



Minnesota Research Tax Credit

**2017
EVALUATION REPORT**

Program Evaluation Division
OFFICE OF THE LEGISLATIVE AUDITOR
STATE OF MINNESOTA

Program Evaluation Division

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February 2017

Members of the Legislative Audit Commission:

Minnesota's research tax credit allows businesses to reduce their tax liability if they conduct qualified research in the state.

We found that the research tax credit has generated jobs and earnings growth in Minnesota, but the growth has been relatively small. In addition, the research tax credit is complicated, and we concluded that the Minnesota Department of Revenue has provided limited guidance to help taxpayers understand the documentation necessary to claim and substantiate the credit.

We recommend that the Legislature explicitly specify purposes for the research tax credit and require analyses of how well proposed changes to the credit help achieve the credit's purposes. We also recommend that the Department of Revenue improve research tax-credit information available to taxpayers.

Our evaluation was conducted by Jody Hauer (project manager), Ryan Moltz, and Katherine Theisen.

The Minnesota Department of Revenue cooperated fully with our evaluation, and we thank the department for its assistance.

Sincerely,

Handwritten signature of James Nobles in black ink.

James Nobles
Legislative Auditor

Handwritten signature of Judy Randall in black ink.

Judy Randall
Deputy Legislative Auditor



Summary

Key Facts and Findings:

- Minnesota’s research tax credit allows businesses to reduce their state tax liability if they conduct qualified research activities in the state. To qualify, research activities must meet several legal requirements. (pp. 4-6)
- The 1981 Legislature established Minnesota’s research tax credit and patterned it after a similar federal tax credit. (p. 7)
- Eligible businesses include “C” corporations, which use research tax credits to reduce their Minnesota corporate franchise tax. Also eligible are individual shareholders in “S” corporations and individual partners in partnerships, who use the credit to reduce their individual income tax. (pp. 3-4)
- In 2014, businesses claimed \$50 million in research tax credits, with C corporations claiming 67 percent of the total. On average, the largest 20 percent of C corporations (measured by national sales) received two-thirds of the tax credit claimed by all C corporation claimants in 2010 to 2014. (pp. 14-15)
- Minnesota statutes do not specify a purpose for the research tax credit, even though national research indicates that it is important for states to set goals and objectives for tax incentives like the tax credit. (pp. 31-32)
- In lieu of an explicit statutory purpose, likely purposes for the research tax credit are to: (1) create or retain jobs, (2) increase research activity, and (3) attract or retain businesses. (p. 33)
- Minnesota’s research tax credit increased jobs and earnings statewide from 2008 to 2014, according to our estimates. However, the growth was

relatively small, and the credit did not pay for itself, as its statewide net fiscal benefits offset only a small share of the amount of credit claimed. (pp. 43-45)

- When legislators discuss changing the research tax credit, they receive estimates of impacts on the state’s General Fund but receive no analysis of whether the proposal will increase the credit’s effectiveness. (p. 49)
- Minnesota Department of Revenue data on the state’s research tax credit are insufficient to allow evaluations of the credit’s performance. (p. 53)
- The Department of Revenue provides limited guidance to help taxpayers understand documentation required to substantiate their claims for the state’s research tax credit. (p. 62)

Key Recommendations:

- The Legislature should establish in statute explicit and measurable objectives for Minnesota’s research tax credit. (p. 32)
- To the extent the Legislature considers changing Minnesota’s research tax credit, it should require and review analyses of how well the proposed changes help achieve the credit’s purpose. (p. 50)
- The Legislature should authorize and require the Minnesota Department of Revenue to collect and maintain data sufficient to allow periodic evaluations of the research tax credit. (p. 56)
- The Minnesota Department of Revenue should provide additional and more specific information to taxpayers about the documentation needed to substantiate claims for the research tax credit. (p. 65)

We estimate that although Minnesota’s research tax credit increased jobs and employee earnings in the state, the credit has not paid for itself.

Businesses in 2014 claimed \$50 million in Minnesota research tax credits.

Report Summary

The 1981 Minnesota Legislature established the research tax credit. Minnesota's credit allows businesses to reduce their taxes if they conduct qualified research activities in the state.

The Internal Revenue Code divides businesses into different types and, since 2010, Minnesota law has defined eligibility for the research tax credit by three of these types. One is S corporations (small, domestic businesses that meet requirements related to the number, type, and tax status of their shareholders). The second is C corporations (corporations that are not S corporations). The third is partnerships (that carry on business through entities such as syndicates, groups, and joint ventures).

C corporations use the research tax credit to lower *corporate* tax liability. By contrast, S corporations and partnerships pass research tax credits to shareholders and individual partners, respectively, to reduce their *individual* income taxes.

Most of the Minnesota research tax credits go to C corporations. From 2010 through 2014, C corporations claimed 81 percent of the credits. In 2014, the most recent year for which complete data are available, C corporations claimed \$34 million in research tax credit, while shareholders in S corporations and individual partners in partnerships claimed \$16 million.

The largest 20 percent of C corporations (as measured by national sales) received two-thirds of the tax credit received by all C corporations claiming the credit in the years between 2010 and 2014. Among C corporations, the manufacturing industry has claimed the largest share—65 percent—of the tax credit.

Federal and state law define qualified research. Qualified expenses for such

research include researchers' wages, research supplies, and 65 percent of contract costs paid to others for doing research, among other items. Wages account for three-quarters of C corporations' qualified research expenses in the state.

Calculating Minnesota's research tax credit involves a complicated formula. The formula takes into account a company's (1) qualified research expenses in the current year, (2) Minnesota sales or receipts for the most recent four years, and (3) both qualified research expenses and sales or receipts from 1984-1988. (Companies without research expenses or sales in 1984-1988 follow a different formula specified in federal law.)

Qualified research expenses that exceed a calculated "base amount" are multiplied by the Minnesota credit's two rates: 10 percent on the first \$2 million of qualified expenses and 2.5 percent on qualified expenses exceeding that. The resulting tax credit cannot exceed the company's tax liability, but if it does, the company can carry that share of the credit forward to reduce up to 15 future years' taxes.

Evaluating the research tax credit requires knowing the credit's purpose, but Minnesota law does not specify one.

National research recommends that states set goals and objectives for tax incentives such as tax credits, but Minnesota has not done this for its research tax credit. Although the tax credit's section in law is entitled "Credit for Increasing Research Activities," the state has not determined what the credit is supposed to accomplish nor what metrics the state should use to measure the credit's performance.

The Legislature should establish in statute explicit and measurable objectives for the tax credit. It should also direct a third party, such as the

Department of Revenue or others, to develop the measures needed to determine how well the tax credit is meeting its objectives.

Minnesota’s research tax credit could be reasonably said to have one or more of at least three objectives: create or retain jobs, increase research activity, and attract or retain businesses.

Academic research of specific states’ research tax credits has found small increases in jobs due to the credits. In general, companies we surveyed indicated that the tax credit was moderately important in helping them hire new employees and retain jobs.¹

Academic researchers tend to agree that research tax credits have at least some positive impact on private research spending. Additionally, 58 percent of our survey respondents indicated that the tax credit encouraged their decisions to conduct research or development in recent years. At the same time, Minnesota’s formula for the tax credit allows many companies to claim the credit even when their qualified research expenses in the current year are lower than the prior year.

Academic research results are mixed regarding the research tax credit’s ability to attract business to the state. Some studies suggest that research tax credits largely retain or move research among existing research facilities instead of encouraging new research companies. Moreover, fewer than one in six of our survey respondents said that the tax credit was important for their company when considering whether to relocate business activities to Minnesota.

¹ We surveyed companies that claimed Minnesota’s research tax credit in 2012, 2013, or 2014. Of 1,431 companies contacted, 493 responded (a 34.5 percent rate). Results are not generalizable to the population of tax credit claimants as a whole.

Minnesota’s research tax credit increased jobs and expanded earnings statewide, according to our economic analysis.

Using an economic model developed by the Pew Charitable Trusts, we estimated employment and earnings attributable to Minnesota’s research tax credit. Our estimates take into account changes in employment and earnings at companies directly receiving the tax credit. They also include (1) indirect effects that occur when suppliers to companies receiving the credit also grow and (2) induced effects from employees that have higher wages due to the tax credit and spend more in the local economy.

Statewide, we estimated the research tax credit created direct, indirect, and induced new job-years—defined as one job per one year—ranging from 790 in 2008 to 1,540 in 2014. Estimated earnings are direct, indirect, and induced employee wages and benefits attributable to the tax credit. They ranged from \$43 million in 2008 to \$129 million in 2014.

At the same time, jobs and earnings due to the research tax credit represent only a fraction of total jobs and earnings in the state. For instance, our analysis focused on the four industries that claim about 95 percent of Minnesota’s research tax credit and accounted for an average of 21 percent of all employment in the state between 2008 and 2014. Compared with statewide employment in these industries, jobs attributable to the research tax credit represented just 0.2 percent or less during those seven years.

Although Minnesota’s research tax credit produced statewide fiscal benefits, it has not paid for itself.

Jobs created due to the research tax credit result in both fiscal benefits and fiscal costs to the state. Benefits occur when new jobs generate income that expands state and local tax bases. Costs

Minnesota’s research tax credit allows many companies to receive a tax credit even if their research activity has not increased over the prior year.

The Minnesota Department of Revenue should do more to inform taxpayers of the documentation needed to substantiate their claims for the research tax credit.

occur because new jobs increase statewide population that, in turn, spurs a need for additional public services. We estimated that net fiscal benefits of the tax credit totaled \$7.2 million in 2014. However, the amount of research tax credit claimed was far higher at \$32.3 million. The net fiscal benefits offset only 22 percent of the amount of the credit in 2014.

Looking at costs and benefits per job-year, however, shows that the tax credit was relatively cost-effective at creating jobs. We estimated that net employee earnings per job-year attributable to the tax credit averaged \$72,000, while the state's net fiscal cost per job-year averaged \$42,000.

When legislators discuss proposals to change Minnesota's research tax credit, they do not have analyses of how well the changes might improve the credit's effectiveness.

National research indicates that states should analyze both the costs and effectiveness of proposals to change tax incentives, such as research tax credits. When Minnesota legislators discuss changing the research tax credit, the Department of Revenue estimates the fiscal impact to the state's General Fund. However, legislators do not receive estimates of how well the proposed change will increase the credit's effectiveness.

To the extent that the Legislature considers changing the research tax credit, it should require analyses of how well the proposed changes will help achieve the credit's purpose. Doing this presumes that the Legislature first explicitly specifies the purpose of the tax credit. The analyses would involve establishing baseline information on the credit's current effects. The state would then compare the baseline to the credit's effect after a change is implemented.

Minnesota Department of Revenue data on the research tax credit are insufficient to allow evaluation of the credit's performance.

A lack of sufficient data on the tax credit prevents the state from fully understanding the credit's effectiveness. The Department of Revenue is not legally required to evaluate the research tax credit, and it has not collected data needed to evaluate the full population of credit claimants. The department has not had business reasons to allocate resources toward collecting more data than it needs to administer and enforce the collection of taxes.

The Legislature should authorize and require the Department of Revenue to collect and maintain data sufficient to allow periodic evaluation of the current research tax credit. It should direct a third party to evaluate the credit. Future evaluations of the tax credit might require collecting additional information, such as data on jobs created, from tax credit claimants. Data-sharing agreements between state agencies would likely be necessary.

The Minnesota Department of Revenue provides limited guidance to help taxpayers understand the data required to substantiate claims for the research tax credit.

The department offers online information on the research tax credit, but the information lacks sufficient clarity and specificity. Department guidance to its auditors is more specific than its information for taxpayers. Most businesses we surveyed favored additional department assistance on documenting their credit claims.

The department should provide additional information to taxpayers on documentation needed for the tax credit. This could include providing online tutorials and sharing examples of acceptable documentation for substantiating the credit.

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- 13 1.4 The research tax credit is among Minnesota's most significant tax credits for businesses.
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- 19 1.8 Minnesota ranked ninth in the country in research and development activity as a share of state gross domestic product in 2013.
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Introduction

Minnesota's research tax credit reduces the tax liabilities of companies that conduct qualified research within the state. The 1981 Legislature established the tax credit, following in the footsteps of the federal government, which had adopted a federal research tax credit earlier that year. Over the intervening 35 years, Minnesota's research tax credit underwent a number of structural changes, but the state had never evaluated the credit's outcomes.

In 2016, the Legislative Audit Commission directed the Office of the Legislative Auditor (OLA) to evaluate the state's research tax credit. This is the first evaluation following a 2015 law requiring OLA to conduct evaluations of economic development incentive programs.¹ Our evaluation addresses the following questions:

- **What is Minnesota's research tax credit, and who receives it?**
- **What are the research tax credit's objectives, and how effectively has Minnesota's tax credit achieved them?**
- **How does Minnesota's tax credit compare with similar credits in other states?**
- **How well does Minnesota's Department of Revenue oversee the credit?**

To answer these questions, we employed a variety of research methods. One was an extensive review of the legal requirements that apply to Minnesota's research tax credit and the federal credit. We also conducted a literature review of academic and economic studies that examined research tax credits and similar tax incentives elsewhere around the country.

We used an economic model developed by the Pew Charitable Trusts to evaluate whether Minnesota's tax credit helped the state create jobs or generate other benefits. To use the model, we collected data from the Department of Revenue and other state and federal agencies. This enabled us to estimate economic effects of the tax credit over time.

We conducted numerous interviews to learn how the research tax credit worked and to better understand stakeholders' perspectives on it. Our interviews included businesses that have claimed the tax credit and tax preparers who have assisted companies with preparing the required tax forms. We interviewed business associations with an interest in the tax credit. Throughout the evaluation, we held numerous interviews and conversations with employees at the Department of Revenue.

For perspectives from a broader array of companies that have claimed Minnesota's research tax credit, we conducted a survey. We focused the survey on companies that purportedly had claimed the research tax credit in at least one of the 2012, 2013, or 2014 tax years. Companies had the option of completing the survey online or on paper. Of 1,431 survey recipients, 493 companies responded, for a 34.5 percent response rate.

Another component of our evaluation was analyzing data on amounts and users of the research tax credit. At our request, the Department of Revenue provided tax credit data that

¹ *Laws of Minnesota* 2015, chapter 77, art. 2, sec. 2.

it had collected. The department also provided tax forms related to the tax credit for 2010 through 2014, which we used to develop a database on Minnesota's tax credit.

To compare Minnesota's research tax credit with similar credits elsewhere, we selected a sample of five other states. We collected information about those states' research tax credits and used three hypothetical companies to estimate how tax credit amounts might differ among the sample states.

Chapter 1 provides background information on Minnesota's research tax credit and how it compares with the federal research tax credit. The chapter also presents results from our comparison of research tax credits in a sample of states. Chapter 2 analyzes the effectiveness of Minnesota's research tax credit. Chapter 3 focuses on the administration of Minnesota's tax credit.

Two appendices to this report are available online. The first is available at <http://www.auditor.leg.state.mn.us/ped/2017/researchcreditmethods.pdf> and explains the research methodology we followed while using The Pew Charitable Trusts' economic model to analyze effects of Minnesota's research tax credit. The second is available at <http://www.auditor.leg.state.mn.us/ped/2017/researchcreditsurvey.pdf>; it describes our survey of companies that had claimed the tax credit at least one year between 2012 and 2014.

Chapter 1: Background

The 1981 Minnesota Legislature created the state’s research tax credit, now known in statute as the Credit for Increasing Research Activities.¹ Minnesota was the first state to adopt such a tax credit, which allows certain businesses to reduce their taxes if they conduct qualified research activities in the state. The Minnesota Department of Revenue administers and enforces the collection of taxes in the state, which includes reviewing and auditing tax credits.² In this chapter, we define the research tax credit and its requirements, describe the credit’s origin and changes to it over time, discuss its usage, and compare it with similar research tax credits available from the federal government and in a sample of five other states.

Requirements

The research tax credit is available to businesses whose eligibility is defined in law. To qualify for the credit, research activities must satisfy several requirements in the federal Internal Revenue Code.

Eligible Businesses

The Internal Revenue Code divides businesses into different types for tax purposes. Those definitions are incorporated into Minnesota law and define eligibility for the research tax credit.

- **S corporations** are domestic, small business corporations that meet certain requirements related to the number, type, and tax status of their shareholders and to the type of stock they issue.³
- **C corporations** are corporations that are not S corporations.⁴ “Corporations” include associations, joint-stock companies, insurance companies, financial institutions, certain regulated investment companies, and certain publicly traded partnerships.⁵

¹ *Laws of Minnesota* 1981, Third Special Session, chapter 2, art. 3, sec. 6, codified in *Minnesota Statutes* 2016, 290.068. The Governor allowed the bill to become law without his signature in January 1982. The tax credit applies to taxable years beginning after December 31, 1981.

² *Minnesota Statutes* 2016, 270C.03, subd. 1.

³ Specifically, an S corporation must (1) not have more than 100 shareholders, (2) have only individuals as shareholders (with certain exceptions), (3) not have as shareholders non-U.S. citizens who do not meet certain criteria relating to immigration status and residency, and (4) not have more than one class of stock. Members of a family may be treated as a single shareholder for purposes of determining the number of shareholders. Shareholders may be resident individuals, estates, certain trusts, and certain tax-exempt entities such as 501(c)(3) charities. Certain types of corporations are ineligible to elect S corporation status, including some financial institutions, some insurance companies, and some companies based in Puerto Rico, among others. See 26 *U.S. Code*, sec. 1361(b) (2016).

⁴ 26 *U.S. Code*, sec. 1361(a)(2) (2016).

⁵ *Minnesota Statutes* 2016, 290.01, subd. 4; and 26 *U.S. Code*, secs. 851(g), 7701(a)(3), and 7704 (2016). Generally, references in this evaluation to “partnerships” do not include the publicly traded partnerships that are treated as C corporations.

- **Partnerships** are syndicates, groups, pools, joint ventures, or unincorporated organizations through which partners carry on a business, financial operation, or venture.⁶ Partners can include individuals, estates, trusts, S corporations, and C corporations.

Since 2010, Minnesota’s research tax credit has allowed C corporations, shareholders in S corporations, and all partners in partnerships to claim qualified research expenses as a credit against their taxes.

For the purposes of the research tax credit, the chief difference among these business types relates to how the companies pay their taxes. Most C corporations pay corporate franchise tax directly on corporate taxable income.⁷ By contrast, S corporations and most partnerships do not pay corporate franchise tax, but rather pass taxable income through to the income tax returns of their shareholders or partners, respectively.

C corporations use the research tax credit to lower the corporation’s tax liability. The shareholders of S corporations and the partners in a partnership receive the research tax credit; the S corporation or partnership itself does not.

Eligible Research

A business may apply the research tax credit against only “qualified research expenses,” which state statutes define with reference to the Internal Revenue Code.⁸ Additionally, qualified research must be conducted in Minnesota to be eligible for the state research tax credit. A qualified research expense must be paid or incurred by the taxpayer in carrying on a trade or business and may include any of the following:

- Wages paid to employee researchers
- Research supplies
- Amounts paid for the right to use time-sharing computers
- 65 percent of the contract costs paid to others for doing research (or 75 percent if paid to a qualified research consortium)⁹
- Certain payments to qualified organizations for basic research¹⁰

⁶ *Minnesota Statutes* 2016, 290.01, subd. 3; and 26 *U.S. Code*, sec. 7701(a)(2) (2016).

⁷ A flat tax rate of 9.8 percent applies to C corporations’ Minnesota taxable income. This is known as the corporate franchise tax. See *Minnesota Statutes* 2016, 290.06, subd. 1. Some C corporations, such as insurance companies, pay other taxes instead of the corporate franchise tax.

⁸ *Minnesota Statutes* 2016, 290.068, subd. 2(a). The federal research tax credit is the subject of extensive case law. For a review of recent cases, see Alex E. Sadler and Jennifer A. Ray, “Navigating the Research Credit,” *Tax Notes* (September 2011): 1270-1274.

⁹ A qualified research consortium is a tax-exempt organization, other than a private foundation, operated primarily to conduct scientific research. See 26 *U.S. Code*, sec. 41(b)(3)(C)(ii) (2016).

¹⁰ Basic research is research carried out to advance scientific knowledge; it does not have a specific commercial objective. See 26 *U.S. Code*, sec. 41(e)(7)(A) (2016).

- Contributions to nonprofit organizations that provide funds to early-stage, small, technologically innovative enterprises in Minnesota

C corporations account for approximately 81 percent of the total amount of state research tax credits claimed from 2010 to 2014. Wages accounted for approximately three-quarters of C corporations' qualified research expenses in Minnesota during those years. The cost of research supplies made up 14 percent of C corporations' qualified research expenses, and contract costs paid to others for doing research was 10 percent of C corporations' qualified research expenses. All other qualified research expenses totaled less than 1 percent of such expenses.

Wages accounted for

76%

of C corporations' qualified research expenses in Minnesota from 2010 to 2014.

To be eligible for Minnesota's research tax credit, qualified research must satisfy all components of a four-part test and take place in the state.

The four-part test is derived from the Internal Revenue Code and a related federal rule.¹¹ The code states that "qualified research" must be "undertaken for the purpose of discovering information which is technological in nature, and the application of which is intended to be useful in the development of a new or improved business component of the taxpayer, and substantially all of the activities of which constitute elements of a process of experimentation."¹² Exhibit 1.1 describes each component of the four-part test.

A food research project offers an example of qualified research. We briefly describe here how this project met each of the four tests required in law to designate the research as qualified research for the tax credit.

- A company wanted to develop a new food product. Its research process met the **"elimination of uncertainty"** test because the company was uncertain that colors derived from natural dyes would produce the desired color without affecting flavor and other factors.
- For the test of **"discovering technological information,"** the food research relied on chemical and food sciences to discover whether a naturally derived color could successfully meet standards for color, taste, and processing.
- Research on the new product met the **"permitted purpose"** test because the product was to be a new color extracted from natural sources, while remaining similar in appearance to other powders manufactured from synthetic food dyes.
- For the **"process of experimentation"** test, the company had conducted a series of tests, working with different color suppliers, on four new color blends. It identified more than 95 variables to test with each color blend, such as effects on the finished color due to changes to the product's acidity.

¹¹ 26 U.S. Code, sec. 41(d)(1)(B) and (C) (2016); and 26 CFR, sec. 1.41-4(a)(2)(i)-(iii) and (4)-(6) (2016).

¹² *Ibid.*

Exhibit 1.1: In addition to being conducted in Minnesota, research activities must satisfy all four tests to qualify for the research tax credit.

Elimination of Uncertainty Test

Qualified research expenses must be incurred in connection with the taxpayer's trade or business and must represent a research cost in the experimental or laboratory sense. Specifically, the research expenses must be permissible deductions under 26 *U.S. Code*, sec. 174 (2016).

Qualified research expenses must relate to activities intended to discover information that would eliminate uncertainty about developing an improvement to a product or process.

Discovering Technological Information Test

Research must be undertaken to discover information that is technological in nature.

The process of experimentation must rely fundamentally on principles of the physical or biological sciences, engineering, or computer science.

Obtaining certain kinds of patents is sufficient but not necessary for satisfying this test. This rule is known as the "patent safe harbor."

Permitted Purpose Test

The purpose of the research must be to create a new or improved product or process, resulting in increased performance, function, reliability, or quality.

Research does not qualify if it relates to style, taste, or cosmetic or seasonal design factors.

Only activities related to a new or improved product or process—and not production activities—qualify for the tax credit.

Process of Experimentation Test

Substantially all research activities must constitute elements of a process of experimentation. Researchers must:

- Identify the uncertainty regarding the development or improvement of a product or process
- Identify one or more alternatives intended to eliminate that uncertainty
- Identify and conduct a process of evaluating the alternatives

The process of evaluating alternatives can be through simulation, modeling, systematic trial and error, or other methods.

SOURCE: Office of the Legislative Auditor, based on 26 *U.S. Code*, sec. 41(d)(1)(B) and (C) (2016); and 26 *CFR*, secs. 1.41-4(a)(2)(i)-(iii), (4)-(6), and 1.174-2(a) (2016).

Calculating the Research Tax Credit

Minnesota's research tax credit is calculated through a multistep equation. It is similar to the equation used to calculate the federal research tax credit.

Calculating the research tax credit requires determining how much a company's qualified research expenses exceed its "base amount" of such expenditures.

Companies calculating Minnesota's research tax credit do so using the state's "RD" tax form. On the form, the taxpayer lists the dollar amounts of its qualified research expenses—broken out by categories such as wages, cost of supplies, and contract expenses—for the current tax year. The taxpayer calculates how much the combined total of these expenditures exceed the base amount. Calculating the base amount takes two steps.

1. Multiply the company's average annual Minnesota gross receipts over the past four years times a "fixed-base" percentage. The fixed-base percentage is the company's total qualified research expenses in Minnesota from 1984 to 1988, divided by its total Minnesota gross receipts for that same period.¹³ This fixed-base percentage cannot exceed 16 percent.
2. Calculate the maximum level of the base amount by computing 50 percent of current-year qualified research expenses in Minnesota.

Whichever calculation result is larger is used to determine the amount of the tax credit, which means that the maximum share of qualified research expenses that can qualify for the research tax credit is 50 percent. Most businesses claiming the Minnesota credit reach the 50 percent maximum. Exhibit 1.2 depicts the calculation of the research tax credit for a hypothetical company. When current-year qualified research expenses exceed the base amount, the difference between them is used to calculate the amount of the research tax credit. A tax credit rate of 10 percent applies to the first \$2 million of qualified research expenses that exceed the base amount; a rate of 2.5 percent applies to amounts exceeding \$2 million.

Origin and Provisions of the Tax Credit

The origin of Minnesota's research tax credit was grounded in a time of economic turmoil. The United States, including Minnesota, was in an economic recession during the early 1980s. By the end of 1981, Minnesota had a \$768 million budget deficit. The research tax credit was one of several provisions included in a budget-balancing bill, passed in January 1982 by the 1981 Legislature, that aimed to reduce the state budget deficit.

¹³ The calculation of the fixed-base percentage varies for companies that did not have research expenses or sales in 1984-1988, based on what tax years the company did have research expenses or sales. If the company had such expenses or sales in fewer than three tax years beginning after December 31, 1983, and before January 1, 1989, or if the first taxable year the business had both gross receipts and qualified research expenses began after December 31, 1993, the fixed-base percentage for the first five tax years beginning after 1993 is 3 percent. The fixed-base percentage for any tax year after the fifth tax year beginning after 1993 for which the business has qualified research expenses is a complex calculation based on 26 *U.S. Code*, sec. 41(c)(3)(B)(ii) (2016).

Exhibit 1.2: Calculating Minnesota's research tax credit involves several steps, as shown by this example for a hypothetical company in tax year 2015.

1	<p>Sum the company's current-year qualified research expenses.</p> <p style="text-align: center;">Example: \$10,000,000</p>
2	<p>Calculate the base amount.</p> <p>Determine a fixed-base percentage by dividing the company's 1984-1988 Minnesota qualified research expenses by its Minnesota sales for that period, up to a cap of 16%.^a</p> <p style="text-align: center;">Example: $\\$4,000,000 / \\$64,000,000 \times 100\% = 6.25\%$</p> <p>Multiply the company's average annual Minnesota sales for the preceding four tax years by the fixed-base percentage.</p> <p style="text-align: center;">Example: $\\$50,000,000 \times 6.25\% = \\$3,125,000$</p>
3	<p>Calculate the cap on qualified research expenses eligible for the research tax credit.</p> <p>Multiply the company's current-year qualified research expenses by 50%.</p> <p style="text-align: center;">Example: $\\$10,000,000 \times 50\% = \\$5,000,000$</p>
4	<p>Calculate the credit-eligible qualified research expenses by subtracting the larger of the preceding two calculations from the current-year qualified research expenses.</p> <p style="text-align: center;">Example: $\\$5,000,000 > \\$3,125,000$ $\\$10,000,000 - \\$5,000,000 = \\$5,000,000$</p>
5	<p>Multiply the credit-eligible qualified research expenses by the state's two-tiered credit rates.</p> <p>First, multiply up to \$2 million of credit-eligible qualified research expenses by 10%.</p> <p style="text-align: center;">Example: $\\$2,000,000 \times 10\% = \\$200,000$</p> <p>Second, multiply any remaining credit-eligible qualified research expenses above \$2 million by 2.5%.</p> <p style="text-align: center;">Example: $\\$3,000,000 \times 2.5\% = \\$75,000$</p>
6	<p>Sum the preceding two calculations for the total tax credit.</p> <p style="text-align: center;">Example: $\\$200,000 + \\$75,000 = \\$275,000$</p>
7	<p>Limit the tax credit by the amount of the company's tax liability.^b</p> <p style="text-align: center;">Example: $\\$275,000 - \\$250,000 = \\$25,000$</p>

^a The fixed-base percentage is calculated differently for businesses that did not have qualified research expenses or sales in Minnesota from 1984 to 1988. See 26 U.S. Code, sec. 41(c)(3)(B)(ii) (2016). Under either method, the fixed-base percentage is capped at 16 percent.

^b Although the example shows a limit on the research tax credit amount, it is possible to increase the amount of the credit up to a company's tax liability at this step by carrying forward unused credit from preceding tax years. If the company is part of a unitary group, the company must allocate the unused \$25,000 to another member of the unitary group that has a tax liability, if any, up to the amount of that member's tax liability. Otherwise, the company can carry forward the unused \$25,000 for up to 15 succeeding tax years.

Several important provisions of the research tax credit have changed over the credit's 35-year history.

Over time, the Legislature has tweaked Minnesota's research tax credit to reflect changes in federal law, address downturns in the state's economy, or respond to businesses' concerns. In the 1980s, and again between 2010 and 2013, the Legislature made several changes to four major provisions of Minnesota's research tax credit: eligibility, tax credit rate, refundability, and carryforward of unused credit to future tax years. Exhibit 1.3 outlines major changes to these provisions.

Eligibility

As we stated in the previous section, the research tax credit is currently available to C corporations, all shareholders in S corporations, and all partners in partnerships. The 1981 Legislature made the research tax credit available for tax years beginning after 1981 without explicitly stating which taxpayers were eligible for the credit. In 1982, the Legislature clarified in statute that both C corporations and some individual taxpayers (including individual partners in a partnership and individual shareholders in an S corporation, among others) were eligible for the tax credit. The Legislature restricted eligibility to only C corporations in 1985.¹⁴ Most recently, the Legislature expanded eligibility to once again include all shareholders in S corporations and individual partners in partnerships in 2010.

Starting in 2013, C corporations that were members of a unitary group could share the research tax credit with other members that had a tax liability, even if those other members did not have qualified research expenses. Unitary groups consist of two or more corporations that meet certain criteria, such as meeting legal requirements on common ownership. Unitary groups are treated as a single taxpayer. For the remainder of this report, we refer to C corporations that are members of a unitary group and C corporations that are not members of a unitary group as "C corporations."

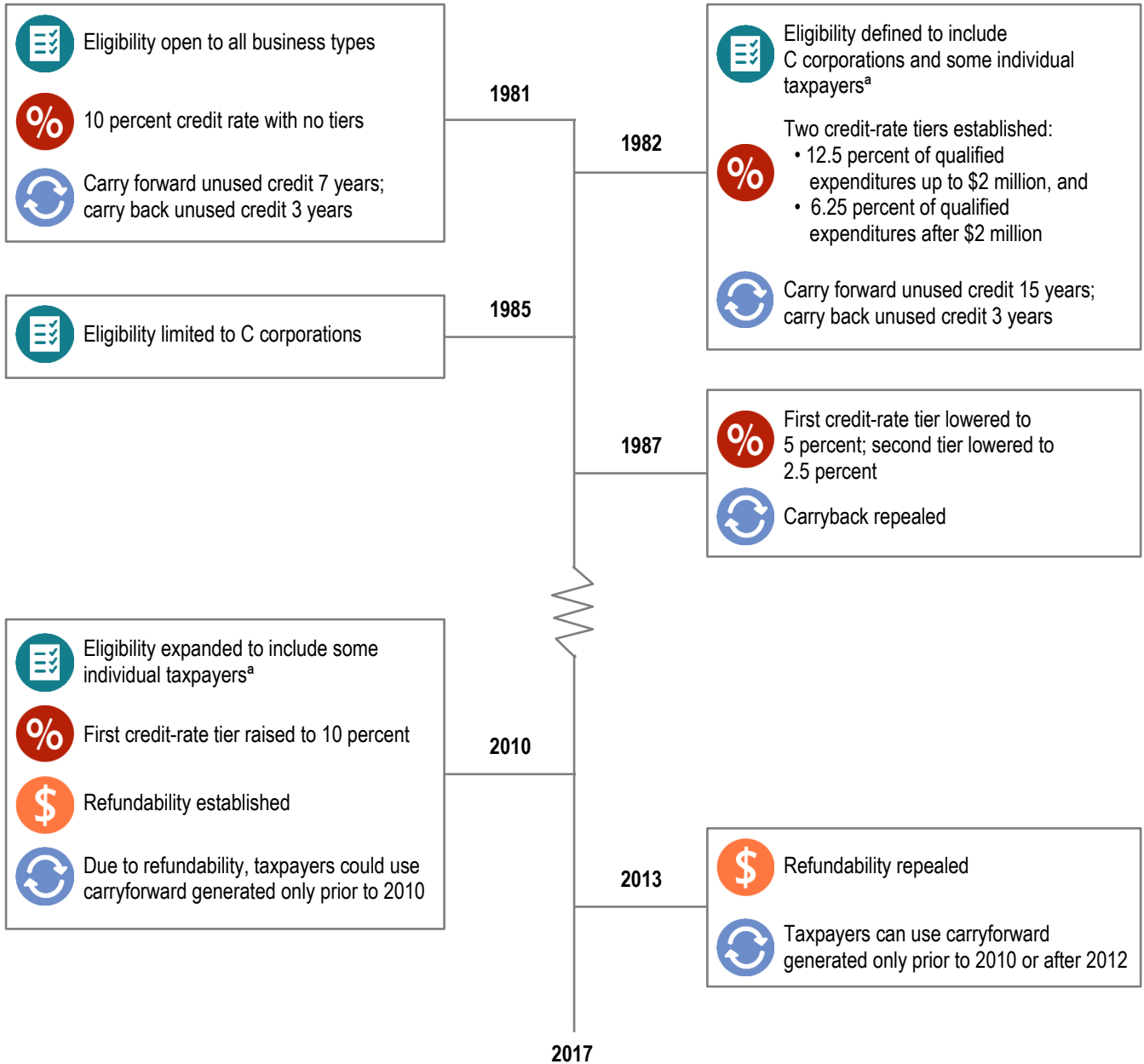
Tax Credit Rate

Currently, the research tax credit is available for the first 10 percent of up to \$2 million in qualified research expenses that exceed a base amount and 2.5 percent of such expenses above \$2 million. These separate tax credit rates are commonly referred to as "tiers." When the Legislature first established the research credit in 1981, the credit had a 10 percent credit rate and no tiers.

The credit rate has always been higher for the first tier, which focuses the greatest percentage-wise benefit on small- to medium-size businesses. Overall, 78 percent of C corporations that claimed the research tax credit between 2010 and 2014 had qualified research expenses of \$4 million or less and benefited from the first tier's 10 percent credit

¹⁴ C corporations that were partners in a partnership were eligible to claim research tax credit passed to them from the partnership.

Exhibit 1.3: In the 1980s and between 2010 and 2013, the Minnesota Legislature modified several important provisions to the state’s research tax credit: eligibility, credit rate, refundability, and carryforward.



^a Individual partners in a partnership and individual shareholders in an S corporation—among other individual taxpayers—were eligible for the research tax credit from 1982 to 1985. The Legislature reinstated eligibility for individual partners in a partnership and individual shareholders in an S corporation in 2010.

SOURCE: Office of the Legislative Auditor, based on *Minnesota Statutes* 1981 Supplement, chapter 290; *Laws of Minnesota* 1981, Third Special Session, chapter 2, art. 3, sec. 6; *Laws of Minnesota* 1982, chapter 523, art. 9, sec. 1; *Laws of Minnesota* 1985, chapter 14, art. 1, sec. 21; *Laws of Minnesota* 1987, chapter 268, art. 1, sec. 39; *Laws of Minnesota* 2010, chapter 216, sec. 10; and *Laws of Minnesota* 2013, chapter 143, art. 6, sec. 14.

rate.¹⁵ From 2010 to 2014, the first tier credit rate applied to 95 percent of the smallest 20 percent of C corporations' qualified research expenses.¹⁶ In contrast, only 11 percent of the largest 20 percent of C corporations' total qualified research expenses were in the first credit rate tier.

Refundability

Refundable tax credits allow taxpayers to receive a tax refund if the calculated amount of the credit amounted to more than the tax due. Although Minnesota's research tax credit no longer offers refundability, the credit was refundable from 2010 to 2012. Legislative leadership intended refundability as a temporary provision to stimulate the economy in the aftermath of the 2007-2009 recession. The 2013 Legislature repealed refundability, which had been more costly to the state than anticipated.¹⁷

During the years when the research tax credit was refundable, C corporations claimed \$65.9 million of refundable tax credit in 2010, \$69.6 million in 2011, and \$73.9 million in 2012. The refundable credit accounted for more than 75 percent of the total amount of credit claimed by C corporations in each year.

Carryforward

The "carryforward" provision allows taxpayers to hold onto any unused portion of their research tax credit and apply it to their tax liabilities in future years. Currently, taxpayers may carry forward any unused dollars of research tax credit for up to 15 years in the future. The 1981 Legislature initially allowed excess credit to be carried back 3 years and carried forward 7 years.

Between 2010 and 2014, C corporations reported varying amounts of tax credit to be carried forward. When the credit was refundable (2010 to 2012), C corporations reported between \$129 million and \$153 million of carryforward credit from previous tax years. After refundability ended, C corporations reported \$35 million and \$42 million of carryforward in 2013 and 2014, respectively.

Use

In this section, we describe the number of research tax-credit claimants and the total amount of Minnesota's tax credit and how it has varied depending on changes to the law. Additionally, we describe characteristics of C corporations that claimed the credit in 2010 to 2014, including industry sector, business size, and location.

¹⁵ As we described earlier, computing Minnesota's research tax credit includes determining how much a company's qualified research expenses exceed a calculated base amount, up to a maximum (50 percent of the current year's qualified research expenses). Although most—not all—taxpayers have a base amount that is at the 50 percent maximum, our analysis in this paragraph presumes that all C corporations reach the maximum. As a result, our estimates may overstate the proportion of qualified research expenses in each credit rate tier.

¹⁶ We based C corporations' size on total sales and receipts in and outside of Minnesota. We also measured business size using total payroll in and outside Minnesota, and the size measures produced nearly identical results.

¹⁷ As we explained earlier in this section, starting in 2013, members of a unitary group could share Minnesota's research tax credit with other members that have a tax liability, even if those other members did not have qualified research expenses. This "sharing" of the tax credit provides some of the same benefits of refundability for C corporations after refundability had been repealed.

The research tax credit, forecast at \$68.7 million for fiscal year 2017, is among the state's most significant tax credits for businesses.

The Department of Revenue forecast that the research tax credit includes \$18.5 million for individual income taxes and \$50.2 million for corporate franchise taxes in fiscal year 2017. The tax credit is estimated as foregone revenue from the state's General Fund, and it represents 0.3 percent of net revenue (\$21.2 billion) to the General Fund in fiscal year 2017.¹⁸

Of six Minnesota tax credits for *corporate franchise* taxpayers, the research tax credit was estimated to be \$50.2 million and ranked highest in fiscal year 2017. Of 13 Minnesota tax credits for *individual* taxpayers, the research credit was estimated to be \$18.5 million and ranked third highest in fiscal year 2017. The two higher ranking tax credits for individual taxpayers were the working family credit (\$266.8 million) and the marriage credit (\$87.3 million). Exhibit 1.4 lists Minnesota tax credits available to corporate and individual taxpayers.

Amount of Claims and Number of Claimants

In 2010, the Minnesota Legislature expanded eligibility for the research tax credit, raised the credit's rate, and made the credit refundable. These law changes dramatically increased both the total amount of credit claimed and the number of taxpayers who claimed the credit. However, the increases have not been sustained; the number of claimants and amount of credit claimed decreased when the Legislature repealed refundability in 2013.

The total amount of research tax credit claimed by C corporations and individual taxpayers more than tripled between tax years 2009 and 2010, largely in response to a change in the law.

The 2010 law change allowed individual partners in a partnership and individual shareholders in an S corporation to claim the research tax credit for the first time since 1985. Individual taxpayers claimed \$8.9 million of research tax credit in 2010. C corporations, which were eligible for the credit prior to the 2010 law change, went from claiming \$29.8 million in 2009 to \$87.5 million in 2010, an increase of 194 percent. The increase in C corporation claims was likely a response to a rise in the credit's rate and to the new provision allowing refundability, as discussed earlier in this chapter.

From 2010 to 2014, C corporations claimed the majority of Minnesota's research tax credit, but individual taxpayers make up the majority of those claiming the credit.

Between 2010 and 2014, C corporations claimed 67 to 91 percent of Minnesota's research tax credit annually. C corporations claimed on average \$127,000 to \$179,000 per business in 2010 to 2014. Compared with C corporations, individual partners and individual shareholders claimed smaller research tax credits, ranging from an average of \$6,800 in 2012 to \$8,900 in 2010.

¹⁸ Foregone revenue is an estimate of the amount of money that the state does not collect as tax revenue due to the research tax credit. Foregone revenue does not take into account the tax credit's effect on the state economy.

Exhibit 1.4: The research tax credit is among Minnesota's most significant tax credits for businesses.

	Forecasted Foregone Revenue (in millions)		
	Fiscal year 2017	Fiscal year 2018	Fiscal year 2019
Corporate Franchise Tax Credits			
Research Credit	\$50.2	\$53.2	\$56.4
Historic Structure Rehabilitation Credit ^a	49.6	68.1	35.3
Employer Transit Pass Credit	0.8	0.8	0.8
Job Opportunity Building Zone Jobs Credit	< 0.05	< 0.05	< 0.05
Enterprise Zone Employer Tax Credit	< 0.05	< 0.05	< 0.05
Greater Minnesota Internship Credit	< 0.05	< 0.05	< 0.05
Individual Income Tax Credits			
Working Family Credit	266.8	273.5	274.8
Marriage Credit	87.3	91.9	96.1
Research Credit	18.5	19.6	20.8
Angel Investment Credit	15.0	0	0
Child and Dependent Care Credit	14.2	14.2	14.2
Credit for K-12 Education Expenses	13.1	13.0	12.9
Credit for Long-Term Care Insurance Premiums	9.0	9.1	9.3
Credit for Military Service in a Combat Zone	0.8	0.8	0.8
Credit for Past Military Service	0.4	0.4	0.4
Enterprise Zone Employer Credit	0.3	0.2	0.2
Job Opportunity Building Zone Jobs Credit	< 0.05	< 0.05	< 0.05
Employer Transit Pass Credit	< 0.05	< 0.05	< 0.05
Greater Minnesota Internship Credit	< 0.05	< 0.05	< 0.05

^a The amounts of foregone revenue listed for the Historic Structure Rehabilitation Credit includes credits for both corporate and individual taxpayers.

SOURCE: Minnesota Department of Revenue, *State of Minnesota Tax Expenditure Budget, Fiscal Years 2016-2019* (St. Paul, February 2016), 9-10 and 12.

The number of C corporations that claimed the research tax credit more than doubled between 2009 and 2010, with 240 C corporations claiming the credit in 2009 and 490 in 2010. This is likely due to the increase in the credit's rate and refundability. The number of C corporation claims has decreased each year since 2012.

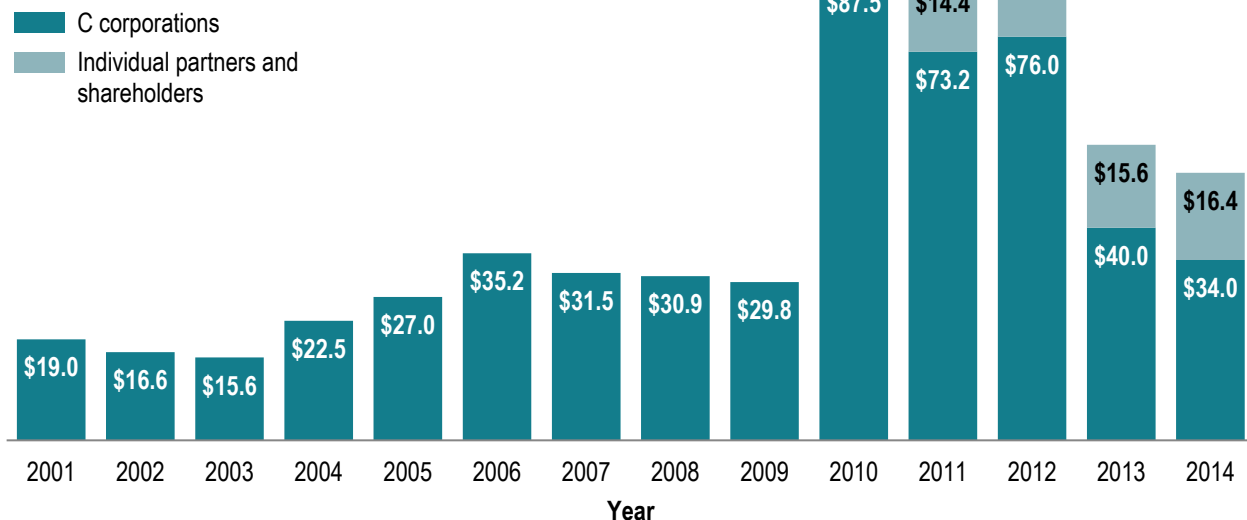
The number of claims made by partners and shareholders grew from 998 individuals in 2010 to 2,353 individuals in 2012. After the Legislature repealed refundability in 2013, fewer individual partners and individual shareholders claimed the credit—1,812 individuals in 2013 and 2,048 in 2014. Exhibit 1.5 displays the trends of credit claims between 2001 and 2014.

Characteristics of C Corporation Claimants

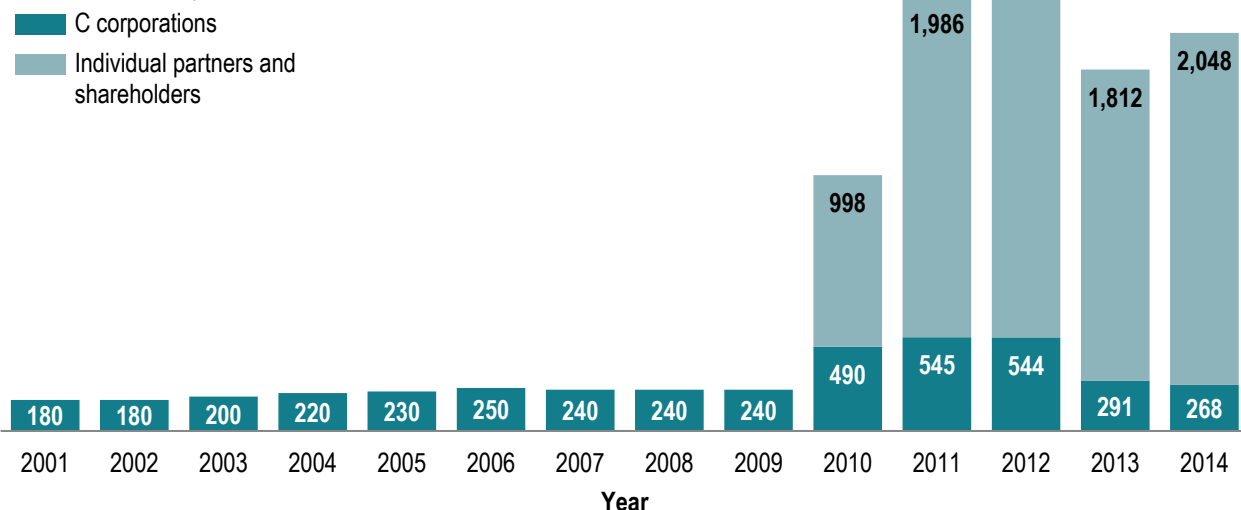
As we described earlier, individual partners in a partnership and individual shareholders in an S corporation are eligible to claim Minnesota's research tax credit. However, due to the lack of complete and accurate data on partners and shareholders, we are unable to present some information regarding this group of credit claimants. As a result, most of this section focuses on credit claims made by C corporations.

Exhibit 1.5: C corporations claim the majority of Minnesota’s research tax credit dollars, but individual partners and shareholders make up the majority of those claiming the credit.

Amount of Minnesota research tax credit, in millions, 2001-2014



Number of Minnesota research tax credit claimants, 2001-2014



NOTES: Numbers of C corporation claimants in 2001 to 2009 are rounded estimates. The number of C corporation claimants in 2001 to 2014 includes unitary groups and other C corporations. Unitary groups consist of two or more C corporations that meet legal requirements on common ownership and are treated as a single taxpayer. In 2010, the Minnesota Legislature expanded eligibility for the research tax credit, raised the credit’s rate, and made the credit refundable. The Legislature repealed refundability in 2013.

SOURCE: Office of the Legislative Auditor, analysis of Department of Revenue data.

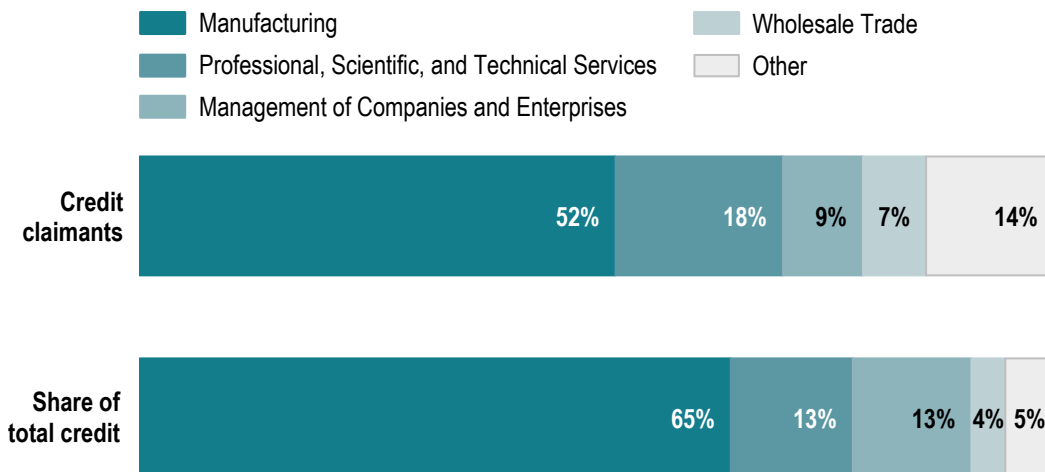
Size

Overall, the largest 20 percent of C corporations claimed the majority of the research tax credit claimed by C corporations from 2010 to 2014. They claimed 67 percent (\$208 million) of the nearly \$310 million of credit claimed by C corporations in those five years. In the same years, the smallest 20 percent of C corporations claimed less than 4 percent of the credit claimed by C corporations.

Industry Sector

C corporations in the Manufacturing industry sector have claimed the largest share of Minnesota’s research tax credit.¹⁹ They represented 52 percent of the total number of C corporation claimants from 2010 to 2014. Moreover, manufacturing companies claimed 65 percent of the credit dollars claimed by C corporations, approximately \$200 million of \$310 million over those five years. Companies in the industry sector called Professional, Scientific, and Technical Services claimed 13 percent of the credit, the next largest share of the credit among C corporations, as shown in Exhibit 1.6.

Exhibit 1.6: C corporations in the Manufacturing industry claimed the largest share of the research tax credit among C corporations from 2010 to 2014.



NOTES: The “Other” category includes businesses in the following North American Industry Classification System (NAICS) categories: Accommodation and Food Services; Administrative and Support and Waste Management and Remediation Services; Agriculture, Forestry, Fishing, and Hunting; Construction; Educational Services; Finance and Insurance; Health Care and Social Assistance; Information; Other Services (except Public Administration); Real Estate and Rental and Leasing; Retail Trade; Transportation and Warehousing; and Utilities. Each NAICS category in the “Other” category represents less than 4 percent of total credit claimants.

SOURCE: Office of the Legislative Auditor, analysis of Minnesota Department of Revenue data.

¹⁹ We base this discussion on the two-digit North American Industry Classification System (NAICS) codes. Companies report six-digit NAICS codes on their tax forms.

Companies in the Manufacturing industry typically transform materials, substances, or components into new products using mechanical, physical, or chemical processes. According to the Minnesota Department of Employment and Economic Development, the Manufacturing sector was the largest private-sector contributor to Minnesota's gross domestic product (GDP) in 2015.²⁰ In the same year, companies in this sector accounted directly or indirectly for 33 percent (914,000 jobs) of all jobs in the state. Average wages paid by Minnesota manufacturers in 2015 were 15 percent higher than the average for all other industries combined.

Among C corporations, large companies in the Manufacturing industry claimed the largest share of Minnesota's research tax credit from 2010 to 2014.

The amount of C corporation credit claimed was concentrated in the largest manufacturing companies. The largest 20 percent of C corporations in the Manufacturing industry claimed 44 percent of the total research tax credit dollars claimed by C corporations from 2010 to 2014. Moreover, the largest 40 percent of C corporations in the Manufacturing industry claimed more research tax credit (58 percent) than all other C corporations combined.

Location

Based on a survey we conducted of research tax-credit claimants, most survey respondents reported that their company does most of its research and development in the Twin Cities metropolitan area.²¹ In answer to a question on where their company conducted most of its research and development, the majority of survey respondents (73 percent) selected a county in the seven-county Twin Cities economic development region.²² Exhibit 1.7 shows the results. Of all Minnesota counties, Hennepin and Ramsey counties accounted for the largest concentration of research and development (40 percent and 13 percent, respectively) among survey respondents. The economic development regions with the next largest concentrations of research and development activity were the Central and Southeast regions with 6.6 percent and 6.5 percent, respectively.²³

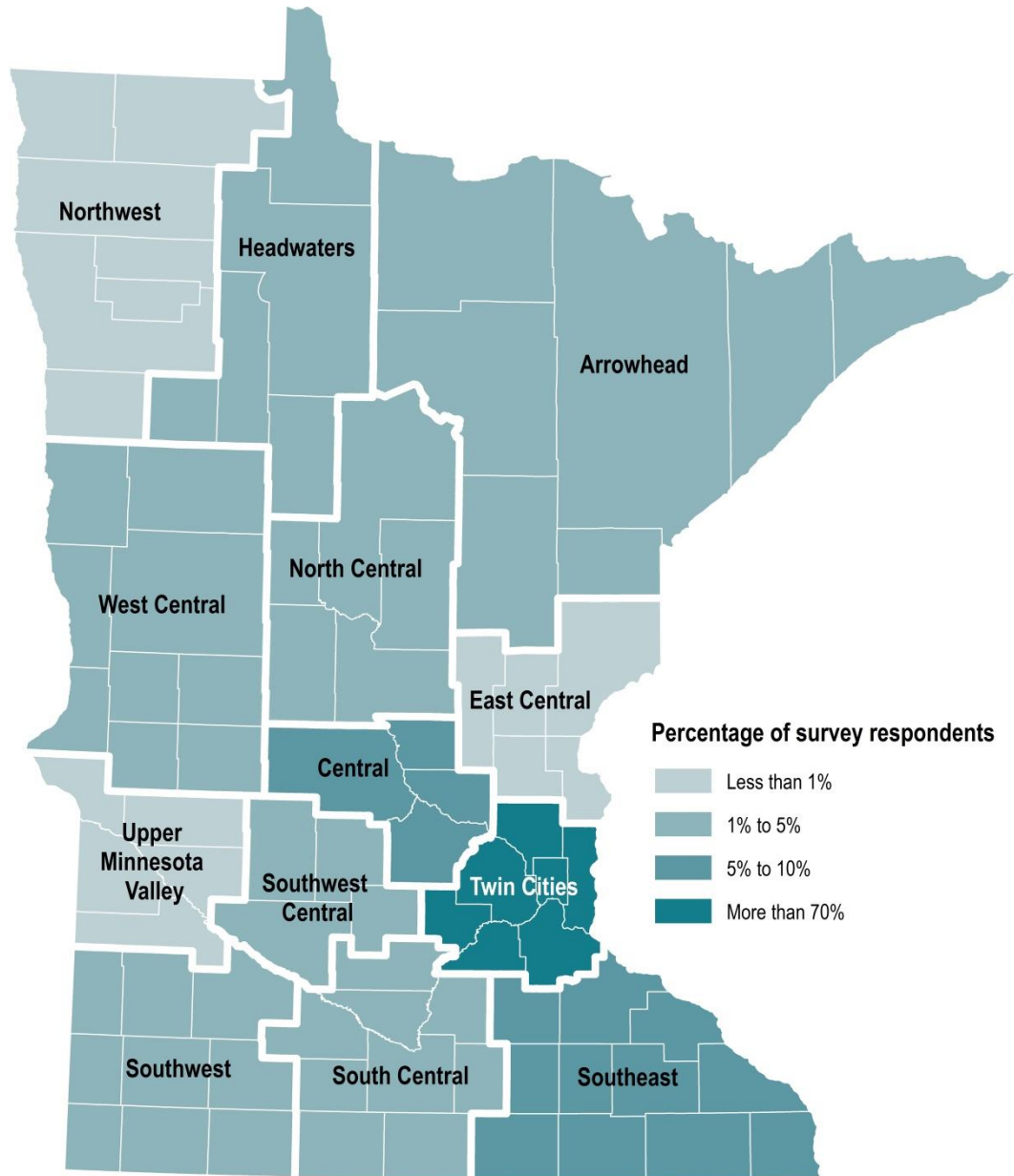
²⁰ Department of Employment and Economic Development, *Manufacturing is the Cornerstone of Minnesota's Economy* (St. Paul, 2016), <https://www.mn.gov/deed/business/locating-minnesota/industries-sectors/manufacturing/impact/>, accessed December 7, 2016.

²¹ We surveyed 1,431 businesses that claimed Minnesota's research tax credit in at least one of tax years 2012, 2013, or 2014. We received responses from 493 companies (a 34.5 percent response rate). However, the survey results are not generalizable to all claimants of Minnesota's research tax credit because the list of claimants was incomplete, and it included taxpayers that had not claimed the credit. We discuss issues with the data in Chapter 3. We weighted the survey results to reflect the probability of responding to the survey, based on the company type and the most recent year the company claimed Minnesota's research tax credit. We discuss our survey methodology in Appendix B, available online at <http://www.auditor.leg.state.mn.us/ped/2017/researchcreditsurvey.pdf>.

²² The seven counties in the Twin Cities economic development region are Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington counties.

²³ The Central economic development region includes Benton, Sherburne, Stearns, and Wright counties. The Southeast economic development region includes Dodge, Fillmore, Freeborn, Goodhue, Houston, Mower, Olmsted, Rice, Steele, Wabasha, and Winona counties.

Exhibit 1.7: The majority of survey respondents said their company conducts most of its research in the Twin Cities economic development region.



NOTES: We surveyed 1,431 businesses that claimed Minnesota’s research tax credit in at least one of tax years 2012, 2013, or 2014. We received responses from 493 companies (a 34.5 percent response rate). However, the survey results are not generalizable to all claimants of Minnesota’s research tax credit because the list of claimants was incomplete, and it included taxpayers that had not claimed the credit.

The survey question was worded as follows: “In which Minnesota county did your company conduct most of its research and development (measured by amount of research expenditures) in the most recent tax year (2012, 2013, or 2014) that your company (or partner or shareholder) claimed the Minnesota tax credit?” (N = 462)

SOURCE: Office of the Legislative Auditor, survey of taxpayers, September 2016.

Comparison of Research Tax Credits

States view research tax credits as important because research and development activities can comprise large segments of their economies, and states typically want to encourage economic growth. In 2013, companies performed research and development (R&D) in the amount of \$323 billion across the United States, of which 2.1 percent occurred in Minnesota, according to National Science Foundation data.²⁴

Although the percentage of R&D by companies in Minnesota is a relatively small share of R&D nationwide, R&D in Minnesota has exceeded the national average every year that the National Science Foundation has collected data since 1995.²⁵ Compared with other states in 2013, Minnesota ranked tenth with companies in the state spending \$6.1 billion on R&D, according to one analysis.²⁶ One way to compare states while controlling for the different sizes of states' economies is to analyze the percentage that each state's R&D activity represents of its gross domestic product. Minnesota's business R&D was 2.0 percent of its gross domestic product in 2013—ninth highest in the country, as Exhibit 1.8 shows.

Federal Research Tax Credit

The United States Congress first passed a temporary research tax credit in 1981, and Minnesota soon after passed its own version of a research credit for the state. Until making the federal credit permanent in December 2015, Congress had allowed the federal credit to expire and then retroactively extended it numerous times.

In most respects, the structure of the federal research credit is more expansive than Minnesota's.

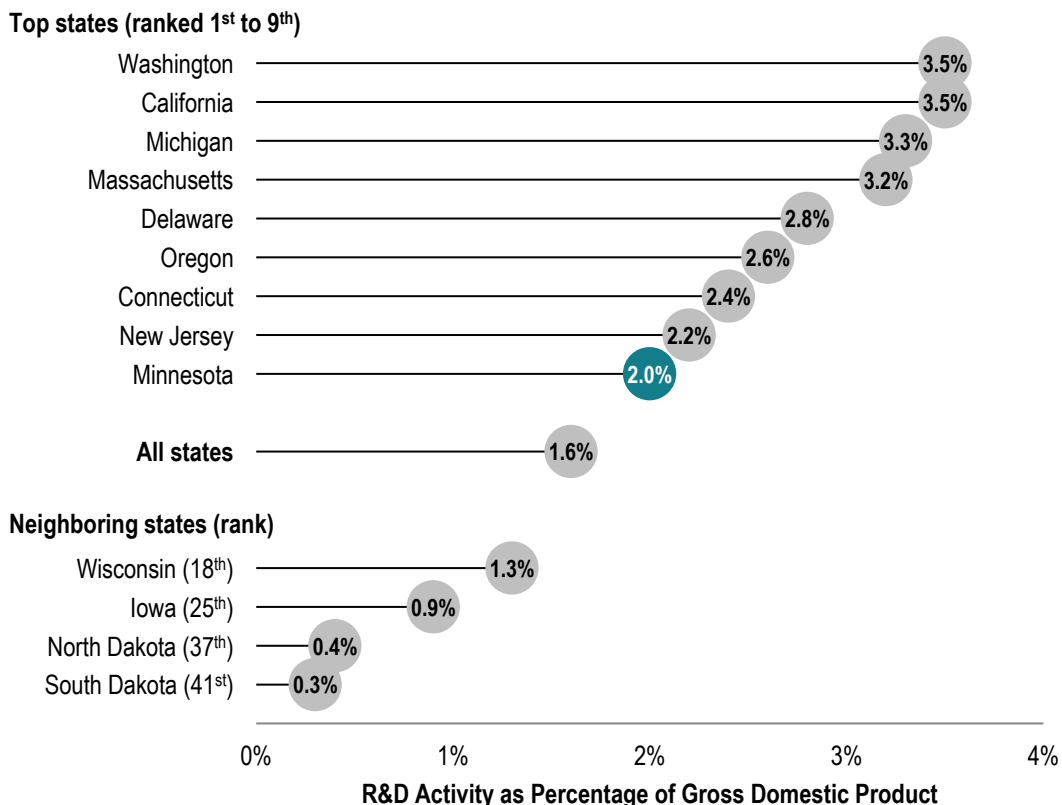
Minnesota bases certain features of its research tax credit on the federal research credit. As stated earlier, Minnesota's credit applies only to research conducted within Minnesota, but its definitions of qualified research expenses largely parallel federal law. Minnesota also follows the federal definition of the "base amount" to which current-year expenses are

²⁴ Raymond M. Wolfe, "Business R&D Performance in the United States Increases Over 6% to \$323 Billion in 2013," *National Center for Science and Engineering Statistics InfoBrief* NSF 15-329, National Science Foundation (August 2015): 5. R&D activities are defined broadly here and would not necessarily qualify for the research tax credit. R&D includes amounts paid by the companies as well as amounts paid by others.

²⁵ This is a measure of domestic R&D paid for by companies and others and performed by companies in each state. See National Center for Science and Engineering Statistics, National Science Foundation, and U.S. Census Bureau, *Business R&D and Innovation Survey, 2013: Detailed Statistical Tables*, (Arlington, VA: National Science Foundation, 2016), <https://nsf.gov/statistics/2016/nsf16313/#chp2>, accessed August 10, 2016. Earlier data are available for 1953-2007 from the National Science Foundation, *Industrial Research and Development Information System*, <http://nsf.gov/statistics/iris>; and for 2008-2013 from the National Science Foundation, *Business and Industrial R&D*, <https://nsf.gov/statistics/industry/>.

²⁶ Brandon Shackelford and Raymond Wolfe, "Five States Account for Half of U.S. Business R&D in 2013; New Data for Metropolitan Areas Available," *National Center for Science and Engineering Statistics Info Brief* NSF 16-317, National Science Foundation (September 2016): 3. Rankings are based on domestic R&D paid for and performed by companies in each state.

Exhibit 1.8: Minnesota ranked ninth in the country in research and development activity as a share of state gross domestic product in 2013.



NOTES: Research and development activity as a percentage of gross domestic product allows for state comparisons that control for differences in size of state economies. This analysis defines R&D activity broadly, and the R&D would not necessarily qualify for the research tax credit. The 1.6 percent for “All states” includes Washington, D.C.

SOURCE: Brandon Shackelford and Raymond Wolfe, “Five States Account for Half of U.S. Business R&D in 2013; New Data for Metropolitan Areas Available,” *National Center for Science and Engineering Statistics Info Brief* NSF 16-317, National Science Foundation (September 2016): 2.

compared.²⁷ In addition, Minnesota law requires taxpayers to compute the state’s research credit using a method similar to the federal credit’s “regular” calculation method.²⁸

Despite similarities, the structure of the federal research tax credit differs from Minnesota’s credit in several important ways. For example, the federal credit offers a higher credit rate and is available to more types of businesses, as Exhibit 1.9 displays. Brief descriptions follow of the federal credit’s expansiveness when compared with Minnesota.

Exhibit 1.9: Key provisions of the 2016 federal tax credit were more expansive than Minnesota’s research tax credit.

Provision	Federal	Minnesota
Tax credit rate	20%; or 13% for taxpayers who deduct their research expenses ^a	10% for first \$2 million of qualified expenses; 2.5% for amounts exceeding \$2 million
Calculation method options	Two	One
Eligibility of business types	C corporation S corporation Partnership Sole proprietorship	C corporation S corporation Partnership
Carryforward period	20 years	15 years
Carryback period	1 year	None
Alternate monetization of credit	Qualifying start-up companies may use the credit to offset a portion of employer-related payroll tax	None

^a Taxpayers who choose to deduct their qualified research expenses on their federal tax form must use the lower 13 percent rate for the federal research tax credit.

SOURCE: Office of the Legislative Auditor, analysis of 26 *U.S. Code*, secs. 41 (a)-(h) and 280C(c); “Audit Techniques Guide: Credit for Increasing Research Activities, Chapter 10 Research Credit Issues” (Washington, DC: Internal Revenue Service, June 2005), www.irs.gov/businesses/audit-techniques-guide-credit-for-increasing-research-activities-i-e-research-tax-credit-research-credit-issues, accessed January 20, 2017; and *Minnesota Statutes* 2016, 290.068.

²⁷ Even though Minnesota (like many other states) uses a base amount similar to the federal credit, the share of expenses eligible for the Minnesota credit can be higher than the share eligible for the federal credit. Calculating the federal credit involves a ratio of *national* research expenses to *national* sales (or gross receipts), which makes the share of expenses qualifying for the federal credit generally smaller than in Minnesota where the formula involves a ratio of *state* research expenses to *state* sales. As an example, for a national company that has concentrated its research in Minnesota, the base year cap of 16 percent (of qualified research expenses as a share of gross receipts) is much easier to reach when it is calculated on expenses and gross receipts within Minnesota alone—instead of on the company’s expenses and gross receipts across the country. Such a company could readily spend, for instance, more than 32 percent of its Minnesota gross receipts on qualified research expenses in this state. For the federal credit, however, this company with research concentrated in Minnesota is highly unlikely to spend 32 percent of its sales generated nationwide on its nationwide qualified research expenses. This company would continue to have 50 percent of its current qualified research expenses eligible for Minnesota’s credit, even if its current research expenses as a percentage of gross receipts is *less* than that percentage from its 1984 to 1988 years.

²⁸ *Minnesota Statutes* 2016, 290.068, subd. 2 (a)-(c).

Higher Credit Rate. The federal research tax-credit rate is 20 percent of qualified research expenditures that exceed a base amount; however, the rate is reduced to 13 percent for taxpayers who choose to deduct their research expenditures from their federal taxes.²⁹ As stated earlier, Minnesota’s tax credit rate is 10 percent of the first \$2 million of research expenses that exceed a base amount and 2.5 percent of research expenditures beyond the first \$2 million. Credit rates are just one component in calculating tax credits (as noted earlier, the share of research expenditures eligible for the Minnesota credit is often higher than the share eligible for the federal credit). Other things being equal, however, larger rates tend to generate larger credit amounts.

Multiple Calculation Methods. The federal research tax credit offers more than one method for taxpayers to calculate the credit. It has a “regular” calculation method, which uses a fixed-base percentage of a company’s research expenses and gross receipts from 1984 to 1988, but it also offers an alternative. The alternative method is known as the alternative simplified credit.³⁰ This method is based on the extent to which a business’s current research expenses exceed 50 percent of its average expenses in the preceding three years (the method does not include the 1984 to 1988 fixed base that is in the regular calculation method). The method also uses a reduced credit rate of 14 percent (or lower for taxpayers deducting research expenses from federal taxes). Some businesses prefer the alternative federal method because their eligible expenses are large enough to offset the method’s lower credit rate. However, the Department of Revenue reported that the lower rate eliminates the gain that many taxpayers might otherwise receive from choosing the federal alternative simplified credit, if it were offered in Minnesota. By contrast with the federal credit, Minnesota offers only the regular calculation method using the 1984 to 1988 fixed base.³¹

More Eligible Business Types. Sole proprietors are among the business types eligible for the federal research tax credit but not the Minnesota credit.³² Past legislative proposals would have extended eligibility to sole proprietors; one such proposal would have increased by more than \$4 million the foregone revenue to the state’s General Fund, according to Department of Revenue estimates.³³

Longer Periods to Carry Unused Tax Credit Forward. Taxpayers that are unable to use the full federal credit to reduce their tax liability can carry the unused credit forward for use up to 20 future years (or back one year). Minnesota limits carryforward for use in a shorter period—up to 15 years—and does not have a carryback provision.

²⁹ 26 *U.S. Code*, secs. 41 (a)(1) and (2); and 280C(c) (2016). The Department of Revenue reported that most federal claimants elect to deduct their research expenses and, therefore, the reduced 13 percent rate would apply to their qualified research expenses for the federal research credit.

³⁰ 26 *U.S. Code*, sec. 41 (c)(1)-(3) and (c)(5) (2016).

³¹ Certain taxpayers have raised a question over whether Minnesota’s reliance on the Internal Revenue Code to define the tax credit’s “base amount” restricts them from electing to use the alternative simplified calculation method. The question was part of a court case under appeal in the Minnesota Tax Court at the time this report was published. See *H.B. Fuller Company and Subsidiaries v. Commissioner of Revenue* (Minnesota Tax Court, pending).

³² 26 *U.S. Code*, sec. 41 (h)(3)(A)(ii) (2016).

³³ H.F. 848, First Unofficial Engrossment, art. 1, secs. 16-20, 2015 Leg., 89th Session (MN); and Department of Revenue, *Research Credit Proposal: Proposed Amendment to H.F. 848, 1st Unofficial Engrossment* (St. Paul, May 17, 2016), 1.

Offers Alternate Monetization. Recent changes to the federal credit allow start-up companies less than five-years-old, and with under \$5 million in gross receipts, to use the credit to offset up to \$250,000 of their employer-related payroll taxes.³⁴ In Minnesota, the credit reduces only corporate franchise tax for C corporations or individual income tax for shareholders and partners. For companies with low tax liabilities, such as start ups, this limitation makes Minnesota's credit less attractive than the federal credit, as these companies may have more credit than needed to offset their relatively small income or franchise tax bills.

In two important respects, Minnesota's research tax credit is more expansive than the federal credit.

Minnesota's research tax credit is more expansive than the federal credit when it comes to (1) corporations with subsidiaries and (2) S corporations and partnerships whose shareholders and partners have sources of income beyond what they derive from research. In the first case, corporations with subsidiaries can share the research tax credit among their subsidiaries even if the subsidiaries did not conduct research. This is not true for the federal credit. Corporations can apportion the federal credit to only those subsidiaries with a share of the corporation's qualified research expenses.

In the second case, individual taxpayers in a partnership or S corporation doing research in Minnesota can use the credit to offset taxes on income from any source, including income from a spouse. For individual taxpayers with extensive income from other sources, this expands their ability to claim Minnesota's research credit. In contrast, individual taxpayers can use the federal tax credit to offset only the tax on income distributed by the business conducting the research.

Other States' Research Tax Credits

Minnesota was the first state to enact a research tax credit shortly after the federal credit in 1981. Since then, other states have passed their versions of research tax credits. As of the end of 2015, Minnesota was 1 of about 33 states, and the federal government, that offered research tax credits.

Compared with research tax credits in a sample of five other states, Minnesota's tax credit has lower rates and less flexibility but fewer reporting requirements.

We compared Minnesota's research credit with research credits in five other states: California, Iowa, Massachusetts, Washington, and Wisconsin.³⁵ We chose these states based on their large amounts of R&D activity and because companies we surveyed indicated they conducted research there; we also gave preference to states that border Minnesota. Our comparisons follow, starting with the tax credit rates.

³⁴ 26 *U.S. Code*, sec. 41 (h)(1)-(4) (2016).

³⁵ The state of Washington had a research credit from 1995 until January 2015 when the credit expired. When in place, Washington's research credit applied to that state's business and occupation tax, which is a tax on companies' gross receipts, not an income or franchise tax as in Minnesota.

Research Tax-Credit Rates

Rates for the research tax credit vary considerably in our comparison group of states, from 1.5 percent in Washington to 15 percent in California, as Exhibit 1.10 shows. Minnesota was the only state with two tiers of credit rates.

Comparison States Tax Credit Rates	
California	15%
Iowa	6.5%
Massachusetts	10%
Minnesota	10% on up to \$2 million of expenses; 2.5% thereafter
Washington	1.5%
Wisconsin	5.75%

For up to \$2 million of qualified research expenditures eligible for the credit, Minnesota's 10 percent tax-credit rate is higher than three states in our sample (Iowa, Washington, and Wisconsin), lower than California, and equal to that in Massachusetts. This 10 percent rate benefits Minnesota's small businesses, start-up companies, and others with less than \$2 million of qualified research expenses eligible for the credit.

Minnesota's credit formula applies to no more than half of all qualified research expenses, meaning taxpayers with up to \$4 million of qualified research expenses could benefit from the 10 percent rate.³⁶ However, for taxpayers with more than \$4 million of qualified research expenses (or \$2 million of qualified research expenses actually eligible for applying the credit rate), Minnesota has a 2.5 percent tax-credit rate, which is lower than all but Washington in the sample. This means that companies with the highest qualified research expenses in Minnesota have a lower credit rate overall than they would in four other states in our sample.

Some states apply different credit rates for research defined as "basic." Definitions vary a bit among states but, generally speaking, basic research is original research done to advance scientific knowledge with no specific commercial objective. California and Massachusetts offer higher tax credit rates for basic research than regular qualified research, as displayed in Exhibit 1.10. Iowa, Minnesota, Washington, and Wisconsin, however, apply the same credit rate to both basic and regular research.

Alternative Calculation Methods

Minnesota does not allow or require an alternative calculation method, such as the alternative simplified credit, as the federal government and some states do.³⁷ In our comparison of six states, three—California, Iowa, and Massachusetts—offered an alternative calculation method, as Exhibit 1.10 illustrates. All three apply lower credit rates for use in the alternative calculation.³⁸ For instance, California's method is an alternative-

Comparison States Number of Calculation Methods

California	2
Iowa	2
Massachusetts	2
Minnesota	1
Washington	1
Wisconsin	1

³⁶ Most C corporations—78 percent of C corporations claiming the credit from 2010 to 2014—had qualified research expenses of no more than \$4 million.

³⁷ An alternative simplified credit refers to a method for calculating the research credit; it is not an additional credit. As stated earlier, this method relies on a base of qualified research expenses from the prior three years instead of from the 1984 to 1988 time period.

³⁸ For some businesses, the lower credit rate is more than offset by an increase in research expenses eligible for the credit. The increase results from the calculation's use of recent years' worth of qualified research expenses.

Exhibit 1.10: Compared with a sample of five other states, Minnesota’s research tax credit has lower rates and less flexibility but fewer reporting requirements.

Provision	CA	IA	MA	MN	WA ^a	WI
Credit rates applied to regular qualified research expenses	15%; less if a business deducts its research expenses ^b	6.5%	10%	10%-Tier 1 2.5%-Tier 2 ^c	1.5%	5.75%
Increased credit rates for “basic” research, i.e., research to advance scientific knowledge with no commercial objective	24%	○	15%	○	○	○
Alternative method for calculating the research tax credit ^d	●	●	●	○	○	○
Credit rates for alternative credit calculations	1.49% to 2.48% ^b	4.55%	5%	○	○	○
Refundability	○	●	○	○	○	○
Years to carry forward excess tax credits	No limit	1	15 ^e	15	0	15
Caps on credit amounts	●	○	●	○	●	○
Additional information or records required of companies claiming the credit	○	●	●	○	●	○

NOTE: The symbol ● means the state has the provision, and ○ means it does not.

^a The state of Washington had a research tax credit from January 1995 until January 2015, when the credit expired. While in place, Washington’s research credit applied to that state’s business and occupation tax, which is a tax on companies’ gross receipts. The tax credit applied to qualified research expenses that exceeded 0.92 percent of a business’s annual gross receipts.

^b California requires businesses that deduct their research expenses to use a lower credit rate. This reduces the credit rate to an effective 13.155 percent for individual taxpayers, 13.674 percent for corporations, and 14.775 percent for S corporations. For alternative credit calculations, California also reduces the rates proportionately for taxpayers that deduct their research expenses.

^c Minnesota applies a 10 percent rate against the first \$2 million in qualified research expenses and 2.5 percent on qualified expenses above that.

^d Certain taxpayers have raised a question over whether Minnesota’s reliance on the Internal Revenue Code to define the tax credit’s “base amount” restricts them from electing to use the alternative simplified calculation method. The question was part of a court case under appeal in the Minnesota Tax Court at the time this report was published.

^e In Massachusetts, unused credit on a company’s first \$25,000 of excise tax can be carried forward for up to 15 years. However, credits cannot reduce by more than 75 percent the excise tax over \$25,000; any such unused credit may be carried forward indefinitely.

SOURCE: Office of the Legislative Auditor, analysis of *Minnesota Statutes* 2016, 290.068, subds. 1-6a; *California Revenue and Taxation Code* 2016, Section 23609; *Iowa Code* 2016, Chapter 422, sections 422.10 and 422.33; *Massachusetts General Laws* 2016, Chapter 63, Section 38M; *Washington Administrative Code* 2016, 458-20-24003, Part III (18)-(24); and *Wisconsin Statutes* 2016, 71.07(4k) and 71.28(4).

incremental credit calculation, which applies tax credit rates ranging from 1.49 percent to 2.48 percent depending upon the amount of qualified research expenditures as a share of average annual gross receipts for the prior four tax years.³⁹

Refundability

In our sample of six states, only Iowa currently offers a refundable research tax credit. Iowa's tax credit claimants can receive refunds from the state for credits that exceed the amount needed to offset their corporate or individual income tax. Like the others in our sample, Minnesota does not offer refunds for the research tax credit, although it provided refunds from 2010 to 2012.⁴⁰ Refundability is advantageous to companies when their credit amounts are greater than their tax liabilities. This can be true for start-up companies, which may have little if any tax liability. It can also be true for large companies. When Minnesota's tax credit was refundable in 2010 to 2012, the largest 20 percent of C corporations claimed \$126 million, which was 61 percent of the refundable research tax credit going to all C corporations during that period. However, refundability is more costly to states, because paying out credit amounts in refunds adds to states' foregone revenue.

Comparison States Refundability

California	No
Iowa	Yes
Massachusetts	No
Minnesota	No
Washington	No
Wisconsin	No

Provision to Carry Unused Credits Forward

All states in our sample except Washington had provisions allowing taxpayers to carry unused tax credit amounts to future tax years. Three of six states we compared, including Minnesota, allowed taxpayers to carry credit amounts forward for 15 years; California had no limit on the years for carryforward.⁴¹ Iowa allows credit claimants to carry unused tax forward for one year; however, because it offers refundability, companies may receive all of their credit in the current year.

Comparison States Years to Carry Forward

California	No Limit
Iowa	1
Massachusetts	15
Minnesota	15
Washington	0
Wisconsin	15

Caps on Credit Amounts

In our comparison group, California, Massachusetts, and Washington limit the amount of credit that companies can claim in a given year; Minnesota does not have such a limit.⁴²

³⁹ For California taxpayers who deduct research expenses from their taxes, the credit rate in the alternative calculation is reduced to an effective rate (rounded) of 1.31 percent for individuals, 1.81 percent for corporations, and 2.44 percent for S corporations.

⁴⁰ In Massachusetts, life sciences companies that claim the research tax credit may apply for refundability of up to 90 percent of their credit (refunds are subject to a maximum \$25 million annual cap that also covers other life-science tax incentives).

⁴¹ In Massachusetts, unused credit on a company's first \$25,000 of excise tax can be carried forward for up to 15 years. However, credits cannot reduce by more than 75 percent the excise tax over \$25,000; any such unused credit may be carried forward indefinitely.

⁴² These limits are above and beyond the amount of a company's tax liability, which also serves as a limit on the amount of tax credit in states that do not offer refundability.

Such caps can help states control the cost of tax credit. California does not allow the credit to reduce tax liability below the state’s minimum \$800 franchise tax. Massachusetts allows use of the credit to offset 100 percent of companies’ first \$25,000 in tax liability and up to 75 percent of tax liability exceeding \$25,000. In addition, Massachusetts’ credit cannot reduce a company’s tax below the minimum tax of \$456. However, when the 75 percent limit disallows a portion of the tax credit, companies may carry those disallowed amounts into an unlimited number of future tax years. Washington capped the amount of its credit at the lesser of \$2 million or a company’s tax liability for the year.

Comparison States Caps on Credits	
California	Yes
Iowa	No
Massachusetts	Yes
Minnesota	No
Washington	Yes
Wisconsin	No

Information Requirements for Companies

Three states in our comparison group required businesses claiming the research tax credit to either (1) supply information above and beyond that typically required to calculate the credit or (2) keep certain records related to the credits. Minnesota requires neither. From

Comparison States Information Requirements	
California	No
Iowa	Yes
Massachusetts	Yes
Minnesota	No
Washington	Yes
Wisconsin	No

2004 through 2014, the state of Washington required tax credit claimants to respond to an annual survey. The survey included questions on the number of jobs created, wages and benefits, and product development. The state required the information as a means of accountability for the tax credit and to aid in measuring the credit’s effectiveness.

Massachusetts has adopted state rules that require businesses to keep certain records related to the research tax credit. For instance, to substantiate wages for the research tax credit, companies must maintain for each employee: detailed job descriptions, gross wages paid compared with wages included in the credit, and timecards or similar records showing the percentage of time devoted to qualified research.

Companies in Iowa must submit tax schedules with tax credit information that the Department of Revenue uses to compile a required annual report. The report lists total amounts of credit claimed, and it names individuals and corporations that receive tax credits in excess of \$500,000.

California, Minnesota, and Wisconsin have not adopted legal requirements regarding retention of tax credit-related records. However, in certain guidance to taxpayers, California states it relies on federal regulations that require taxpayers to maintain records sufficient to substantiate that the expenditures claimed are eligible for the credit.⁴³ California has also specified that failure to maintain records according to rules for the federal research tax credit is a basis for disallowing the company’s state research tax credit. The state’s documents describing the research tax credit explain types of acceptable documentation and provide examples. Similarly, Wisconsin has not adopted its own recordkeeping rules, but its Department of Revenue offers detailed guidance on (and examples of) documentation for qualified research.

⁴³ California Franchise Tax Board, *Research and Development Credit: Frequently Asked Questions* (Sacramento: Franchise Tax Board, 2008), 5.

Research Tax Credits for Hypothetical Companies in a Sample of States

States structure their research tax credits to attract or retain companies' research activity within their borders. Many factors affect business decisions about company locations, and research tax credits may play only a small role. Nonetheless, business interests and others compare states' research tax credits and seek improvements to make their own state's tax credit more competitive than others.

At first glance, states with higher tax-credit rates might appear more competitive than others. However, the tax-credit rate is just one part of the equation. In a comparison of six states' research tax credits, we accounted for other parts of the equation, such as refundability and limits on amounts of the tax credit, in each state.

To compare differences in states' research tax-credit amounts, we calculated research tax credits for three hypothetical companies. Our results represent the research tax credits these companies might expect if they were operating in each of our comparison states. We used qualified research expenses, gross receipts, and tax liabilities from tax records for three companies in Minnesota. All three were C corporations but differed in size as measured by their amounts of qualified research expenses. We applied data for these companies to the formulas used in tax year 2015 for calculating research tax credits in the six states from our comparison group.⁴⁴

Because of the great complexity of tax systems and business structures from state to state, we had to create overly simplistic hypothetical companies. We assumed that our hypothetical companies: were C corporations with no subsidiaries, had no other tax credits or deductions, had no credits carrying over from earlier years, and had the same precredit tax burden. The hypothetical large, medium, and small companies spent \$108 million, \$6 million, and \$531,000, respectively, on qualified research expenses. They spent no part of those expenses for basic research or contracted research. Further, we assumed that all states shared the same definition of qualified research expenditures, as defined for the federal research tax credit.⁴⁵ We made additional assumptions in particular states when statutes or rules required use of a data point that we did not have, such as a company's total qualified research expenses in the United States. In these cases, we calculated the research tax credit a series of times, using different assumptions, such as varying amounts of a company's United States qualified research expenses.

Comparison Group

California
Iowa
Massachusetts
Minnesota
Washington
Wisconsin

Among our six comparison states, the research tax credit for a hypothetical large company in Minnesota was smaller than other states' tax credits; however, such credits for a medium- or small-sized hypothetical company were equal to or larger than those in the comparison states.

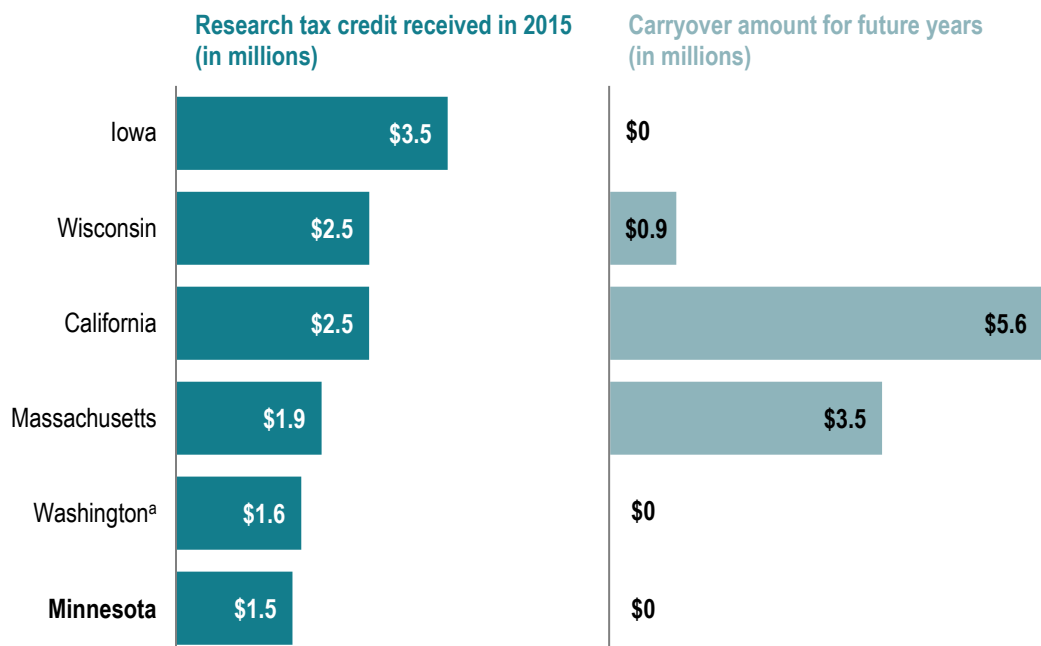
⁴⁴ Because Washington's research tax credit expired in 2015, we used that state's formula in place for 2014.

⁴⁵ Most of our comparison states use the federal credit's definition of qualified research expenditures with the exception that the research must occur within a given state. However, Washington specified its own definition, which differed slightly from the federal definition.

We estimated that our hypothetical large company in Minnesota would receive a \$1.5 million research tax credit to reduce a precredit tax liability of \$2.49 million in the current year. This credit amount is exclusive of carryover amounts.⁴⁶ The other states' credits varied from an estimated \$1.9 million in Massachusetts to \$3.5 million in Iowa for our hypothetical company bearing the same precredit tax liability. Exhibit 1.11 shows the differences. The other states' credit amounts for the large company range from 6 percent to 134 percent higher than Minnesota's credit.

At the same time, however, for hypothetical medium- and small-sized companies, Minnesota's research tax credit ranked as high as, or higher than, nearly all of our comparison states. For the medium company, we estimated that Minnesota's research tax

Exhibit 1.11: In a six-state sample, a large hypothetical company was estimated to earn less research tax credit in Minnesota than in five other states.



NOTES: The research tax credit is the estimated credit amount available to reduce the hypothetical company's tax liability in tax year 2015. Carryover amounts estimate dollars available for use in future tax years.

To calculate research tax credits for a hypothetical company, we assumed that the company: was a C corporation with no subsidiaries; had no other tax credits or deductions; had no credit carryover; had the same tax liability in each state; and spent about \$108 million on qualified research expenses but nothing on basic research or contracted research. Further, we assumed that all states shared the same definition of qualified research expenditures.

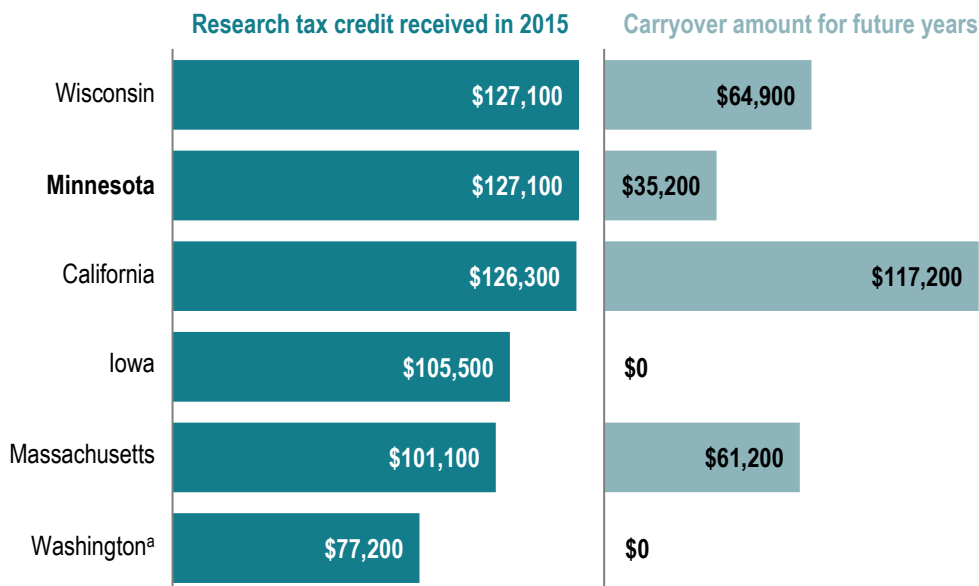
^a Washington had a research tax credit from January 1995 until January 2015 when the credit expired. To calculate research tax credits in Washington, we used regulations in place for tax year 2014. While in place, Washington's research credit applied to that state's business and occupation tax, which is a tax on companies' gross receipts. The tax credit applied to qualified research expenses that exceeded 0.92 percent of a business's annual gross receipts.

SOURCE: Office of the Legislative Auditor, analysis of research tax-credit forms and regulations for six states.

⁴⁶ The amount for the current year does not reflect unused credit that companies carry over to future tax years. Companies do not lose credits carried into the future; but they cannot use them in the current year.

credit would generate more than \$127,000 in credits—equal to Wisconsin, slightly higher than California, and higher than the other three states, as shown in Exhibit 1.12. By contrast, for the hypothetical small company, we estimated Minnesota’s research tax credit at about \$3,100, which was second only to the credit in Iowa and tied with Washington and Wisconsin. Exhibit 1.13 shows estimates for the hypothetical small company.

Exhibit 1.12: In a six-state sample, a medium hypothetical company was estimated to earn as much or more research tax credit in Minnesota as in five other states.



NOTES: The research tax credit is the estimated credit amount available to reduce the hypothetical company’s tax liability in tax year 2015. Carryover amounts estimate dollars available for use in future tax years.

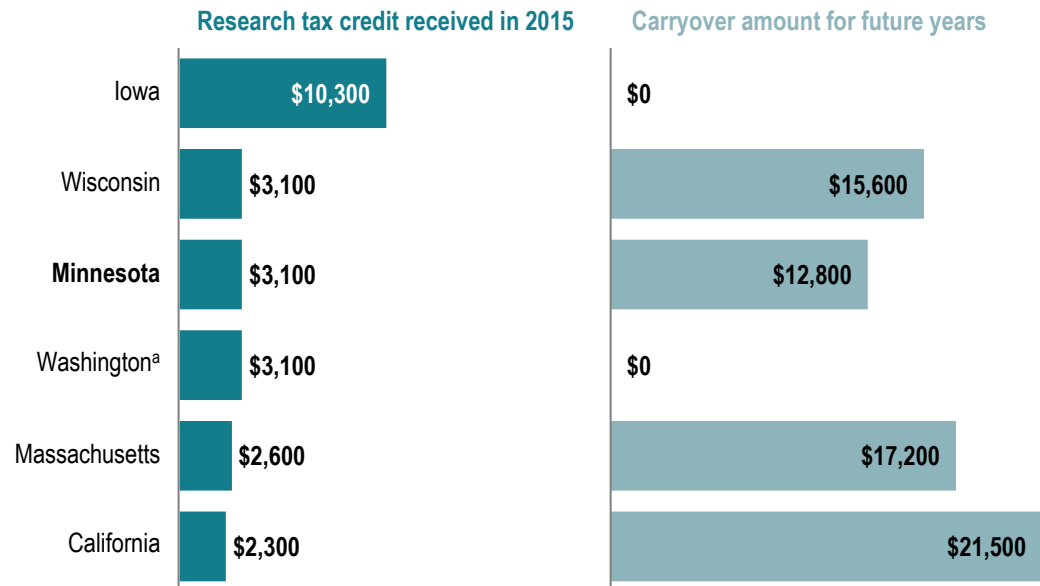
To calculate research tax credits for a hypothetical company, we assumed that the company: was a C corporation with no subsidiaries; had no other tax credits or deductions; had no credit carryover; had the same tax liability in each state; and spent about \$6 million on qualified research expenses but nothing on basic research or contracted research. Further, we assumed that all states shared the same definition of qualified research expenditures.

^a Washington had a research tax credit from January 1995 until January 2015 when the credit expired. To calculate research tax credits in Washington, we used regulations in place for tax year 2014. While in place, Washington’s research credit applied to that state’s business and occupation tax, which is a tax on companies’ gross receipts. The tax credit applied to qualified research expenses that exceeded 0.92 percent of a business’s annual gross receipts.

SOURCE: Office of the Legislative Auditor, analysis of research tax-credit forms and regulations for six states.

Iowa’s credits for our hypothetical large and small companies are more than twice as high as Minnesota’s, largely due to refundability in Iowa. Our hypothetical medium-sized company, on the other hand, fared better in Minnesota than Iowa. This is largely because Iowa’s smaller tax credit rate would generate less than \$106,000 in research tax credits compared with a \$127,000 tax credit in Minnesota.

Exhibit 1.13: In a six-state sample, a small hypothetical company was estimated to earn as much or more research tax credit in Minnesota as in four of five other states.



NOTES: The research tax credit is the estimated credit amount available to reduce the hypothetical company's tax liability in tax year 2015. Carryover amounts estimate dollars available for use in future tax years.

To calculate research tax credits for a hypothetical company, we assumed that the company: was a C corporation with no subsidiaries; had no other tax credits or deductions; had no credit carryover; had the same tax liability in each state; and spent about \$531,000 on qualified research expenses but nothing on basic research or contracted research. Further, we assumed that all states shared the same definition of qualified research expenditures.

^a Washington had a research tax credit from January 1995 until January 2015 when the credit expired. To calculate research tax credits in Washington, we used regulations in place for tax year 2014. While in place, Washington's research credit applied to that state's business and occupation tax, which is a tax on companies' gross receipts. The tax credit applied to qualified research expenses that exceeded 0.92 percent of a business's annual gross receipts.

SOURCE: Office of the Legislative Auditor, analysis of research tax-credit forms and regulations for six states.

Chapter 2: Effectiveness

States use business tax credits, such as Minnesota’s research tax credit, to induce economic activity. In theory, this economic activity might not have occurred without the tax credit, or it might have occurred to a lesser degree.

Evaluating the effectiveness of tax credits can be difficult. To determine the effects of a tax credit on a state economy, research suggests that analysts could measure the extent to which the tax credit subsidizes its targeted activity.¹ Analysts could also compare the economic activity that occurred as a result of the tax credit with the economic activity that would have occurred in its absence (the “counterfactual”). However, it is difficult to determine the counterfactual because researchers cannot observe it. Another difficulty of measuring the effectiveness of a tax credit is that it requires the credit to have clear and specific goals and objectives.

In this chapter, we first discuss the lack of a specific statutory purpose for Minnesota’s research tax credit. Then, we examine academic research and businesses’ perspectives on three likely objectives of the research tax credit. We also present estimates of the economic effects of Minnesota’s research tax credit from 2008 to 2014 and weigh the economic benefits of the tax credit against its fiscal costs. Finally, we review information needed when legislators discuss potential changes to the credit.

Lack of Purpose and Objectives

The statute that authorizes Minnesota’s research tax credit addresses eligibility for the credit, the tax rates for the credit, and what may be done with unused credit. However, the statute is silent on one important matter: the purpose of the credit.

Evaluating the effectiveness of Minnesota’s research tax credit requires knowing the credit’s purpose, but Minnesota statutes do not specify one.

Some Minnesota laws include a purpose statement that conveys the Legislature’s original intent when adopting a particular law. In this case, the only statutory clue to the research tax credit’s purpose is in the title of its section of law: “Credit for Increasing Research Activities.”² This name suggests that a purpose of the research tax credit is to increase research activities, but there is no indication in statute as to the Legislature’s desired level or rate of increase.

Minnesota has not set explicit objectives for its research tax credit. It has neither created specific metrics to measure the research tax credit’s performance nor required a state agency to monitor it over time. State law does not define targets for the desired increase in

¹ Jennifer Weiner, *State Business Tax Incentives: Examining Evidence of their Effectiveness* (Boston: New England Public Policy Center, Federal Reserve Bank of Boston, December 2009), 5.

² At its inception, the research tax credit was entitled “Credit for Research and Experimental Expenditures.” See *Laws of Minnesota* 1981, Third Special Session, chapter 2, art. 3, sec. 6. The 1991 Legislature renamed the research tax credit, giving it its current name. See *Laws of Minnesota* 1991, chapter 291, art. 7, sec. 11.

research activities. Moreover, neither the Legislature nor the Department of Revenue has previously evaluated Minnesota's research tax credit.³

To determine the effectiveness of tax incentives, national studies recommend setting goals and objectives for the incentives, as well as ongoing monitoring and analysis of them. Without such monitoring, according to the United States Government Accountability Office, a tax incentive lacks transparency and accountability.⁴ Similarly, a 2015 Pew Charitable Trusts report says that economic development incentives, including tax credits, can cause fiscal risks because their costs can be unpredictable.⁵ It recommends that states monitor these incentives by regularly forecasting their fiscal impact, monitoring the costs of their incentives (especially the large incentives—such as Minnesota's research tax credit), and sharing information on the incentives among the relevant state agencies.

RECOMMENDATION

The Legislature should establish in statute explicit and measurable objectives for Minnesota's research tax credit.

Minnesota law currently requires the Legislature to include a statement of purpose to define measurable objectives in any bill that creates, renews, or continues a tax expenditure—such as a tax credit—enacted after July 1, 2010.⁶ Although the Legislature established the research tax credit prior to 2010, we encourage legislators to enact a similar purpose statement to apply to the research tax credit.

As a first step, the Legislature should state the specific objectives it hopes the research tax credit will achieve. We offer some plausible objectives for the credit later in this chapter, but the Legislature may decide that some other objective is appropriate. Once the objective is agreed upon, the Legislature should direct a third party—such as the Department of Revenue, the Office of the Legislative Auditor, economists at the University of Minnesota, or some other entity chosen by the Legislature—to develop measures to gauge how well the research tax credit is achieving these objectives. These steps require the Legislature and the third-party evaluators to think through not only the measures themselves, but also how the measures could be realized. One of the questions to ask is whether appropriate data for the desired measures even exist; if they do not, additional steps are needed to collect the data.

The Legislature could use any of a number of methods to determine specific objectives for the research tax credit and how to measure the objectives. One possibility is a method that the state of Washington follows. Since 2013, Washington law has required that any bill proposing a new tax incentive include a performance statement indicating the incentive's

³ The department did review tax expenditures in general in 2011 when it contracted with a group of economists and public policy analysts to research oversight of the state's tax expenditures. See Minnesota Department of Revenue, Tax Research Division, *Tax Expenditure Review Report: Bringing Tax Expenditures Into the Budget Process* (St. Paul, 2011).

⁴ *Tax Expenditures: Background and Evaluation Criteria and Questions* (Washington, DC: United States Government Accountability Office, 2012), 8 and 29.

⁵ *Reducing Budget Risks: Using Data and Design To Make State Tax Incentives More Predictable* (Washington, DC: The Pew Charitable Trusts, 2015), 6-7.

⁶ *Laws of Minnesota* 2010, chapter 389, art. 10, sec. 1, as codified in *Minnesota Statutes* 2016, 3.192.

legislative purpose.⁷ The performance statement must identify the metrics and data requirements that would allow Washington’s legislative auditor and the Legislature to evaluate the effectiveness of the tax incentive. Further, state law requires any taxpayer who claims a tax incentive to respond to an annual survey related to the incentive.

In written guidance to the Washington Legislature, the legislative auditor suggested organizing performance statements around a framework called a “logic chain.”⁸ The logic chain specifies in detail the sequential process by which a given tax incentive is meant to induce a given outcome. It also identifies the data and metrics for each step of the process. As noted by Washington’s legislative auditor, a logic chain has several advantages:

- It provides transparency to all parties by identifying what the tax incentive is supposed to achieve.
- It provides a vehicle for legislators to agree on the assumptions and outcomes that would have to be met to determine whether a tax incentive is successful.
- It makes clear the data needed to measure outcomes. If such data are not available, the Legislature can consider mandating their collection.
- It provides an opportunity for considering whether a tax incentive is the appropriate mechanism to achieve a given policy aim.

Exhibit 2.1 presents a hypothetical example of a logic chain for a research tax credit. We provide the exhibit as an illustration of the logic chain concept; we are not recommending that the Legislature adopt the specific policy objective or measures contained in the exhibit.

Likely Objectives

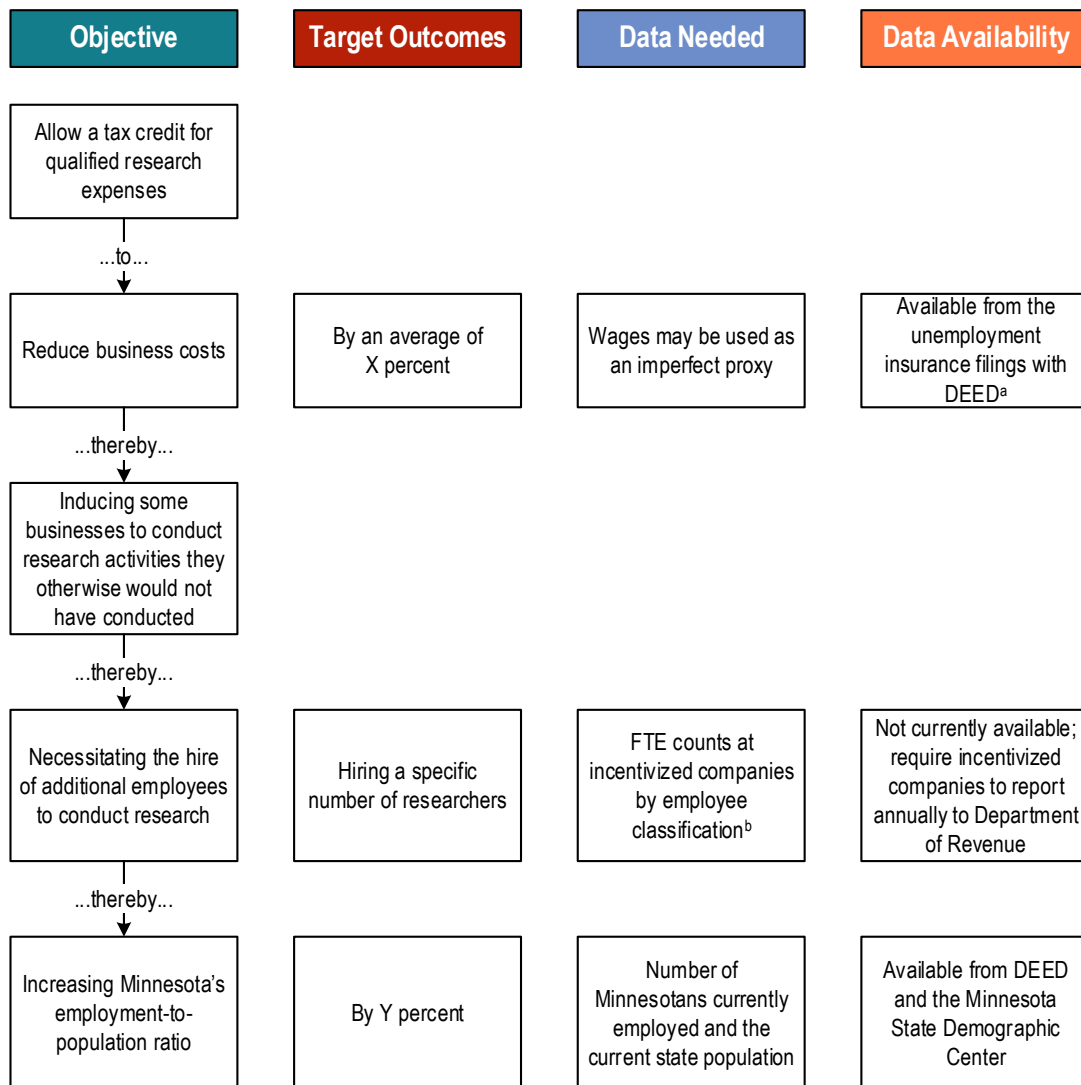
Because Minnesota enacted its credit soon after Congress adopted the federal credit, it is possible that Minnesota’s credit shares the same purpose as the federal credit: to encourage private research. We interviewed several people familiar with Minnesota’s research tax credit, primarily representatives of business associations. They generally agreed that a likely purpose of the credit is to encourage research and development activity within the state. Some believed that a purpose of the research credit is to attract or retain businesses and most viewed the credit as an incentive for growth of high-skill or high-paying jobs. Further, some stated that the credit could produce spillover effects on the state’s economy as a whole.

Despite the lack of a specific statutory purpose, Minnesota’s research tax credit could reasonably be said to have one or more of the following objectives: (1) create or retain jobs, (2) increase research activity, and (3) attract or retain businesses.

⁷ *Revised Code of Washington* 2016, 82.32.808, subsection (2).

⁸ *Legislative Auditor Report to the Legislature: Guidance for Drafting Performance Statements in Tax Preference Legislation* (Olympia, WA: Washington Joint Legislative Audit and Review Committee, 2014), 2.

Exhibit 2.1: This sample “logic chain” is one possible framework for developing tax-incentive objectives and ways to measure them.



^a DEED is the Minnesota Department of Employment and Economic Development.

^b An FTE is a full-time-equivalent employee.

SOURCE: Office of the Legislative Auditor, based on *Legislative Auditor Report to the Legislature: Guidance for Drafting Performance Statements in Tax Preference Legislation* (Olympia, WA: Washington Joint Legislative Audit and Review Committee, 2014).

If creating or retaining jobs, increasing research activity, or attracting or retaining businesses are indeed the objectives of the tax credit, it should be remembered that companies’ decisions on these matters depend on many factors, such as labor costs and availability of skilled labor. Availability of a tax credit is only one factor, and it may vary in importance for different companies.

Create or Retain Jobs

One likely objective of Minnesota's research tax credit is to create new jobs or retain existing jobs. In this section, we discuss findings from academic or economic research and businesses' perspectives from our interviews and survey.⁹ Later in this chapter, we present our analysis of how well Minnesota's research tax credit has met this likely objective.

Evidence suggests that research tax credits may create or retain jobs, but this comes at a cost to the state.

Studies from other states suggest that research tax credits cause marginal increases in the number of jobs in the state. However, the same studies found that such job creation comes at a price—sometimes a high price—to the state. Several company representatives we surveyed or interviewed stated that the research tax credit has helped their company create or maintain jobs.

Academic and Economic Research

Several state-specific studies of research tax credits found marginal increases in jobs due to the credits. A 2005 study of a decade of changes to Connecticut's corporate tax policy found that, when considered individually, most of the policy changes the researchers analyzed did not have a large impact on job growth in the state.¹⁰ (The policy changes included corporate income tax rate changes, targeted sales and property tax exemptions, and tax credits.) The researchers estimated that Connecticut's *incremental* research and experimentation tax credit—that is, a credit against corporation's tax for incremental increases in research and experimental expenditures conducted in Connecticut—generated the second largest number of private sector jobs (1,261 in 2002) among the 27 individual policy changes analyzed.¹¹ The estimated cost per private sector job created by this tax credit was \$4,706, the third lowest among the policy changes in the analysis. The state's *nonincremental* research and development tax credit, however, created an estimated 249 private sector jobs in 2002 with a high cost per job of \$81,876.

A 2008 study of a proposed research tax credit in New Hampshire indicated that the credit would increase R&D-related employment in the state by 0.3 percent (about 70 jobs).¹² The researchers concluded that the tax credit would generate only about \$50,000 of additional business taxes, bringing the net foregone tax revenue to \$950,000 a year. Nevertheless, the New Hampshire Legislature adopted a research tax credit, and it remains in effect today.

⁹ To learn about businesses' perspectives of Minnesota's research tax credit, we interviewed representatives from nine businesses. The businesses agreed to let us identify them: Cargill, Control Concepts, Ecolab, General Mills, Graco, IBM, Medisyn Technologies, Torax Medical, and Winnebago Manufacturing. Additionally, we surveyed 1,431 businesses that had claimed the tax credit in at least one of three recent tax years (2012, 2013, or 2014). We received responses from 493 companies (a 34.5 percent response rate). Due to our uncertainty regarding the survey mailing list provided by the Department of Revenue, we do not believe the survey results are generalizable to all Minnesota research tax credit claimants. We weighted survey results to reflect the probability of responding to the survey, based on company type and year a company claimed the credit.

¹⁰ William F. Lott and Stan McMillen, "The Economic Impact of Connecticut's Corporate Tax Policy Changes: 1995-2012" (Storrs, CT: Connecticut Center for Economic Analysis, University of Connecticut, 2005).

¹¹ Lott and McMillen noted that the number of jobs generated or created could include jobs that were saved.

¹² Ross Gittell, "Are Research and Development Tax Credits Effective? The Economic Impacts of a R&D Tax Credit in New Hampshire," *Public Finance and Management* 8, no. 1 (2008): 70-101.

A 2012 study of Washington's Business and Occupation tax credit found that, due to the tax credit, employment grew by an estimated 0.5 to 0.6 percent at the firms that claimed credits.¹³ The researchers estimated that the tax credit resulted in a one-time employment growth of 454 jobs. They estimated that these additional jobs would cost the state \$45,000 per job, but generate \$25,000 per job in new earnings in the state. As we stated in Chapter 1, Washington's Business and Occupation Tax Credit expired in 2015.

Businesses' Perspectives

Relative to nine other business activities, research tax-credit claimants that responded to our survey indicated that the credit was moderately important in helping their companies hire new employees and retain existing jobs.¹⁴ However, their responses suggest that the credit was more important in years the credit was refundable than in the years it was not refundable. This is likely the case because refundable tax credits can lower companies' tax liabilities to \$0 and also generate a tax refund. These companies could then use the tax refund to create new jobs or invest in other business activities, among other uses for that money.

A higher percentage of survey respondents that received a tax refund due to their 2012 research tax credit thought that it was important for helping their company retain jobs than did respondents who did not receive a refund in 2012, 2013, or 2014. Seventy-five percent of respondents that received a refund said that the credit was very important or moderately important in helping their company retain existing jobs. However, as shown in Exhibit 2.2, respondents who did not receive a refund held less favorable opinions. Among those respondents, 46 percent said that the credit was very or moderately important in helping their company retain existing jobs.

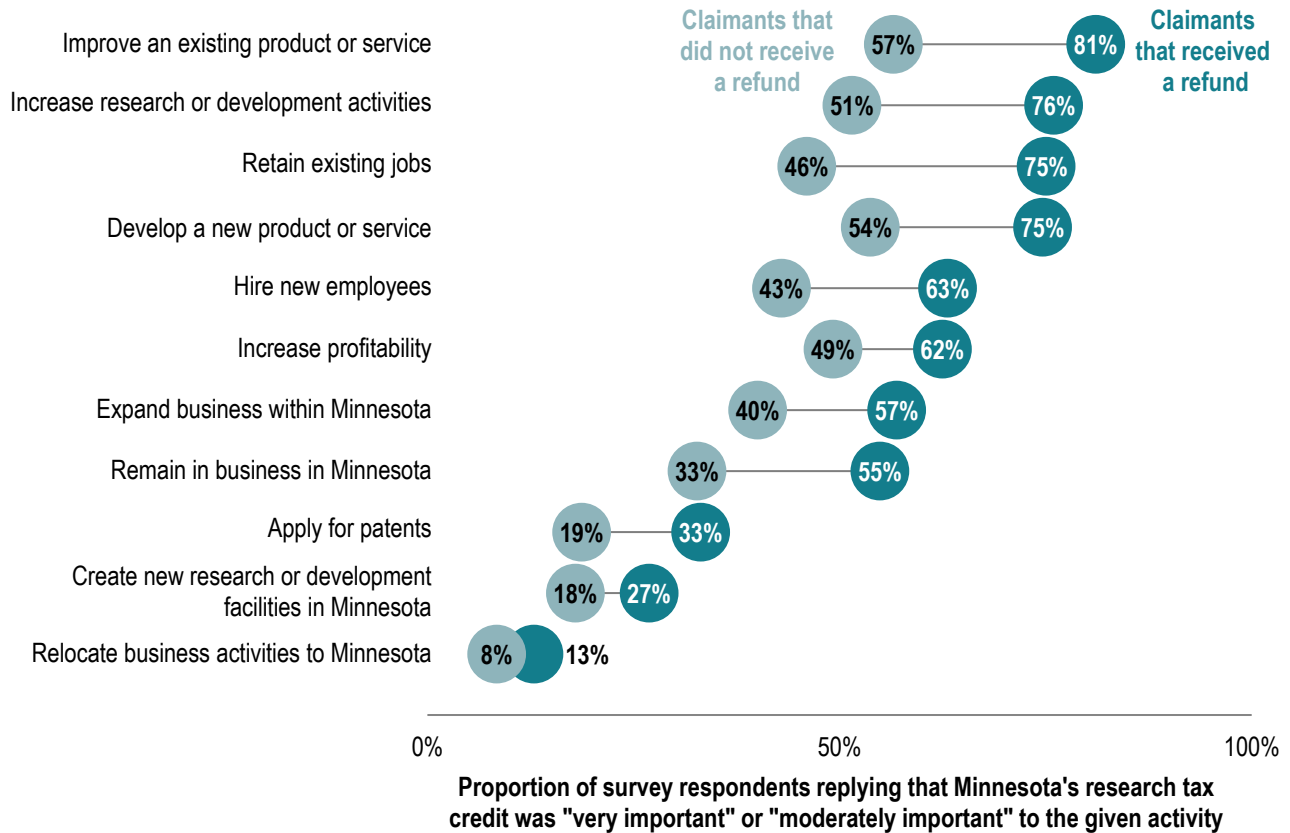
Similarly, a higher percentage of survey respondents that received a tax refund due to the research tax credit, as compared with those that did not receive a tax refund, thought the research tax credit was important for hiring new employees. For example, 63 percent of survey respondents who received a refund in 2012 indicated that the credit was very or moderately important in helping their company hire new employees. By contrast, 43 percent of survey respondents that did *not* receive a refund thought the credit was very important or moderately important in helping their company hire new employees.

Several company representatives we surveyed or interviewed stated that the research tax credit has helped their company create or maintain jobs. For example, representatives of a relatively small company said the tax credit enabled their business to hire an additional engineer. One business that responded to our survey stated that "The [research] tax credit has been instrumental in us going from 35 to 100 employees in the last 6 years." Another survey respondent stated that "With this incentive we are better capable to attain and retain highly skilled research engineers for our [company's] innovative growth and competitiveness in our markets."

¹³ Timothy J. Bartik and Kevin Hollenbeck, "An Analysis of the Employment Effects of the Washington High Technology Business and Occupation (B&O) Tax Credit: Technical Report," Upjohn Institute Working Paper 12-187 (Kalamazoo, MI: W.E. Upjohn Institute for Employment Research, 2012); and *2012 Tax Preference Performance Reviews, Report 13-1* (Olympia, WA: Washington Joint Legislative Audit & Review Committee, 2013).

¹⁴ The nine other business activities are: apply for patents, create new research or development facilities in Minnesota, develop a new product or service, expand business within Minnesota, increase profitability, increase research or development activities, improve an existing product or service, relocate business activities to Minnesota, and remain in business in Minnesota.

Exhibit 2.2: Surveyed companies that received a tax refund from Minnesota’s research tax credit considered the credit more important than those that did not receive a refund.



NOTES: Minnesota’s research tax credit was a refundable tax credit in 2010 to 2012. We surveyed 1,431 businesses that claimed Minnesota’s research tax credit in at least one of tax years 2012, 2013, or 2014. We received responses from 493 companies (a 34.5 percent response rate). However, the survey results are not generalizable to all claimants of Minnesota’s research tax credit because the list of claimants was incomplete, and it included taxpayers that had not claimed the credit.

The survey questions were worded as follows: “When your company (or partner or shareholder) received a tax refund due to a 2012 Minnesota research and development tax credit, how important was the tax credit in allowing your company to...” and “For the tax years your company (or partner or shareholder) claimed the Minnesota research and development tax credit but did not receive a tax refund due to the tax credit, how important was the tax credit in allowing your company to....” (For refundable tax credit, N = 156 to 161; for nonrefundable tax credit, N = 338 to 344.)

SOURCE: Office of the Legislative Auditor, survey of taxpayers, September 2016.

Increase Research Activity

A second likely objective for Minnesota’s research tax credit is to increase research activities in the state. We next discuss findings from academic and economic research as well as businesses’ perspectives from our survey and interviews.

Evidence suggests that research tax credits may increase research-related spending; however, Minnesota’s research tax credit does not require all credit claimants to increase qualified research activity.

While Minnesota's research credit may *encourage* research activity in the state, not all companies need to *increase* their Minnesota research activity to receive a tax credit. As Chapter 1 described, computing Minnesota's research tax credit includes determining how much a company's qualified research expenses exceed a calculated base amount, up to a maximum. The maximum is defined as 50 percent of current year expenses. For most taxpayers, the base amount is that maximum—50 percent of the *current* year's qualified research expenses—it is not related to past years' levels of research. As a result, these taxpayers can receive a tax credit even if their research expenses are *lower* than the previous year's.

Academic and Economic Research

Despite the relatively limited amount of literature available on states' research tax credits, researchers generally agree that tax credits have at least some positive impact on research and development (R&D)-related spending.¹⁵ For example, a 2005 study found that while a state's overall economic situation influences companies' investment behavior, state research tax credits can increase private R&D spending in the state. Specifically, the research found that for one state in one year, state research tax credits generate approximately \$75 to \$120 in additional industrial R&D spending per capita.¹⁶ A 2009 study suggests that a 1.0 percentage point increase in a state's effective rate of the research credit may result in an increase in state R&D of approximately 1.7 percent in the short run and 3.0 to 4.0 percent in the long run.¹⁷ A study conducted in 2014 found that a 1.0 percent increase in state research tax incentives leads to a 2.8 to 3.8 percent increase in R&D expenditures.¹⁸

However, some researchers caution that nearly all of the increase in R&D in one state comes at the expense of reduced R&D in other states.¹⁹ Others think there are "pervasive" methodological concerns in this area of study. Notably, one researcher stated that "Sorting out small tax effects in the larger economy...seems impossible" and that "most [economic growth] measures require analysts to make often unreasonable assumptions to justify them," among other concerns.²⁰ Furthermore, the same research concluded that few studies examine whether public monies could have been better spent or whether the tax credits were economically justified.²¹ Additionally, some evidence suggests that research tax

¹⁵ Research and development (R&D) activities are defined broadly here and would not necessarily qualify for the research tax credit.

¹⁶ Yonghong Wu, "The Effects of State R&D Tax Credits in Stimulating Private R&D Expenditure: A Cross-State Empirical Analysis," *Journal of Policy Analysis and Management* 24, no. 4 (2005): 795.

¹⁷ Daniel J. Wilson, "Beggars Thy Neighbor? The In-state, Out-of-state, and Aggregate Effects of R&D Tax Credits," *The Review of Economics and Statistics* 91, no. 2 (2009): 434-435.

¹⁸ Andrew C. Chang, *Tax Policy Endogeneity: Evidence from R&D Tax Credits* (Washington, DC: Federal Reserve Board, Divisions of Research & Statistics and Monetary Affairs, 2014), 4.

¹⁹ Daniel J. Wilson, "Beggars Thy Neighbor? The In-state, Out-of-state, and Aggregate Effects of R&D Tax Credits," *The Review of Economics and Statistics* 91, no. 2 (2009): 435; and Chad R. Miller and Brian Richard, "The Policy Diffusion of the State R&D Investment Tax Credit," *State and Local Government Review* 42, no. 1 (2010): 23.

²⁰ Terry F. Buss, "The Effect of State Tax Incentives on Economic Growth and Firm Location Decisions: an Overview of the Literature," *Economic Development Quarterly* 15, no. 1 (2001): 95-96.

²¹ *Ibid.*, 93.

credits may have different effects for companies in particular industries or by company size.²²

Businesses' Perspectives

Based on our survey of research tax-credit claimants, most survey respondents believed that Minnesota's research tax credit was an important factor in encouraging their company to conduct research or development in Minnesota in the past five years. Specifically, 75 percent of survey respondents indicated that Minnesota's research tax credit greatly encouraged or encouraged their companies' decisions to conduct research or development in Minnesota in the past five years. When considering 13 other factors that affect such decisions, survey respondents ranked the research tax credit as the third most influential factor, as Exhibit 2.3 shows.

When asked about the research tax credit's importance in allowing their company to conduct 11 business activities, such as improving an existing product or service, our survey respondents indicated that the credit was important in helping their companies increase research or development activities. Their responses suggest, however, that companies that received a tax refund in 2012 due to the research tax credit considered the credit more important than did companies that did not receive a tax refund in 2012, 2013, or 2014. As we explained earlier, refundable tax credits can lower companies' tax burdens enough to generate a tax refund. As shown in Exhibit 2.2, 76 percent of survey respondents that received a refund indicated that the credit was very or moderately important in helping their company increase research or development activities. By contrast, for respondents who did not receive a refund, the percentage dropped to 51 percent.

Some business representatives we surveyed or interviewed said Minnesota's research credit has allowed their company to increase or complete its research projects, while some said that the credit had no effect on the company's research activities. For example, one survey respondent stated "As a young start-up company, the [research] tax credit truly helped us justify making larger investments in new products sooner than expected. The successful launch of those products has helped us grow and create many new jobs in our community." In contrast, one large company's representative stated that the size of Minnesota's tax credit was not sufficient to make it an important incentive when it comes to increasing research.

Attract or Retain Companies

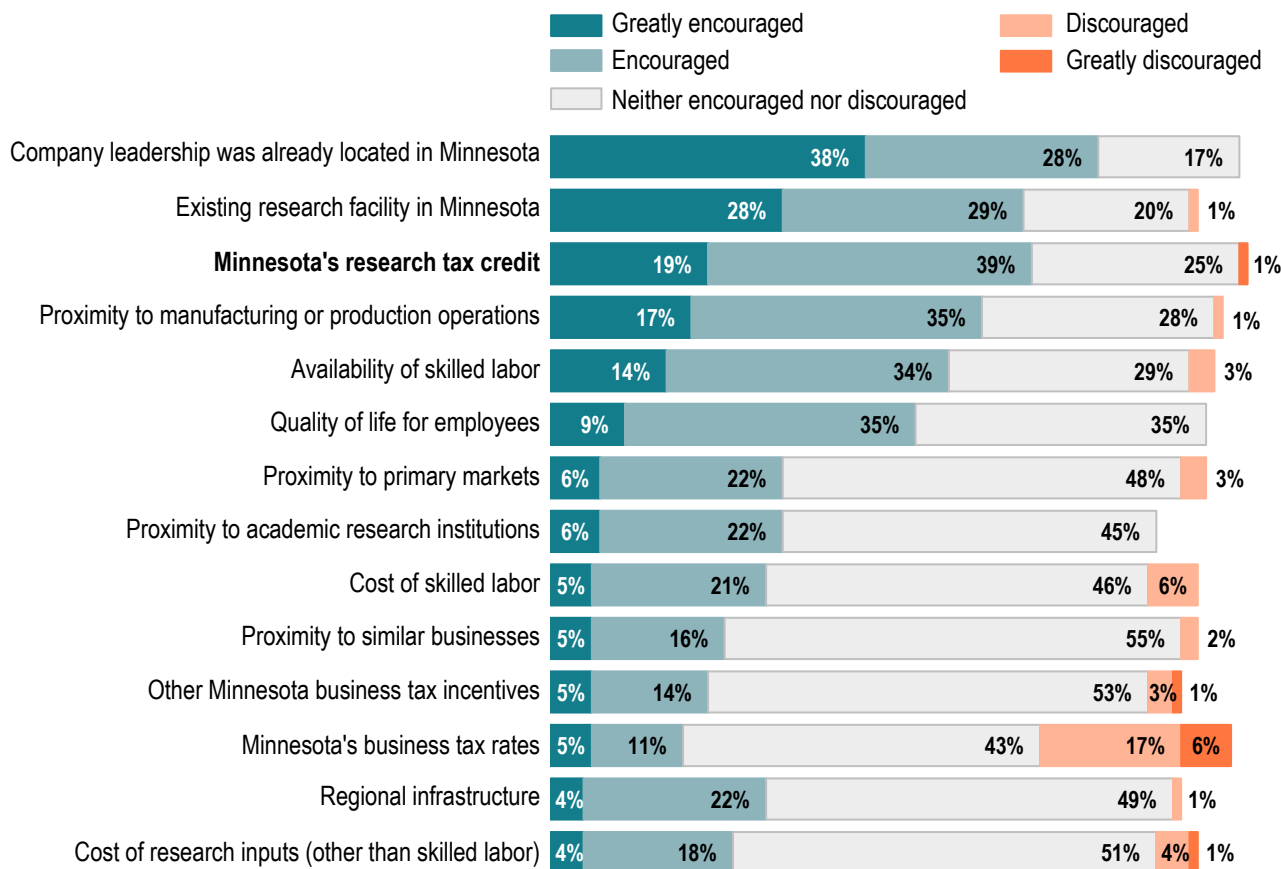
A third likely objective of Minnesota's research tax credit is to attract new companies to the state or retain existing firms. In this section, we discuss findings from academic and economic research and businesses' perspectives from our interviews and survey.

Evidence is mixed on the extent to which research tax credits have an effect on retaining companies or attracting new ones.

A business decision to relocate or remain in a state is based on many factors, and it is difficult to isolate the impact of the research tax credit on these decisions. Academic and other research, our interviews with business representatives, and results from our survey of

²² Lolita A. Paff, "State-Level R&D Tax Credits: A Firm-Level Analysis," *The B.E. Journals in Economic Analysis and Policy*, vol. 5, no. 1 (2005): 17; and Boris Lokshin and Pierre Mohnen, "How Effective are Level-Based R&D Tax Credits? Evidence from the Netherlands," *Applied Economics*, vol. 44 (2012): 1536.

Exhibit 2.3: Most survey respondents thought that Minnesota's research tax credit encouraged their companies to conduct research or development in the state.



NOTES: We surveyed 1,431 businesses that claimed Minnesota’s research tax credit in at least one of tax years 2012, 2013, or 2014. We received responses from 493 companies (a 34.5 percent response rate). However, the survey results are not generalizable to all claimants of Minnesota’s research tax credit because the list of claimants was incomplete, and it included taxpayers that had not claimed the credit. Responses for “Not applicable” and “Do not know” are not included in the above graph. As a result, the totals do not sum to 100 percent.

The survey question was worded as follows: “During any of the past five years, how have the following items influenced your company’s decision to conduct research or development in Minnesota?” (N = 479 to 488)

SOURCE: Office of the Legislative Auditor, survey of taxpayers, September 2016.

research tax-credit claimants suggest that research tax credits might affect one business’s location decision, but it might not affect others’ decisions.

Academic and Economic Research

A state’s tax system can affect businesses’ decisions on their locations, especially given globalization trends that help capital and labor become increasingly mobile. A 2009 study estimated the effective after-tax price of qualified research expenditures that firms in a sample would have faced in each of the 50 states, had they been located there. The researchers found that more generous state research tax credits and higher state corporate

tax rates give companies a greater incentive to invest in R&D.²³ However, as we stated above, other research has indicated that businesses' location decisions depend on many other factors, such as labor costs and availability of skilled labor.

According to one researcher, tax credit supporters argue that tax incentives can make a state more competitive for businesses.²⁴ However, critics portray tax competition as a "race to the bottom" that jeopardizes state funding of public services, thus "tax incentives may actually harm a location's competitive standing if associated service cuts make the area a less desirable place to live or work."²⁵ Furthermore, some researchers question the ability of state research tax credits to attract new research activity—and its resulting economic effects—to the state. A 2010 study found that state research tax credits largely result in retaining or moving research activities among *existing* manufacturing facilities rather than encouraging *new* research.²⁶

Businesses' Perspectives

We heard mixed opinions from the businesses we surveyed and interviewed regarding the research tax credit's ability to attract or retain companies. Many of our survey respondents indicated that Minnesota's research tax credit was not important for their company when considering whether to relocate business activities to the state, as Exhibit 2.2 showed. However, more thought that the research tax credit was important for helping their company remain in business in Minnesota.

Some of the business representatives we interviewed said they do not believe that Minnesota's research credit is significant enough to attract new businesses to the state. However, others said the credit is one of the factors that helps retain their company's research activities in Minnesota. Representatives from one of the smaller companies we spoke with said that the refundable tax credit from the past made staying in Minnesota more attractive. At the same time, the representatives said that the current nonrefundable tax credit is not a significant factor in keeping the company in the state, and the company would not move if Minnesota's credit were no longer available.

Economic Effects

In this section, we estimate the change in the number of jobs and amount of earnings in Minnesota attributable to the state's research tax credit. We examine the broader effects of the tax credit on Minnesota's economy. We also weigh the fiscal benefits of the tax credit against its fiscal costs.

We used an economic model developed by the Pew Charitable Trusts to estimate the effects that Minnesota's research tax credit had on job creation and the state economy from 2008 to

²³ Lolita Paff and Todd A. Watkins, "What is the After-Tax Price of R&D? An Interstate Comparison," *Fiscal Studies* 30, no. 1 (2009): 97.

²⁴ Jennifer Weiner, *State Business Tax Incentives: Examining Evidence of their Effectiveness* (Boston: New England Public Policy Center, Federal Reserve Bank of Boston, December 2009), 8-9.

²⁵ *Ibid.*, 9.

²⁶ Chad R. Miller and Brian Richard, "The Policy Diffusion of the State R&D Investment Tax Credit," *State and Local Government Review* 42, no. 1 (2010), 22-35.

2014.²⁷ The data used for this analysis are data from the Minnesota Department of Employment and Economic Development’s Unemployment Insurance database and tax records supplied by the Department of Revenue for C corporations that claimed the research tax credit from 2008 to 2014. We also used data from other sources, such as state wage and employment data from the federal Bureau of Economic Analysis and state revenue and expenditure data from the think tank Urban Institute-Brookings Institution Tax Policy Center. Due to the lack of complete and accurate data on partners and shareholders that claimed Minnesota’s research tax credit, we are unable to present information regarding individual tax credit claimants.

In our analysis, we included companies from four industries (based on two-digit North American Industry Classification System codes): the Manufacturing industry; the Professional, Scientific, and Technical Services industry; the Management of Companies and Enterprises industry; and the Wholesale Trade industry.²⁸ The companies in these four industries claimed approximately 95 percent of Minnesota research tax credit dollars claimed by C corporations between 2010 and 2014.

Estimated Job Creation and Earnings

Companies that receive Minnesota’s research tax credit experience the tax credit’s direct effects—lower business costs due to lower tax burdens. Lower business costs can help a business to expand its economic activity, such as by investing in new machinery and hiring more workers to operate it. In turn, the business has a greater opportunity to produce and sell more goods or services.

In addition, the research tax credit can have broader effects on Minnesota’s economy. Indirect effects of the tax credit occur when incentivized companies purchase more from in-state suppliers, which may increase employment and business output at the suppliers (commonly referred to as “spillover” effects).²⁹ Induced effects may also occur when incentivized firms pay higher wages to employees. As these individuals spend their earnings on goods and services in the local economy, they create new income for the businesses supplying those purchases (also known as “multiplier” or “ripple” effects).

Two measures of the economic effects of Minnesota’s research tax credit are the net changes in the number of jobs and amount of earnings (wages and benefits) in the state that are attributable to the tax credit. We used Pew Charitable Trust’s economic model to

²⁷ Appendix A discusses the methodology and assumptions we used in this analysis. Appendix A is available online at <http://www.auditor.leg.state.mn.us/ped/2017/researchcreditmethods.pdf>.

²⁸ The Manufacturing industry sector comprises businesses engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products. The Professional, Scientific, and Technical Services industry sector includes companies that specialize in performing professional, scientific, and technical activities for others, such as specialized design services, computer services, and research services. The Management of Companies and Enterprises industry sector consists of establishments that hold equity in companies and enterprises for the purpose of owning a controlling interest or influencing management decisions. It also includes establishments that administer, oversee, and manage establishments of the company or enterprise and that normally undertake the strategic or organizational planning and decision-making role of the company or enterprise. The Wholesale Trade industry sector comprises establishments engaged in selling merchandise and rendering services incidental to the sale of merchandise. Merchandise sold by this sector includes outputs of agriculture, mining, and manufacturing products.

²⁹ Jennifer Weiner, *State Business Tax Incentives: Examining Evidence of their Effectiveness* (Boston: New England Public Policy Center, Federal Reserve Bank of Boston, December 2009), 14.

estimate the net changes in jobs and in earnings. The model accounted for the direct effects, indirect effects, induced effects, and opportunity costs of the tax credit.³⁰

We estimate that Minnesota’s research tax credit increased jobs and earnings annually from 2008 to 2014.

We estimated that Minnesota’s research tax credit created job-years (defined as one job for one year) ranging from 790 in 2008 to 1,540 in 2014 statewide, as shown in Exhibit 2.4.³¹ Our job-year estimates represent new jobs attributable to the tax credit in a particular year (as compared against a hypothetical baseline where Minnesota’s research tax credit did not exist in that year). Job-years cannot be summed to calculate a cumulative total of jobs created. In a separate analysis, however, we estimated that the research tax credit resulted in an overall employment growth of 1,150 jobs from 2008 to 2014.

Exhibit 2.4: Based on our analysis, Minnesota’s research tax credit created statewide job-years and earnings from 2008 to 2014.

Year	Estimated Net Change in Statewide Employment (in job-years) ^a	Estimated Net Change in Statewide Earnings (in millions)
2008	790	\$43
2009	870	\$50
2010	860	\$59
2011	1,150	\$91
2012	1,330	\$101
2013	1,540	\$124
2014	1,540	\$129

NOTES: Our job-year and earnings (wages and benefits) estimates represent the net change in statewide employment and earnings attributable to Minnesota’s research tax credit, accounting for direct effects, indirect effects, induced effects, and opportunity costs in the state. The data used in our analysis are for C corporations in the four industries (Manufacturing industry; Professional, Scientific, and Technical Services industry; Management of Companies and Enterprises industry; and Wholesale Trade industry) that claimed 95 percent of the research tax credit dollars claimed in 2010-2014 by all C corporations.

^a Data are displayed as job-years, which are defined as one job for one year. They cannot be summed to calculate a cumulative total of jobs created. The job-year estimates are rounded to multiples of ten.

SOURCE: Office of the Legislative Auditor, analysis of Department of Revenue and Department of Employment and Economic Development data.

³⁰ Opportunity costs are defined as the loss of potential gain from alternatives when the state chooses an option. According to the Pew Charitable Trusts, because a tax incentive results in decreased revenue for state governments, and states need to balance their budgets, states often “pay for” the incentive with tax increases or spending cuts. In this analysis, the alternatives to the research tax credit included (1) maintaining or increasing government spending on programs such as education or (2) maintaining or implementing a broad-based business tax cut. See “Evaluating Incentives: A Tutorial” (Washington, DC: The Pew Charitable Trusts, 2016), <https://www.evaluatingincentives.org/Concepts>, accessed May 17, 2016.

³¹ The job-year data presented in this section include direct, indirect, and induced job-years and are rounded to multiples of ten.

We estimated the annual net earnings generated in Minnesota from the job-years created annually due to the tax credit between 2008 and 2014. Net earnings is a measure of statewide changes to earnings, accounting for direct effects, indirect effects, induced effects, and opportunity costs of the tax credit. We estimated that the net earnings attributable to the research tax credit ranged from \$43 million in 2008 to \$129 million in 2014, as shown in Exhibit 2.4. Net earnings per new job-year averaged an estimated \$72,000 over the seven-year period in our analysis.

Minnesota’s research tax credit contributed only a small fraction of the total number of jobs and total earnings statewide.

The job-years created by the tax credit ranged from an estimated 0.02 to 0.04 percent of total annual employment (ranging annually from 3.4 million to 3.6 million people) in Minnesota from 2008 to 2014, as shown in Exhibit 2.5. Similarly, the credit contributed an estimated 0.03 to 0.06 percent of the total annual earnings (ranging annually from \$163 billion to \$200 billion) in the state during this seven-year period.

Although the four industries in our analysis account for significant shares of all jobs and earnings statewide, the amount of annual job-years and earnings attributable to the research tax credit is small by comparison. The industries in our analysis accounted for, on average, 21 percent of all employment and 33 percent of all earnings in Minnesota between 2008 and

Exhibit 2.5: Based on our analysis, the research tax credit contributed a small fraction of the total number of jobs and total earnings in Minnesota annually from 2008 to 2014.



NOTE: The data used in our analysis are for C corporations in the four industries (Manufacturing industry; Professional, Scientific, and Technical Services industry; Management of Companies and Enterprises industry; and Wholesale Trade industry) that claimed 95 percent of the research tax credit dollars claimed in 2010-2014 by all C corporations.

SOURCE: Office of the Legislative Auditor, analysis of Department of Revenue and Department of Employment and Economic Development data.

2014. When compared with statewide jobs and earnings in the four industries in our analysis, the jobs and earnings attributable to the research tax credit represented just 0.2 percent or less during the seven-year period of our analysis.

Statewide Fiscal Benefits and Costs

The jobs created between 2008 and 2014 due to Minnesota's research tax credit result in both benefits and costs to the state. On one hand, the added jobs generate income that contributed to a larger tax base for state and local governments. On the other hand, job creation increases the state's population which requires additional public spending to accommodate the accompanying growth in the need for public services.

The Pew Charitable Trusts' model allowed us to estimate the statewide fiscal effects that changes in population and personal income made on state revenues and expenditures. We calculated the annual net fiscal benefit of the research tax credit, which accounts for the benefits of the added jobs and income, less the cost of additional public spending to accommodate the population growth. We then compared the net fiscal benefit with the amount of credit claimed by the C corporations included in our analysis.

We estimated that Minnesota's research tax credit produced statewide fiscal benefits from 2008 to 2014, but the credit did not pay for itself.

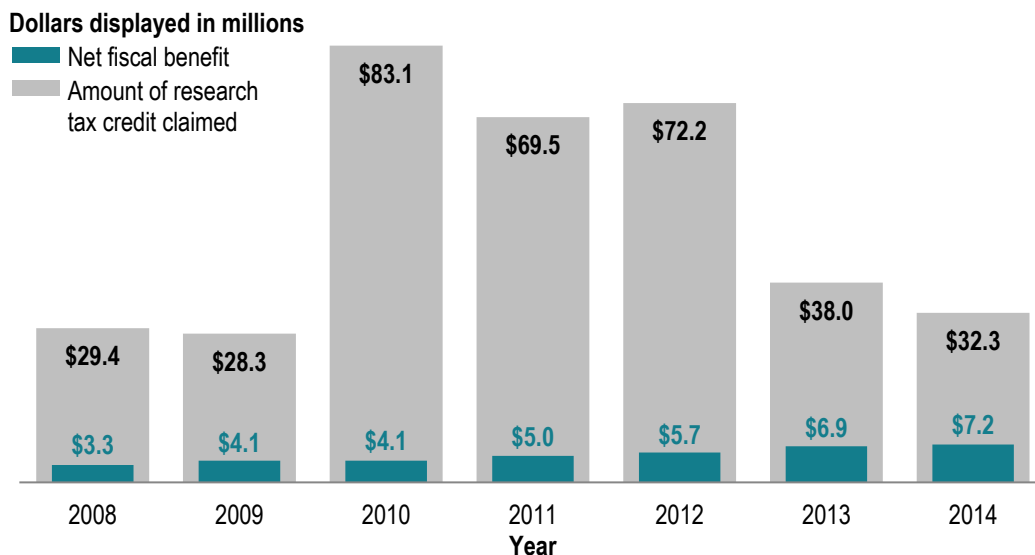
The net fiscal benefits of Minnesota's research tax credit increased from an estimated \$3.3 million in 2008 to \$7.2 million in 2014. On average, the estimated net fiscal benefit averaged \$5.2 million annually over that seven-year period. At the same time, the amount of tax credit claimed annually by the C corporations in our analysis was far higher, as shown in Exhibit 2.6.³² Between 2008 and 2014, the amount of research tax credit claimed by the C corporations in our analysis ranged from \$28 million in 2009 to \$83 million in 2010. The amount of tax credit claimed was highest between 2010 and 2012 when the research tax credit was refundable.

The statewide net fiscal benefits of Minnesota's research tax credit offset only a portion of the amount of tax credit claimed annually by C corporations in 2008 to 2014. The share of the credit offset by its net fiscal benefits ranged from 5 percent in 2010 to 22 percent in 2014, as shown in Exhibit 2.7. From 2008 to 2014, the net fiscal benefit of the credit offset an increasing portion of the amount of tax credit claimed by the C corporations in our analysis. The net fiscal benefits of Minnesota's research tax credit might never offset the entire annual amount of tax credit claimed. However, policymakers have to weigh that against the research tax credit's advantages of job creation and earnings growth.

One way to estimate the cost to the state of Minnesota's research tax credit is by calculating its net fiscal cost. The net fiscal cost of the tax credit represents revenue that the state did not collect because of the research tax credit, less the gain in fiscal benefits. Such foregone revenue means the state cannot allocate this amount to other alternatives, such as government spending on programs or cutting taxes. However, if the research tax credit did not exist in 2014, for example, the state would not have received the estimated \$7 million of net fiscal benefit in that year. We estimated that between 2008 and 2014, the net fiscal cost of the research tax credit averaged \$45 million annually. Over that seven-year period, it

³² The amount of research tax credit claimed annually by the C corporations in our analysis does not reflect the direct effects, indirect effects, induced effects, or opportunity costs of the tax credit.

Exhibit 2.6: The estimated net fiscal benefits of Minnesota’s research tax credit increased between 2008 and 2014, but the amount of tax credit claimed annually by the C corporations in our analysis was far higher.



NOTES: Net fiscal benefits are the statewide fiscal effects attributable to Minnesota’s research tax credit after accounting for the changes that population and personal income make on state and local government revenues and expenditures. The research tax credit was refundable in 2010 to 2012.

The data used in our analysis are for C corporations in the four industries (Manufacturing industry; Professional, Scientific, and Technical Services industry; Management of Companies and Enterprises industry; and Wholesale Trade industry) that claimed 95 percent of the research tax credit dollars claimed in 2010-2014 by all C corporations.

SOURCE: Office of the Legislative Auditor, analysis of Department of Revenue and Department of Employment and Economic Development data.

ranged from \$24 million in 2009 to \$79 million in 2010. The net fiscal cost represented 95 percent of research tax credit claimed in 2010 but diminished to 78 percent in 2014.

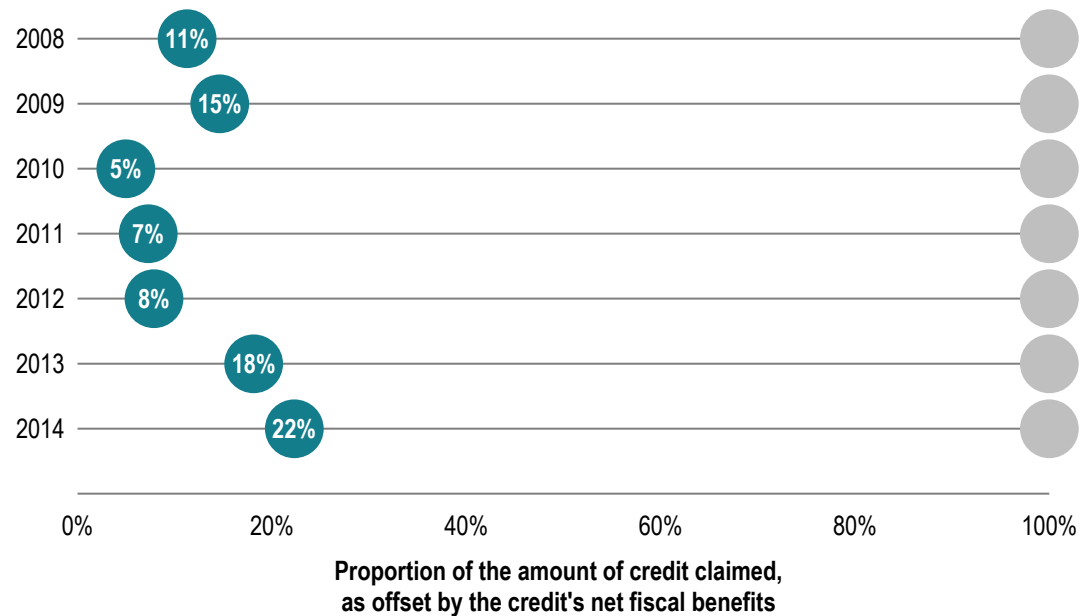
Cost-Effectiveness per Job-Year

To assess the cost-effectiveness of the jobs created due to Minnesota’s research tax credit, we compared the estimated net earnings per job-year with the net fiscal cost per job-year for each year in our analysis.³³ Minnesota’s research tax credit appears to have been relatively cost-effective at creating jobs.

On average, the estimated annual net earnings per job-year exceeded the estimated net fiscal costs per job-year between 2008 and 2014.

³³ As stated earlier, net earnings represent the annual net change in statewide earnings attributable to Minnesota’s research tax credit, accounting for direct effects, indirect effects, induced effects, and opportunity costs. Net fiscal cost represents tax revenue that the state did not collect due to the research tax credit, less the credit’s statewide fiscal benefit.

Exhibit 2.7: The estimated statewide fiscal benefits of Minnesota’s research tax credit only partially offset the amount of tax credit claimed annually by C corporations in 2008 to 2014.



NOTES: The grey dots represent the point at which the research tax credit’s fiscal benefits would offset 100 percent of the amount of tax credit claimed annually. Net fiscal benefits are the statewide fiscal effects of changes attributable to Minnesota’s research tax credit after accounting for the changes that population and personal income make on state and local government revenues and expenditures. The research tax credit was refundable in 2010 to 2012.

The data used in our analysis are for C corporations in the four industries (Manufacturing industry; Professional, Scientific, and Technical Services industry; Management of Companies and Enterprises industry; and Wholesale Trade industry) that claimed 95 percent of the research tax credit dollars claimed in 2010-2014 by all C corporations.

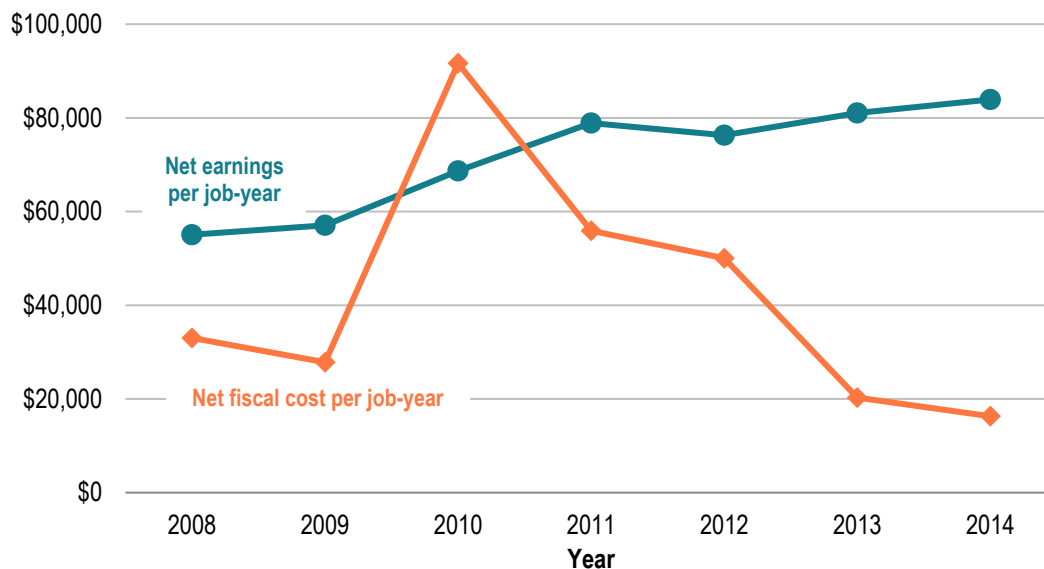
SOURCE: Office of the Legislative Auditor, analysis of Department of Revenue and Department of Employment and Economic Development data.

The estimated net earnings per job-year created due to the research tax credit averaged around \$72,000, while the estimated net fiscal cost per job-year created by the tax credit was less, averaging around \$42,000. The estimated net fiscal cost per job-year was lower than the net earnings per job-year in all years except for 2010, as shown in Exhibit 2.8.

One reason why the net fiscal cost per job-year is low relative to the net earnings per job-year may be because the majority of Minnesota’s research tax credit is claimed by manufacturing companies, whose sales largely occur outside the state. Industries with such sales are known as “export-based” industries.³⁴ Economic research has shown that employment growth in export-based industries has a greater effect on economic growth than

³⁴ For this discussion, an “export” is defined as a sale that occurs outside state lines. Export-based sales bring new dollars into a state’s economy.

Exhibit 2.8: The estimated net fiscal cost per job-year was lower than the net earnings per job-year in all years except 2010.



NOTE: Our employment and earnings estimates represent the annual net change in statewide employment and earnings attributable to Minnesota's research tax credit, accounting for direct effects, indirect effects, induced effects, and opportunity costs in the state. Net fiscal cost represents tax revenue that the state did not collect due to the research tax credit, less the gain in the credit's statewide fiscal benefit.

The data used in our analysis are for C corporations in the four industries (Manufacturing industry; Professional, Scientific, and Technical Services industry; Management of Companies and Enterprises industry; and Wholesale Trade industry) that claimed 95 percent of the research tax credit dollars claimed in 2010-2014 by all C corporations.

SOURCE: Office of the Legislative Auditor, analysis of Department of Revenue and Department of Employment and Economic Development data.

in an industry where sales are confined within the state.³⁵ If companies whose sales stay inside the state expand in response to a tax credit, they reduce potential sales for other firms in that same industry within the state. As a result, net industry employment may not increase, and the tax credit may merely lead to redistributing sales within the industry.

Limitations

Our analysis of the research tax credit's economic effects has limitations. First, our estimates were sensitive to the assumptions we used in our analysis, such as the share of an industry's sales that occur outside Minnesota. We describe our assumptions in Appendix A. Second, our analysis does not factor in all possible benefits and costs of the tax credit. For example, Pew Charitable Trusts' economic model does not measure the proportion of added jobs that go to unemployed local residents; nor does it measure environmental costs of increased business activity in the state.

³⁵ Timothy J. Bartik and Kevin Hollenbeck, "An Analysis of the Employment Effects of the Washington High Technology Business and Occupation (B&O) Tax Credit: Technical Report," Upjohn Institute Working Paper 12-187 (Kalamazoo, MI: W.E. Upjohn Institute for Employment Research, 2012), 21.

A third limitation is the lack of accurate and complete tax-return data for S corporations and partnerships. Without those data, we were unable to fully estimate the effects of Minnesota's research tax credit on the state economy. In addition, the tax-return data available to us for this analysis do not reflect changes to the amount of credit that occurred due to audits or amended tax returns.

Changes to the Research Tax Credit

Some in the private sector have proposed changing Minnesota's research tax credit. Based on our survey of companies that had recently claimed the tax credit, one of the most prevalent reasons cited for not claiming the credit in recent years was that the "benefit of the credit did not provide a sufficient return on investment." This sentiment has led business associations to lobby the Legislature to change the research tax credit. Legislators have considered several such proposals in the past five legislative sessions. Proposals include restoring refundability, offering an alternative simplified credit, and increasing credit rates, among others. Virtually all of these proposals require foregoing additional amounts of revenue to the state's General Fund, according to estimates from the Department of Revenue.

To manage tax incentives and reduce fiscal risks, research indicates that states should analyze both the programs' costs and effectiveness in economic development.³⁶ As the Pew Charitable Trusts wrote, "Because incentive programs often involve such long-term commitments, states can have difficulty changing course if programs cost more than expected or if policymakers conclude that they are not effective economic development tools."³⁷ When changing tax incentives, the research recommends that states should first understand the fiscal risks and how the proposed change could impact the incentive's effectiveness.

The Minnesota Department of Revenue estimates fiscal impacts of proposed changes to the state's research tax credit, but legislators do not have information on to what degree the changes will improve the credit's effectiveness.

When the Legislature discusses proposals to change the research tax credit, the Department of Revenue estimates fiscal impacts on the state's General Fund. For example, one proposal has been to increase the tax credit's rate. To increase the second tier rate from 2.5 percent to 4 percent, the department estimated a loss of \$3.1 million to the General Fund in fiscal year 2017 and \$10.9 million the following year.³⁸

Another recent legislative proposal was to restore the tax credit's refundability. The department estimated that making the credit refundable would have a significant and negative impact on the state's General Fund. Estimated fiscal impacts ranged from \$9.8 million to nearly \$50 million in foregone revenue in fiscal year 2017, depending upon

³⁶ *Reducing Budget Risks: Using Data and Design to Make State Tax Incentives More Predictable* (Washington, DC: The Pew Charitable Trusts, December 2015), 1 and 7.

³⁷ *Ibid.*, 7.

³⁸ Department of Revenue, Tax Research Division, *Research Credit Provisions in House Omnibus Tax Bill, H.F. 848, Third Engrossment*, March 16, 2016.

specifics of the different proposals.³⁹ One proposal would have limited the refund amount to \$15,000 per claimant; the other to \$200,000.

Understanding the fiscal impacts of proposed changes to the credit is important but not sufficient. Minnesota does not currently require analyses of whether a proposed change will affect how well the tax credit works. This means that the state does not know to what degree proposed changes would impact the credit's effectiveness in economic development or capacity to fulfill its purpose. The state collects no information on effects the research tax credit has on companies receiving it. Consequently, the state lacks data to determine whether or how changing the credit's structure would enhance its effectiveness.

RECOMMENDATION

To the extent the Legislature considers changing Minnesota's research tax credit, it should require and review analyses of how well the proposed changes help achieve the credit's purpose.

Presuming the Legislature first specifies the purpose of the research tax credit, as recommended earlier in this chapter, it should take two key steps. One would be requiring the Department of Revenue or another entity to analyze changes to the tax credit. The second step would be conducting a legislative review of the tax credit after a specified period. These steps are needed to ensure transparency of the tax credit and accountability for its outcomes.

For the first step, the Legislature should require analyses both before and after a change is implemented. Prior to a change taking effect, the department or other analysts should develop a process for evaluating it.⁴⁰ For Minnesota, this could include establishing baseline information on the current effects of the tax credit, such as the information on job-years presented earlier in this chapter. The baseline would become a point of comparison to subsequently determine how well the approved change achieves the tax credit's objectives.

The evaluation process would include identifying the data needed to monitor the effectiveness of the proposed change as well as how to collect and analyze those data. Data collection could involve, for example, requiring beneficiaries of the credit to provide information that substantiates effects the credit has had on their company. As an example of this, the state of Washington required its credit recipients to respond to an annual survey related to the credit. The survey included questions on the number of new research projects, numbers of patents or copyrights associated with the research for which the credit was claimed, and information on the company's jobs and their wages and benefits.

The second key step for the Legislature is to require, at the same time it initially approves a change to the credit, a future legislative review of that change. One way to do this would be to set a "sunset" date when the approved change would either be reapproved or allowed to

³⁹ Department of Revenue, Tax Research Division, *Research Credit Provisions in House Omnibus Tax Bill, H.F. 848, Third Engrossment*, March 16, 2016.; and Department of Revenue, Tax Research Division, *Research Credit Proposal: Proposed Amendment to H.F. 848, 1st Unofficial Engrossment*, May 17, 2016.

⁴⁰ Researchers suggest that evaluating tax credits requires estimating the effects of the credit, such as through econometric modeling. For example, see Jennifer Weiner, *State Business Tax Incentives: Examining Evidence of their Effectiveness* (Boston: New England Public Policy Center, Federal Reserve Bank of Boston, December 2009), 3.

expire. Results from the analytic process described above would provide information on the credit's effectiveness. The information would allow legislators to make an informed decision on whether to continue the credit as amended or further modify it.

Considerations before Changing the Credit

Changes to the research tax credit should be designed in ways that not only achieve the credit's purpose but also control costs and make them predictable. When changing the tax credit, the Legislature should consider how to appropriately structure the change. Although legislators could consider any number of structural improvements, we focus on three: targeting the research tax credit, limiting the credit's costs, and linking the change to claimants' performance.

Target the tax credit. The Legislature should state the purpose of the change and target it to those businesses best suited to achieve that purpose. For example, if the objective is to assist start-up businesses to employ more workers, the state should target the credit to companies that meet criteria on size, age, and job growth. If, for instance, the Legislature were to consider restoring the credit's refundability, it could target refundability to such companies. Similarly, if the Legislature were to consider changing the tax credit's rates, it could focus the change on the first-tier rate of the tax credit, which has substantial effects on start-up businesses.

Limit the cost of the tax credit. Controlling costs requires capping the amount of annual revenues foregone due to the tax credit. For the example of restoring refundability for start-up businesses, the state could cap the amount of the refund. The cap could limit the amount refunded per claimant. Alternatively, it could limit the total annual amount of the credit statewide. With this alternative, if more companies claimed the credit than the amount capped, the state could distribute refunds at the end of the tax filing year in proportion to amounts claimed. Caps on tax credit amounts allow the state to forecast and control expected costs.

Link the change to actual performance. The Legislature could link tax credit changes to company performance. This means designing changes to the tax credit in ways that make receipt of the tax credit contingent upon company performance. Such a design would help ensure that companies meet the tax credit's objectives before they receive the tax credit. In the example of restoring refundability for start-up businesses that create jobs, the state could require companies to supply evidence that job growth occurred due to the additional benefit of refundability. For instance, a start-up company could estimate that, with added help from the tax credit, it could afford to hire an additional research scientist. To receive the tax credit at the end of its tax year, the company would have to produce evidence of its new research hire. Structuring the research tax credit this way would require advance notification to potential recipients so that they could prepare the appropriate substantiation before claiming the credit.

No Recommendation on Recent Proposals

In this evaluation report, we are not recommending for or against any of the recently proposed changes to Minnesota's research tax credit, such as increasing tax credit rates or restoring refundability. This is for three reasons. First, changes to tax credit policy are within the Legislature's purview.

Second, earlier in this chapter, we recommended that the Legislature should set explicit and measurable objectives for the tax credit. Without objectives, it is difficult to determine whether changes to the tax credit would fulfill intended purposes.

Third, Minnesota has not yet measured benefits to the state for any of the proposed changes to the research tax credit. We could not recommend changing the credit without first being able to analyze the tradeoff between a change's fiscal costs and its economic and fiscal benefits to the state. Results of our analysis presented earlier in the chapter provide one way of starting to gauge the tax credit's effects. However, as we discuss in more detail in Chapter 3, data have not previously been available for a complete analysis.

Chapter 3: Administration

The Minnesota Department of Revenue administers and enforces the collection of taxes in the state. This statutory duty includes reviewing and auditing taxpayers' tax returns, including those with claims for research tax credits.¹

The Department of Revenue has defined its mission as “working together to fund Minnesota’s future.”² The department identified five strategies for achieving its mission. The two strategies most relevant to this evaluation are to (1) “provide customers with information, education, and services” and (2) “listen to our customers, [and] identify improvements to the revenue system.”³ Overall, we found problems in certain aspects of the department’s administration of the research tax credit, which are relevant to achieving parts of its mission.

Aspects of the Minnesota Department of Revenue’s administration of the research tax credit lack what is necessary to make the tax credit understandable and workable for taxpayers.

The aspects of administration where we have concerns are: insufficient usable data on the research tax credit, lengthy or costly audits of tax returns, and inadequate tax credit information for taxpayers. In the remainder of this chapter, we examine these three aspects of the department’s administration of the research tax credit. We did not evaluate other components of the Department of Revenue’s administrative responsibilities, such as developing tax forms, collecting taxes, or enforcing tax laws.

Data Issues

An important component of evaluating the research tax credit is analyzing data on the credit and its use. We identified issues with the department data available on the tax credit.

Although the Minnesota Department of Revenue is not legally required to evaluate the research tax credit, the department’s collection of data on the Minnesota research tax credit is insufficient to allow evaluation of the credit’s performance.

The data issues and inconsistencies that affected our evaluation also present broader implications beyond our report. The issues represent future problems for the Legislature and others interested in how well the research tax credit is working. We examine below issues of incomplete analysis of the research tax credit and certain unreliable data.

¹ *Minnesota Statutes* 2016, 270C.03, subd. 1.

² Minnesota Management and Budget, “Department of Revenue Agency Profile,” *State of Minnesota 2018-19 Biennial Budget* (St. Paul, October 2016), 1.

³ *Ibid.*, 2.

Incomplete Analysis

The Department of Revenue reported that it collects data from tax returns as needed to support its responsibility to administer and enforce the assessment and collection of taxes. However, the department does not collect data specific to the research tax credit other than what taxpayers report on their tax forms, which limits analysis of the credit. Additionally, the department does not capture every line of every tax return into its databases. As a result, obtaining data on taxpayers' use of the tax credit involves database developers collecting data from numerous tables spread out through multiple databases and data warehouses.

The department has not committed staff resources to ongoing analysis of the research tax credit. Department officials said they have not had ongoing business reasons to allocate resources for collecting and analyzing data specific to the tax credit. When the department receives information requests, such as legislative requests to analyze the revenue impact of the tax credit, staff collect the necessary data from original tax forms and compile them for analysis. Such efforts may require entering data from tax forms by hand. The department does not have a readily available data set or trend data on research tax-credit claims. It produced such an analysis for tax data filed in 2012, which the department considers sufficient for its purposes. However, the data it compiled were largely for only that one year.

Department officials reported that evaluating the research tax credit requires more precise data on the full population of credit claimants than is necessary for the department to administer and enforce the collection of taxes. The department could not provide us with descriptive information on changes in research credit amounts and specific corporate or individual tax-credit claimants over time. We constructed our own database using electronic data and entering by hand the images of many thousands of tax forms supplied by the department. We received from the department "RD" forms (the tax form taxpayers use to calculate their research tax credit) for most C corporations as well as for some shareholders and partners. However, RD forms were unavailable for many other taxpayers who claimed the credit. Not all taxpayers filed the form even though the department and the RD form instruct taxpayers to attach the form to their income tax return.

The department explained conditions under which businesses could receive the tax credit even though they did not file an RD form. One example is companies that are members of a "unitary group" (meaning, companies that are members of a group of two or more corporations that meet certain requirements for common ownership). If one company in a unitary group has more research tax credit than it can use against its tax, other members of that unitary group are allowed to use the unused credit against their tax liability—even if those companies have no qualified research expenses and may not complete the RD form.

In addition, the process that individual taxpayers follow in submitting tax returns does not require them to submit the RD form. The S corporation or partnership itself submits an RD form along with its other tax returns; it passes to its individual shareholders or partners a different tax form indicating that individual's portion of the research tax credit. In turn, individual taxpayers submit a different tax form indicating their share of the credit amount and verifying the reduction in their tax liability. The RD form is not part of their submission.

In the end, we were able to use the tax form data for only C corporations. Data for individual claimants from S corporations and partnerships were largely incomplete. Our

analysis suggests that the vast majority of individual taxpayers' RD forms for tax years 2010 through 2012 had not been filed or were otherwise unavailable.⁴ In addition, smaller but still substantial numbers of C corporations' RD forms were not available.

Certain Unreliable Data

We have concerns about the reliability of certain department data on the research tax credit, and our concerns suggest problems for future analyses of the tax credit. For instance, to conduct our survey of taxpayers, we requested from the department contact information for businesses that had claimed the credit in recent tax years.⁵ However, the Department of Revenue does not maintain lists of taxpayers that claim the research tax credit. Instead, the department identified tax returns over a four-year period that listed an amount on the forms' research credit line.

The resulting data, however, were incomplete and contained inaccuracies. For example, the data included some businesses that should not have been included. The mailing list contained 136 C corporations that were not in a subsequent data set containing tax forms from companies that had claimed the credit between 2010 and 2014.⁶ This represents 17 percent of the C corporations on the mailing list. On the other hand, the department data excluded businesses that should have been included in the mailing list. We estimate that the number of C corporations not on the list was at least 65 and could have been up to 196 companies. Using tax return forms, we verified that these companies had in fact claimed the research tax credit during 2012 to 2014.⁷ One was a business that contacted us and reported that it had received the tax credit in the past; it requested to complete our survey.⁸

The Department of Revenue could not provide updated information on tax credit amounts that were increased or decreased due to amended or audited tax returns. The department does not routinely collect such data for specific tax credits listed on tax forms. Following department audits of tax returns, resulting changes may be made to multiple aspects of the return, not solely the tax credit. The department does not track whether a specific change in tax is attributable to the research tax credit. Consequently, we cannot quantify how much the tax credit amounts would have changed if the data accounted for amended or audited returns. However, we believe this could be significant based on a review we conducted of 15 files from audits the department completed in 2014 to 2015 and interviews we held with

⁴ Individual partners or shareholders claim the research tax credit using Minnesota's M1C or M1 form; the entity that is the partnership or S corporation does not itself claim a tax credit, as Chapter 1 explained.

⁵ We discuss the methodology of our survey in an online appendix, available at <http://www.auditor.leg.state.mn.us/ped/2017/researchcreditsurvey.pdf>.

⁶ Among these 136 C corporations, 25 responded to our survey as if they had claimed the tax credit. However, none of the 136 were among those for whom we received tax forms containing tax credit claims.

⁷ The uncertainty in our estimate arises from differences between the tax year and the tax-return filed year. The differences prevented us from matching with full certainty taxpayer data coming from two different sources.

⁸ The Department of Revenue offered explanations for differences between the mailing list and subsequent tax form data we received. First, taxpayers may have mistakenly put an amount on the wrong line of the tax form that resulted in them being included in the mailing list even though they had not claimed the credit. Second, taxpayers may have claimed the credit on an amended tax form, not the original one that was used to compile the mailing list.

representatives from a small number of businesses that had been audited.⁹ Our analyses showed that audits have resulted in significantly reduced tax credit amounts as well as tax credit increases. Furthermore, the department's published data on the use of research tax credits do not include changes in tax credit amounts due to amended returns or audits.

RECOMMENDATION

The Legislature should authorize and require the Minnesota Department of Revenue to collect and maintain data sufficient to allow periodic evaluations of the research tax credit.

Complete, accurate information on the use of the research tax credit is necessary to analyze the credit's effects. The specific data to be collected should be based on the tax credit's objectives set by the Legislature, as we recommended in Chapter 2. Once objectives are clearly articulated, the Legislature should direct a third party to identify measures for determining how well the tax credit has met the objectives. The third party could be the Department of Revenue or some other entity. Legislation should provide for routinely collecting the necessary data and conducting the analyses on a recurring basis. Although the frequency of such analyses would be subject to data needs and the availability of staff resources, the analyses would be particularly important following legislative changes to the tax credit.

Periodic evaluations are important because tax expenditures, such as the research credit, are less visible and receive less rigorous legislative review than programs funded with biennial appropriations. A 2011 analysis, contracted for by the Department of Revenue, concluded that tax expenditures receive less scrutiny than direct expenditures because they are outside the Legislature's normal budget process.¹⁰ A 2013 House Research study determined that there is a bias for retaining tax expenditure laws.¹¹ The study says this is because legislatures commonly make tax expenditures "permanent features of the tax law that remain in place until modified or repealed by a future legislature."¹² By contrast, direct spending programs receive appropriations that a legislature typically reviews biennially.

Minnesota's experience affirms that the research tax credit has become an enduring fixture in state tax law, despite a lack of evidence-based analyses of the credit's effectiveness. Over the 35 years since the law's inception, key elements of the law's structure have changed just five times, as Chapter 1 showed. In the past five years, the Minnesota Legislature has discussed changing the research tax credit, but analyses of the tax credit's effectiveness have not been available.

⁹ The number of interviews is too small for the results to be representative of all tax-credit claimants that had recently been audited; however, we learned valuable insights and perspectives from the interviews. The nine businesses we interviewed agreed to let us identify them: Cargill, Control Concepts, Ecolab, General Mills, Graco, IBM, Medisyn Technologies, Torax Medical, and Winnebago Manufacturing.

¹⁰ Minnesota Department of Revenue, with assistance from Marsha Blumenthal, Laura Kalambokidis, P. Jay Kiedrowski, John Spry, Judy Temple, and Jenny Wahl, *Tax Expenditure Review Report: Bringing Tax Expenditures Into the Budget Process* (St. Paul, February 2011), 2-5 and 28.

¹¹ Minnesota House of Representatives Research Department, *A Review of Selected Tax Expenditures* (St. Paul, November 2013), 10.

¹² *Ibid.*

To fully evaluate the research tax credit, the analysts directed by the Legislature will need more information than the Department of Revenue currently collects from taxpayers. As one example, analysts would need a database of completed Schedule RD forms from *all* individual taxpayers filing for the tax credit. As another, analysts may need legal authority to collect certain data from companies that receive the tax credit. For instance, depending on the objectives that the Legislature specifies for the tax credit, the evaluation may require information on jobs created, jobs retained, or compensation for those jobs. These data go beyond the scope of what the Department of Revenue currently collects.

Other states have collected data of this nature for evaluating tax credits. For instance, when Washington’s research tax credit was in place, the state required corporations receiving that tax credit to respond to an annual survey conducted by the revenue department.¹³ On the survey, companies reported information such as their previous year’s amount of credit; number of new products or research projects; and number of patents, trademarks, and copyrights associated with the research for which the credit was claimed.

Given the complexity of the tax credit, the Legislature may have to appropriate additional resources to the Department of Revenue to collect data for periodic evaluations of the research tax credit. We anticipate that some amount of staff time beyond the department’s current staff levels may be necessary. Because the tax credit generates significant amounts of foregone revenues that affect the state’s General Fund, we believe the expenditures to evaluate the success of the tax credit are justified.

Furthermore, conducting periodic evaluations of the tax credit will likely require legislative action regarding data. The Legislature will have to authorize data sharing between state agencies. The agencies involved will have to develop data-sharing agreements and ways of linking data among them. This is because certain data, such as numbers of employees in the businesses claiming the research tax credit, are available only outside the Department of Revenue’s databases.

Audits

An important part of the Minnesota Department of Revenue’s oversight function is auditing tax returns, including those with claims for the research tax credit. The department conducts audits to ensure that tax calculations are accurate and that taxpayers’ liabilities are correct—that is, they pay the right amount. The department also offers an appeals process for taxpayers who disagree with audit outcomes.¹⁴ Most features of the department’s audit process are classified by state law as “not public” information.¹⁵ Although we were able to review the department’s audit process, we are obligated to protect the data and cannot describe the process in detail. However, we can make general points and draw conclusions without revealing classified information.

¹³ *Washington Administrative Code* 2016, Title 458, Chapter 20, Section 268 Annual Surveys for Certain Tax Preferences. Washington’s research tax credit expired in 2015.

¹⁴ A taxpayer who disagrees with the outcome of an audit has two possible venues for appealing the decision: the Department of Revenue’s Administrative Appeals Division or the Minnesota Tax Court. The department’s “administrative appeals” process is designed as an informal, less costly avenue than litigation. The Department of Revenue’s internal appeals process receives relatively few appeals related to the research tax credit, and appeals to the Tax Court are rare.

¹⁵ *Minnesota Statutes* 2016, 270B.02.

Administering Audits

To learn about the Department of Revenue's process for auditing tax returns that contain research tax credits, we employed several research methods. We interviewed department staff, officials from nine businesses that had claimed the tax credit, and staff from public accounting firms and other tax consultants who help taxpayers claim Minnesota's research tax credit. We read relevant materials, including statutes and the department's *Corporate Audit Manual*. For a better understanding of companies' viewpoints, we surveyed businesses that had claimed the research tax credit at least once between 2012 and 2014.¹⁶ As previously mentioned, we reviewed files from a sample of 15 audits involving the research tax credit that were completed in 2014 and 2015. These methods revealed some common themes related to taxpayers' experience with Department of Revenue audits.

The Minnesota Department of Revenue does not audit returns for the sole purpose of reviewing the research tax credit.

In its audits, the department does not separately audit claims for the research tax credit from other items on the tax return. Rather, the department treats tax returns holistically and audits simultaneously all potential areas of noncompliance on the return. The department tracks only its overall audits of corporate tax returns, not the subset of audits that includes issues related to the research tax credit. At our request, the department estimated that audits containing research credit issues comprised an average of about 4 percent of its completed audits from 2012 through 2015.

Attitudes among the companies we surveyed and interviewed on the audit experience were mixed. Among the survey respondents that indicated that the Department of Revenue had completed at least one audit of their 2012, 2013, or 2014 research tax credit, 38 percent reported having had a positive experience with their most recently completed audit. Thirty-two percent reported a negative experience. One survey respondent said that the “[Minnesota Department of] Revenue auditor was very helpful in helping us get the [research] tax credit that we had coming. He found some errors in our calculations and information, was able to explain our errors and moved the process forward.” In contrast, some of the business representatives we interviewed had negative experiences. One representative indicated that the company's audit experience was sufficiently negative that he would not file for the research tax credit in the future. Others said that despite difficulties with their audit, they intended to continue claiming research credits in the future.

The Minnesota Department of Revenue's audit process can create excessive administrative burdens for audited businesses.

¹⁶ We surveyed 1,431 businesses that claimed Minnesota's research tax credit in at least one of tax years 2012, 2013, or 2014. We received responses from 493 companies (a 34.5 percent response rate). However, the survey results are not generalizable to all claimants of Minnesota's research tax credit because the list of claimants was incomplete, and it included taxpayers that had not claimed the credit. Ninety-four survey respondents (19 percent of all survey respondents) indicated that their company underwent at least one Minnesota Department of Revenue audit of the company's research tax credit claimed in tax years 2012-2014. Sixty-eight percent of these companies (64 companies) indicated that the Minnesota Department of Revenue had *completed* at least one audit of their tax returns from those years. We weighted the survey results to reflect the probability of responding to the survey, based on the company type and the most recent year the company claimed Minnesota's research tax credit.

As part of our evaluation, we analyzed the length of time that audits took. We asked business representatives about the timing and nature of department auditors' requests for information from claimants of research tax credits. We also analyzed companies' costs for complying with audits.

Length of Audits and Extensions to Statute of Limitations

We examined the length of time that audits took as reported by our survey respondents and in a sample of 15 audit files we reviewed. Approximately 78 percent of our survey respondents for whom the Department of Revenue had completed an audit involving a 2012, 2013, or 2014 research tax-credit claim reported that their audits were completed within a year. The remaining 22 percent reported that their audits took longer than 12 months to complete, with one respondent reporting that the audit took 23 months. In our sample of audit files, the average audit length was slightly more than one year (383 days). Our sample included six audits that took at least 365 days to complete, with the longest taking 780 days.¹⁷

Many of the businesses we interviewed said the audits took far longer than they expected and required inordinate staff resources. Moreover, some businesses did not understand why it took weeks or months for the auditors to respond to information the businesses had provided at the auditors' request.

The department's stated goal is to complete 75 percent of all field audits—not just those involving the research tax credit—within one year.¹⁸ According to department data depicted in Exhibit 3.1, the department has not met this goal since at least calendar year 2012. The department improved its timeliness rate from 2014 to 2016, but it is not currently completing timely audits at the same rate it did in 2012 or 2013.

In general, state law limits to 3.5 years the time allowed for the department to adjust a tax return (such as making changes resulting from an audit) filed in any given tax year.¹⁹ For instance, for a return filed in December 2010, the department can legally adjust the tax return until 3.5 years later, or June 2014. To adjust a tax return after the 3.5-year time limit, the department has authority to request taxpayers to sign a waiver that allows the department to take additional time to adjust the tax return. Waivers typically specify the agreed upon length of the time extension.

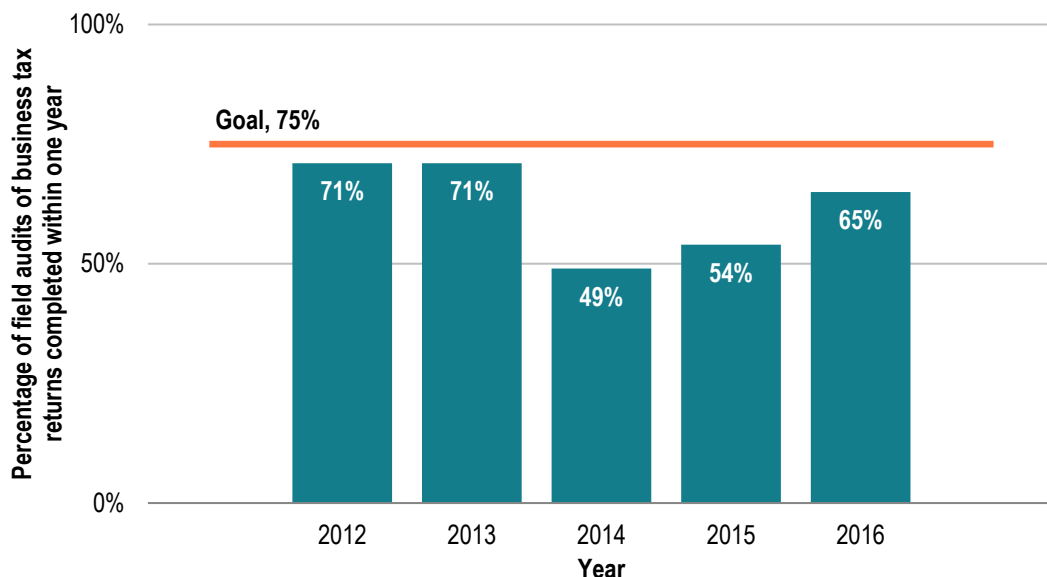
The waiver forms instruct taxpayers that, if they fail to sign the waiver, the department may adjust the tax return using its available information. Five of the 15 audit files we reviewed contained signed waivers that allowed the department to exceed the 3.5-year limit; three other audit files indicated that the 3.5-year limit was extended for other reasons, such as the filing of an amended Minnesota tax return. In one case, a business signed four waivers that ultimately extended the statute of limitations 13 months past its original end date.

¹⁷ These calculations are based on 14 of the 15 audit files. We could not ascertain the start date for 1 of the 15 audits from the materials provided by the Department of Revenue.

¹⁸ A "field audit" is one that involves an auditor visiting in person a taxpayer's place of business. By contrast, an "office audit" does not involve such a visit. See *Minnesota Statutes* 2016, 289A.38, subd. 9. We did not ask survey respondents whether the audits of their research tax credits were field or office audits. Therefore, we do not know whether the subset of audits that involve the research tax credit are meeting the department's timeliness goal.

¹⁹ *Minnesota Statutes* 2016, 289A.38, subd. 1. Certain circumstances trigger different time limits. For instance, the department could assess additional taxes within 6.5 years of returns' due dates or filing dates if taxpayers omit gross income in excess of 25 percent of the amount reported on the tax return.

Exhibit 3.1: Since 2012, the Minnesota Department of Revenue has not met its goal of completing 75 percent of its field audits of business tax returns within one year, but it has improved its completion rate in recent years.



NOTES: These data reflect field audits of all business tax returns, not just returns involving the research tax credit. A “field audit” involves an auditor’s in-person visit to a taxpayer’s place of business. “Business tax returns” includes tax returns filed by C corporations, S corporations, and partnerships and certain portions of the individual income tax returns of shareholders in S corporations and individual partners in a partnership.

SOURCE: Office of the Legislative Auditor, analysis of Department of Revenue data.

One business official we interviewed expressed frustration that the department *began* its audit process within a short time of the statutory time limit. He reported that the company supplied a tremendous amount of requested data to the department within six weeks of the auditor’s initial request for information related to the research tax credit. However, because the auditor started asking questions related to the research tax credit when he was only two months away from the 3.5-year limit, the auditor discontinued the audit after the taxpayer declined to sign a waiver; the auditor subsequently disallowed half of the company’s research expenses. The company official expressed frustration that he was asked to sign a waiver due to the department’s tardiness in beginning to audit the research tax credit. After negotiations, the final settlement resulted in a 10 percent adjustment to the credit amount.²⁰ Although waivers to the statute of limitations are optional, taxpayers do not always view them that way. Representatives of one large business told us that they felt obliged to sign a waiver. The company thought that the department would deny its entire research tax credit if it did not sign the waiver.

²⁰ Not all audits involving the research tax credit result in a reduction of the credit. Two of the 15 audit files we reviewed showed that a taxpayer’s credit amount increased as a result of the audit.

Burdensome Requests for Information

While many survey respondents that had been audited reported acceptable experiences with the Department of Revenue's requests for information, significant shares did not. Approximately 31 percent indicated that the amount of documentation requested by the department was unreasonable. About 46 percent thought the amount requested was reasonable. Similarly, 37 percent reported that compliance with the audit required an unreasonable amount of staff resources.

Officials from several of the businesses we interviewed said department auditors made repeated requests for information that the business had previously provided. Officials also said that department auditors requested information in different formats than the business typically recorded for its own business purposes, despite some companies' understanding that they were not legally required to reformat such information.

Some business officials indicated that compliance with audits took inordinate amounts time. On average, our survey respondents reported spending approximately 124 hours of personnel time on Minnesota Department of Revenue audits. Among the business officials we interviewed, one said the audit lasted ten months and required the company's president to put in more than 600 hours of his time to retrospectively reconstruct his time allocation on a research project using old daily calendars and e-mails. An official from another business reported that the business spent about 1,000 hours on the audit. Among those we interviewed, the time burden for an audit tended to be greater for small-sized businesses and less for large corporations, possibly because large companies have in-house staff that dedicate their time to audits.

The Department of Revenue conducted a focus group of business representatives in 2013 to assess the department's outreach to small businesses. The study did not focus specifically on the research tax credit, but some of the participants' comments about the audit process were similar to what we heard from our interviewees and survey respondents. Below are selected comments from the department's focus group participants:

“[H]elp me by simplifying the process to be compliant with the agency.”

“The audit process is too long, and the result – lost job opportunities because of the cost associated with the audit.”

“Corporate Tax, I'm unclear of how it works. A video, or anything like that, would be helpful.”

“I was relieved to go through the audit process to know I was doing things correctly.”

Audit Costs

Our survey respondents' views were split on whether the cost to the business of complying with the audit was reasonable. Approximately 38 percent that had at least one audit completed by the Minnesota Department of Revenue thought that the costs of complying with the audit were unreasonable, but 42 percent thought that costs were reasonable. On average, survey respondents reported spending approximately \$10,000 on personnel costs for Department of Revenue audits. The median of such costs was \$6,000. In addition to personnel costs, survey respondents reported spending between \$250 and \$100,000 on “other” expenses related to the audit. The company that spent \$100,000 described the other

expenses as “professional fees to respond to the numerous [information document requests] related to the R&D credit portion of the audit. This included reformatting existing reports, preparing additional summaries and calculations, and traveling to St. Paul to meet with the auditors.”

Some of the business officials we interviewed reported that the costs to comply with an audit diminished the benefit they received from the research tax credit. Representatives of a small-sized business we interviewed reported that the business spent about \$71,000 on the audit. The company broke even—the amount of the credit received was about the same as the amount spent defending the credit during the audit. Officials from another business we interviewed reported spending about \$20,000 worth of internal time on the audit and another \$5,000 for assistance from its accounting firm. The officials said that the amount they paid to the accounting firm was more than the amount of their adjusted tax credit.

Information for Taxpayers

In its administration of state taxes, the Department of Revenue provides information and services to taxpayers, elected officials, and other stakeholders. The department considers one of its five administrative strategies to be providing taxpayers with the “information and services they need to voluntarily comply with tax laws.”²¹

To evaluate information on the research tax credit, we reviewed the department’s website and YouTube video for explanations on what taxpayers should collect to prepare themselves to substantiate their claim for the research tax credit. We also reviewed sections of the department’s *Corporate Audit Manual*. In addition, in our company interviews and survey of companies, we asked for businesses’ viewpoints on the information and guidance available to them.

The Minnesota Department of Revenue provides limited guidance to help taxpayers understand the documentation required to substantiate their claims for the state’s research tax credit.

Below we discuss the department’s online sources of taxpayer information regarding the research tax credit. We compare the online information with instructions to department auditors from the department’s *Corporate Audit Manual*. In the final section, we present company perspectives on taxpayer information and make a recommendation for improvement.

Online Information

The department’s website provides background information on the research credit but does not always fully explain the information. As an example, the website says “expenditures are eligible only if the cost of the activity may be deducted under [Internal Revenue Code] Section 174.” It does not explain in plain language the relevance of this restriction to a taxpayer. Section 174 of the Internal Revenue Code helps define research activities as that term is used in federal law (and, therefore, state law). For instance, expenditures for

²¹ Minnesota Management and Budget, “Department of Revenue Agency Profile,” *State of Minnesota 2018-19 Biennial Budget* (St. Paul, October 2016), 3-4.

activities that are ineligible under Section 174, such as acquiring land, cannot be expenditures for qualified research in calculating the research tax credit.

Regarding information on audits, the department provides a level of specificity in certain internal documents that is not available on the department's public website.²² The department maintains a *Corporate Audit Manual*, which department auditors use for training and guidance throughout the course of their audits.²³ One example of the contrast between the audit manual and the department's online information pertains to documents that an auditor might request of taxpayers. Certain of these documents would serve as evidence that the company followed a process of experimentation to eliminate uncertainty, as required by law.²⁴ The department's audit manual lists examples of these documents including procedure manuals, lab schedules, and summary data from experiments the company conducted. On the other hand, the website describes "required documentation" by suggesting in part that taxpayers keep "a description of the process of experimentation, including the start- and end-dates." The website did not (as of late 2016) provide the details listed in the audit manual, as Exhibit 3.2 describes.

Further, the department's audit manual lists information that department auditors might request of taxpayers. As part of these requests, the audit manual suggests that auditors ask the company to provide a chronological timeline of all the steps it took in developing or improving its product or business process. The website and YouTube video, by contrast, lack this specificity. The website suggests keeping "detailed records and documentation for all expenses" the company claims for the research credit. It gives only general examples, such as "records that identify each business component where [the company] claimed research expenses."

Another example of the contrast in specificity between online resources and the audit manual is information on employee work related to companies' research projects. The department's website says companies should keep "A list of...employees [whose wages are claimed for the credit] with job titles, position descriptions, wages, percentage of time, and total wages claimed." The YouTube video has the same information. The department's internal audit manual, however, provides additional detail. It instructs auditors to seek documentation on what a sample of employees *did* on the research project, timesheets for those employees' time on the project, and any other documentation that ties them to the research activity.

Furthermore, the *Corporate Audit Manual* provides detailed definitions of eligible research expenses, such as supplies, while the website does not. The manual defines supplies as tangible property used by company employees in the research process; it also specifies

²² Parts of the department's *Corporate Audit Manual* contain information classified as "not public"; however, the section on the research tax credit is public information.

²³ The department has incorporated into its manual some of the Internal Revenue Service's publicly available information regarding those parts of the federal research credit that also pertain to Minnesota's credit. This includes portions of federal audit techniques guides. One is: Internal Revenue Service, *Research Credit Claims Audit Techniques Guide (RCCATG): Credit for Increasing Research Activities IRC § 41** (Washington, DC, 2008), <https://www.irs.gov/businesses/research-credit-claims-audit-techniques-guide-rccatg-credit-for-increasing-research-activities-41>, accessed January 9, 2016.

²⁴ The "process of experimentation" refers to a company's research projects that could qualify for the tax credit if its research activity meets the experimentation test. According to the Department of Revenue's internal guidance, to meet the test, a company's research must have three core elements: (1) identification of uncertainty in the development or improvement of a product being researched, (2) alternatives intended to eliminate that uncertainty, and (3) a process for evaluating those alternatives.

Exhibit 3.2: The Department of Revenue’s internal public information on the research tax credit is more specific than its information that is readily accessible to taxpayers.

Topic	Department of Revenue <i>Corporate Audit Manual</i>	Information for Taxpayers from Department of Revenue Website
Documentation to support that the taxpayer followed the legal requirements for a “process of experimentation” to eliminate uncertainty	<ul style="list-style-type: none"> Provide relevant supporting documentation, for example, a “procedure manual, project checklist, technical abstract, lab schedule, lab report, project status report, summary experiment data results, etc. for products or business components developed or improved, and claimed for the research credit during the period under examination.” 	<ul style="list-style-type: none"> The website does not list specific documents to support a process of experimentation.
Information requests of taxpayers	<ul style="list-style-type: none"> Present a description, preferably in chronological order, of “all the steps or activities undertaken when developing or improving a product or business component (i.e., present a time-line description of the company’s development processes and procedures).” 	<ul style="list-style-type: none"> Present “detailed records and documentation for all expenses” claimed, such as: “description of the process of experimentation, including the start- and end-dates,” and “records that identify each business component where [the company] claimed research expenses.”
Information on employee work that is related to the company’s research project(s)	<ul style="list-style-type: none"> Obtain a list of “all the names and work titles of the employees whose wages are included in the computation of the deduction.” For a sample of employees, “ask for the documentation of what they did, timesheets covering the time, and any other documentation that ties them to the R&D credit claim.” 	<ul style="list-style-type: none"> Provide a list of “employees with job titles, position descriptions, wages, percentage of time, and total wages claimed for the credit.”
Definition of “supplies”	<ul style="list-style-type: none"> To be eligible as a research expense, supplies must be: tangible property; used in conducting qualified research; and “used or consumed by an employee of the company performing qualified activities.” Supplies do not include: “land and land improvements”; “capital equipment”; or “general and administrative supplies,” such as travel or telephone expenses. 	<ul style="list-style-type: none"> The department’s website does not define supplies but suggests retaining “invoices for all supplies” claimed for the credit.

SOURCE: Office of the Legislative Auditor, based on Minnesota Department of Revenue, *Corporate Audit Manual* (St. Paul, June 23, 2016), 922-951; and Minnesota Department of Revenue, webpage on “Credit for Increasing Research Activities,” http://www.revenue.state.mn.us/businesses/corporation/Pages/Research_Credit.aspx, accessed October 26, 2016.

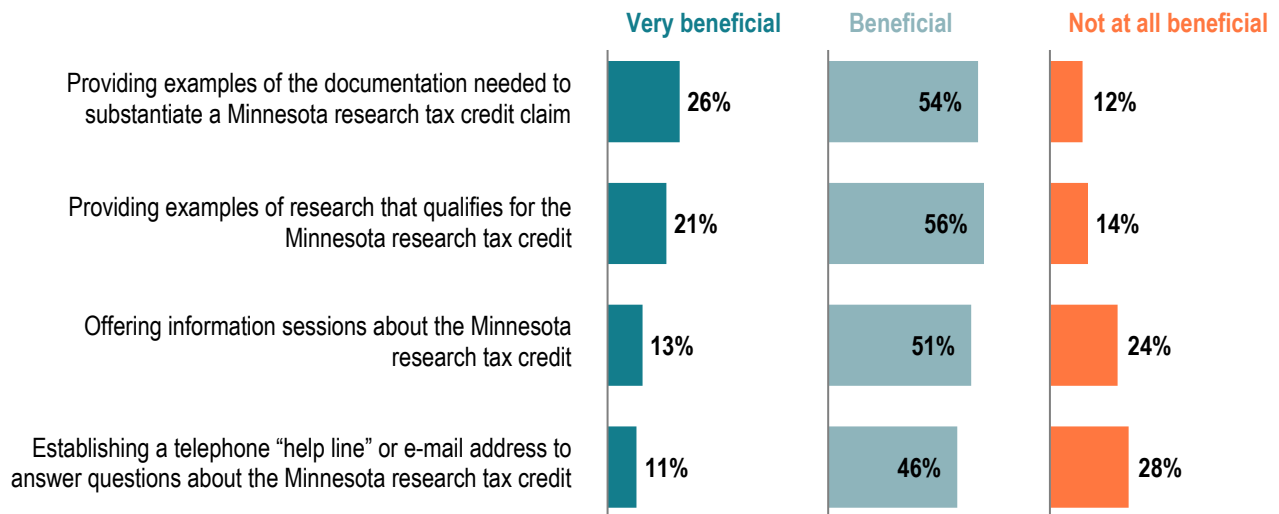
items the definition excludes, such as depreciable property, travel, and telephone expenses. By contrast, the website indicates that “supplies” are a research expense, but it does not define them.

Company Perspectives on Information for Taxpayers

Some business representatives we had surveyed noted changes they would like to see regarding department information on the research tax credit. Most business representatives we surveyed favored the possibility of additional efforts by the Department of Revenue to

provide assistance on the research tax credit. For example, 80 percent of survey respondents claiming the research credit in 2012 to 2014 indicated that they would find it beneficial to their company to have department examples of documentation needed to substantiate a research tax-credit claim, as Exhibit 3.3 shows.

Exhibit 3.3: Most survey respondents thought that examples of documentation needed for the research tax credit would be helpful.



NOTES: We surveyed 1,431 businesses that claimed Minnesota's research tax credit in at least one of tax years 2012, 2013, or 2014. We received responses from 493 companies (a 34.5 percent response rate). However, the survey results are not generalizable to all claimants of Minnesota's research tax credit because the list of claimants was incomplete, and it included taxpayers that had not claimed the credit. The survey question was worded as follows: "If the Minnesota Department of Revenue made the following possible changes, how beneficial do you think they would be to your company?" (N = 449 to 450) Responses for "Do not know" are not included above; consequently, the rows do not sum to 100 percent.

SOURCE: Office of the Legislative Auditor, survey of taxpayers, September 2016.

Company representatives we interviewed recommended that the department explain in advance the data needed for the tax credit, including specific formatting the department may require. Some suggested the department provide information on documentation required to substantiate the tax credit, including what is needed to defend a possible audit of the tax credit. They spoke of excessive time burdens and demands for documentation of their qualified research expenses. Some also suggested that department auditors understand the business requirements of industry sectors that claim the credit, such as medical equipment manufacturing or electrical engineering.

RECOMMENDATION

The Minnesota Department of Revenue should provide additional and more specific information to taxpayers about the documentation needed to substantiate claims for the research tax credit.

Businesses need additional information if they are to make an informed judgment on whether to claim the credit. They also need more information to prepare themselves in advance of an audit. Conceivably, advance information could reduce the number of tax returns that get audited for the research tax credit. It could also minimize the number of audit issues related to research tax credits.

The Department of Revenue has already implemented some activities to provide information to taxpayers. For instance, department officials reported that staff are working as of early 2017 to add information to the department's website about documenting the tax credit. As another example, the department offered in April 2016 a training session on the research tax credit to a group of taxpayers convened through the Medical Alley Association. Similarly, the department has held occasional "listening sessions" with business tax professionals regarding potential improvements to the department's processes (these have not included sessions specific to the research tax credit). On a case-by-case basis, department auditors have sent examples of required documentation to companies that are being audited. Working in partnership with the state's Office of MN.IT Services, the department developed an "audit room," which is a virtual "filing cabinet" for taxpayers to upload documents and communicate with auditors. It expects to have a version available for taxpayer use in 2017.

Despite these examples, we believe taxpayers need more information on a more widespread, consistent basis. Various options exist for supplementing the department's current educational resources. We recommend the following options, although this list is not comprehensive.

- Offer more detailed and specific written resources on the research tax credit, especially web-based information for broad dissemination.
- Provide taxpayers with research tax-credit information that is equivalent to what is now available in the department's *Corporate Audit Manual*.
- Provide ongoing training, such as a series of archived webinars on specific research tax-credit issues, which businesses can access at whatever time works best for them.
- Hold listening sessions focused exclusively on needs of taxpayers claiming the research tax credit.
- Share examples of acceptable documentation for substantiating the research credit and research that qualifies for the credit. Examples may have to be altered for public use if they contain classified information.
- Consider recordkeeping agreements between the department and taxpayers following audits of the research tax credit. Such agreements are available for the federal tax credit. They are designed for mid-sized and large businesses and are intended to expedite the audit process by identifying the records that taxpayers need to support their tax credit claim. If used in Minnesota, the agreements would specify the type of documentation needed for the research tax credit. In the agreements, taxpayers would agree to keep the specified records, and if they do, in turn, the department would agree to avoid disallowing research tax credits for lack of substantiation.

Some other states provide additional resources to help taxpayers decide whether to pursue the research credit and how to claim it. For example, California offers a “frequently asked questions” document about its research and development credit. The document defines the state’s credit, explains how a taxpayer claims it, and describes what is sufficient documentation needed to support the credit claim. We think resources such as these would be helpful to Minnesota taxpayers.



List of Recommendations

- The Legislature should establish in statute explicit and measurable objectives for Minnesota's research tax credit. (p. 32)
- To the extent the Legislature considers changing Minnesota's research tax credit, it should require and review analyses of how well the proposed changes help achieve the credit's purpose. (p. 50)
- The Legislature should authorize and require the Minnesota Department of Revenue to collect and maintain data sufficient to allow periodic evaluations of the research tax credit. (p. 56)
- The Minnesota Department of Revenue should provide additional and more specific information to taxpayers about the documentation needed to substantiate claims for the research tax credit. (p. 65)



February 1, 2017

James R. Nobles
Legislative Auditor
Room 140 Centennial Office Building
658 Cedar Street
St. Paul, Minnesota 55155-1603

Dear Mr. Nobles:

Our mission is *Working Together to Fund Minnesota's Future*. We cannot do this work alone and, in that spirit, we welcome the review of the Office of the Legislative Auditor and regard it as part of an ongoing process to improve the administration of Minnesota's tax laws.

Outreach and Education

The department strives to apply our tax laws equally and fairly for all of our customers. To do this, we focus our attention on providing our customers with the information, education, and services they need to meet their obligations under the law, including accessing the tax benefits provided in the law. We recognize this is a complex area of law for those who benefit from the research credit. Such complexities increase the burden on our customers to substantiate the many components of their claims, particularly with documentation created and maintained since the historical base period, 1984-1988, as well as at the time of the current research expenditures.

We offer a variety of information and educational resources that our customers can easily access by using our website or voluntarily subscribing to one of over 150 email subscription lists on a variety of topics. We also encourage our customers to call with their questions. In the first quarter of a new call center survey 93% of customers calling the Corporate Franchise Tax Division report our call center answered their question, and 87% agreed that the information provided by telephone was very clear.

Please note, the information on customer addresses requested by the OLA for its survey was compiled from our best available data as provided by our customers on their returns. We do not maintain mailing lists of customers who claim certain credits or deductions for the purposes of surveying them.

Audit Activity and Timelines

As with our outreach and education efforts, we approach business income tax returns holistically, focusing our audits on those items within the return that are furthest from compliance. We do not audit returns for the sole purpose of reviewing the research credit, and we estimate that about 4% of audits in our Corporate Tax Division include a review of this credit during the audit. Relatively few matters involving the research credit go on to our administrative appeals process, and we are aware of only one question of law involving the research credit going to the Minnesota Tax Court since the credit's inception in 1981.

Maintaining an appropriate level of auditing staff is essential to doing the department's work on a timely basis. Longer audit timelines occurred concurrently with declines in audit staffing. When staffing was reduced, audits

were reassigned to a smaller staffing complement, creating delays for the state and for our customers. Investing in an appropriate level of staff will help us meet our goal of completing 75% of all corporate field audits within one year.

Improved Services

We appreciate the Legislative Auditor's review, and agree with the recommendation and feedback that focus on continuously improving our services in complex areas of law such as this one.

More specifically, the department is already:

- Adding additional content to our website to provide customers with more information about the documentation needed to substantiate claims for Minnesota's research credit. This additional, specific educational material will assist our customers in documenting their qualified research expenditures at the time those expenditures are made. The availability of documents generated contemporaneously to qualified research expenditures significantly shortens the length of audit.
- Leveraging new technology like the department's new Virtual Audit Room. The Virtual Audit Room reduces the time needed for on-site visits, speeds the exchange of documentation, and allows the department to receive documents in many of the forms and formats kept by our customers.
- Expanding our Audit Quality Survey – currently used at the completion of sales and use tax audits – to business income audits in our Corporate Tax Division. Our Audit Quality Survey provides our auditing staff real-time feedback on the services we provide during the audit process.
- Continuing to include the supervisor name and phone number in our audit confirmation letters, and encouraging our customers and their representatives to call the supervisor if they have any concerns.

We anticipate that these actions – carried out by our well-trained staff – will all work together to support our vision that everyone reports, pays, and receives the right amount: no more, no less.

Evaluating the Effects of the Credit

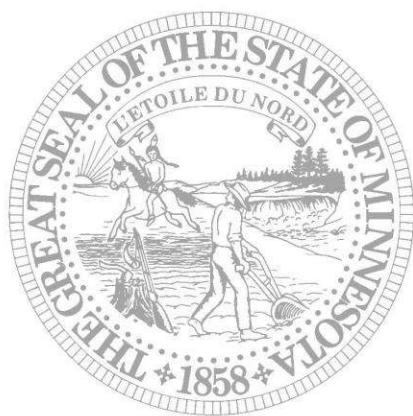
As the report describes, our primary business functions – receiving, processing, and administering returns and payments for over 30 different taxes, and collecting over \$20.5 billion annually – inform which data we collect and maintain. We welcome a conversation with the legislature about its interest in articulating in statute the objectives of the research credit and expanding the data that is available for evaluation purposes. Evaluating the effects of tax law changes on behavior can be costly and partnership across thought leaders such as the University of Minnesota, Office of Legislative Auditor, Minnesota Department of Employment and Economic Development, and the department would help ensure a quality product.

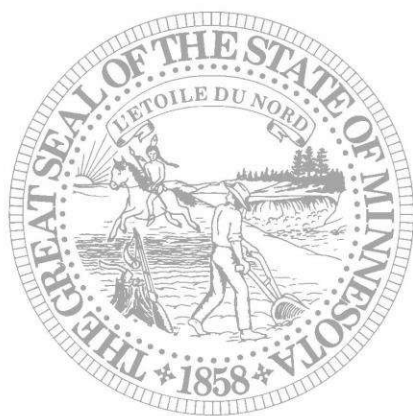
In closing, the department would welcome additional opportunities to share information about our efforts to improve delivery of services to our customers, and further discussion on the direction and progress of those efforts. The OLA's evaluation and recommendations for the department provide helpful suggestions for making these efforts more effective.

Sincerely,



Cynthia Bauerly
Commissioner





Forthcoming OLA Evaluations

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Home- and Community-Based Services: Financial Oversight
Minnesota State High School League Standardized Student Testing

Recent OLA Evaluations

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Agricultural Commodity Councils, March 2014
“Green Acres” and Agricultural Land Preservation Programs, February 2008
Pesticide Regulation, March 2006

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Mental Health Services in County Jails, March 2016
Health Services in State Correctional Facilities, February 2014
Law Enforcement’s Use of State Databases, February 2013
Public Defender System, February 2010
MINNCOR Industries, February 2009
Substance Abuse Treatment, February 2006

Economic Development

Minnesota Research Tax Credit, February 2017
Iron Range Resources and Rehabilitation Board (IRRRB), March 2016
JOBZ Program, February 2008

Education, K-12 and Preschool

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Minnesota Teacher Licensure, March 2016
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K-12 Online Learning, September 2011
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Q Comp: Quality Compensation for Teachers, February 2009
Charter Schools, June 2008

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MnSCU Occupational Programs, March 2009

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Renewable Energy Development Fund, October 2010
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Energy Conservation Improvement Program, January 2005

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Department of Natural Resources: Deer Population Management, May 2016
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DNR Forest Management, August 2014
Sustainable Forest Incentive Program, November 2013
Conservation Easements, February 2013
Environmental Review and Permitting, March 2011
Natural Resource Land, March 2010

Government Operations

Mineral Taxation, April 2015
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Councils on Asian-Pacific Minnesotans, Black Minnesotans, Chicano/Latino People, and Indian Affairs, March 2014
Helping Communities Recover from Natural Disasters, March 2012
Fiscal Notes, February 2012
Capitol Complex Security, May 2009

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Minnesota Department of Health Oversight of HMO Complaint Resolution, February 2016
Minnesota Health Insurance Exchange (MNSure), February 2015
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Consolidation of Local Governments, April 2012

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State Employee Union Fair Share Fee Calculations, July 2013
Workforce Programs, February 2010
E-Verify, June 2009
Oversight of Workers’ Compensation, February 2009

Miscellaneous

Minnesota Film and TV Board, April 2015
The Legacy Amendment, November 2011
Public Libraries, March 2010
Economic Impact of Immigrants, May 2006
Liquor Regulation, March 2006

Transportation

MnDOT Highway Project Selection, March 2016
MnDOT Selection of Pavement Surface for Road Preservation, March 2014
MnDOT Noise Barriers, October 2013
Governance of Transit in the Twin Cities Region, January 2011
State Highways and Bridges, February 2008



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