continued operation of Rocky Mountain Laboratories has and will continue to have essential long-term impacts through improving the processes that detect, treat, and prevent diseases caused by microbes. It will undoubtedly continue to inspire lifesaving product development beyond Montana's borders.

The research done at RML has helped create a more diversified and highly skilled workforce than would otherwise exist. As a result, the local economy is more resilient to the economic challenges of automation, plant relocations, and out-migration faced by other rural communities.

1.8 References

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