Report

The Economic Incidence of Health Care Spending in Vermont

Christine Eibner, Sarah Nowak, Jodi Liu, Chapin White

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Preface

This report estimates the economic incidence of health spending in the state of Vermont for 2012 and as projected for 2017 with the Affordable Care Act but without additional reforms related to Act 48, Vermont's plan to adopt universal health insurance coverage. The report describes who ultimately pays for health care in Vermont by tracing spending back to the original funding source. For example, the study traces spending on public programs such as Medicaid back to the taxes and other funding sources used to pay for these programs; it then further traces tax spending back to the taxpayers who bear the economic incidence of these costs. One of the original purposes of this study was to provide a baseline for understanding health payments and benefits in Vermont as the state implemented Act 48, a plan to provide universal health insurance to all Vermont residents. Very shortly before this report went to press, Vermont Governor Peter Shumlin (D) announced that plans to implement Act 48 were being put on hold. As a result, some of the references to Act 48 implementation are outdated. However, the report remains relevant for understanding who pays for health care in Vermont under current policy (i.e., the Affordable Care Act), and provides a baseline as Vermont grapples with other state-level health policy questions.

This report should be of relevance to individuals and organizations within and outside the state of Vermont who have an interest in health care financing. It may also be of interest to states that are considering adopting reforms to the Affordable Care Act using Section 1332 waivers, which become available in 2017.

The work was sponsored by the Vermont Joint Fiscal Office and conducted within RAND Health. A profile of RAND Health, abstracts of its publications, and ordering information can be found at www.rand.org/health. The study was led by Christine Eibner. Questions about the report may be addressed to eibner@rand.org.

Abstract

In 2015, Vermont legislators may consider financing plans to implement Act 48, a law that aims to provide universal health care coverage to all Vermont residents starting in 2017. In this analysis, we estimate the economic incidence of payments for health care by Vermont residents and the value of health care benefits received by Vermont residents in 2012 and 2017, *without the implementation of Act 48 reforms*. The goal of the analysis was to understand how health care is currently paid for in Vermont, and to provide a baseline for understanding the possible effects of Act 48. We use data from the 2012 Vermont Household Health Interview Survey, the Vermont Health Care Uniform Evaluation and Reporting System, and administrative data on taxes to estimate payments in 2012. We then project these estimates forward to 2017, using the RAND COMPARE microsimulation to account for how health care coverage in Vermont will change as a result of the Affordable Care Act (ACA). We find that most Vermont residents receive more in health benefits than they pay for directly or through taxes. While lower-income individuals, on average, pay less than higher-income individuals, there is considerable variation across individuals in the level of payment for health care. Much of the current variation stems from the fractured nature of the health system, with some individuals receiving coverage through employers, some through the Exchange (i.e., the health insurance marketplace created by the ACA), and some through other sources. As Vermont considers health care reform, legislators may wish to consider options to reduce the degree of variation in payments made by individuals with similar income levels.

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Background

In 2011, the Vermont legislature passed Act 48, a plan to provide universal health coverage to all residents. One of the goals of the law was to ensure greater "fairness and equity" in how Vermonters pay for health care (Agency of Administration, 2012). Implementing a state-based universal coverage plan will entail significant shifts in how health care is financed in Vermont. As the Vermont legislature and administration implement the law, it is important to understand how health care is financed today and the degree of fairness and equity present in the current system.

In this analysis, we estimate total health spending in Vermont in 2012, and as projected in 2017 under the Affordable Care Act (ACA) *without additional reforms related to Act 48*. We then consider two concepts related to the fairness and equity present in the existing system. The first concept, **payments** by Vermont residents to support health care, represents what Vermont residents pay for health care in the form of premiums, out-of-pocket spending, and taxes. Payments do not necessarily equal spending, in part because some health spending in Vermont is financed by net inflows from the federal government. The second concept that we consider is **the value of health benefits received** by Vermont residents, which is equal to premiums, out-of-pocket spending, and the value of any public health benefits that individuals might receive (including Medicare, Medicaid, military health coverage, and other public health services). **The value of health benefits received corresponds to total health spending in the state**, and can be compared to figures reported in the Vermont Expenditure Analysis, the state's annual public report on health spending (Green Mountain Care Board, 2014)**.** One of the reasons that we focus on payments and the value of health benefits received is to understand whether people in Vermont get more or less in benefits than they are paying for directly or through taxes, and to understand whether this differs depending on people's income.

Below, we define each of these two concepts in greater detail:

- **Payments for health care**, which consist of
  - *Direct payments*:
    - Premiums paid by an individual
    - Premiums paid by an individual's employer (following standard methods used by economists, we treat employer premium contributions as direct payments by workers, because they ultimately bear the incidence of those payments through reduced wages)
    - Out-of-pocket payments for health care
  - *Net tax payments*:

    - Payments by an individual of federal and state taxes to support current health care programs
    - *Minus* federal and state tax subsidies received for health care, including the value of the tax exclusion for employer-sponsored insurance (ESI).

- **The value of health benefits received**, which consists of
    - The premium of the individual's health plan
    - Out-of-pocket payments for health care
    - The premium-equivalent of any public insurance that the individual might receive, such as Medicaid, Medicare, or military health benefits
    - The value of any public health benefits the individual might receive, such as publicly funded mental health services, alcohol and drug abuse programs, disability and assisted living services, etc.

We analyze payments for health care and the value of health benefits received in 2012 because this is the most recent year for which there are complete data. Also, by focusing on 2012, we can validate our estimates against the Vermont Expenditure Analysis. The 2017 projections provide a baseline for estimating the impacts of possible universal coverage reforms under Act 48.

Approach

We analyzed health care payments and the value of health benefits received using data on individuals and families from the Vermont Household Health Interview Survey (VHHIS), spending information from the Vermont Health Care Uniform Evaluation and Reporting System (VHCURES), and state administrative data on taxes and Medicaid spending. We supplemented our analysis with information from federal data sources, including the American Community Survey (ACS), the Statistics of U.S. Businesses (SUSB), and the Medical Expenditure Panel Survey (MEPS). To estimate health insurance enrollment in 2017, we used a Vermont-specific version of the RAND COMPARE microsimulation model, which estimates how individuals will respond to the ACA.

After allocating spending to residents, we then analyzed which types of individuals pay more or less for care. We consider two concepts related to fairness and equity:

- **Vertical equity** refers to the degree to which people with higher incomes pay more than people with lower incomes.
- **Horizontal equity** refers to the degree to which people with the same incomes pay the same amount for health care.

We also assessed how much individuals receive in terms of health benefits, including benefits that they pay for directly (e.g., out-of-pocket payments for health care, premiums) and benefits that are subsidized by others. The value of health benefits received is an important yardstick for measuring whether the system is equitable. For example, if two individuals of the

same income level pay the same amount, but one receives a larger benefit than the other, the system is less equitable than would be the case if they both received the same level of benefits.

Limitations

Our analysis has several important limitations. First, no single database exists that contains all of the information needed to estimate all of the flows of payments for health care services provided to Vermont residents. By necessity, we merged together data from multiple sources, including self-reported information from state and national surveys and administrative information from state government agencies. The process of merging data from different sources adds uncertainty to our estimates. Second, Vermont and the rest of the country are in a transitional period with respect to health care, due to the implementation of the ACA. Our projections for 2017 therefore contain a high degree of uncertainty. Third, among those with two or more sources of insurance, it was sometimes difficult to determine how much of an individual's health spending was covered by each insurance source.

Findings

Health Care Spending in Vermont

- **Total spending on health care for Vermont residents was $5.1 billion in 2012**, according to our analysis. Our spending estimate aligns closely with the 2012 Vermont Expenditure Analysis.
- **About 28 percent of spending on Vermont residents in 2012 was financed by net inflows from the federal government**; nearly all of the remaining 72 percent was paid for by Vermont residents. Only a very minimal amount of health spending was financed through Vermont state taxes levied on out-of-state residents. Financing from the federal government flows into the state to support Medicaid, Medicare, Exchange subsidies, and other public health spending. Importantly, we account for the fact that Vermont residents pay taxes to the federal government to support health care; the estimated federal inflows are net of these tax payments.
- **We estimate that by 2017 total spending on health care for Vermont residents will increase to $6.8 billion.** That increase is driven by expanded insurance enrollment from the ACA, health care cost inflation, and the aging of the population. Our estimated 2017 spending is higher than an estimate from the University of Massachusetts (London et al., 2013); the two estimates are not directly comparable, because the University of Massachusetts analysis did not include out-of-pocket payments for health care.
- **We estimate that by 2017 the share of spending on Vermont residents that is financed by net inflows from the federal government will increase to 30 percent.** The increase in net federal inflows stems mainly from new federal subsidies offered by the ACA and from large increases in the share of the Vermont population enrolled in Medicare. These estimates include reforms related to the ACA, but do not include additional reforms related to Act 48.

Vertical Equity (the Degree to Which People with Higher Incomes Pay More)

- Under current law (the ACA), we find mixed results regarding the degree of vertical equity in the system.
- **On average, individuals with lower incomes tend to pay less for health care than individuals with higher incomes.** For example, we estimate that someone with income below 139 percent of the federal poverty level (about $35,000 for a family of four) will pay on average $1,110 to $1,570 for health care in 2017, while someone with income above 1,000 percent of the federal poverty level (about $250,000 for a family of four) will pay on average $20,160 to $21,480.
- **While lower-income individuals pay less in actual dollars than higher-income individuals, as a percentage of income, low- and middle-income families pay more than high-income families.** For example, we find that individuals with incomes below 139 percent of the federal poverty level pay on average 20 percent of their incomes to support health care and taxes for health care. Individuals with incomes above 1,000 percent of FPL pay on average 13 percent of their incomes on health care.
- **The value of health care benefits received is relatively uniform across the distribution of income.** We estimate that, in 2017, average health benefits received per person will range from about $10,000 to $12,000, with only small differences across income levels. The per person value of health benefits received is slightly lower, about $9,000 to $10,000 on average, when we limit the analysis to individuals under the age of 65.
- **Low-income families pay for a smaller share of their health benefits received than high-income families.** While the value of health benefits received is relatively equal across the income distribution, families with lower incomes pay for less, and rely more heavily on subsidies, than higher-income families. These subsidies include the value of Medicaid coverage, Exchange subsidies and tax credits, and—in some cases—Medicare coverage (for low-income individuals over the age of 65 and dually eligible individuals of any age).

Horizontal Equity (the Degree to Which People with the Same Incomes Pay the Same Amounts)

- **We find that people with the same income levels often pay very different amounts for health care**, suggesting that horizontal equity in the state is limited. For example, 27 percent of individuals with incomes below 139 percent of FPL will pay less than 5 percent of income on health care, while 21 percent of these individuals will pay more than 20 percent of their income on health care. This finding is driven partly by the fact that people with the same income levels get health insurance through different sources. For example, a person with income below 139 percent of the FPL could be enrolled in Medicaid, employer coverage, or Medicare; that individual could also be uninsured.
- **Different tax regimes for people with employer- and Exchange-based health insurance contribute to inequities.** Low- and middle-income families who purchase plans on the Exchange are eligible for tax credits and cost sharing subsidies if they do not have access to qualifying coverage from an employer or another source. ESI is also subject to a tax exclusion, in that spending on employer coverage is not subject to federal and state income and payroll taxes. However, the value of the ESI tax exclusion is

smaller for individuals with lower incomes, who have lower marginal tax rates. The result is that subsidized Exchange enrollees in Vermont, who tend to have lower incomes, would frequently pay less overall for health care than individuals with similar levels of compensation who are enrolled in ESI.

- **A family of four earning $35,000 to $65,000 in employer compensation (wages plus the employer's share of the cost of health benefits) would pay for about 31 percent of their health care if enrolled on the Exchange. The same family would pay for about 60 percent of their health expenditures if they received employer-based insurance.**

Conclusions

After unpacking the flows of health care payment in Vermont to understand who ultimately pays for residents' health care consumption, we come to three major conclusions:

1. **The federal government makes a significant and growing contribution to fund health care consumption in Vermont.** These net inflows from the federal government are due in part to Vermont's growing population age 65 and over, and due to the state's expansive Medicaid program and related programs that are eligible for federal matching funds.
2. **On average, low- and middle-income Vermont residents pay less in dollar amounts but more as a percentage of income for health care than high-income residents.** While the lowest-income group pays less than one-tenth of what the highest-income group pays, low-income Vermonters spend on average 20 percent of their income on health-related payments.
3. **These averages mask considerable variation across individuals in the amount they pay for health care.** While nearly one-third of low-income individuals spend less than 5 percent of their income on health care, about 21 percent of low-income individuals spend more than 20 percent of their income on payments for health care.
4. **Low-income workers could be better off with Exchange coverage than with employer-sponsored insurance,** particularly if employers passed back premium spending to these workers in the form of increased wages. While both the federal government and the state of Vermont provide premium tax credits and cost-sharing reductions to Exchange enrollees, similar subsidies are not available to low-income workers with ESI.

If Act 48 implementation moves forward, Vermont policymakers might look for opportunities to better align the degree of subsidization available for individuals with similar incomes, regardless of whether they are enrolled on the Exchange or in employer coverage. In addition, if Act 48 implementation moves forward, state policymakers would likely want to retain as many of the net federal inflows as possible. Section 1332 waivers offer an option to redirect federal funds for ACA-related policies to Vermont-specific health reforms. However, alternative approaches may be needed to maintain the implicit savings generated from the employer tax exclusion.

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Abbreviations

ACA	Affordable Care Act
ACS	American Community Survey
AGI	adjusted gross income
CBO	Congressional Budget Office
CEX	Consumer Expenditure Survey
CHAP	Catamount Health Assistance Program
CHIP	Children's Health Insurance Program
CMS	Centers for Medicare and Medicaid Services
CPI	consumer price index
DSH	disproportionate share hospital
DVHA	Department of Vermont Health Access
ESI	employer-sponsored insurance
FMAP	federal matching assistance percentage
FPL	federal poverty level
FSA	flexible spending account
GMC	Green Mountain Care
HHS	Department of Health and Human Services
HRS	Health and Retirement Study
HSA	health savings account
JFO	Joint Fiscal Office
MAGI	modified adjusted gross income
MEPS	Medical Expenditure Panel Survey
MEPS-IC	Medical Expenditure Survey Insurance Component
NHEA	National Health Expenditure Accounts
OACT	Office of the Actuary (CMS)

RHI	retiree health insurance
SUSB	Statistics of U.S. Businesses
VHAP	Vermont Health Access Plan
VHCURES	Vermont Health Care Uniform Evaluation and Reporting System
VHHIS	Vermont Household Health Insurance Survey

1. Introduction

In 2011, Vermont passed Act 48, a plan to implement Green Mountain Care (GMC), a universal, publicly financed health insurance program that could be available to all Vermont residents as early as 2017. Act 48 potentially positioned Vermont as a leader in the next wave of health reform in the United States. According to the Congressional Budget Office (CBO), the ACA will leave 30 million individuals—10 percent of the U.S. non-elderly population—without health care coverage (Congressional Budget Office, 2014b). Vermont's proposal could provide coverage to all residents, and could provide lessons for future reforms in other states. In preparing to move toward universal coverage, policymakers in Vermont were interested in understanding who pays for health care in the state under current policies. Principles set forth by the Green Mountain Care Board and other Vermont agencies stated that "the financing of health care in Vermont must be sufficient, fair, predictable, transparent, sustainable, and shared equitably," and a further goal is to "ensure greater fairness and equity in how Vermonters pay for health care". Vermont policymakers would need to understand who is currently paying for care so that the current financing system could be used as a baseline for comparisons under changing policies.

In this analysis, we estimate the incidence of health spending in Vermont in 2012 and in 2017 **prior to the implementation of GMC**. *Incidence* in this context refers to the distribution of who pays for health care in Vermont, traced back to the original source of funding (e.g., state spending on health is traced back to Vermont taxpayers, employer spending is traced back to workers, etc.). Health care **payments** include premiums paid by an individual or the individual's employer, out-of-pocket payments for health care, and tax payments that support health care programs net of tax subsidies for health care. Our analysis tracks how payment varies across different individuals by income, considering a wide range of income categories, including very low- and very high-income individuals. We also use case studies of specific types of individuals to understand whether incidence varies depending on the type of insurance coverage (e.g., employer-sponsored insurance [ESI] versus the Exchange), or by other factors, such as age.

A key goal of the analysis is to determine whether the distribution of payment for health care in Vermont is equitable. We use two criteria to judge the equitability of the system. First, we consider the degree to which individuals with the same income levels tend to pay the same amount for health care. This concept is sometimes referred to as *horizontal equity*. Second, we consider the degree to which individuals with higher income pay more than individuals with lower income, a concept referred to as *vertical equity*. When assessing the payments made to support health care in Vermont, we consider spending that directly finances health consumption—such as premiums and out-of-pocket payments on health care—as well as taxes paid that support health-related programs, such as Medicaid.

In addition to considering the payments individuals make, we consider **the value of health benefits received**, and the extent to which these benefits vary across different types of individuals. The value of health benefits received is an important yardstick for measuring whether the system is equitable. For example, if two individuals of the same income level pay the same amount, but one receives a larger benefit than the other, the system is less equitable than would be the case if they both received the same level of benefits. In calculating benefits, we focus on the value of health insurance coverage provided, rather than differences in actual health care costs incurred, along with any out-of-pocket payments incurred. This approach recognizes that one of the main functions of health insurance is to stabilize health spending, and this approach avoids attributing inequities in the financing system to the fact that there is inherent variability across individuals in actual health care received in a given year. The value of health benefits received corresponds to total health spending on behalf of Vermont residents, and can be compared to the Vermont Expenditure Analysis.

We assume, as most economic literature suggests, that the ultimate incidence of employers' health insurance spending falls on workers. In other words, workers ultimately pay not only their employee contribution, but also their employer contribution, which they shoulder in the form of reduced wages. This assumption is standard among economists, and it is used by federal agencies such as the CBO and the Joint Committee on Taxation in their budgetary projections (Congressional Budget Office, 2014b). The logic behind this assumption is that employers offer a total compensation package, which can include wages, health insurance, and other benefits, to attract and retain qualified workers. If health insurance costs change, firms must adjust other parts of their benefit package, such as wages, to remain competitive.[1] Although it may take time for wages to fully adjust to changes in health insurance costs (Sommers, 2005), our analysis estimates incidence in a "steady state" rather than a transitional period.

To measure health care incidence, we use Vermont-specific data sources, including the Vermont Household Health Insurance Survey (VHHIS), a survey of the health insurance enrollment choices of individuals and families living in Vermont, and the Vermont Health Care Uniform Evaluation and Reporting System (VHCURES), an all-payer claims database. We estimate transitions in health insurance that may take place as a result of the ACA using RAND's COMPARE microsimulation model, a forecasting tool developed to estimate how demand for health insurance will respond to policy changes.

[1] The trade-off between wages and health insurance benefits is evidenced in a recent policy debate in Vermont regarding the possibility of reducing the actuarial value of teachers' health insurance coverage. While some studies argue that there are potentially large savings associated with reducing teachers' benefits, the National Education Association has countered that much of those savings should be returned to teachers in the form of higher base pay. See, for example, Hirschfeld, 2014.

We find that Vermont residents received about $5.1 billion in health care benefits in 2012, and will receive approximately $6.8 billion in benefits in 2017.[2] While most of this care is ultimately paid for by Vermont residents (either through taxes or direct payments), the federal government pays for a substantial and growing portion—28 percent in 2012, and 30 percent in 2017. Importantly, these federal inflows are net of tax payments made by Vermont residents and are financed either by transfers from out-of-state taxpayers, drawdowns from the Medicare trust fund, or deficit spending. The possibility that Vermont benefits on net from federal support is evident in statistics on federal tax payments by state and federal health spending by state. For example, using data from the Internal Revenue Service (IRS) and the Kaiser Family Foundation, we calculate that Vermont contributed 0.15 percent of total federal income tax collections in 2012, but accounted for 0.33 percent of total federal Medicaid spending in the same year.

Our findings on vertical equity are mixed—lower-income individuals pay less in absolute terms than higher-income individuals—but, on average, lower-income individuals devote a greater share of income to health-related spending. In terms of horizontal equity, we find that there is significant variation across individuals with similar incomes regarding how much they pay for health care. For example, 27 percent of families with incomes below 139 percent of the federal poverty level (FPL) will pay less than 5 percent of income for health care, while 21 percent of these families will pay more than 20 percent of their income for health care. We also find that low-income families with employer coverage might be better off with Exchange subsidies, particularly if employers pass back the cost of health insurance to workers in the form of higher wages.

In the next chapter, we provide an overview of the methods we used to estimate the incidence of health spending in Vermont in 2012 and 2017, and in Chapter Three we provide a brief discussion of health care financing in Vermont. We present the results of our analysis in Chapter Four. In Chapter Five, we discuss the findings of our analysis and highlight some considerations that might be of interest to Vermont policymakers as they begin to implement GMC. At the end of the report, we provide a more detailed methodological appendix.

[2] Our estimate, $6.8 billion, exceeds a previous estimate made by the University of Massachusetts (London et al., 2013) because we include out-of-pocket payments in our total, while the University of Massachusetts reports excluded out-of-pocket payments.

2. Overview of Goals and Methods of the Analysis

The goals of this incidence analysis are to estimate

- payments by Vermont residents for health care in calendar year 2012
- health care benefits received by Vermont residents in calendar year 2012
- payments and benefits in calendar year 2017 in the absence of a new universal coverage plan
- the distribution of payments and benefits across different population groups and types of individuals.

We estimate the payments and benefits in 2017 assuming that state and federal health care policies continue on their current path, i.e., in the absence of the major reforms outlined in Act 48. These 2017 estimates are intended as a baseline for estimating the impacts of possible future reforms. We focus on calendar years as opposed to state fiscal years because Exchange premiums are tied to calendar years, and income tax liability reflects calendar-year income.

Key Concepts

The analysis uses two key concepts: payments for health care and health care benefits received.

1. **Payments for health care** consist of tax payments and direct payments:
   a. *Tax payments* include tax payments to the state and federal governments for health care minus any individual tax subsidies received. Tax subsidies include the value of the tax exclusion for employer-sponsored insurance, which is not subject to state or federal income and payroll taxes. Some taxes, such as the Medicare Hospital Insurance payroll tax, are earmarked for health care, and the full amounts of earmarked taxes are included. Other taxes, such as state and federal income taxes, go into general funds to support a wide range of programs: health care, education, defense, and so on. A portion of those general taxes are treated as payments for health care, based on the share of general fund outlays going to health care programs.
   b. *Direct payments* include premiums paid by an individual or the individual's employer, plus out-of-pocket payments for health care at the point of service.

Payments in our analysis include all payments made to support health care consumption in Vermont, regardless of whether these payments come from in-state or out-of state sources.

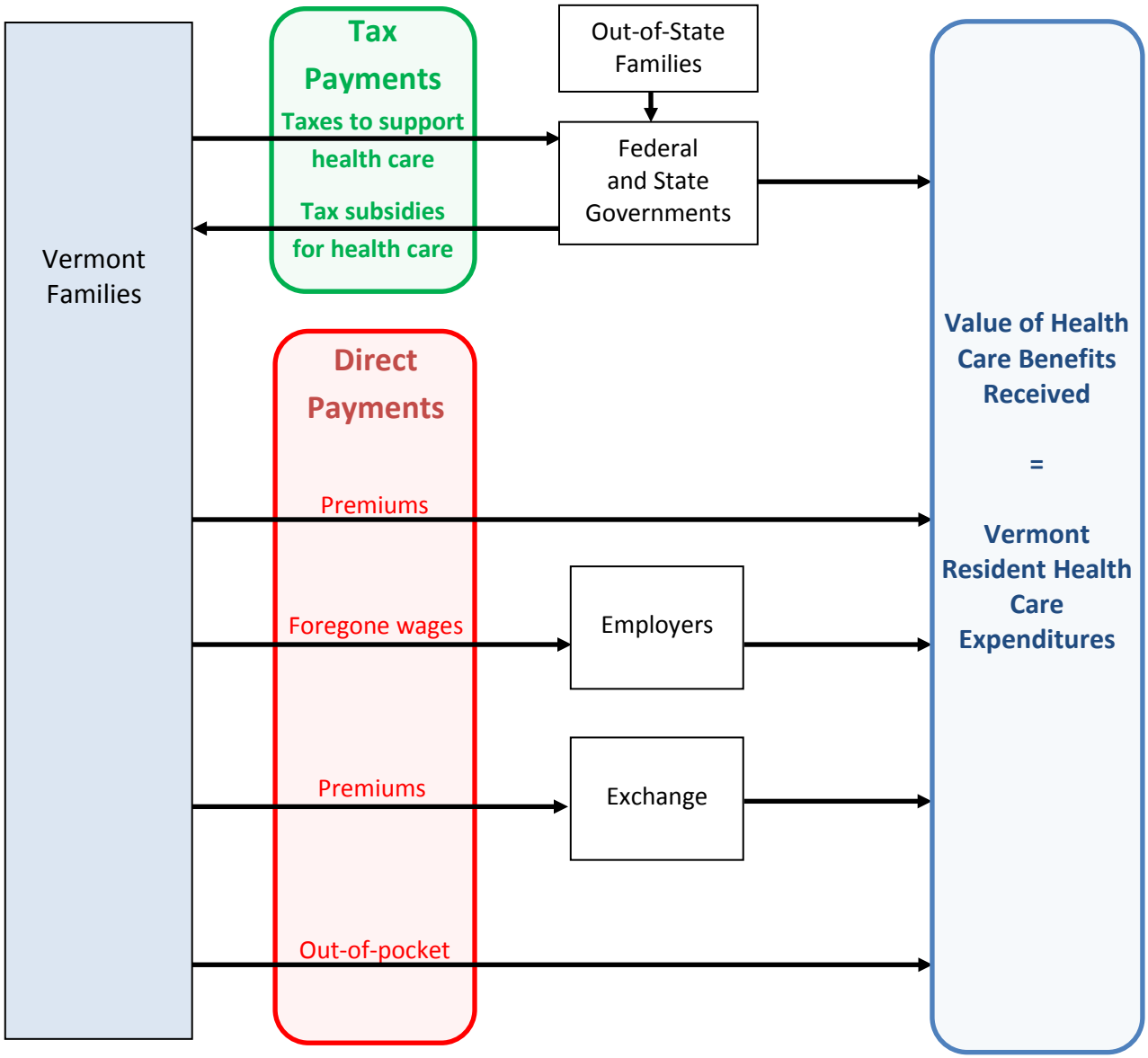
2. **The value of health benefits received** equals the premium, or premium-equivalent, of the health plan(s) in which the individual is enrolled plus out-of-pocket payments at the point of service. The value of health benefits received also includes benefits associated with non-Medicaid related public health services (e.g., state-funded substance abuse and mental health treatment, disability and assisted living services, spending on the Vermont Veteran's Home).

The value of health benefits received includes all health care received by Vermont residents, whether or not this consumption occurs in state or out of state. Our analysis does not consider the value of health benefits received by out-of-state residents who might happen to get care in Vermont.

Figure 2.1 illustrates, in a highly simplified way, the flows of payments for health care and benefits received. Several key points are worth highlighting:

- The benefits received by a family equals out-of-pocket payments plus the premium (in cases in which a premium is paid, such as fully insured employer-sponsored plan) or premium-equivalent (in cases in which a premium is not paid, such as Medicaid or a self-funded employer plan). Those premiums vary depending on type of plan (e.g., Medicaid versus ESI) and the type of family (e.g., a single adult versus two adults plus children), but are not based on the family's actual utilization of services. We took that approach because it reflects the pooling and redistribution of funds within health plans.
- Total benefits do not necessarily equal total payments and, as will be discussed below, total benefits to Vermont residents significantly exceed their total payments. The gap between benefits and payments reflects tax expenditures and deficit spending by the federal government, and also net inflows of federal funds from out-of-state families.
- Benefits received include health plans' administrative costs. This implicitly assumes that the management and operation of health plans provides some value to enrollees. For example, administrative costs are used to support plan websites, provider directories, insurers' time spent negotiating with providers to receive discounts or define networks, etc.
- Out-of-state families potentially support health care in Vermont in two ways. First, federal taxes levied on out-of-state families may be redistributed in a way that assists Vermont residents. Second, Vermont levies taxes on out-of-state families, for example through consumption taxes that may affect tourists (e.g., sales taxes).

Figure 2.1. Payments for Health Care and Value of Health Benefits Received



NOTES: Taxes to support health care include tax payments earmarked for health care, such as the Medicare Hospital Insurance payroll tax, plus a share of tax payments into general funds—that share equals outlays for health care as a share of total outlays from those general funds. Tax subsidies for health care include explicit subsidies, such as advance premium tax credits for Exchange plans, plus the value of the tax expenditure associated with the tax exclusion for ESI plans. Foregone wages are equal to employer premium contributions for ESI plans—the economic incidence of those contributions is assumed to fall entirely on families, and so those contributions are treated as direct payment by families. The value of health care benefits received includes the premiums paid for ESI plans and Exchange plans, plus the premium-equivalents for Medicare and Medicaid coverage, and other government-sponsored health activities.

Defining Economic Incidence

One major challenge in estimating payments for health care is defining what we mean by "paying for health care." This seems simple on the surface, but it requires differentiating between the *nominal incidence* and the *economic incidence* of payments for health care. Nominal incidence reflects the physical payment, i.e., who writes the check. Economic incidence reflects the economic burden of the payment, taking into account competitive market conditions and adjustments made in response to the payment. When we measure and report payments for health care, we are estimating and reporting economic incidence.

To illustrate the difference between nominal and economic incidence, Medicare hospital insurance taxes are levied on both the employer and the employee—each pays 1.45 percent of taxable wages, for a total of 2.9 percent of taxable wages. The nominal incidence of the hospital insurance tax falls equally on the employer and the employee, i.e., both are writing checks to the Medicare trust fund. But the economic incidence of the Medicare tax is generally assumed to fall entirely on employees—i.e., employees bear the full economic burden. The rationale for assuming that workers face the full economic incidence comes from the fact that the labor market is competitive and that employers are offering wages and benefits so that the total costs of compensation equal the revenues generated by the employee. If the Medicare tax were increased, the competitive market assumption is that employers would reduce taxable wages so that the total compensation paid by the employer remains constant. Workers would receive lower taxable wages, and would pay a higher nominal rate on those reduced wages.

In estimating the incidence of payments for health care, one crucial question is how to treat premium payments for employer-sponsored health coverage. The nominal incidence of employer-sponsored health coverage falls mainly on employers. But, based on the competitive-market assumption, the economic incidence is generally assumed to fall fully on workers. Following general practice among economists, in this analysis we treat both employer and employee contributions as paid by the employee.

Because workers pay for employer-provided health insurance with foregone wages, we need to be careful about how we characterize these payments in our analysis. Importantly, these payments do not reduce income; rather, they reduce the amount of total compensation that workers have available to spend on other goods and services. To address this issue, in some of our analyses we compare individuals with similar total compensation, defined as income plus the cost of employer-sponsored health insurance benefits. For example, a worker with $40,000 in income and a $5,000 employer premium contribution would have equivalent compensation to a worker with $45,000 in income and no employer insurance. We consider total compensation in some, but not all of our analyses, because the concept of total compensation is not relevant for determining eligibility for public programs, such as Medicaid.

Teachers and Municipal Workers

As with other workers, we assume that teachers and municipal workers bear the full cost of their health insurance premiums in the form of reduced wages. That is, we assume that the total level of compensation for these workers is set in a competitive economic environment, in order to attract and retain workers with an optimal mix of skills. Part of this compensation is provided in the form of health insurance. If the state or municipality decided to drop health insurance coverage, it would need to find an alternative way to compensate workers, or else workers might consider competing employment opportunities.

Because the ultimate incidence of employer premium contribution falls on workers, we assume that, in the long run, state education and municipal property taxes would remain the same even if health insurance benefits were eliminated. These funding streams would be expected to compensate workers at adequate levels, regardless of whether state-funded universal coverage was available in Vermont. As described in more detail in our methodological appendix, these assumptions are supported by decades of research, and similar assumptions are commonly used in federal economic projections done by organizations such as the CBO and the Joint Committee on Taxation.

Some prior literature has demonstrated that wages may be slow to adjust to changes in employers' health care costs (Sommers, 2005). If wages are slow to adjust, it is possible that, should Vermont institute a universal, state-funded health insurance program, there could be short-run savings to property tax payers. However, our analysis focuses on the current incidence of health insurance spending in a steady-state economy. We do not consider how incidence will change in the short run after the implementation of Act 48.

Although a reduction in health insurance spending would not affect the long-run level of taxes needed to provide teachers' and municipal workers' compensation, it would benefit workers by enabling a greater share of compensation to be provided in the form of wages. At the national level, one study estimates that a typical American family would have $5,400 in extra income annually if health spending between 1999 and 2009 had increased at the general rate of inflation (Auerbach and Kellermann, 2011), rather than at the actual rate of health care cost growth.

The first step in the incidence analysis is to construct a dataset that represents the population of Vermont residents and contains basic population characteristics, including age, sex, income, and health plan enrollment. The starting point for this Vermont resident database is the 2012 VHHIS, which collected information on demographics, income, health plan enrollment, and out-of-pocket payments on health care from 4,610 households containing 10,982 unique individuals. The VHHIS includes 2012 weights equal to the number of individuals in the population represented by each survey respondent. In addition to VHHIS, we rely on data from the VHCURES, an all-payer claims database, to estimate spending.

The second step is to estimate state and federal tax payments for health care in 2012 for each individual in the VHHIS. The VHHIS does not include data on taxes paid, and it only reports total family income without breaking out wages and salaries versus other sources of income. Therefore, we used national data from the American Community Survey (ACS) to allocate family income among individuals within the members, and to allocate income between wages and salaries and other sources of income. Total state and federal income tax payments were assigned to individuals in VHHIS based on demographics and income, with payments baselined to totals from administrative records. Several other sources of state revenue, such as consumption taxes, an insurance tax, and an employer assessment, were also assigned to individuals in VHHIS. Depending on the type of tax payment, we assigned different shares as going to support health care programs. For example, 100 percent of Medicare Hospital Insurance payroll tax payments go to support health care, whereas about 25 percent of federal income tax payments go to support health care.

The third step is to estimate the premiums, or premium-equivalents, in 2012 for the health plans in which individuals in the VHHIS were enrolled. For enrollees in ESI, we used 2012 Vermont-specific data on premiums from the Medical Expenditure Panel Survey Insurance Component (MEPS-IC) to assign employer and employee contributions. Premium-equivalents were assigned to Medicaid enrollees based on the type of enrollee (non-elderly adults; elderly adults; children; and aged, blind or disabled). For enrollees in Medicare, Catamount, the Exchange (Vermont Health Connect), and the Children's Health Insurance Program (CHIP), two premiums were assigned: the premium paid by the enrollee, and the premium-equivalent paid by the federal and/or state government. Enrollee-paid premiums were assigned based on the premium formulas for each program and the individual's income, and the premium-equivalents were assigned based on administrative data on premiums and spending in those programs. Medicare enrollees with a supplemental plan were also assigned a separate premium for that coverage. At the end of the third step, we have all the information necessary to estimate payments for health care and benefits received in 2012 for each individual in the VHHIS dataset.

The fourth step is to project incidence in 2017, building on the 2012 incidence analysis. This step involves adjusting the 2012 population weights in the VHHIS to reflect population growth and aging in Vermont and growing premiums and premium-equivalents based on projected growth in spending per enrollee in Medicare, Medicaid, and all other sources of coverage. The 2017 projections also require transitioning coverage status for some individuals in the VHHIS to reflect the implementation of the Medicaid expansion and the Exchange under the ACA. Those transitions are simulated using results from the RAND COMPARE model, as described in detail in the technical appendix.

Glossary of Terms

In estimating incidence, there are several concepts that we consider in our analysis, related to how much individuals pay to support health care and how much they receive in health benefits. We provide a glossary of these terms and concepts below.

Federal Poverty Level (FPL): The FPL is a measure of income issued every year by the U.S. Department of Health and Human Services (HHS) and used to assess eligibility for programs such as Medicaid. The FPL is related to income, but it is adjusted to account for the number of individuals living in a family. For example, a single individual with an income of $45,000 is just over 400 percent of FPL; a family of four with an income of $45,000 is just under 200 percent of the FPL.

HHS increases the FPL each year based on the growth of the consumer price index (CPI). Tables 2.1 and 2.2 show the share of the population with incomes in various FPL-based ranges in 2012 and as projected for 2017.

Table 2.1. Distribution of Vermont Population, by Income Category, 2012

Percentage of FPL	Income, Single Individual	Income, Family of Four	Share of Population, 2012
0–138%	Up to $15,415	Up to $31,809	19%
139–200%	$15,416–$22,340	$31,810–$46,100	11%
201–300%	$22,341–$33,510	$46,101–$69,150	19%
301–400%	$33,511–$44,680	$69,151–$92,200	16%
401–500%	$44,681–$55,850	$92,201–$115,250	10%
501–1,000%	$55,851–$111,700	$115,251–$230,500	20%
1,001%+	$111,701 and over	$230,501 and over	5%
TOTAL			100%

NOTE: Table shows the percentage of individuals in each income category.
SOURCE: The FPLs come from HHS; the share of the population is based on the authors' calculations using VHHIS and Vermont tax data.

Table 2.2. Distribution of Income in Vermont Population, by Income Category, 2017

Percentage of FPL	Income, Single Individual	Income, Family of Four	Share of Population, 2017
0–138%	Up to $17,124	Up to $34,996	20%
139–200%	$17,125–$24,817	$34,997–$50,719	11%
201–300%	$24,818–$37,226	$50,720–$76,078	18%
301–400%	$37,227–$49,634	$76,079–$101,438	16%
401–500%	$49,635–$62,043	$101,439–$126,797	10%
501–1,000%	$62,044–$124,086	$126,798–$253,595	19%
1,001%+	$124,087 and over	$253,596 and over	5%
TOTAL			100%

NOTE: Table shows the percentage of individuals in each income category.
SOURCE: The FPLs are based on RAND projections using HHS's reported FPLS for 2014, inflated using factors estimated by the CBO. The share of the population within each FPL is derived from the authors' calculations using VHHIS and Vermont tax data.

Gross Tax Payments to Support Health Care: Gross tax payments to support health care reflect the total taxes that individuals pay to support health care–related programs, including Medicare, Medicaid, Exchange subsidies and tax credits, public health funding, and other federal and state health spending. Gross tax payments include payments made through income taxes, payroll taxes, consumption taxes, and other types of taxes.

Net Tax Payments to Support Health Care: Net tax payments reflect gross tax payments after subtracting any tax benefits that individuals receive for health care received. Tax benefits come in two major forms: premium tax credits for eligible Exchange enrollees, and the value of the income tax exclusion for employer-provided health insurance. It is possible that net tax payments can be negative, i.e., if someone receives more in health-related tax breaks than he or she pays toward health care through taxes.

Table 2.3 shows gross tax payments, tax subsidies, and net tax payments by income level, as estimated for 2017. To calculate per-capita tax payments, we sum all of the tax payments made by individuals within each income category and divide by the total number of individuals in each income category. Residents with incomes between 139 and 300 percent of the FPL, who are eligible for premium tax credits on the Exchange, on average have negative health-related net tax payments. (Those with incomes between 301 and 400 percent of FPL are also eligible for premium tax credits; however the level of the credit is smaller for this group.)

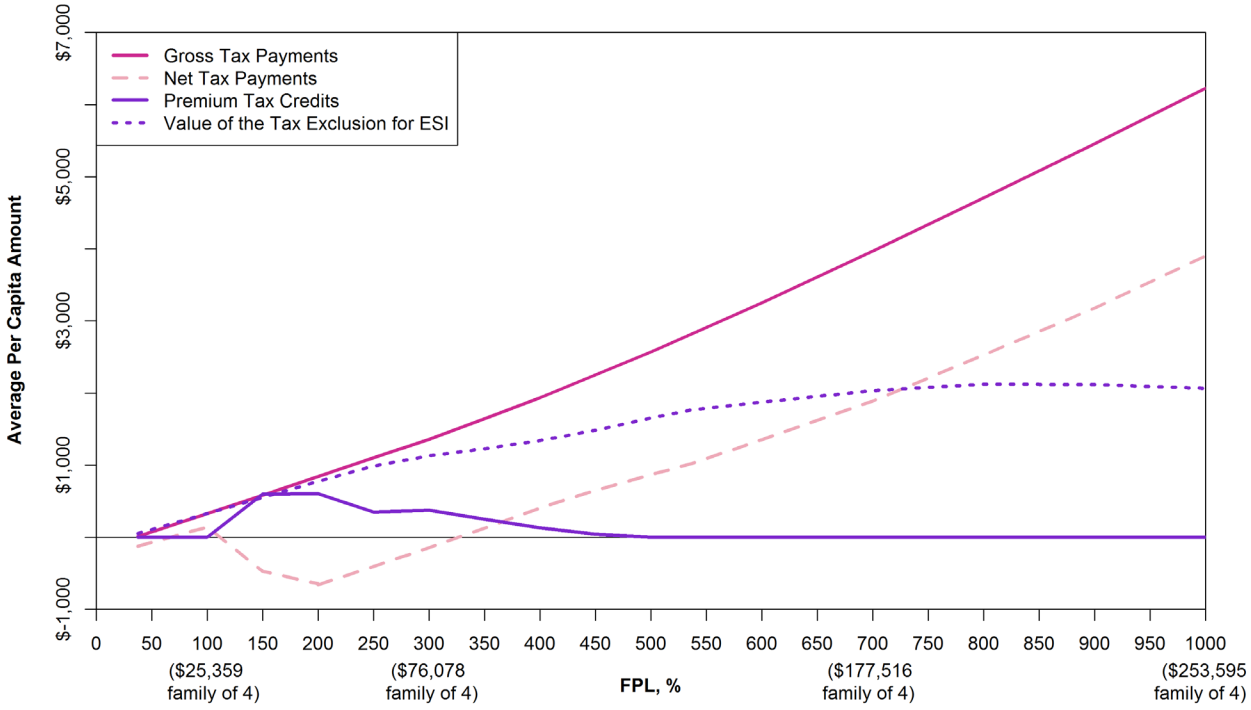
Table 2.3. Average Tax Payments and Tax Subsidies for Health Care Per Capita, by Family Income Level, 2017

	<139% FPL	139–200%	201–300%	301–400%	401–500%	501–1,000%	1,001%+
Gross tax payments	$270	$730	$980	$1,530	$2,100	$3,420	$13,620
Tax subsidies	$220	$1,470	$1,360	$1,420	$1,340	$1,780	$1,860
Net tax payments	$60	($740)	($380)	$110	$760	$1,640	$11,760

NOTES: Gross tax payments include federal and state taxes paid to support health care. Tax subsidies are the value of the tax exclusion for ESI and Exchange premium tax credits. We sum payments and subsidies for all individuals within each income category, and divide by the total number of individuals in the income category. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.
SOURCE: Authors' calculations based on VHHIS, data from the Vermont Tax Department, and other state and federal data sources.

Figure 2.2 graphically shows how gross and net tax payments vary for individuals of different income levels. To calculate net tax payments, we subtract tax subsidies provided either as Exchange tax credits or through the employer tax exclusion for health insurance from gross tax payments. The purple lines in Figure 2.2 show the relative importance of each of these types of tax subsidy for individuals with different incomes. The value of the ESI tax exclusion is small for the lowest-income individuals, and grows as income increases. This pattern reflects both that people with lower incomes are less likely than people with higher incomes to have ESI, and that people with lower incomes have lower marginal tax rates and therefore benefit less from the tax exclusion. Exchange tax credits, in contrast, are highest for individuals with incomes just above 138 percent of FPL, and then fall to zero for those with incomes above 400 percent of FPL. The pattern of the Exchange tax credits is driven by the requirements of the ACA, which in general offers no tax credits to those with incomes below 138 percent of FPL (since these individuals are eligible for Medicaid) or to those with incomes above 400 percent of the FPL.

Figure 2.2. Average Tax Payments and Subsidies for Health Care Per Capita, by Family Income Level, 2017



NOTES: Gross tax payments include federal and state taxes paid to support health care. Tax subsidies are the value of the tax exclusion for ESI and Exchange premium tax credits. To allocate per capita payments within families, we sum payments made by a family and divide by the number of family members. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

The Employer Tax Exclusion

Spending by employers on health benefits for their workers receives two types of favorable tax treatment: It is excluded from the worker's taxable gross income for the purposes of individual state and federal income and payroll taxes, and it is deductible as a business expense in the calculation of corporate income and tax liabilities. Premium contributions by workers are also generally excluded from the worker's taxable income, as long as the employer has established a Section 125 ("Cafeteria") plan. These tax exclusions create a significant subsidy for employer-sponsored health insurance and are viewed as one of the major reasons why employers offer health insurance as a benefit (Buchmueller, Carey and Levy, 2013).

The tax treatment of employer-provided health benefits introduces a complication in our calculation of the incidence of health care spending. Our general approach to calculating incidence is to imagine a scenario—wholly unrealistic, but useful analytically—in which all spending on health care is eliminated, and to then estimate the resultant increase in funds available to be spent on other goods and services. Keeping with this general approach, we follow two key steps in calculating the incidence of employer contributions to health benefits. First, as described throughout this document, we treat employer contributions for health insurance benefits as implicit payments by workers in the form of foregone wages. In other words, if employers were to drop health insurance coverage, competitive labor market pressures would lead them to pass the savings back to workers in the form of increased gross wages. If workers received an increase in gross wages, they would face a larger tax liability. So the second key step in calculating incidence is to calculate the hypothetical increase in tax liabilities that would result from the wage pass back, i.e., the value of the lost tax benefit. The increase in gross wages minus the increased tax liability represents the incidence on the worker of employer contributions.

Our approach to calculating incidence creates an apples-to-apples comparison of the costs of health care, regardless of whether individuals are enrolled in employer or Exchange plans. Most individuals enrolled on an Exchange plan are eligible for subsidies in the form of advanced premium tax credits. In this case, the individual does not receive the tax benefits from ESI but receives a tax credit that reduces his or her net premium costs. An individual with equivalent compensation, if enrolled in ESI, would pay the full premium through foregone wages, but receive a tax benefit that reduces his or her total tax liability. For an equivalently sized subsidy, the impact on the individual's finances would be the same regardless of whether the subsidy is provided as a reduction in taxes or a reduction in net premiums.

Direct Payments to Support Health Care: Direct payments to support health care reflect health care payments made to support an individual's own health care consumption. These payments include out-of-pocket payments for health care and premium payments. Because we

assume that the incidence of employer spending on health care falls ultimately on workers, we include both employee and employer premium contributions when we calculate direct health care payments.

Total Payments to Support Health Care: Total health care payments are the sum of direct payments to support health care and net tax payments. This concept represents the total amount that an individual contributes to health spending, including spending on the individual's personal health consumption and spending used to finance other individuals' health care consumption, net of any benefits that the individual receives in terms of tax credits, tax breaks, or other subsidies.

Value of Health Benefits Received: The value of benefits represents the total value of the health care benefits that individuals receive each year. In assigning value to individuals, we tally

- out-of-pocket spending on health care, including self-financed out-of-pocket payments and payment subsidies through cost-sharing reductions
- the value of health insurance, as measured by the individual's or family's total premium (or, for public programs like Medicaid and Medicare, the "premium equivalent")
- the value of non-Medicaid-related public health services that are available to the individual, such as publicly funded mental health and substance abuse treatment services.

The value of benefits received represents the total value of health care consumed by Vermont residents, and corresponds to Vermont residents' health expenditure. We focus on the value of health insurance, rather than the value of individual health services received, to capture the fact that part of the reason for having insurance is to reduce the risk associated with large, unpredictable expenditure. Even if an individual's own health spending is small or zero in a given year, he or she still receives value from having health insurance, due to the reduction in risk.

The value of health benefits received in Vermont will not necessarily equal the value of health care payments made by Vermont residents. In particular, health benefits received may exceed health spending due to net inflows from the federal government and from out-of-state residents.

Total Compensation: Total compensation refers to the sum of wages and employer compensation provided in the form of health benefits. For example, a worker with $40,000 in wages and a $5,000 employer premium contribution would have $45,000 in total compensation. Two workers with the same level of income will have different levels of total compensation, if one receives ESI and the other does not. By definition, the worker with employer coverage has higher total compensation than the worker without employer coverage.

Limitations of Analysis

Our analysis has several important limitations. First, we had to combine information from multiple data sources because there is no single database that includes all of the information that we needed to create a representation of the Vermont population, their employers, and their health

care payments. For example, while the VHHIS contains comprehensive data on Vermont families and their health insurance choices, income information in the VHHIS is limited, and the survey does not contain information on taxes paid. Because of this, we had to match individuals to tax data provided by the Vermont Department of Taxation. These matches were accomplished by matching people who were similar in terms of their age, family size, and income; we were not able to match respondents in the VHHIS to their actual tax filing records. Similarly, we were unable to match individuals to their actual employers, and instead assigned workers to "synthetic" employers based on self-reported firm size. The fact that we are combining information from multiple data sources, and relying on probabilistic rather than definitive matches, creates imprecision in our analysis.

Second, and related to the first limitation, we were unable to fully account for the correlation between worker demographics and employer insurance premiums in our analysis. Premiums in our analysis vary with employer size, which is correlated with income. However, in matching premiums to employers, we accounted for firm size only and were unable to capture any additional correlation between average wages among employees and the total premium of their employer plan. Similarly, we may not have fully captured correlations between employer premiums and other worker characteristics, such as age or health status.

Third, we found it challenging to estimate the incidence of health spending for individuals with multiple sources of health insurance coverage. In part, this was because the VHHIS appears prone to misreporting when it comes to people with more than one insurance source. For example, the number of dually eligible Medicare and Medicaid enrollees in VHHIS is low relative to administrative totals. Further, among those with dual coverage, it is not always clear which insurer is the first payer, requiring us in many cases to make an assumption.

Fourth, to estimate payments and the value of health benefits received in 2017, we needed to estimate how the ACA will affect health insurance enrollment decisions. The ongoing implementation of the ACA makes it challenging to estimate how health insurance coverage will evolve over time in Vermont. Although we have preliminary data on how the ACA affected coverage in 2014, take-up will likely change as people become more familiar with the law, the employer mandate takes effect in 2015, and the individual mandate penalties reach their full level in 2016. Uncertainty surrounding the ongoing effects of the ACA adds an additional level of imprecision to our estimates.

An additional limitation relates to the fact that we were unable to capture in our analysis the tax benefits associated with health spending financed through tax advantaged vehicles such as health savings accounts (HSAs) and flexible spending accounts (FSAs).

3. Health Care Coverage and Financing in Vermont

Coverage Before the Affordable Care Act

In 2012, 49 percent of Vermont's residents were insured through ESI. Other major sources of health insurance coverage in the state included Medicaid and CHIP, Medicare, and the Vermont Health Access Plan (VHAP). Table 3.1 shows the distribution of health care coverage for Vermont residents in 2012 in RAND's underlying database, which is derived from a modified version of the VHHIS. Our modifications are described in more detail in the appendix; they include appending the VHHIS income data with modified adjusted gross income estimates from the Vermont tax department and adjusting the Medicare and Medicaid totals to match administrative information from the state.

Table 3.1. Health Insurance Coverage Sources in Vermont, 2012

	Number of Individuals	Share of Population
Employer coverage	307,032	49%
Medicaid and CHIP	85,400	14%
VHAP	39,698	6%
Medicare	86,866	14%
Dual Medicare and Medicaid	33,399	5%
Non-group and Catamount	19,331	3%
Military	10,693	2%
Uninsured	43,534	7%
Total	625,953	100%

NOTE: Individuals are assigned to only one category based on their primary source of insurance coverage.
SOURCE: Authors' calculations based on data from the VHHIS, modified to match administrative totals provided by the Department of Vermont Health Access (DVHA).

Even before the coverage expansions from the ACA took effect on January 1, 2014, Vermont had relatively expansive programs for low- and moderate-income individuals. Medicaid and CHIP coverage was and continues to be available to individuals who meet income eligibility standards based on the FPL. FPL varies by family size, e.g., in 2012, the FPL for a single individual was $11,170 while the FPL for a family of four was $23,050. In 2012, children ages 0 to 19 were eligible for Medicaid if their family income was no greater than 225 percent of FPL, and pregnant women were eligible if their incomes were no greater than 133 percent of the FPL. Low-income parents were eligible for Medicaid Section 1931 coverage if their incomes were at

or below 77 percent FPL in urban areas and 73 percent FPL in rural areas. Working people with disabilities were also eligible, if their income was below 250 percent of FPL (Vermont Legal Aid's Office of Health Care Ombudsman, 2013). Prior to the ACA, Medicaid eligibility also depended on an asset limit of $2,000 for an individual and $3,000 for couples. (Asset limits were eliminated by the ACA.)

Children up to age 19 who did not qualify for Medicaid were eligible for CHIP if their family income was less than or equal to 300 percent FPL (Vermont Legal Aid's Office of Health Care Ombudsman, 2013). Similarly, pregnant women with family incomes up to 200 percent FPL were also eligible for CHIP. The Vermont CHIP charges modest premiums on a graduated scale based on income. Collectively, CHIP and children's Medicaid are referred to as "Dr. Dynasaur."

In addition to Medicaid and CHIP, Vermont also offered several programs that were discontinued in 2014, after the ACA's coverage expansions took effect. First, VHAP was available for uninsured adults without access to ESI; parents up to 185 percent FPL (working parents up to 191 percent FPL) and childless adults up to 150 percent (working childless adults up to 160 percent) were eligible (Kaiser Commission on Medicaid and the Uninsured, 2013). Monthly premiums were tiered based on FPL, ranging from $7 to $49 per person for individuals with family income from 50 percent to 185 percent FPL. VHAP ESI premium assistance was also available for adults who had offers of ESI. Second, the Catamount Health program provided subsidized non-group coverage for adults up to 300 percent FPL through the Catamount Health Assistance Program (CHAP) (Vermont, 2006). Eligible individuals needed to be residents of Vermont, at least 18 years of age, and not eligible for Medicaid, Medicare, or VHAP. Further, to be eligible for subsidies, enrollees must have been without qualifying private health insurance for more than 12 months, or must have lost coverage due to a qualifying event (e.g., employment loss, COBRA coverage ends, divorce, death of spouse). The Catamount program also offered an employer-sponsored insurance premium assistance program (ESIA) that provided premium assistance for individuals to enroll in ESI. Coverage through ESIA was available if the enrollee met the eligibility criteria for Catamount Health but had access to an employer plan with comprehensive coverage comparable to Catamount Health and if the cost of providing premium assistance to enroll in the employer's plan was less than the cost of providing premium assistance to enroll in Catamount Health.

Finally, Vermont offered several state pharmacy assistance programs to low-income residents, including VHAP Pharmacy, VScript, and VScript Expanded. An additional program, VPharm, offers wraparound coverage for Medicare Part D enrollees up to 225 percent FPL.

Both VHAP and Catamount Health were discontinued on March 31, 2014, as enrollees transitioned to Medicaid or the Exchange (Vermont Health Connect, 2013). The VHAP Pharmacy, VScript, and VScript Expanded programs were also discontinued on March 31, 2014. VPharm, the wraparound program for Part D enrollees, remains in effect.

State spending on Medicaid, CHIP, VHAP, and the Catamount Health premium assistance programs was financed through both state and federal funding sources. The federal government

contributed to Medicaid, VHAP, and the Catamount Health premium assistance program at the regular federal matching assistance percentage (FMAP), which was 57.86 percent in state fiscal year 2012. Federal reimbursement for CHIP was higher; this program received an enhanced FMAP of 70.51 percent in 2012. Since 2012, FMAP rates in Vermont have declined slightly; regular FMAP for state fiscal year 2014 was 55.34 percent, and CHIP FMAP was 68.37 percent.

State contributions to Medicaid, CHIP, VHAP, and Catamount Health came primarily from the general fund, which covered approximately 46 percent of state expenses, and the state health care resources fund, which covered 44 percent of state expenses. An additional 7 percent of state spending was financed through the national tobacco settlement,[3] and the remaining 3 percent of funding was financed through miscellaneous fees and other payments.

Coverage After the Affordable Care Act

When the ACA's coverage expansions took effect on January 1, 2014, Vermont eliminated the Catamount and VHAP programs and several pharmacy benefit programs for low-income individuals. Individuals who had previously been eligible for Catamount and VHAP gained new eligibility in Medicaid due to the expansion to 133 percent of the FPL, or for tax credits and cost-sharing subsidies in the health insurance Exchange. Medicaid and CHIP eligibility for children, pregnant women, and adults with disabilities was mostly unaffected by the law.[4]

The health insurance Exchanges are state-specific markets for buying and selling private health insurance coverage. Enrollees with incomes between 100 and 400 percent of the FPL are eligible for federal tax credits to reduce the cost of premiums, if they are ineligible for Medicaid or CHIP and do not have an affordable offer of coverage from an employer. Unlike Medicaid and CHIP, Exchange plans can have significant cost-sharing requirements—such as copayments and deductibles—which can lead to high out-of-pocket payments among enrollees. However, Exchange enrollees with incomes below 250 percent of the FPL are further eligible for federally financed cost-sharing reductions, which reduce their out-of-pocket expenses.

In most states, tax credits and cost-sharing reductions in the Exchange are fully financed by the federal government. However, Vermont opted to further subsidize Exchange enrollees by offering additional premium tax credits and cost-sharing reductions, over and above the federal contributions. Vermont's enhanced premium tax credits are available to families with incomes below 300 percent of FPL, and they reduce the maximum premium contributions that enrollees must make to a benchmark Exchange plan by an additional 1.5 percent. The federal tax credits

[3] The share financed by the tobacco settlement falls slightly from 2012 to 2017. After 2017, there will be a large decline as tobacco settlement funds are depleted.

[4] The law removed asset tests for pregnant women and children and required states to use a new methodology for counting income, based on modified adjusted gross income (MAGI). Eligibility standards for groups converting to MAGI income standards were adjusted to minimize the impact of the conversion process on eligibility.

cap premium spending as a percentage of family income, up to the price of a benchmark plan. So, for example, if the federal credits capped spending at 8 percent of income, the Vermont enhanced credits would reduce this cap to 6.5 percent of income. Vermont's enhanced tax credit payments are matched by the federal government at the regular FMAP rate.

The Vermont cost-sharing reduction reduces out-of-pocket expenses at the time of services. To be eligible for the cost-sharing reduction, an individual must purchase a silver-level plan and have family income below 300 percent of FPL. Vermont's enhancements to the federal cost-sharing reduction subsidies are fully financed by the state. Table 3.2 shows the medical deductibles and out-of-pocket maximums for an individual and four-person family under the cost-sharing reduction.

Table 3.2. Cost-Sharing Reductions for Low-Income Vermont Families ≤300% FPL

Family Income as a Percent of FPL	Medical Deductible		Out-of-Pocket Maximum	
	Individual	Family of 4	Individual	Family of 4
139–150%	$100	$200	$500	$1,000
151–200%	$750	$1,500	$1,250	$2,500
201–250%	$1,500	$3,000	$3,000	$6,000
251–300%	$1,900	$3,800	$4,000	$8,000

SOURCE: Vermont Health Connect.

In addition to providing federal tax credits and cost-sharing subsidies for Exchange enrollees, the federal government offered enhanced FMAP for adults who become newly eligible for Medicaid as a result of the ACA. Because Vermont offered expansive Medicaid coverage to residents before the ACA took effect, it gets a different FMAP for newly eligible adults than most other states. Specifically, the FMAP for newly eligible adults is 77 percent in 2014, 81.6 in 2015, 86.2 in 2016, 86.8 in 2017, 90 percent in 2018, 93 percent in 2019, and 90 percent thereafter. Vermont also receives a 2.2 percent increase in regular FMAP (above the base level of 54 percent) in 2014 and 2015.

Using the RAND COMPARE model, we estimate that the share of individuals enrolled in ESI will decline slightly between 2012 and 2017 (Table 3.3), falling from 49 percent to 45 percent of the population. The decline in employer coverage is driven in part by the new, subsidized insurance options available on the Exchange. Simultaneously, we estimate increases in Medicaid, CHIP, and non-group enrollment (through the Exchange) in response to the ACA. The number of Medicare enrollees also increases, due to the aging of the population. The increases in Medicaid, Exchange, and Medicare more than offset the decline in ESI enrollment; as a result, we estimate that the share of uninsured individuals in Vermont will decline from 7 percent in 2012 to 2 percent in 2017. While the 2 percent estimate for the number of remaining uninsured individuals is low, Massachusetts dropped to a 3 to 4 percent uninsurance rate after its

2006 health reform (Center for Health Information and Analysis, 2013), and early indications suggest that uninsurance in Massachusetts has fallen still further since the implementation of the ACA (Bebinger, 2014). The ACA may have a bigger effect on uninsurance in Vermont because of Vermont's enhanced Exchange subsidies. Vermont also has a smaller Latino population than Massachusetts, and early results suggest that Latinos have continued to have relatively high rates of uninsurance even after ACA implementation (Doty, Blumenthal and Collins, 2014).

Table 3.3. Projected Changes in Health Insurance Coverage Sources in Vermont, 2012 and 2017

	2012		2017	
	Number of Individuals	Share of Population	Number of Individuals	Share of Population
Employer-sponsored insurance	307,032	49%	285,345	45%
Medicaid and CHIP	85,400	14%	134,095	21%
VHAP	39,698	6%	n/a	n/a
Medicare	86,866	14%	103,228	16%
Dual Medicare and Medicaid	33,399	5%	36,776	6%
Non-group/ Catamount/Exchange	19,331	3%	49,384	8%
Military	10,693	2%	10,464	2%
Uninsured	43,534	7%	11,741	2%
Total	625,953	100%	631,032	100%

NOTE: Individuals are assigned to only one category based on their primary source of insurance coverage.
SOURCE: Vermont Household Health Interview Survey, 2012, modified by RAND; RAND COMPARE Model, Vermont-Specific Version, 2017.

Table 3.4 shows the share of employers that offered insurance in 2012, and that are estimated to offer insurance in 2017 based on our model. We estimate a decline in offer rates for firms with fewer than 100 workers. The reduction in offer rates is driven by the presence of Exchange subsidies, which make Exchange coverage an attractive option both for employers and their workers. Vermont's enhanced Exchange tax credits and cost-sharing reductions increase the incentive for firms to drop insurance. The decline in employer offer rates is most pronounced for firms with fewer than 50 workers, which are not subject to the employer mandate.

Table 3.4. Estimated Employer Insurance Offer Rates in Vermont, 2012 and 2017

Number of Workers	2012	2017
<50	46%	37%
50–99	96%	84%
100–499	100%	99%
500+	100%	100%

NOTE: Results are based on the RAND COMPARE Model, Vermont-Specific Version, 2017.

Vermont funding streams for Medicaid and CHIP remained similar before and after the ACA's major changes took effect, with about 46 percent of financing from the general fund, 44 percent from the state health care resources fund, and the remaining 10 percent from the national tobacco settlement and other sources. Funding for the state-financed Exchange enhancements comes entirely from general fund revenue.

Net Federal Inflows to Vermont Residents

Vermont residents make tax payments to the federal government to support health care programs, and the federal government, in turn, helps finance health care in Vermont through Medicare, federal matching payments for Medicaid, and federal Exchange premium tax credits and cost sharing subsidies. *Net federal inflows* refers to total federal health care financing provided to Vermont minus total federal tax payments by Vermont residents to support health care. These tax payments are implicitly reduced, due to the fact that spending on employer-sponsored health insurance coverage is not subject to income and payroll taxes. The value of this tax subsidy is extremely large—the CBO estimates that it costs the federal government $250 billion each year (Congressional Budget Office, 2013d), a figure that exceeds the federal governments' gross annual costs of implementing the ACA's coverage expansions (Congressional Budget Office, 2014b).

A recent report from the National Priorities Project (Sweger and Koshgarian, 2014) compared federal inflows and outflows across the 50 states and found that Vermont is 10 percent above the national average in terms of federal inflows per person, and 32 percent below the national average in terms of taxes paid per person. Overall, the study found that Vermont residents contribute approximately $5,459 in federal taxes per person but receive $6,108 per person in federal inflows. While the National Priorities Project focused on inflows for all types of services, the net inflows of federal funding are evident for health-related programs as well. According to the IRS, Vermont contributed 0.15 percent of total federal internal revenue collections in 2012 (Internal Revenue Service, 2014). However, Vermont accounted for 0.33 percent of total Medicaid spending in 2012, and 0.20 percent of Medicare spending in 2009 (the

most recently available year) (Kaiser Family Foundation, 2014a; Kaiser Family Foundation, 2014c). Vermont's disproportionate share of Medicaid funding likely reflects that Vermont has an expansive program, with higher income eligibility standards than most other states under pre-ACA policy (that is, relative to other states, people with higher incomes were able to qualify for Medicaid in Vermont). While Medicare spending per capita in Vermont has historically been below the national average, growth rates in Medicare spending in Vermont have outpaced the growth in national Medicare spending in recent years. Moreover, Vermont receives extra federal support for the Exchange through the state's federally matched enhanced premium tax credits. As validated in the analyses presented below, these statistics imply that federal revenues are an important source of funding for Vermont.

4. Results

Table 4.1 shows total spending on the value of health care benefits in Vermont in 2012 and as projected for 2017. We estimate that, in total, Vermont residents spent about $5.1 billion on the value of health care benefits in 2012, and we project that this number will grow to $6.8 billion by 2017. The 2012 estimate is within 1 percent of 2012 spending total reported in the Vermont Expenditure Analysis, a remarkable degree of consistency given that we used different methods and in some cases different data. Our 2017 estimate, $6.8 billion, is higher than an estimate of $5.9 billion in 2017 reported by the University of Massachusetts (London et al., 2013). However, the University of Massachusetts report did not include out-of-pocket spending, which explains the difference between the two estimates.[5]

The increase in spending is driven by health care cost inflation, increased health insurance enrollment (and the related increase in utilization) resulting from the ACA, and an increase in the number of residents age 65 or older. Employer coverage represents the largest source of spending in both 2012 and 2017. Total spending on Medicare, which encompasses both individual and federal contributions, grows from $1.07 billion to $1.44 billion, an increase of nearly 35 percent.[6] Total Medicaid spending also increases, from $1.25 billion to $1.66 billion, about 33 percent. While spending in the individual market represents a small share of overall spending, this spending increases more than three-fold between 2012 and 2017, from $85 to $359 million. The large increase in individual market spending is fueled in part by the ACA's Exchange, which provides new subsidies to enrollees in this market.

[5] We estimate $944 million in out-of-pocket payments in 2017. If we subtract this spending from our total, we get $5.866 billion, which is within 1.5 percent of the University of Massachusetts estimate of $5.952 billion.

[6] Our $1.074 billion estimate for total Medicare spending is slightly higher than the Vermont Expenditure Analysis estimate of $1.062 billion; this is because we include Medicare supplemental policies in the total.

Table 4.1. Nominal Incidence of Total Spending on Health by Vermont Residents, 2012 and 2017

	Spending Amount (Millions)	
	2012	2017
Employer market	**$1,690**	**$2,034**
Employee premium contributions	$395	$478
Retiree premium contributions	$12	$18
Vermont employer premium contributions for Vermont residents	$1,188	$1,431
<50 workers	$284	$287
50–99 workers	$65	$76
100–499 workers	$205	$248
500+ workers	$634	$820
Out-of-state employer premium contributions for Vermont residents	$95	$107
Medicare	**$1,074**	**$1,440**
Federal Medicare spending	$873	$1,166
Medicare premium contributions	$189	$256
Medicare supplemental policies	$12	$18
Medicaid/CHIP/VHAP	**$1,246**	**$1,661**
Federal Medicaid spending	$717	$1,033
State Medicaid spending	$518	$623
Medicaid premium contributions	$11	$4
Non-group/Catamount/Exchange	**$85**	**$359**
Individual market premium contributions	$58	$221
Federal private insurance subsidies	$15	$127
State private insurance subsidies	$11	$10
Out-of-pocket	**$720**	**$944**
Insured	$686	$937
Uninsured	$34	$7
Other	**$270**	**$373**
Federal military spending	$55	$62
TRICARE premium contributions	$1	$1
Other federal spending	$138	$214
Other state spending	$76	$96
TOTAL	**$5,084**	**$6,810**

NOTES: Other federal and state spending includes DVHA appropriations, disproportionate share hospital (DSH) payments, and non-Medicaid health-related appropriations. Medicaid premium contributions are VHAP and CHIP premiums. Individual market premium contributions are non-group, Catamount, and Exchange premiums minus premium assistance tax credits.

In Table 4.2, we decompose total spending into payments by Vermont residents, tax payments by out-of-state residents (e.g. consumption and income taxes paid by non-residents),

net inflows from the federal government, and payments by employers in the form of health insurance for retirees. We estimate that Vermont residents paid for about 71 percent of the cost of their health care consumption in 2012, and will pay for about 69 percent of their consumption in 2017. Payments encompass payments made directly by Vermont residents individually or through an employer, as well as both state and federal taxes paid by Vermont residents to support health care. We estimate that the share of total consumption paid for by Vermont residents will decrease between 2012 and 2017, due to new federal subsidies available through the ACA and the increase in the share of Vermont's population that is eligible for Medicare.

Most of the remaining spending in Vermont is financed by net inflows from the federal government—i.e., payments and subsides from the federal government for health care in Vermont in excess of taxes collected for health care from Vermont residents. By 2017, we estimate that net federal inflows will account for 30 percent of health care spending in Vermont. These net federal inflows partly reflect two national phenomena: (1) the federal government is running a deficit, so total federal outlays exceed total federal revenues, and (2) federal subsidies include the value of the tax exclusion for employer-sponsored health plans, which is not funded by revenues and is, therefore, like a deficit-financed program. At the national level, RAND estimates that around 16 percent of health care spending was financed by net federal inflows in 2012 (roughly 8 percent financed by federal deficit spending and another 8 percent financed by the tax exclusion). RAND projects that this share will decline to around 11 percent in 2017, due to a projected decline in the federal deficit. The incidence of those net federal inflows at the national level will be spread across current and future taxpayers, in the form of higher tax rates and higher debt service payments.

Net federal inflows account for larger-than-average shares of total spending in Vermont, because of Vermont's demographics and the features of its Medicaid program. Vermont generates a relatively small share of federal tax payments (i.e., smaller than its population share), but receives a relatively large share of federal payments for health care (i.e., larger than its population share). Some of the net inflow from the federal government supports the Medicare program and may be viewed as paying back to Vermont residents the Medicare hospital insurance taxes collected from them in previous years.

Out-of-state residents pay for less than 1 percent of health spending in Vermont through Vermont state taxes on income and consumption. We include separate line items for payments related to corporate taxes and retiree health premiums, because it is not clear whether the incidence for these items falls on employers, workers, shareholders, or other groups. However, the amount of health spending financed through these sources is small.

Table 4.2. Economic Incidence of Health Care Spending in Vermont

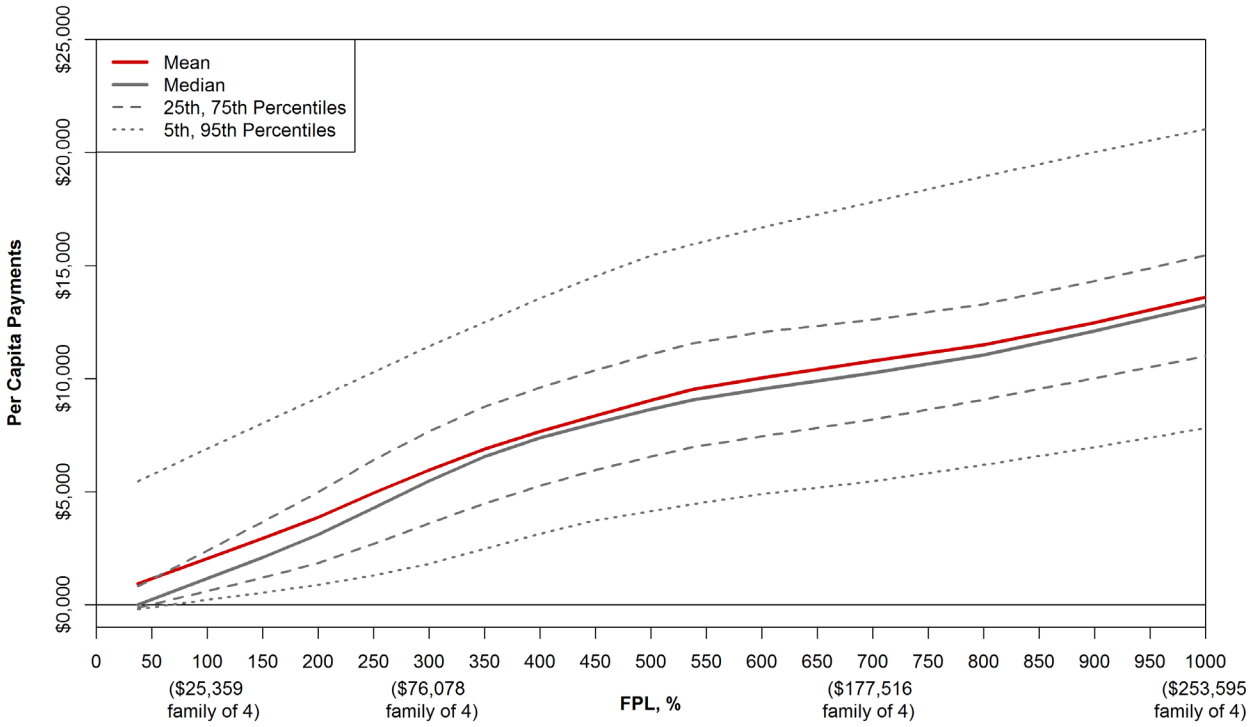
	Spending Amount (Millions)			
	2012		2017	
Total payments by Vermont residents	$3602	71%	$4,666	69%
Vermont residents' direct payments	$2,670	53%	$3,592	53%
Vermont residents' tax payments	$932	18%	$1,073	16%
Corporate income tax payments by Vermont businesses	$55	1%	$79	1%
Vermont state tax payments by out-of-state residents	$5	<1%	$6	<1%
Federal government (net federal inflows)	$1,412	28%	$2,044	30%
Retiree health incidence	$10	<1%	$15	<1%
TOTAL	$5,084	100%	$6,810	100%

NOTES: Direct payments include all premiums, including employee and employer premium contributions, and out-of-pocket payments minus cost-sharing reduction subsidies. Tax payments from Vermont residents include federal income tax, Medicare hospital insurance payroll tax, and state taxes supporting health care minus the tax exclusion for ESI and Exchange premium tax credits. Corporate income tax payments include federal and state taxes paid by Vermont businesses. Tax payments from out-of-state residents consist of Vermont income taxes, sales taxes, and meals and room taxes. The incidence on the federal government equals the net federal inflows, i.e., the difference between all federal spending on health care for Vermont residents—through Medicare, Medicaid, Exchange premium tax credits and cost-sharing subsidies, non-Medicaid health-related appropriations, DVHA appropriations, military health spending, the tax exclusion for ESI, and DSH payments—and federal taxes paid by Vermont residents to support health care programs. Retiree health incidence is employer premium contributions for retired employees.

Figure 4.1 focuses on the 69 percent of total health spending that we estimate will be paid for by Vermont residents in 2017, and shows the average per capita payment for individuals at different points in the income distribution. Total payments in this context include both direct payments made by the individual or on behalf of the individual through an employer or subsidies on the Exchange, and net tax payments that support health care, including the value of the tax expenditures. The figure plots the average, median, and various percentiles of payments made by Vermont residents at each income level.

Figure 4.1 clearly shows that higher-income individuals, on average, pay more for health care than lower-income individuals. However, among individuals with similar incomes, there is a relatively wide distribution of health spending from the range between the 5th and the 95th percentiles. For example, while the average family with income at 300 percent of the FPL level (about $76,000 for a family of four in 2017) pays about $7,000 to support health care in Vermont, the 5 percent of people in this income range with the lowest spending pay less than $2,000, while the 5 percent of people with the highest spending pay more than $12,000. The median payment among those with income less than 50 percent of FPL is close to zero, but the average payment is higher—almost $2,000. The difference between the median and average spending is explained by a small segment of low-income individuals; for example, about 5 percent spend more than $5,000 per year. This high spending comes mainly in the form of foregone wages, which can be substantial among low-income people with ESI.

Figure 4.1. Payments for Health Care Per Capita, by Income, 2017



NOTES: Payments include direct payments (premiums paid by the individual or through an employer, out-of-pocket payments, and tax payments (minus the tax exclusion for ESI) made by the individual to support health care consumption. To allocate per capita benefits within families, we sum total payments made by a family and divide by the number of family members. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

Table 4.3 corresponds to Figure 4.1 in that it shows average payments made by individuals across income groups. However, in the table, we break average spending into categories such as individual premium contributions and out-of-pocket payments. We also include separate line items for the value of foregone wages and the value of the tax exclusion for ESI. While these wage offsets for ESI represent implicit payments and tax savings, they do not come directly out of an individuals' income and therefore are conceptually somewhat different that other types of payments for health care. Like Figure 4.1, the table illustrates that total payments increase with income. For example, when we include foregone wages as a component of health payments, a person with income under 139 percent of the FPL pays, on average, $1,570 to support health care consumption in Vermont, while an individual with income over 1,000 percent of the FPL pays $21,480. If we exclude wage offsets, a person with income under 139 percent of the FPL pays, on average, $1,110 to support health care consumption, while a person with income above 1,000 percent of the FPL pays $20,160.

Table 4.3. Average Payments for Health Care Per Capita, by Family Income Level, 2017

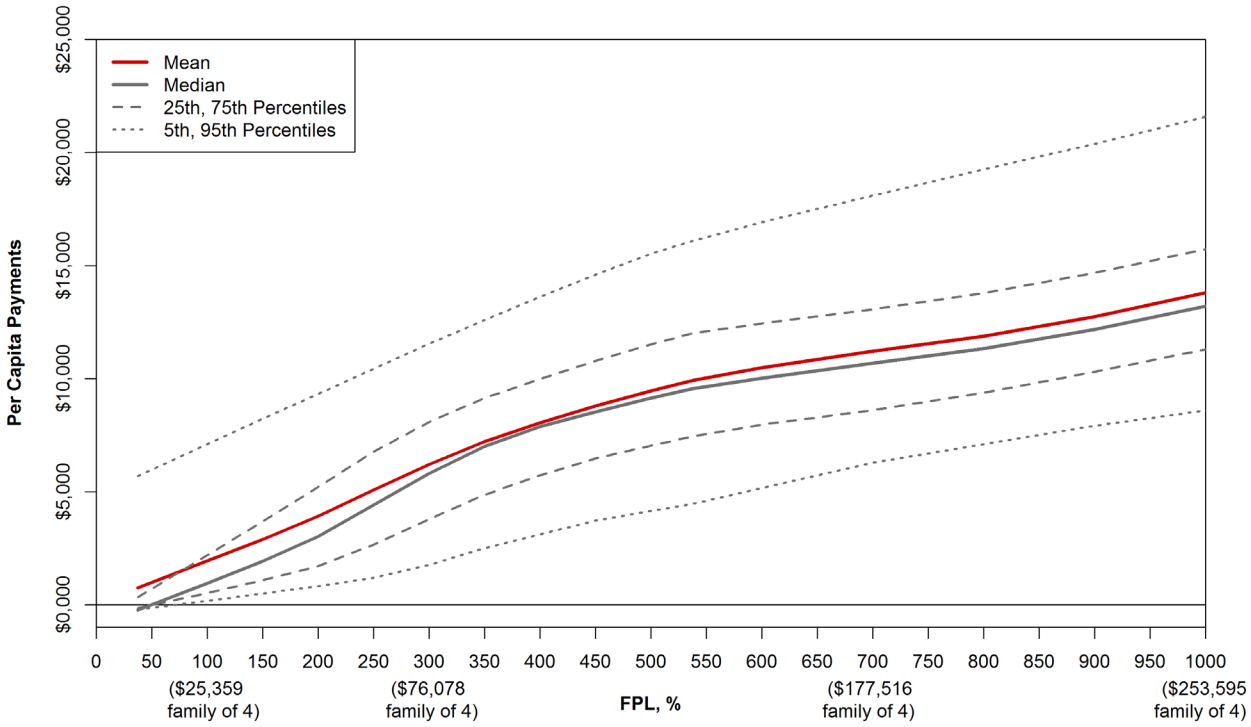
	<139% FPL	139–200%	201–300%	301–400%	401–500%	501–1,000%	1,001%+
Premium contributions	$510	$1,930	$1,770	$2,160	$2,170	$2,080	$2,700
Out-of-pocket payments	$330	$840	$1,050	$1,550	$1,790	$2,720	$3,830
State tax payments	$110	$320	$330	$400	$460	$580	$1,700
Federal tax payments							
Medicare Hospital Insurance payroll tax	$100	$250	$370	$550	$690	$1,060	$3,280
Income tax	$60	$160	$280	$570	$950	$1,780	$8,640
Wage offsets for ESI							
Value of employer premiums (foregone wages)	$670	$1,530	$2,240	$3,020	$3,340	$3,780	$3,180
Value of the tax exclusion for ESI	($220)	($650)	($960)	($1,170)	($1,340)	($1,780)	($1,860)
Exchange premium tax credits	$0	($820)	($400)	($250)	$0	$0	$0
Total with wage offsets	$1,570	$3,560	$4,690	$6,830	$8,060	$10,220	$21,480
Total without wage offsets	$1,110	$2,680	$3,410	$4,990	$6,060	$8,220	$20,160

NOTES: Total payments include premiums paid by the individual, out-of-pocket payments, tax payments made by the individual to support health care consumption, premiums paid by the employer, minus the tax exclusion for ESI and Exchange premium tax credits. Tax payments reported in the table include only those payments that are directed toward spending for health care. We sum payments for all individuals within each income category, and divide by the total number of individuals in the income category. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

Figure 4.2 shows payment for health care for the subset of the Vermont population that is under age 65. The patterns for this group are very similar to those for the overall population; in particular, payments increase with income, and there is a wide distribution in the amounts people pay at each income level. In general, the level of payment is slightly higher for those under the age of 65, because these individuals are not eligible for Medicare.[7] This pattern is also driven by the fact that the figures include foregone wages as payments, which leads to higher incidence among the working age population.

[7] One exception is that low-income seniors pay, on average, more than low-income people under the age of 65, most likely because of older individuals' less-elastic demand for health care services.

Figure 4.2. Payments for Health Care Per Capita by Individuals Under Age 65, by Income, 2017



NOTES: Payments include direct payments (premiums paid by the individual or through an employer, out-of-pocket payments, and tax payments (minus the tax exclusion for ESI) made by the individual to support health care consumption. To allocate per capita benefits within families, we sum total payments made by a family and divide by the number of family members. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

Table 4.4 disaggregates average payments among people under age 65 into subcomponents, including premium contributions, out-of-pocket payments, tax payments, and wage offsets. We then calculate total payments for each income group, with and without the wage offsets included. As shown in the previous tables and figures, payments increase substantially with income, regardless of whether or not the wage offset is included. In the total that includes the wage offsets, we estimate that an average person with income below 139 percent of the FPL will pay approximately $1,420 per year to support health care, while a person with income above 1,000 percent of FPL will pay about $20,830. Corresponding amounts excluding the wage offsets range from $920 for an average person with income below 139 percent of the FPL, and $19,120 for an individual with income above 1,000 percent of the FPL.

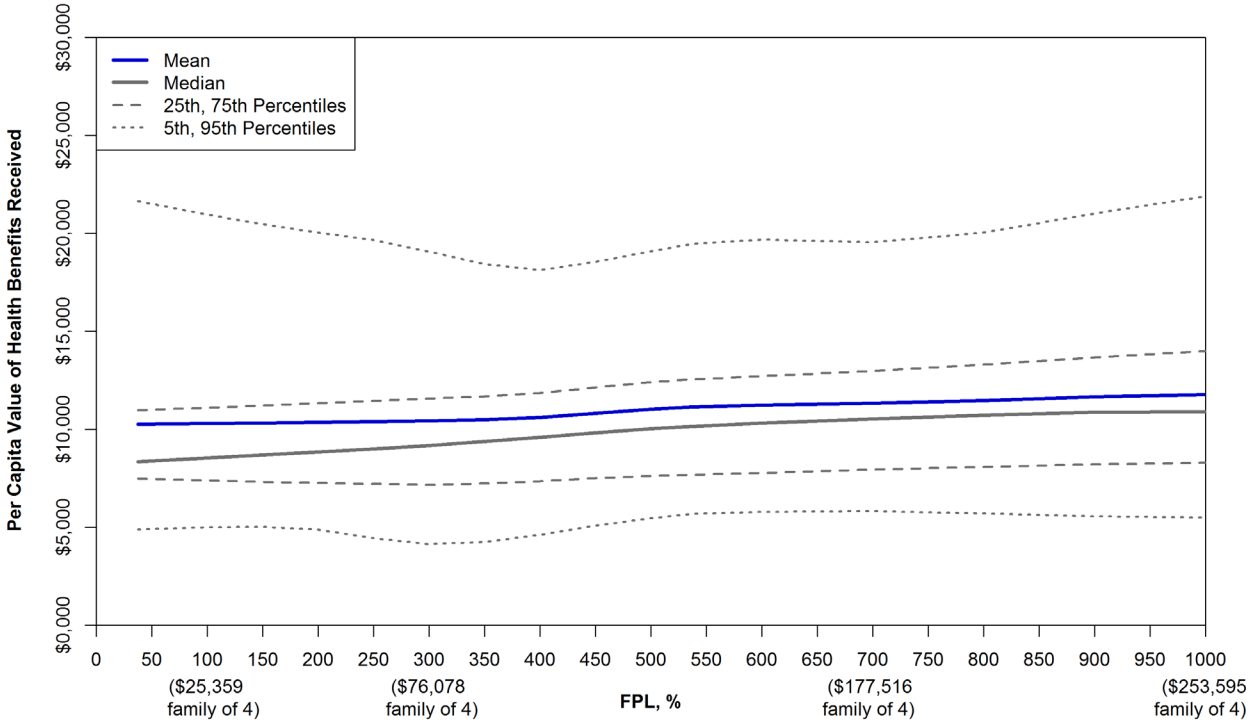
Table 4.4. Average Payments for Health Care Per Capita by Individuals under Age 65, by Family Income Level, 2017

	<139% FPL	139–200%	201–300%	301–400%	401–500%	501–1,000%	1,001%+
Premium contributions	$380	$1,990	$1,760	$2,260	$2,240	$2,120	$2,440
Out-of-pocket payments	$230	$650	$790	$1,200	$1,580	$2,300	$3,050
State tax payments	$140	$390	$350	$460	$510	$630	$1,700
Federal tax payments							
Medicare Hospital Insurance payroll tax	$110	$320	$460	$650	$790	$1,190	$3,310
Income tax	$60	$200	$350	$640	$990	$1,840	$8,630
Wage offsets for ESI							
Value of employer premiums (foregone wages)	$740	$1,990	$2,800	$3,800	$4,120	$4,700	$4,110
Value of the tax exclusion for ESI	($240)	($850)	($1,210)	($1,480)	($1,660)	($2,220)	($2,400)
Exchange premium tax credits	$0	($1,070)	($510)	($310)	$0	$0	$0
Total with wage offsets	$1,420	$3,630	$4,780	$7,210	$8,570	$10,560	$20,830
Total without wage offsets	$920	$2,490	$3,200	$4,890	$6,110	$8,080	$19,120

NOTES: Total payments include premiums paid by the individual, out-of-pocket payments, tax payments made by the individual to support health care consumption, premiums paid by the employer, minus the tax exclusion for ESI and Exchange premium tax credits. Tax payments reported in the table include only those payments that are directed toward spending for health care. We sum payments for all individuals within each income category, and divide by the total number of individuals in the income category. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

Figure 4.3 shows the value of health benefits received by individuals in Vermont, by income level. We measure the value of health benefits by summing out-of-pocket payments for health care, premium payments (including payments made by the individual and payments made by others), and the value of health care provided by Vermont's public health system (state-funded mental health and substance abuse treatment, disability services, etc.). Mean benefits in the state are roughly equivalent, regardless of an individual's income. Combined with the data presented in Figure 4.1, this pattern suggests that, while higher-income people pay more into the system, the value of health benefits received is similar regardless of an individual's income. However, within each income category, some people receive substantially more or substantially less benefits than others. These differences are driven in part by the type of health insurance coverage that people receive. For example, the high level of value of health benefits received by the top 5 percent (or at the 95th percentile) of low-income individuals is driven primarily by dually eligible Medicare and Medicaid enrollees, who receive health benefits from both of these programs (see text box).

Figure 4.3. Value of Health Benefits Received Per Capita, by Income, 2017



NOTES: Benefits received include the value of all health benefits received, including the total value of health insurance premiums, out-of-pocket payments, cost-sharing reduction subsidies, and benefits from public programs such as Medicaid and Medicare. To allocate per capita benefits within families, we sum the value of health benefits received by a family and divide by the number of family members. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

Assigning the Value of Health Benefits for Dually Eligible Individuals

Dually eligible individuals receive greater benefits than others because, to qualify for both Medicaid and Medicare, one must meet specific criteria based on income, age, and disability status. Because they tend to be older and sicker than the general population, dually eligible individuals have inherently higher spending than other insured people. We estimate the value of health benefits received for among those with public coverage based on the "premium equivalent," which represents average health spending and administrative costs among everyone enrolled in the same type of coverage. Because we group duals separately from other Medicaid and Medicare enrollees when estimating benefits, duals are assigned a higher health benefit. We could have alternatively assigned a single premium-equivalent for all Medicaid (or Medicare) enrollees based on average spending among duals and non-duals combined. However, this approach would have distorted the overall level of benefits in the population as the demographic composition of enrollees changed over time. For example, those who are newly eligible for Medicaid as a result of the ACA tend to have much lower spending than duals, and if we had assigned newly eligible individuals an average benefit that included spending for duals, our estimates would have been too high. In the appendix, we provide more detail on how we estimated premium-equivalents for dually eligible enrollees, newly eligible Medicaid beneficiaries, and other types of enrollees.

In Table 4.5, we disaggregate the average value of health benefits received into components that are self-financed versus components that are paid for by others in the form of subsidies. The table confirms that, on average, the average value of benefits received is remarkably flat across individuals. For example, a typical person with income under 139 percent of FPL receives $10,640 in benefits, and a typical person with income over 1,000 percent of FPL receives $11,920 in benefits. However, higher-income individuals finance much more of their spending directly and receive fewer subsidies from the state and the federal government.

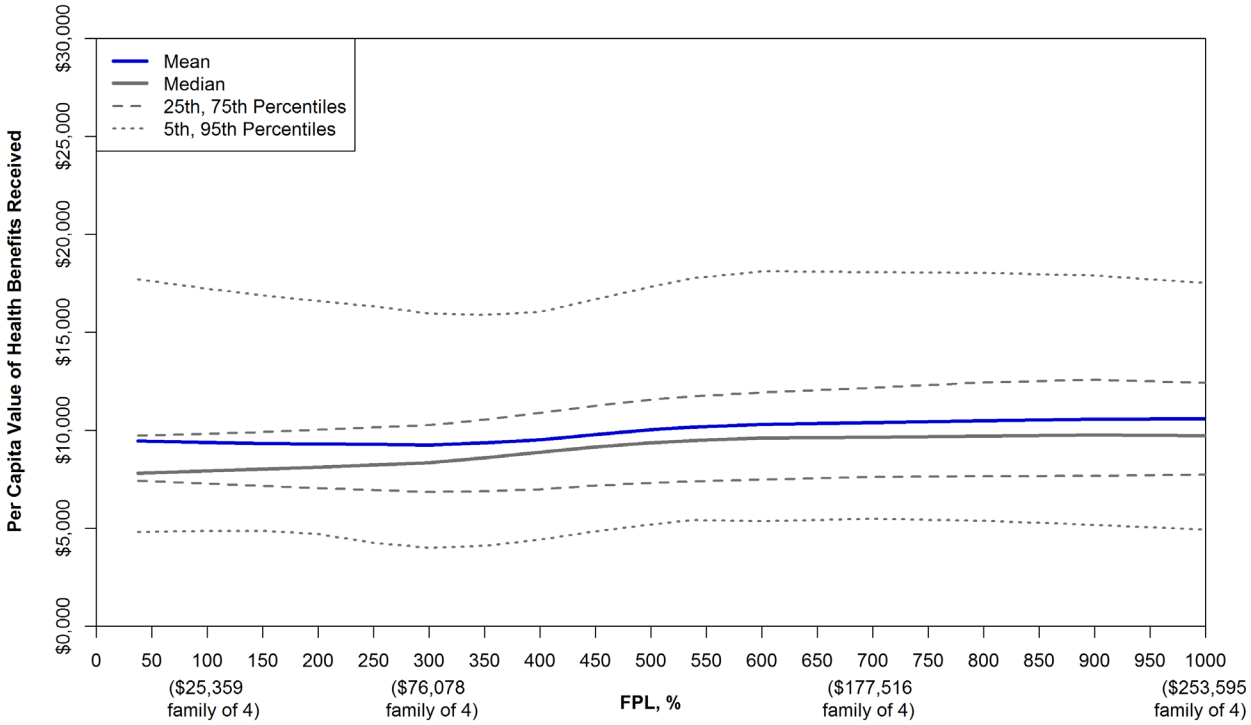
Table 4.5. Average Per Capita Value of Health Benefits Received, by Family Income Level, 2017

	<139% FPL	139–200%	201–300%	301–400%	401–500%	501–1,000%	1,001%+
Self-financed benefits							
Out-of-pocket payments	$330	$840	$1,050	$1,550	$1,790	$2,720	$3,830
Value of premiums							
Individual payments	$510	$1,930	$1,770	$2,160	$2,170	$2,080	$2,700
Employer payments	$670	$1,530	$2,240	$3,020	$3,340	$3,780	$3,180
Federal subsidies							
Medicare	$1,790	$2,600	$2,100	$1,750	$1,610	$1,590	$1,310
Medicaid/CHIP	$4,160	$2,740	$1,580	$630	$510	$350	$180
Exchange cost-sharing reductions	$0	$90	$0	$0	$0	$0	$0
Non-Medicaid health-related spending and other federal spending	$520	$390	$440	$420	$380	$410	$460
State subsidies							
Medicaid/CHIP	$2,430	$1,600	$960	$400	$400	$240	$120
Exchange cost-sharing reductions	$0	$0	$10	$0	$0	$0	$0
Non-Medicaid health-related spending and other state spending	$230	$140	$140	$130	$130	$130	$130
Total	$10,640	$11,880	$10,300	$10,050	$10,330	$11,300	$11,920

NOTES: Health benefits received include the value of out-of-pocket payments, individually purchased insurance benefits, employer premium contributions, and benefits funded through cost-sharing reduction subsidies, and other transfers use to support an individual's health care consumption. Other spending includes DVHA appropriations and DSH payments. We sum the value of benefits received for all individuals within each income category, and divide by the total number of individuals in the income category. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

Figure 4.4 shows the value of health benefits received among individuals under the age of 65. The average value of health benefits received is slightly lower among the population under 65, as compared with the full population reported in Figure 4.3. This difference is largely driven by the fact that, as measured in our analysis, the value of Medicare and dual-Medicare and Medicaid coverage is higher than the value of other types of insurance. These differences reflect that Medicare enrollees and dually eligible individuals use more health care services than others. As with the full population, the average value of health benefits received for individuals under age 65 is very similar regardless of income level.

Figure 4.4. Value of Health Benefits Received Per Capita by Individuals Under Age 65, by Income, 2017



NOTES: Benefits received include the value of all health benefits received, including the total value of health insurance premiums, out-of-pocket payments, cost-sharing reduction subsidies, and benefits from public programs such as Medicaid and Medicare. To allocate per capita benefits within families, we sum the value of health benefits received by a family and divide by the number of family members. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

Table 4.6 disaggregates the value of health benefits received into subcomponents for the population under age 65. The table confirms that the average benefit level is relatively flat, ranging from $9,710 for individuals with incomes below 139 percent of FPL to $10,390 for individuals with incomes over 1,000 percent of the FPL. As for the total population, higher-income individuals self-finance a larger share of the total health benefits received.

Table 4.6. Average Per Capita Value of Health Benefits Received by Individuals Under Age 65, by Family Income Level, 2017

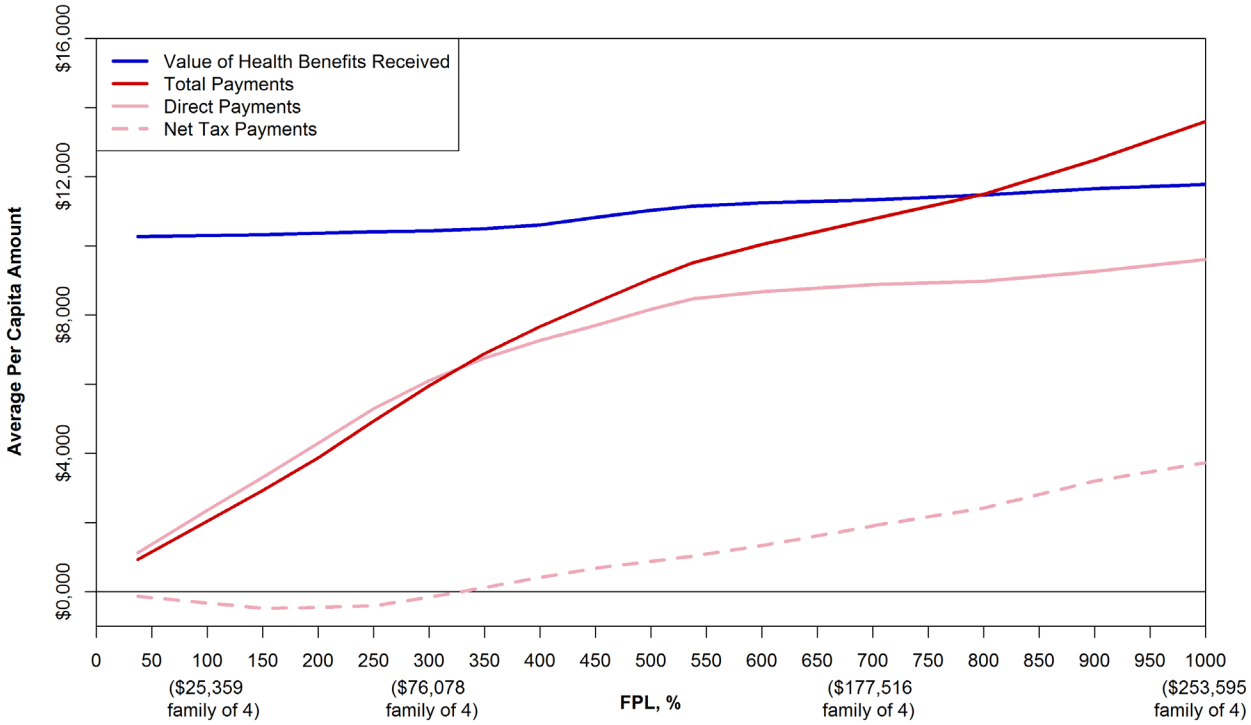
	<139% FPL	139–200%	201–300%	301–400%	401–500%	501–1,000%	1,001%+
Self-financed benefits							
Out-of-pocket payments	$230	$650	$790	$1,200	$1,580	$2,300	$3,050
Value of premiums							
Individual payments	$380	$1,990	$1,760	$2,260	$2,240	$2,120	$2,440
Employer payments	$740	$1,990	$2,800	$3,800	$4,120	$4,700	$4,110
Federal subsidies							
Medicare	$990	$580	$410	$200	$220	$150	$30
Medicaid/CHIP	$4,210	$2,400	$1,480	$570	$430	$300	$90
Exchange cost-sharing subsidies	$0	$120	$0	$0	$0	$0	$0
Non-Medicaid health-related spending and other federal spending	$550	$420	$480	$450	$400	$440	$510
State subsidies							
Medicaid/CHIP	$2,370	$1,110	$780	$310	$330	$180	$30
Exchange cost-sharing subsidies	$0	$0	$10	$0	$0	$0	$0
Non-Medicaid health-related spending and other state spending	$250	$140	$140	$130	$130	$130	$140
Total	$9,710	$9,410	$8,650	$8,910	$9,450	$10,330	$10,390

NOTES: Health benefits received include the value of out-of-pocket payments, individually purchased insurance benefits, employer premium contributions, and benefits funded through cost-sharing reduction subsidies, and other transfers use to support an individual's health care consumption. Other spending includes DVHA appropriations and DSH payments. We sum the value of benefits received for all individuals within each income category, and divide by the total number of individuals in the income category. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

In Figure 4.5, we plot the average total payments and average benefits shown in Figures 4.1 and 4.3. In addition, we add lines representing direct payments, which are payments made by the individual to support his or her (or his or her family's) own health care consumption, and net tax payments, which are payments made by the individual to support the health care consumption of others. The average total payments line shows the sum of the direct payments and net tax payments. By plotting the average total payments and average total benefits lines together, we can see that the typical Vermont resident receives more in benefits than he or she pays each year in direct payments and taxes. For example, the red line representing payments made does not cross the blue line representing benefits received until income exceed approximately 800 percent

of the FPL, or about $200,000 for a family of four. This analysis is consistent with the numbers shown in Table 4.2, in which we estimate that Vermont residents will pay for about 67 percent of their health care in 2017. When we separate total payments into direct payments and net tax payments, we find that direct payments increase steeply with income until income reaches about 500 percent of FPL, and then begin to continue to rise at a slow rate as income increases. There is a dip in net tax payments at around 150 percent of the FPL due to the ACA's tax credits, which are highest for individuals with incomes between 138 and 200 percent of the FPL. Above 150 percent of FPL, net tax payments increase at a steady rate.

Figure 4.5. Average Health Payments and Total Value of Health Benefits Received Per Capita, by Income, 2017

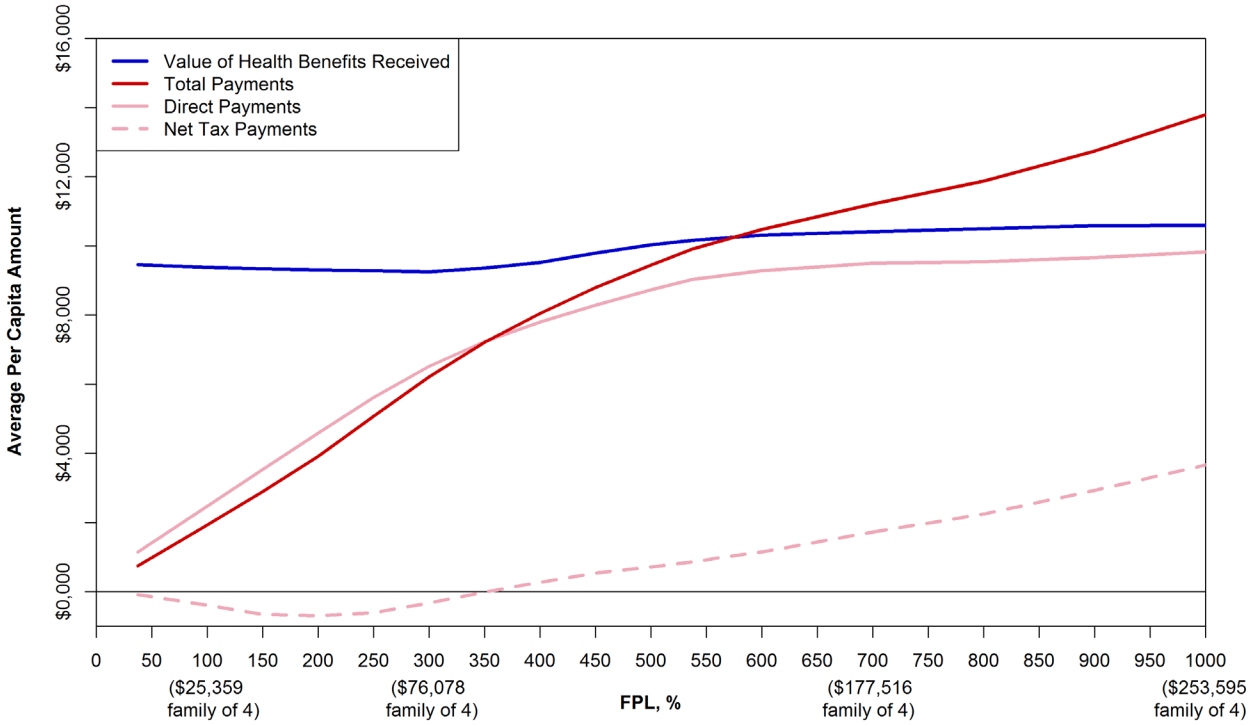


NOTES: Benefits received include the value of all health benefits received, including total premiums paid by an individual or through an employer, out-of-pocket payments, benefits funded through Exchange cost-sharing reductions, and benefits from public programs such as Medicaid and Medicare. Direct payments are premiums paid by the individual or through an employer, and out-of-pocket payments. Net tax payments are payments made by the individual to support health care consumption, minus the tax exclusion for ESI and Exchange premium tax credits. Total payments are the aggregation of direct payments and tax payments. To allocate per capita amounts within families, we sum payments made and benefits received by a family and divide by the number of family members. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

Figure 4.6 graphs total health payments and the value of total benefits received for individuals under age 65. The patterns shown in this figure are similar to those reported in Figure 4.5, although the gap between the value of benefits received and direct payments made to support health care consumption is lower for high-income individuals when we restrict the analysis to those under age 65. This reflects that fact that the Medicare benefit increases the

difference between what individuals pay directly (e.g., through out-of-pocket payments and premiums) and what they receive in health benefits. Another key difference between Figures 4.5 and 4.6 is that, for the population under age 65, payment levels begin to exceed the value of health benefits received at about 575 percent of the FPL. Again, this difference is due to the fact that older individuals receive Medicare, and therefore are more likely to pay less than they receive in benefits in any given year.

Figure 4.6. Average Health Payments and Total Value of Benefits Received Per Capita by Individuals under Age 65, by Income, 2017



NOTES: Benefits received include the value of all health benefits received, including total premiums paid by an individual or through an employer, out-of-pocket payments, benefits funded through Exchange cost-sharing reductions, and benefits from public programs such as Medicaid and Medicare. Direct payments are premiums paid by the individual or through an employer, and out-of-pocket payments. Net tax payments are payments made by the individual to support health care consumption, minus the tax exclusion for ESI and Exchange premium tax credits. Total payments are the aggregation of direct payments and tax payments. To allocate per capita amounts within families, we sum payments made and benefits received by a family and divide by the number of family members. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

While the average individual may receive more in benefits than he or she contributes in payments for health care, this pattern may vary depending on an individual's source of insurance and other factors. A drawback of the previous tables and figures is that they combine various types of individuals, including those enrolled in Medicare, those enrolled in ESI, those enrolled in Medicaid, the uninsured, and those enrolled in other sources of coverage. In Table 4.7, we show the ratio of individuals' total spending on health care relative to the total value of benefits received for a variety of prototypical families with different insurance sources. Another

important difference between Table 4.7 and the previous figures is that, in Table 4.7, we categorize individuals based on their total compensation (wages plus employer contributions to employer-provided health benefits). This approach enables us to make an apples-to-apples comparison of Exchange enrollees and ESI enrollees, accounting for the fact that ESI enrollees, by definition, receive more compensation from their employers than equivalent workers without ESI.

Table 4.7 shows considerable variation across types of people in the value of benefits received relative to the amount of payments made. Not surprisingly, Medicaid enrollees contribute a small amount relative to the total value of the health benefits they receive. For example, a single-parent family with two children on Medicaid pays about $810 in taxes and direct payments, and receives over $25,000 in health benefits, for a payment-to-benefits ratio of 3 percent. Most Medicare enrollees also receive considerably more than they pay, although we do not capture the cumulative payments that Medicare enrollees have made in earlier years.

One striking aspect of Table 4.7 is that working individuals and families with equivalent levels of total compensation receive very different benefits depending on whether they are enrolled in employer coverage or Exchange coverage. For example, a family with two working parents enrolled in insurance through the Exchange with total compensation between $35,000 and $65,000 has a payment-to-benefits ratio of about 31 percent, while a similar family enrolled in employer coverage has a payment-to-benefit ratio of about 60 percent. This difference reflects, in part, that the tax treatment of Exchange plans is vastly different from the tax treatment of ESI plans. Individuals on Exchange plans pay for these plans with after-tax dollars, but then receive tax credits and cost sharing subsidies that vary inversely with income. In contrast, individuals enrolled in ESI pay directly for these benefits, but with pre-tax dollars. As a result, ESI enrollees receive an effective subsidy that is equivalent to their marginal tax rate. Because the marginal tax rate is lower for low income individuals, the value of the ESI tax subsidy increases as income goes up. The result is that low and middle income enrollees frequently receive subsidies for a larger share of their health spending if they are enrolled in the Exchange, relative to what they would receive if they had coverage from an employer (and paid for this coverage through foregone wages).

Table 4.7. Case Studies, 2017

Type of Individual or Family (Age, Compensation, Primary Source of Insurance Coverage)	(1) Individual Out-of-Pocket Payments	(2) Individual and Employer Premium Payments*	(3) Federal and State Tax Payments to Support Health Care	(4) Federal and State Cost-Sharing Reductions	(5) Federal and State Premium Tax Credits	(6) Value of the Tax Exclusion for ESI	(7) Value of Benefits Received from Public Programs**	(8) Net Payments (=1+2+3 -6)	(9) Value of Benefits (=1+2 +4+5+7)	(10) Ratio of Payments to Value of Benefits (=8/9)
(A) Single parent, 2 children, Medicaid	$30	$0	$780	$0	$0	$0	$24,560	$810	$24,590	3%
(B) Childless adult, age 26–34, Medicaid	$30	$0	$1,020	$0	$0	$0	$7,990	$1,050	$8,030	13%
(C) Working adult, age 26–34										
(C1) $15,000–$30,000 of compensation, Exchange	$680	$1,490	$1,520	$1,110	$4,950	$0	$430	$3,690	$8,660	43%
(C2) $15,000–$30,000 of compensation, ESI	$840	$6,850	$1,610	$0	$0	$2,440	$430	$6,870	$8,130	84%
(C3) $30,000–$50,000 of compensation, Exchange	$2,010	$3,810	$2,660	$100	$2,520	$0	$430	$8,480	$8,860	96%
(C4) $30,000–$50,000 of compensation, ESI	$1,000	$6,960	$2,200	$0	$0	$2,580	$430	$7,570	$8,380	90%
(D) Family of 4, 2 working parents										
(D1) $35,000–$65,000 of compensation, Exchange	$2,070	$3,300	$2,360	$3,360	$14,840	$0	$1,720	$7,730	$25,280	31%
(D2) $35,000–$65,000 of compensation, ESI	$2,480	$20,870	$2,630	$0	$0	$11,020	$1,720	$14,960	$25,070	60%
(D3) $65,000–$100,000 of compensation, Exchange	$6,810	$9,910	$5,990	$0	$7,900	$0	$1,720	$22,710	$26,340	86%
(D4) $65,000–$100,000 of compensation, ESI	$3,080	$20,100	$4,420	$0	$0	$8,160	$1,720	$19,440	$24,900	78%

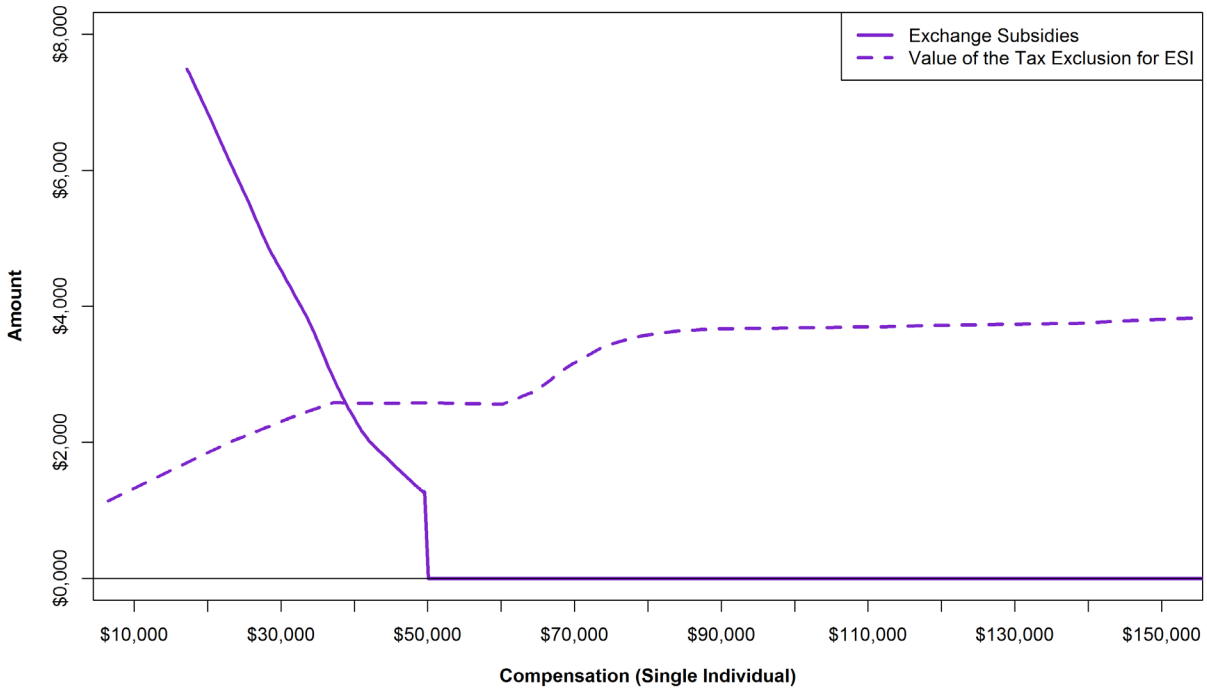
Type of Individual or Family (Age, Compensation, Primary Source of Insurance Coverage)	(1) Individual Out-of-Pocket Payments	(2) Individual and Employer Premium Payments*	(3) Federal and State Tax Payments to Support Health Care	(4) Federal and State Cost-Sharing Reductions	(5) Federal and State Premium Tax Credits	(6) Value of the Tax Exclusion for ESI	(7) Value of Benefits Received from Public Programs**	(8) Net Payments (=1+2+3 -6)	(9) Value of Benefits (=1+2 +4+5+7)	(10) Ratio of Payments to Value of Benefits (=8/9)
(D5) $100,000–$125,000 of compensation, ESI	$3,450	$19,860	$6,420	$0	$0	$6,820	$1,720	$22,920	$25,030	92%
(D6) $125,000–$250,000 of compensation, ESI	$4,010	$20,170	$10,640	$0	$0	$8,560	$1,720	$26,250	$25,890	101%
(D7) Over $375,000 of compensation, ESI	$5,210	$21,130	$83,460	$0	$0	$14,470	$1,720	$95,330	$28,060	340%
(E) Married couple, no children										
(E1) $25,000–$40,000 of compensation, Exchange	$1,420	$2,430	$1,560	$2,190	$10,210	$0	$860	$5,410	$17,110	32%
(E2) $25,000–$40,000 of compensation, ESI	$1,630	$13,660	$1,690	$0	$0	$3,240	$860	$13,730	$16,140	85%
(E3) $40,000–$65,000 of compensation, Exchange	$3,890	$5,380	$3,260	$250	$7,120	$0	$860	$12,530	$17,490	72%
(E4) $40,000–$65,000 of compensation, ESI	$1,980	$13,620	$2,860	$0	$0	$3,640	$860	$14,820	$16,460	90%
(E5) $65,000–$85,000 of Compensation, ESI	$2,270	$13,720	$4,470	$0	$0	$4,460	$860	$15,990	$16,840	95%
(E6) $85,000–$170,000 of compensation, ESI	$2,720	$13,740	$7,900	$0	$0	$4,860	$860	$19,490	$17,310	113%
(E7) Over $250,000 of compensation, ESI	$3,380	$13,610	$48,320	$0	$0	$8,130	$860	$57,180	$17,840	320%
(F) Couple, Medicare (without Medicare supplemental, ESI, or RHI)										
(F1) $40,000–$65,000 of compensation	$4,220	$3,340	$710	$0	$0	$0	$15,610	$8,270	$23,170	36%
(F2) $65,000–$85,000 of compensation	$3,250	$3,220	$2,060	$0	$0	$0	$14,280	$8,530	$20,760	41%
(F3) $85,000–$170,000 of compensation	$5,660	$3,410	$4,680	$0	$0	$0	$15,350	$13,750	$24,420	56%

Type of Individual or Family (Age, Compensation, Primary Source of Insurance Coverage)	(1) Individual Out-of-Pocket Payments	(2) Individual and Employer Premium Payments*	(3) Federal and State Tax Payments to Support Health Care	(4) Federal and State Cost-Sharing Reductions	(5) Federal and State Premium Tax Credits	(6) Value of the Tax Exclusion for ESI	(7) Value of Benefits Received from Public Programs**	(8) Net Payments (=1+2+3 -6)	(9) Value of Benefits (=1+2 +4+5+7)	(10) Ratio of Payments to Value of Benefits (=8/9)
(F4) Over $250,000 of compensation	$6,780	$7,760	$24,930	$0	$0	$0	$10,680	$39,470	$25,210	157%
(G) Single individual, Medicare (without Medicare supplemental, ESI, or RHI)										
(G1) $30,000–$50,000 of compensation	$1,740	$1,710	$640	$0	$0	$0	$7,880	$4,090	$11,330	36%
(G2) $50,000–$60,000 of compensation	$1,320	$1,710	$1,230	$0	$0	$0	$7,770	$4,260	$10,800	39%
(H) Dual eligible Medicare enrollee										
(I1) Age <65	$450	$1,880	$920	$0	$0	$0	$28,330	$3,250	$30,660	11%
(I2) Age 65+	$350	$1,760	$630	$0	$0	$0	$28,390	$2,740	$30,500	9%
(I) Uninsured Individual	$320	$0	$1,380	$0	$0	$0	$3,990	$1,700	$4,310	39%

NOTES: Compensation includes wages and the wage offset for ESI. Exchange case studies are standardized to silver plans. Amounts in columns (1) - (8) are averages across individuals or families as indicated in each case. We estimate that, in 2017, 100 percent of the FPL will be $12,409 for a single individual, $16,726 for a couple, and $25,359 for a family of four. To enable comparisons across individuals in employer and Exchange plans, we standardized spending using the following methods: (1) premiums were set to the median for each plan type (single, employee+1, or family) and firm size category. (2) Out-of-pocket (OOP) payments was based on the average total health care spending by age category (<18, 19–64, 65+) multiplied by 1 minus the actuarial value (AV) of the health plan, assuming an 85 percent AV for employer plans and a 70 percent AV for the Exchange. We then applied a regression-based adjustment to enable OOP spending to vary by age and income, using data from the MEPS. Numbers may not sum to exact totals due to rounding.
For a single individual, $17,125–$31,021 will be139–250% of FPL; $31,022–$49,634 will be 251–400% of FPL, and $49,634–$62,043 will be 401–500% of FPL.
For a couple, $23,082–$41,814 will be 139–250% of FPL; $41,815–$66,902 will be 251–400% of FPL; $66,903–$83,628 will be 401–500% of FPL; $83,629–$167,255 will be 501–1,000% of FPL; and over $250,883 will be over 1500% of FPL.
For a family of 4, $34,997–$63,399 will be 139–250% of FPL; $63,400–$101,438 will be 251–400% of FPL; $101,439–$126,797 will be 401–500% of FPL; $126,798–$253,595 will be 501–1,000% of FPL; and over $380,392 will be over 1500% of FPL.
* Includes premiums paid by individuals and wage offsets for ESI, minus premium tax credits
** Includes Medicare spending minus premiums collected, Medicaid spending minus premiums collected, health-related non-Medicaid appropriations, DVHA appropriations, and DSH payments

Figure 4.7 shows the value of the Exchange tax credits compared with the value of the employer tax exclusion for single workers with different levels of total compensation. The value of the Exchange subsidies falls to zero at around $50,000 because, by law, these subsidies are not available to individuals with incomes over 400 percent of the FPL (about $50,000 in 2017). The "stepped" shape of the curve representing the value of the ESI exclusion is driven by the marginal tax rate, which increases in a stepwise manner. We find that that, for almost everyone with total compensation below $50,000, the subsidy provided through Exchange tax credits is more valuable than the employer tax exclusion. This result implies that single workers with total compensation below about $38,000 might be better off financially if their employers dropped health insurance coverage and passed the savings back to them in the form of increased wages. Whether a worker would prefer Exchange coverage to ESI would depend on other factors not measured in this report, such as the breadth of Exchange provider networks and the perceived quality of care provided by Exchange plans.

Figure 4.7. Exchange Subsidies and Value of the Tax Exclusion for ESI Received by Single Individuals, by Compensation, by Income, 2017

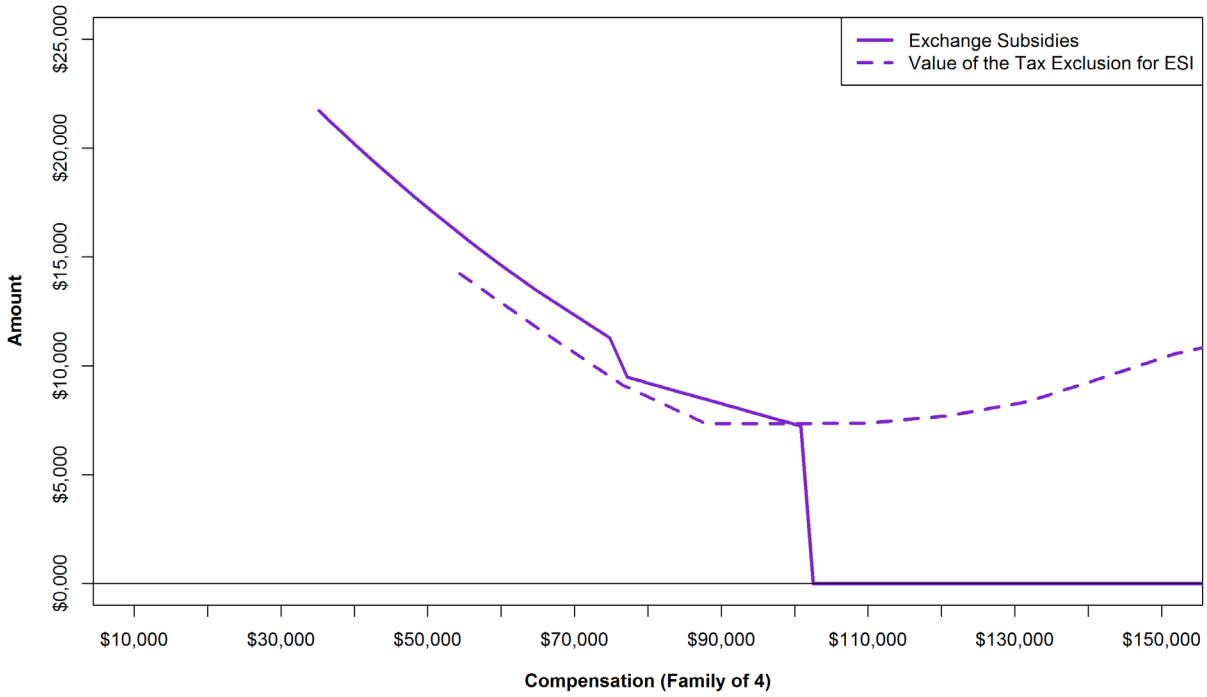


NOTES: Exchange subsidies include advanced premium tax credits and cost-sharing reductions. Compensation includes wages and the wage offset for ESI. The amounts are for single individuals.

Figure 4.8 compares the value of the Exchange subsidies with the value of the employer tax exclusion for a family of four. The value of the Exchange subsidies falls abruptly to zero at $100,000, about 400 percent of the FPL in 2017. The u-shaped pattern for the value of the employer-tax exclusion is driven by the earned income tax credit, which leads to increasing

marginal tax rates for some individuals.[8] Here, we find that the cut-off for preferring the Exchanges over ESI is about $100,000 in 2017. In other words, families with total compensation under $100,000 might be financially better off if employers dropped health insurance coverage, enabling them to obtain subsidies on the Exchanges. Again, whether families would prefer to receive Exchange coverage will depend on the quality of Exchange plans compared with ESI plans, factors that we do not measure in this report.

Figure 4.8. Exchange Subsidies and Value of the Tax Exclusion for ESI Received by Families of Four, by Compensation, by Income, 2017



NOTES: Exchange subsidies include advanced premium tax credits and cost-sharing reductions. Compensation includes wages and the wage offset for ESI. The amounts are for families of four in which all family members have the same type of insurance (ESI or Exchange). The kink in the Exchange subsidies curve at about $75,000 is driven by the fact that Vermont's enhanced Exchange tax credits phase out at 300 percent of FPL.

The tables and figures discussed above focus on individuals' absolute spending on health care. However, policymakers are often concerned about spending relative to income. In Table 4.8, we report average health spending as a percentage of income for individuals in different income groups. We consider five types of payments: (1) out-of-pocket payments (e.g., co-pays, deductibles, other cost sharing, consumption of over-the-counter drugs, any payments made

[8] The earned income tax credit is available for people with incomes below about $50,000. However, it affects people with much higher levels of total compensation, because total compensation is the sum of employer premium contributions and wages.

directly to providers without using insurance), (2) individual premium payments, (3) premium payments made on behalf of individuals by employers, (4) net tax payments, which are total taxes paid to support health care minus any health-related tax benefits or subsidies received, and (5) total payments on health care, which represent the sum of the other three types of payments.

Table 4.8 paints a different picture of the progressivity of the current Vermont health system, relative to the previous tables and figures. In particular, while the tables above showed that low-income individuals pay less in absolute terms than high income individuals, Table 4.8 shows that—as a percentage of income—lower-income individuals pay more than their higher-income counterparts. We estimate that individuals with incomes below 139 percent of the FPL spend, on average, 28 percent of income on health care, while individuals with incomes above 1,000 percent of the FPL spend only 14 percent of their income on health care. The large spending among low-income individuals is driven in part by foregone wages among those with ESI. When we eliminate foregone wages from the totals, we find the low-income individuals spend about 20 percent of their incomes on health care, compared with 13 percent among those with the highest incomes.

Table 4.8. Average Payments for Health Care as a Percentage of Average Income, by Family Income Level, 2017

Payments	<139% FPL	139–200%	201–300%	301–400%	401–500%	501–1,000%	1,001%+
Individual premium	9%	12%	9%	8%	6%	4%	2%
Out-of-pocket	6%	5%	5%	5%	5%	5%	3%
Net tax	5%	(1%)	3%	4%	6%	7%	9%
Wage offsets for ESI							
Employer premium (foregone wages)	12%	9%	11%	11%	9%	7%	2%
Tax exclusion for ESI	(4%)	(4%)	(5%)	(4%)	(4%)	(3%)	(1%)
Total with wage offsets	28%	21%	23%	24%	23%	20%	14%
Total without wage offsets	20%	16%	16%	18%	17%	16%	13%
Share of population	20%	11%	18%	16%	10%	19%	5%

NOTES: Out-of-pocket payments include cost-sharing reduction subsidies. Net tax payments include taxes paid by the individual to support health care consumption, minus premium tax credits. The share of income spent on health care is calculated as the average payments for health care across individuals divided by the average income across individuals in each income category. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

In Table 4.9, we repeat the analysis shown in Table 4.8, but we limit the sample to those under the age of 65. For the younger population, we continue to find that very low-income individuals pay more as a percentage of income than very high-income individuals. For example, in the analysis that includes wage offsets for ESI, people with income under 139 percent of the FPL pay, on average, 25 percent of their income to support health care consumption, and people

with incomes above 1,000 percent of FPL pay, on average, 15 percent of their incomes to support health care. However, the pattern for individuals under the age of 65 is hill-shaped, implying that middle-income individuals pay the most as a percentage of income. In the analysis that includes wage offsets, people with incomes between 301 and 400 percent of the FPL pay on average 26 percent of income to support health care, more than groups with higher or lower income. A similar pattern holds for the analysis without wage offsets. Middle-income, working-aged individuals likely pay more because they are (in most cases) ineligible for Medicaid, and less likely to be eligible for publicly subsidized health care than lower-income individuals.

For the population under age 65, average payments are lower and substantially flatter across the income distribution when we eliminate wage offsets (foregone wages and the value of the tax exclusion for ESI) from the calculations. This is because the implicit cost of ESI borne by workers in the form of foregone wages is high, and this cost is the same regardless of the workers' income level. Further, the value of the employer tax exclusion is larger for higher-income workers, who have higher marginal tax rates.

Table 4.9. Average Payments for Health Care as a Percentage of Average Income by Individuals Under Age 65, by Family Income Level, 2017

Payments	<139% FPL	139–200%	201–300%	301–400%	401–500%	501–1,000%	1,001%+
Individual premium	7%	13%	9%	8%	6%	4%	2%
Out-of-pocket	4%	3%	4%	4%	5%	5%	2%
Net tax	5%	(1%)	3%	5%	7%	7%	10%
Wage offsets for ESI							
Employer premium (foregone wages)	13%	13%	14%	14%	12%	10%	3%
Tax exclusion for ESI	(4%)	(5%)	(6%)	(5%)	(5%)	(5%)	(2%)
Total with wage offsets	25%	22%	25%	26%	25%	21%	15%
Total without wage offsets	16%	15%	17%	18%	18%	16%	14%
Share of population	18%	8%	14%	13%	8%	15%	4%

NOTES: Out-of-pocket payments include cost-sharing reduction subsidies. Net tax payments include taxes paid by the individual to support health care consumption, minus the tax exclusion for ESI and Exchange premium tax credits. The share of income spent on health care is calculated as the average payments for health care across individuals divided by the average income across individuals in each income category. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

One issue that can be a concern when looking at averages is that unusual cases—e.g., a relatively small number of low-income individuals who have expensive employer-sponsored health plans—may have a disproportionate influence on the results. In Tables 4.10 and 4.11, we address this issue by looking at the share of people in each income group who spend no more than 5 percent of income on health care, 6 to 10 percent of income on health care, 11 to 20 percent of income on health care, and more than 20 percent of income on health care. In both of

these tables, we focus on payments *without* including the value of foregone wages. This is because people do not pay directly for foregone wages, although they would have higher disposable income if these foregone wages were passed back to them. Table 4.10 shows a lot of variation across individuals in the amount of income that they pay to support health care. For example, despite the fact that the average low-income individual pays 20 percent of income toward health care, almost 30 percent of individuals with incomes below 139 percent of FPL spend no more than 5 percent of income on payments for health care. As income increases, the share of people who spend no more than 5 percent of income on health care declines.

Table 4.10. Share of the Population by Total Payments for Health Care (without Wage Offsets for ESI) as a Percentage of Income, 2017

Share of Income Spent on Health Care	<139% FPL	139–200%	201–300%	301–400%	401–500%	501–1,000%	1,001%+
≤5%	27%	5%	1%	1%	1%	1%	2%
6–10%	36%	23%	23%	12%	10%	9%	9%
11–20%	15%	46%	48%	56%	62%	69%	81%
>20%	21%	26%	28%	31%	27%	20%	7%

NOTES: Total payments without wage offsets for ESI include premiums paid by the individual, out-of-pocket payments, tax payments made by the individual to support health care consumption, minus premium tax credits and cost-sharing reductions. Premiums paid by the employers on behalf of the individuals (foregone wages) and the tax exclusion from ESI are not included in this table. The share of income spent on total payments is calculated by the total payments made by a family divided by the family's modified adjusted gross income. The share of the population is calculated by dividing the number of individuals in each share of income category (≤5%, 6–10%, 11–20%, >20%) by the number of individuals in the income category. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

Table 4.11 shows the share of the population paying less than or equal to 5 percent, 6 to 10 percent, 11 to 20 percent, or more than 20 percent of their income on health-related expenses among individuals under the age of 65. As for the full population, we find a lot of heterogeneity in terms of how much people pay. For example, among the lowest-income individuals (<139 percent of FPL), 29 percent pay no more than 5 percent of income toward health care expense, while 19 percent pay more than 20 percent of income for health-related expenses.

Table 4.11. Share of the Population by Total Payments for Health Care (without Wage Offsets for ESI) as a Percentage of Income for Individuals under Age 65, 2017

Share of Income Spent on Health Care	<139% FPL	139–200%	201–300%	301–400%	401–500%	501–1,000%	1,001%+
≤5%	29%	7%	2%	1%	1%	0%	1%
6–10%	40%	27%	22%	11%	7%	8%	5%
11–20%	12%	41%	48%	55%	61%	69%	85%
>20%	19%	26%	28%	33%	31%	22%	8%

NOTES: Total payments without wage offsets for ESI include premiums paid by the individual, out-of-pocket payments, tax payments made by the individual to support health care consumption, minus premium tax credits and cost-sharing reductions. Premiums paid by the employers on behalf of the individuals (foregone wages) and the tax exclusion from ESI are not included in this table. The share of income spent on total payments is calculated by the total payments made by a family divided by the family's modified adjusted gross income. The share of the population is calculated by dividing the number of individuals in each share of income category (≤5%, 6–10%, 11–20%, >20%) by the number of individuals in the income category. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

Taken together, Tables 4.10 and 4.11 imply that there is a lot of variation in the distribution of spending across individuals. This pattern is related to the fact that different types of insurance have different costs—Medicaid, for example, is free for low-income individuals, while ESI may be very costly for this group.

5. Conclusions

In this analysis, we estimate the incidence of who pays for health care in Vermont, and we attempt to characterize the equity in the system under current policy (that is, policy that includes the ACA but not the universal coverage reforms that may be implemented as part of Act 48). We consider two forms of equity: *Vertical equity* measures the degree to which individuals with higher incomes pay more for health care, and *horizontal equity* measures the degree to which individuals with the same incomes pay the same amounts for health care.

One of our main findings is that a significant share of health care benefits received by Vermont residents is financed by net inflows from the federal government. Those net inflows—i.e., federal payments for benefits received by Vermont residents minus payments of federal taxes by Vermont residents to support health care—accounted for 28 percent of health care benefits received in Vermont in 2012, and we project that share will rise to 30 percent in 2017. Vermont's net federal inflows partly reflect federal fiscal policy—the fact that a share of Medicare and Medicaid benefits are financed out of deficit spending, and the fact that ESI generates a significant federal tax expenditure. The net inflows also reflect the fact that Vermont has a relatively large and growing population of people who are eligible for Medicare, and a Medicaid program with expansive eligibility and expensive benefits. Moreover, Vermont's expanded premium tax credits, which increase the generosity of the federal tax credits, receive federal matching assistance payments. If Act 48 implementation moves forward, state policymakers will likely want to retain as much of these net federal inflows as possible. While Section 1332 waivers offer an option to redirect federal funds for ACA-related policies to Vermont-specific health reforms, these waivers do not apply to Medicare spending or spending on the employer tax exclusion.

In terms of vertical equity, our findings are mixed. On one hand, average per capita payments for health care rise steeply with income, with payments by the highest-income families (over 1,000 percent of FPL) more than ten times as large as the lowest-income families (below 139 percent of FPL). But, at the same time, on average, payments by low- and middle-income families account for a larger share of their income than in high-income families. For the population under age 65, the pattern is "hill-shaped," with middle-income families paying more than others. The current system of financing health care includes significant income redistribution, but it has not gone as far as collecting payments in proportion to income.

In terms of horizontal equity, there is considerable variation in payments across individuals in the same income range. For example, while, on average, very low-income individuals spend 20 percent of their income on payments for health care, a substantial minority—27 percent of the low-income population in Vermont—spends less than 5 percent of their income on health care. These figures do not include the cost of foregone wages used to support health care. When we

account for foregone wages, spending as a share of income is higher, reaching 30 percent of income for an average individual with incomes below 139 percent of the FPL.

One key factor that contributes to differences across individuals in terms of what they pay for health care is the differential tax treatment of employer and individual health insurance coverage. Exchange enrollees are eligible for both state and federal subsidies that reduce their premium payments and cost-sharing amounts. While ESI is subject to a tax exclusion, this benefit is relatively modest for low- and middle-income individuals, and smaller than the subsidies available for Exchange plans. Yet, individuals with ESI are ineligible to receive Exchange subsidies, regardless of their level of total compensation (i.e., income plus foregone wages used to pay for ESI). The difference between the subsidies available to Exchange enrollees and those available to ESI enrollees is currently exacerbated in Vermont relative to other states, due to Vermont's enhanced premium tax credits. If Act 48 implementation moves forward, policymakers in Vermont may wish to consider opportunities to reduce stark differences in spending across individuals based on whether coverage is provided by an employer or through the Exchange.

Under the current vision of Green Mountain Care, the state of Vermont plans to retain Medicare as a separate program, which will enable the state to continue to capture federal funding for the Medicare benefit. How ESI will be addressed remains less clear. Attempts to retain the employer system have the value of preserving the federal tax exclusion for this coverage. However, the employer system potentially leads to inequities, particularly for low- to middle-income workers, who benefit less than high-income workers from the employer tax exclusion. To ensure equity in health care financing, Vermont policymakers might consider options to better align the degree of subsidization available to individuals with similar levels of total compensation, regardless of whether they have ESI or Exchange plans.

Detailed Methodological Appendix

Defining the Incidence of Health Spending

As part of this analysis, we trace back the incidence of health spending for all health care received by Vermont residents to the underlying payers for this health care. In general, we assume that incidence falls on people, either through direct out-of-pocket payments, reduced wages, or higher tax payments. Much of the incidence of health spending in Vermont falls on Vermont residents, but some incidence can also be borne by individuals out of state. Below, we describe the key incidence assumptions undergirding this analysis.

Incidence of Employer Health Spending

Economic theory and empirical evidence strongly support the idea that workers bear the costs of their health care insurance in the form of reduced wages and other benefits. That is, firms offer workers a total compensation package that includes wages, health insurance, and other benefits, and the value of this package is set to attract and retain an optimal mix of workers (in terms of skill mix, level of training, etc.). If health insurance benefits were eliminated, the firm would have to increase wages or other compensation, or workers could be poached by other firms willing to offer a slightly higher wage. Similarly, if health insurance were added to a worker's compensation package, other forms of compensation would have to be reduced to ensure the financial stability of the firm.

The trade-off between wages and benefits is difficult to observe, in part because, at a cross-sectional level, firms that offer high wages also tend to offer generous benefits. Additionally, wage decrements and pass-backs due to health insurance changes may occur gradually over time, and therefore may not be immediately observable to the worker. However, decades of rigorously designed studies have shown trade-offs between wages and other compensation, including health insurance benefits (Viscusi and Moore, 1987; Gruber, 1994; Jensen and Morrisey, 2001; Olson, 2002; Miller, 2004; Bhattacharya and Bundorf, 2009). For example, using data from the Health and Retirement Study (HRS), Jensen and Morrissey (2001) found that a worker's annual wages were approximately $6,300 lower if that worker was provided health insurance. A more recent study estimates that, if health care costs growth had not outpaced general inflation between 1999 and 2009, a typical American family would have an additional $5400 in annual cash income (Auerbach and Kellermann, 2011).

The idea that higher health spending leads to reduced wages is captured in various projections of the fiscal consequences of health reforms. For example, a paper sponsored by the Social Security Administration has estimated that reduced wage growth caused by high health care costs has contributed to an erosion in the social security tax base (Burtless and Milusheva,

2013). Similarly, the CBO Office and Joint Tax Commission estimate that reductions in health plan benefit generosity spurred by the ACA's "Cadillac Tax" will increase income tax revenue, as firms shift total compensation from health insurance spending to wages (Congressional Budget Office, 2014b).

Following these studies, we assume that workers bear the incidence of employer health spending. However, we assume that firms cannot perfectly target wage decrements to individual workers, due to nondiscrimination rules. Instead, firms reduce wages among all workers by the amount necessary to cover the firms' health care expenses, regardless of which specific workers enroll in health insurance coverage.

Retiree health insurance coverage represents an exception to our general approach of assuming workers bear the full cost of health insurance spending. In theory, firms may have considered retiree health insurance costs during retirees' active employee years, and reduced wages and other compensation to enable future health spending. In practice, it is unclear the extent to which firms anticipated the required level of future retiree health spending.[9] We therefore assume that employer spending on retiree health benefits is borne by firms.

Estimating Incidence

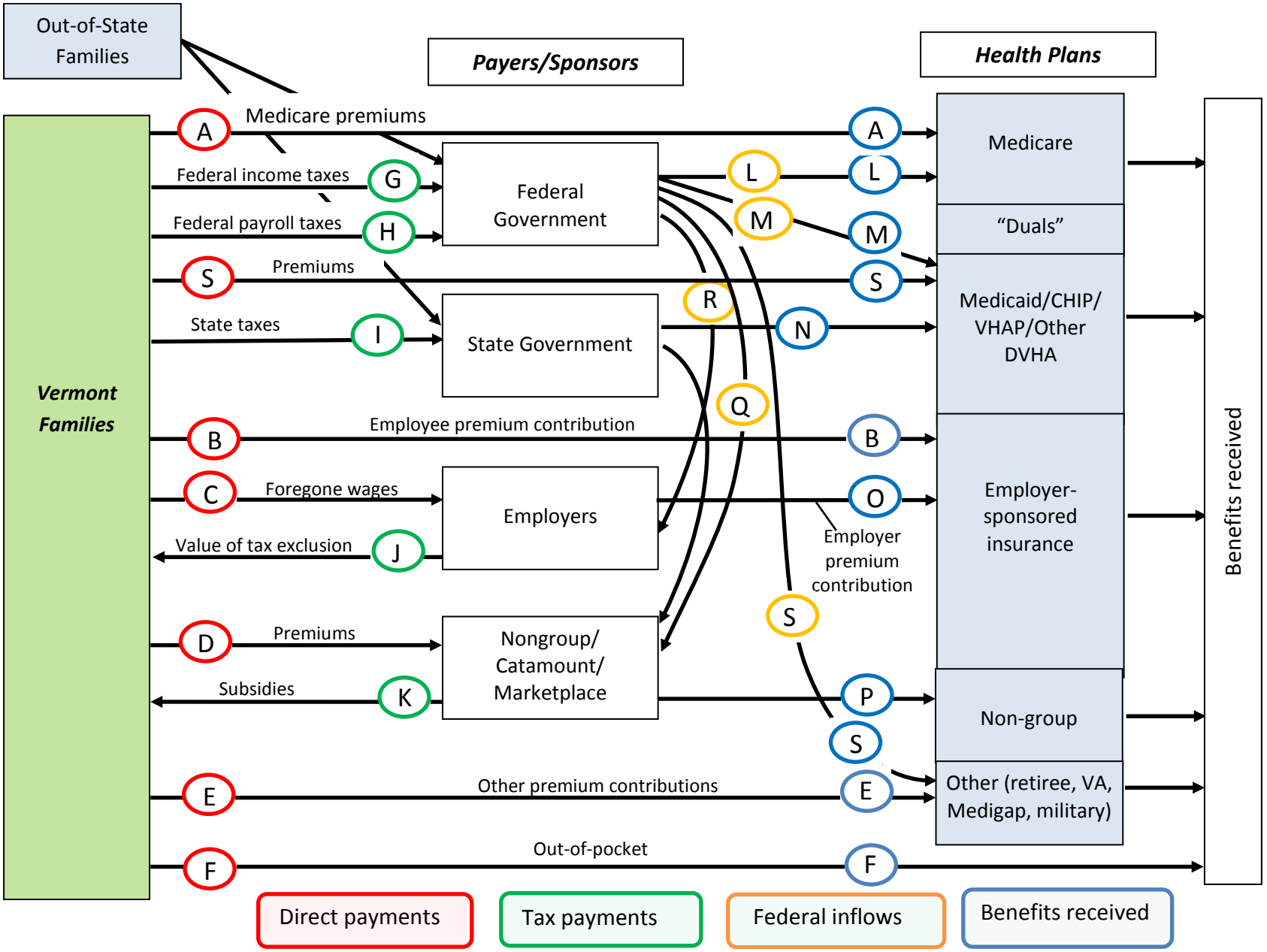
To estimate the incidence of health spending in 2012, we build a synthetic representation of the Vermont population using primarily Vermont-specific data sources. See Figure A.1 for an illustration of the flows of payments for health care and benefits received. In the figure, the Vermont population is represented by the light green box on the left side.

The underlying data on individuals and families comes from the 2012 VHHIS, which was fielded by Market Decisions, LLC, through a contract with the Vermont Department of Financial Regulation, Insurance Division. The 2012 VHHIS collected information from 4,610 households containing 10,982 unique individuals residing in Vermont. Survey respondents answered questions related to income, employment status, marital status, health insurance enrollment, and demographic characteristics such as age, sex, race, and education. Respondents were contacted using both landlines and cell phones, and the overall response rate was approximately 48 percent. Market Decisions, LLC created survey weights to adjust for nonresponse and to ensure that the survey accurately matches the distribution of the population in terms of age, sex, race, ethnicity, and area of residence as well as the number of uninsured and the number of Medicaid, VHAP, and CHIP enrollees by age. With the weights, VHHIS represents the full population of the state of Vermont.

[9] For example, numerous city governments have described high retiree health costs as a reason for serious concerns about the city's financial health, with some—such as Detroit, Michigan—citing retiree health costs as a reason for bankruptcy.

While VHHIS contains many useful data elements, it does not contain all the information that is needed to estimate the incidence of health spending in Vermont. In particular, it does not contain information on total health spending or taxes paid. In addition, while VHHIS collects information on total family income, this income is not apportioned to family members, and it is not clear how much of total income is earned as opposed to unearned. Finally, while VHHIS collects information on employment status and firm size, it does not contain information on employers, or on how much money firms spend on employees' health insurance benefits. To address these gaps, we impute information from a variety of different data sources. These imputation steps are described in more detail below.

Figure A.1. Payments for Health Care and Value of Health Benefits Received



Earnings Imputations

To assign wages to each family and individual, we used information from the American Community Survey (ACS) to impute (1) the fraction of income that was earned (wages), by decile of income, for each of the 20 categories listed below, and (2) the split of income between the male and female workers if both spouses worked, by income decile, for each "married" category with more than one worker listed below. These imputations were necessary in order to estimate federal and state tax payments by Vermont families.

- Married, no workers
  - Household head (HH) <65
  - HH 65+
- Married, one worker
  - HH <35
  - HH 35–49
  - HH 50–64
    - No one with retiree benefits
    - One individual with retiree benefits
    - Two individuals with retiree benefits (this is possible if one retiree has gone back to work, or if there are more than two adults in the household)
  - HH 65+
- Married, two or more workers
  - HH <35
  - HH 35–49
  - HH 50–64
  - HH 65+
- Single, does not work
  - HH <35
  - HH 35–49
  - HH 50–64
  - HH 65+
- Single, works
  - HH <35
  - HH 35–49
  - HH 50–64
  - HH 65+

Assignment of Taxes

Taxes to Support State Health Spending

Health care benefits funded by the Vermont state government are financed through two major funding sources: the general fund and the state health care resources fund. Some general fund revenue is earmarked for education and transportation, which affects the allocation of revenues available for health spending. Remaining general fund revenues, which are used in part to finance Medicaid and other health spending, are referred to as the "available general fund." Tables A.1 and A.2 show the funding allocations available for health spending in each of these major funds.

Table A.1. Revenue Allocations in Vermont's Available General Fund

Tax Type	Funding Allocation
Personal income taxes	52.5%
Sales and use tax	17.4%
Meals and room tax	10.7%
Corporate tax	6.6%
Insurance tax	4.2%
Other taxes and assessments (summed across 14 line items)	8.7%
Total	100.0%

NOTES: Reported percentages are based on average actual and forecasted allocations from 2012 through 2019. The available general fund represents general fund revenues not earmarked for education or transportation.

Table A.2. Revenue Allocations in Vermont's State Health Care Resources Fund

Tax Type	Funding Allocation
Provider taxes	54.1%
Cigarette and other tobacco taxes	27.2%
Employer assessment	6.0%
Claims assessment	5.1%
Graduate medical education	4.9%
Premiums for CHIP and Medicaid programs	2.3%
All taxes and assessments (6 line items)	0.4%
Total	100.0%

NOTES: Reported percentages are based on estimated allocations in 2014 and 2015.

To assign the incidence of spending by the state government to individuals, we need an approach to allocate the revenues collected in each of the line items described in Tables A.1 and A.2. We describe how we allocated these taxes below.

State Income Taxes

We assigned state income taxes (included in the green "I" line in Figure A.1) to families using data provided by the Vermont Tax Department. Specifically, the Tax Department provided us with spreadsheets that showed total income taxes paid at each percentile of income for individuals and families grouped into 11 categories:

- Single under age 35
- Single age 35 to 49
- Single age 50 to 64
- Single age 65+
- Married under age 35
- Married age 35 to 49, no dependents
- Married age 35 to 49, with dependents
- Married age 50 to 64, no dependents
- Married age 50 to 64, one dependent
- Married age 50 to 64, two or more dependents
- Married age 65 and over.

We then imputed taxes to individuals in the VHHIS data by ranking observations within each of the 11 categories by percentile, and appending the tax information provided by the Vermont Department of Taxation. To account for non-filers, we calculated the number of non-filers in Vermont using data from the 2009, 2010, and 2011 Current Population Surveys, which assess respondents' tax filing status. We then imputed filing status to individuals by randomly assigning status within each of the 11 categories described above (single under 35, single age 35 to 39, etc.).

Consumption Taxes (Sales and Use, Meals and Rooms, and Cigarette Taxes)

The Vermont Department of Taxes also provided us with information on total taxes collected for a variety of consumption taxes, including the sales and use tax, the automobile tax, taxes on meals, hotel rooms, alcohol, gasoline taxes, and cigarette taxes (included in the green "I" line in Figure A.1). Before allocating these taxes across Vermont residents, we first subtracted collections from out-of-state residents. To estimate that share of each tax paid by out of state residents, we used averages from three reports conducted for the Vermont Department of Tourism and Marketing (Economic & Policy Resources, 2005, undated; Chmura Economics & Analytics, 2012).

After subtracting collections from out-of-state residents, we allocated the remaining consumption taxes across Vermont residents using patterns reported in the Consumer Expenditure Survey (CEX), pooling CEX data for the years 2005 to 2008. Specifically, we

divided the CEX data into eight cells based on single versus non-single status and income quartile. We then estimated the share of spending for each of the taxable items listed above (e.g., cigarettes, gasoline, hotel rooms, alcohol, meals, other taxable consumption goods) attributable to individuals in each of the eight cells. So, for example, if one cell had 5 percent of taxable spending, it would be assigned 5 percent of taxes collected for this tax category. Finally, we allocated tax payments across individuals in the VHHIS data in proportion to income, within each of the eight cells.

Insurance Tax

Roughly 4 percent of the available general fund is financed through a tax on private insurance companies. Per the Vermont Joint Fiscal Office (JFO), about 43 percent of the insurance tax falls on captive insurers[10] located out-of-state, and another 57 percent falls on private insurance companies, including not only health insurance but also fire, life, automobile, and other insurance products. We assume that the incidence of the 57 percent of the insurance tax that falls on traditional insurers is born by Vermont residents in the same proportion as the sales and use tax.

To avoid double counting, we subtract the health insurance portion of insurance tax from health insurance premiums. In the nominal incidence tables, these taxes are counted as state Medicaid spending, and in the economic incidence tables they are counted as tax payments by Vermont residents. Tax payment amounts are allocated to individuals in proportion to their premiums.

State Corporate Taxes

There is lack of certainty in the economics literature regarding who bears the ultimate incidence of the corporate tax (Harris, 2009). Some have argued that the incidence falls on owners of capital, while others studies have suggested that—particularly in the short run—company shareholders may bear the brunt of the tax (Auerbach, 2005). Empirical studies often find that a large share of the ultimate incidence of the corporate tax falls on labor (Gravelle, 2011); however, it is not labor at the taxed firm but wages in the economy at large that are affected by the tax. In the absence of clear evidence about who bears the burden, we do not assign the incidence of corporate taxes. Instead, we keep these taxes as a stand-alone line item in our model.

Provider Taxes

Vermont levies taxes on providers to support its Medicaid program. Because these taxes are matched with federal matching assistance dollars, we assume the incidence of the provider tax

[10] Captive insurers are typically off-shore insurance companies that provide reinsurance to bundles of products.

falls partially on the federal government, in proportion with the FMAP rate. To avoid double counting, we subtract the federal contribution to the provider tax that funds Medicaid from the state's Medicaid spending.

Employer Assessment

Vermont levies an assessment on employers if they have uninsured workers. Revenues from this assessment make up approximately 5 percent of the state health care resources fund. The assessment is incurred regardless of whether the firm offers health insurance. We assume that the incidence of this tax falls on uninsured workers (included in the green "I" line in Figure A.1).

Claims Assessment

About 5 percent of the state health care resources fund comes from a claims tax levied on health insurers. We assume the incidence of this tax falls on privately insured individuals in proportion to their premiums paid (included in the green "I" line in Figure A.1).

To avoid double counting, we subtract the claims tax from health insurance premiums. In the nominal incidence tables, this tax is counted as state Medicaid spending, and in the economic incidence tables, it is counted as a tax payment by VT residents. Tax payment amounts are allocated across individuals in proportion to their premiums.

Graduate Medical Education

Another 5 percent of the state health care resources fund comes from funding for graduate medical education, which is matched with federal matching assistance dollars. As with the provider tax, we assume the incidence of this funding falls partially on the federal government, in proportion with the FMAP rate.

Premium Payments for CHIP and Medicaid Programs

Following state policies, we assume that enrollees in CHIP, Catamount, VHAP, and VPharm are required to contribute to their health insurance premiums. These premium contributions account for just over 2 percent of the state health care resources fund (included in the green "I" line in Figure A.1).

Other Taxes

We assign remaining taxes to individuals in proportion with consumption. This assumption mainly affects the revenues from the general fund, in which 8.7 percent of the total revenue is distributed across 14 distinct line items in small proportions. The majority of these taxes appear correlated with consumption, including a beverage tax, a telephone tax, a liquor tax, and an electrical tax (included in the green "I" line in Figure A.1).

Payments of Federal Taxes by Vermont Families

Payroll Taxes

The federal government levies payroll taxes on individuals and firms to fund spending for Part A of Medicare, which covers hospital services (the green "H" line in Figure A.1). Prior to January 1, 2013, this tax was equal to 1.45 percent of wages, levied on both employees and employers (so the total tax was 2.9 percent of wages). On January 1, 2013, an additional 0.9 percent payroll tax was levied on individuals with taxable income exceeding $250,000 if married and filing jointly, $125,000 if married and filing separately, and $200,000 for all other taxpayers. We imputed hospital insurance taxes based on respondents' wage income. We assumed that the entire incidence of the tax (including the share paid by the employee and employer) was borne by the employee, and that this entire tax supports health care.

Other Taxes to Support Federal Health Spending

To estimate federal income tax payments used to finance health care (the green "G" line in Figure A.1), we first estimated federal income tax payments for each family in VHHIS, and then assumed that the proportion of income taxes used to fund health care is proportional to the share of total federal outlays spent on health care. In making these calculations, we first subtracted spending for Medicare Part A and for Social Security spending, because these programs are funded through dedicated tax revenue streams (payroll taxes). The final equation that we used to estimate the share of income taxes devoted to health spending is as follows:

$$\text{Share of federal income tax payments devoted to health care} = \frac{\text{(total federal health care outlays)-(net Medicare Part A outlays)}}{\text{(total federal outlays)-(net Social Security outlays)-(net Medicare Part A outlays)}}$$

In 2012, total federal outlays were $3,538 billion, net social security outlays were $752 billion ($768 billion in outlays with $16 billion in offsetting receipts), and total outlays on major medical programs (Medicare, Medicaid, and CHIP) were $726 billion in 2012 (Congressional Budget Office, 2013b). Outlays for Medicare Part A were $262 billion (Congressional Budget Office, 2013a). Total outlays on Veterans medical care, defense health programs, and other health spending were $198 billion (White House Office of Management and Budget, 2014). We assume that the share of defense health programs for military retirees was equal to the proportion of retired service members and their families, 54 percent (Congressional Budget Office, 2014c). Using the above equation, we estimate that in 2012, 25.3 percent of federal income tax revenue was devoted to payments for health care.

The CBO projects that total federal outlays will be $4,135 billion in 2017, net social security outlays will be $971 billion ($989 billion in outlays with $18 billion in offsetting receipts), total outlays on major medical programs (Medicare, Medicaid, CHIP, and Exchange subsidies and

related spending) will be $967 billion (Congressional Budget Office, 2014b). Outlays for Medicare part A will be $306 billion (Congressional Budget Office, 2013c). Total outlays on Veterans medical care, defense health programs, and other health spending are projected to be $230 billion by the Office of Management and Budget (White House Office of Management and Budget, 2014). We assume the proportion of retired service members remains 54 percent. We estimate that 34.0 percent of federal income tax revenue will be devoted to payments for health care in 2017.

Out-of-Pocket Payments for Health Care

To estimate out-of-pocket payments for health care (the red "F" line in Figure A.1), we impute medical spending to Vermont residents in the VHHIS using a two-step process that involves the nationally representative Medical Expenditure Panel Survey (MEPS) (2002–2011) and the VHCURES, an all-payer claims database for the state of Vermont.

First, we use the MEPS to impute spending to individuals in VHHIS by dividing both the VHHIS and the MEPS into cells based on ten-year age groups, sex, insurance status, and health status, and assigning total and out-of-pocket expenditure to VHHIS individuals using a matched observation from the MEPS. This imputation gives us spending levels for all individuals in the VHHIS data set and preserves the correlation between spending and health status observed in the MEPS, but the MEPS spending levels are not specific to Vermont.

To make the spending imputations Vermont-specific, we run a separate imputation using data from VHCURES. We group VHCURES and VHHIS observations into cells based on insurance status, age, and gender (health status is not available in the claims data). We then rank total spending in survey and cell by percentile. Spending in VHHIS is based on the imputed MEPS values. After ranking by percentile, we match the VHCURES spending amounts to the VHHIS observations, replacing the MEPS expenditure values with Vermont-specific claims information.

By using this two-step approach, rather than imputing spending directly from VHCURES, we are able to preserve the correlation between health spending and health status (which is observed in MEPS and VHHIS, but not in VHCURES).

In addition, the match to the MEPS enables us to have spending values for individuals who are uninsured, and therefore not represented in VHCURES. However, these spending values must be further adjusted to reflect, to the extent possible, Vermont-specific spending patterns among the uninsured. To make this adjustment, we pro-rate out-of-pocket payments for uninsured individuals using the ratio of per-capita private health expenditure in Vermont relative to per-capita spending in the United States, obtained from the Centers for Medicare and Medicaid Services' Office of the Actuary's 2009 State Health Expenditure Account report (2009 is the most recently available year).

As a final step, we applied an additional adjustment to scale out-of-pocket payments so that they varied by income. First, we regressed out-of-pocket payments in the MEPS-HC data on age, gender, income, health insurance status, and health status, and a full set of interactions between

these terms. Then, for each age, gender, health insurance, and health status category, we determined how average out-of-pocket payments deviated from the mean across income categories. We then adjusted total out-of-pocket payments in each age, gender, health insurance status, and health status cell to reflect the income differences found in the data.

Premiums and Premium-Equivalents

In addition to tracking medical spending, we also track total premiums paid. While premiums should in aggregate reflect the value of claims paid by insurers, the sum of paid claims (total payments minus out-of-pocket payments) will be less than the sum of premiums, because of administrative costs associated with health insurance. Although we track both premiums and claims in our model, we focus on the value of premiums plus out-of-pocket payments when reporting the value of health care received. For public programs such as Medicare and Medicaid, we estimated premium-equivalents, which include benefit payments plus spending on program administration. Below, we describe the data sources that we used to estimate the distribution of premiums in Vermont.

Premiums for Employer-Sponsored Insurance (the red "B" and red "C" lines in Figure A.1)*:* We generated a synthetic data set of 422 firms based on 2011 Vermont-specific data from the Statistics of U.S. Businesses (SUSB), an administrative data base maintained by the U.S. Census Bureau that contains all businesses in the United States. We matched workers in VHHIS to firms based on firm size and whether the firm offered health insurance to its employees. In the VHHIS, we know whether workers without ESI had access to an ESI offer. We then used 2012 Vermont-specific premiums from the Medical Expenditure Survey Insurance Component (MEPS-IC) to assign ESI premiums to synthetic firms and individuals in the VHHIS. The MEPS-IC provides information about the 10th, 25th, 50th, 75th, and 90th percentiles for single, employee +1, and family premiums, as well as the percentiles for the employee contribution for each plan type. Each firm in our model was randomly assigned a percentile, and employees within each were assigned a total ESI premium, and an employee contribution, based on the firm percentile and the family plan type (single, employee +1, or family). For the calculation of the economic incidence, both the employer and employee contributions were included and treated as direct payments for health care.

Catamount Premiums: We estimate total plan value using the 2013 market share report published by the Vermont Department of Financial Regulations (Vermont Department of Financial Regulation, 2014). We then calculate the average premium per enrollee (total premiums collected divided by number of enrollees) (included in the blue "P" line in Figure A.1). Catamount enrollees are required to contribute a premium contribution, which we estimate based on program rules (included in the red "D" line in Figure A.1). The required contributions for 2012 were as follows:

- Income greater than 150 percent of FPL, up to 200 percent of FPL: $60

- Income greater than 200 percent of FPL, up to 225 percent of FPL: $124
- Income greater than 225 percent of FPL, up to 250 percent of FPL: $152
- Income greater than 250 percent of FPL, up to 275 percent of FPL: $180
- Income greater than 275 percent of FPL, up to 300 percent of FPL: $208
- Income greater than 300 percent: full cost.

Health Insurance Exchange: We assigned average Exchange premiums (included in the blue "P" line in Figure A.1) by calculating the average premium offered across all plans that will be offered in the market in 2015, and inflating to 2017 dollars (our inflation approach is described later in this document). Data for assigning premiums came from information published by Vermont Health Connect (Vermont Health Connect, 2014). We assumed that all individuals with qualifying incomes would take advantage of subsidies (the green "K" line in Figure A.1), if available. The subsidy level was based on the cost of the second-lowest-cost silver plan available in 2015.

Premium-Equivalents for Medicaid, VHAP, and CHIP: We calculate effective Medicaid, VHAP, and CHIP premiums based on the weighted average expenditures among enrollees within broad demographic groups. The four demographic groups that we consider are adults under the age of 65 who were Medicaid-eligible before the ACA; dually eligible individuals (including those over and under 65), children (including Medicaid-eligible children and CHIP), and VHAP/newly eligible adults.

VHAP and CHIP require individual premium contributions, which scale with income. We assign these contributions based on program rules, as follows:

VHAP Premium Contributions

- Income up to 50 percent of FPL: $0
- Income over 50 percent of FPL, up to 75 percent of FPL: $7
- Income over 75 percent of FPL, up to 100 percent of FPL: $25
- Income over 100 percent of FPL, up to 150 percent of FPL: $33
- Income over 150 percent of FPL, up to 85 percent of FPL (adults with children only): $49

Dr. Dynasaur Premium Contributions

- Families with income up to 185 percent of FPL: $0
- Families with income over 185 percent of FPL, up to 225 percent of FPL: $15 per family
- Families with incomes over 225 percent of FPL, up to 300 percent of FPL: $20 per family
- Pregnant women with incomes up to 200 percent of FPL: $15
- If otherwise uninsured: $60

Medicare Effective Premiums: We calculated Medicare premium-equivalents (the blue "L" line in Figure A.1) by calculating the average expenditure among enrollees, with total expenditure derived from the Green Mountain Care Board's 2012 Expenditure Report (Green Mountain Care Board, 2014). We make an additional adjustment to allow for the fact that dually

eligible Medicare enrollees are about 1.8 times as expensive as non-dual enrollees (Jacobson, Neuman, and Damico, 2012). Dually eligible individuals are assigned a higher premium value in our model than non–dually eligible enrollees.

We assign Medicare Part B premium contributions (the red "A" line in Figure A.1) based on premium amounts published in the Federal Register (Centers for Medicare and Medicaid Services, 2011a). Part D premiums for 2012 (also in the red "A" line in Figure A.1) were derived using a report from the Medicare Office of the Actuary (Centers for Medicare and Medicaid Services, 2011b).

Federal Subsidies for Health Benefits for Vermont Families

We estimated four types of federal subsidies for health benefits for Vermont families:

- federal outlays for Medicare (the blue "L" line in Figure A.1), i.e., benefit payments minus premiums paid by beneficiaries
- federal match payments for Medicaid and CHIP (the blue "M" line in Figure A.1)
- the value of the tax exclusion for ESI (the yellow "R" line and green "J" line in Figure A.1)
- advanced premium tax credits and cost-sharing reductions for Exchange plans (the yellow "Q" line and green "K" line in Figure A.1).

The value of the tax exclusion for ESI was estimated using the estimated employer and employee premium contributions and the estimated marginal federal and state income and payroll tax rates.

Disproportionate Share Hospital Payments

The federal government provides Disproportionate Share Hospital (DSH) payments to hospitals that serve a high fraction of low-income patients. According to administrative data we received from the state, total Medicaid DSH payments equaled $37.4 million dollars in 2012, of which $20.2 million was federally funded and $17.2 million was state funded. The ACA reduced DSH payments to account for the fact that more people would be insured due to the law. After taking into account these reductions, our estimated DSH allotment for 2017 is $38.9 million, including $20.9 million in federal funding and $17.9 million in state funding. DSH payments grow slightly in absolute terms despite the reduction due to health care cost inflation.

We assumed that the DSH payments would be used to offset uncompensated care spending among the uninsured.

Cost Shifting

"Cost shifting" refers to a situation in which health care providers increase the prices they charge to private health plans in response to shortfalls in revenues associated with treating patients who are uninsured or enrolled in plans paying low reimbursement rates (e.g., Medicare or Medicaid enrollees). Cost shifting, if it occurs, could have implications for our incidence analysis. If, for

example, utilization of health care services by the uninsured drove up private prices, then we might want to include some of the costs for uninsured patients in the incidence of health care for the privately insured.

Cost shifting is often cited by providers to justify large gaps between prices paid by private and public plans. But there is a significant debate in the health economics literature regarding the extent to which cost shifting actually occurs. Theoretically, economists have argued that, in competitive markets, cost shifting would not be possible due to competitive pressures, and that, in noncompetitive markets, providers would use market power to set higher prices regardless of the level of uninsured and low-reimbursement patients in the population. Empirically, findings on cost-shifting have been mixed. A 2011 review of the literature concluded that "the evidence does not support the notion that cost shifting is both large and pervasive" (Frakt, 2011). More recently, White found that cuts in Medicare prices led to significant reductions in the negotiated prices paid by private plans, i.e., the opposite of cost shifting (White, 2013). Given the mixed evidence regarding cost shifting, we assume that private premiums in Vermont are unaffected by the level of uninsurance. This assumption likely has very little effect on our results, given that Vermont's uninsurance rate is low and projected to fall by 2017.

Estimating Transitions in Health Insurance Coverage Using the RAND COMPARE Model

While we can measure health enrollment in health plans in 2012 using VHHIS and administrative data, we must project enrollment in 2017. In making these projections, we need to account for changes in the demand for health insurance that may result from the major provisions of the ACA, including the individual mandate and new subsidies for Exchange coverage. Although many of the ACA's provisions took effect on January 1, 2014, we do not yet have complete data on post-2014 outcomes. Even if we did, 2014 is likely to be a transitional year due to limited familiarity with the law, the delay of the employer mandate, website challenges, and relatively low individual mandate penalties. (These penalties do not reach their full level until 2016.) As a result, we use RAND's COMPARE microsimulation model to project 2017 health insurance enrollment in Vermont, taking into account the full impact of the individual mandate penalty, the implementation of the employer mandate, and increased time for individuals to adjust to the law.

COMPARE uses a utility maximization framework to estimate how individuals and firms will respond to the ACA, taking into account provisions of the law including the mandates, changes in risk-pooling and risk adjustment in the non-group and small group markets, Medicaid expansion, tax credits and cost-sharing subsidies available to qualified Exchange enrollees, and other details of the law. The methodology underlying the COMPARE model has been described in previous studies (Cordova et al., 2013).

Briefly, the model creates a synthetic population of individuals, families, and firms, using data from the April 2010 wave of the 2008 Survey of Income and Program Participation (SIPP)

and the 2008–2009 Kaiser Family Foundation Annual Survey of Employer Benefits. Each individual in the SIPP is assigned simulated health expenditures using the spending of a similar individual from the 2010–2011 Medical Expenditure Panel Survey (MEPS). We then augment spending imputations with data on high-cost claims from the Society of Actuaries (SOA). The SOA adjustments account for the fact that the MEPS underrepresents individuals with high spending.

Individuals in COMPARE make health insurance enrollment decisions by weighing the costs and benefits of available options, an approach that is referred to by economists as "utility maximization." The utility maximization framework accounts for premium costs, anticipated out-of-pocket health care payments, the value of health benefits, the risk of incurring a financially devastating health care bill, and the tax penalty the individual would face if uninsured. Premium costs are adjusted to account for tax credits, if such credits are available to the enrollee. All else equal, higher premiums reduce an individual's probability of enrolling in health insurance, while lower risk of catastrophic spending, reduced out-of-pocket payments, the avoidance of penalties, and increases in health care utilization encourage enrollment. Possible health insurance enrollment choices in the model are uninsurance, Medicaid or CHIP, a small employer plan (including bronze, silver, gold, and platinum plans on the small group health options exchange), a large employer plan, or a bronze, silver, gold, or platinum plan in the ACA-compliant non-group market (including plans available on and off the Exchange). However, not all of these options will be available to all individuals in the model. For example, Medicaid is available only to people who are eligible, and access to employer coverage varies across individuals depending on employment, firm offering decisions, and family circumstances (such as the presence of a spouse's employer plan).

Firms in COMPARE maximize the aggregate utility of their workers, enabling them to make the health insurance decision that provides the best value to the most workers. In some cases, the optimal decision could be to not offer insurance or to drop health insurance coverage. Following standard economic theory, we assume that workers face a trade-off between health insurance and wages, so that wages fall as health insurance costs increase, and vice versa. The wage-health insurance trade-off assumption implies that, if the firm opts to stop offering health insurance, wages will have to increase.

In determining whether they would prefer an offer of health insurance to a change in wages, firms consider the value of alternative health insurance options available to their workers, which depends on whether they are eligible for Medicaid or Exchange tax credits in the absence of a firm offer, the tax exclusion for ESI, the utility of health insurance described above, and the penalty that will be imposed if workers do not enroll in coverage. As the tax exclusion for ESI changes, the benefit to workers stemming from an employer offer will also change, and consequently modeled firms' offering decisions may change.

Vermont-Specific Adjustments

Because the data used to populate the COMPARE model come from nationally representative data sources, we make several adjustments the model, using Vermont-specific data, to represent Vermont's population. These adjustments include *reweighting*, a process by which we will ensure that the data used in the model reflect Vermont's demographic characteristics, *calibration*, a process that ensures decisions made in the model reflect choices previously observed in Vermont, and *customization*, in which we incorporate Vermont-specific programs and policies into the model.

Reweighting: To reweight the model, we adjust the underlying data in the COMPARE model, which come from nationally representative data sources, to reflect the Vermont-specific population using data from the ACS. The reweighting ensures that the synthetic population used in the model reflects Vermont's state specific characteristics including age composition, race/ethnicity, income distribution, health insurance status, employment status, and access to employer health insurance coverage.

Calibration: Through the calibration process, we ensure that the model accurately predicts health insurance enrollment decisions and premiums under policy scenarios for which we have accurate historical data from Vermont. We calibrate the model to accurately reflect health insurance enrollment decisions and premiums under policies in place in 2012, before the ACA took full effect in 2014.[11]

Customization: We incorporate Vermont-specific rules regarding Medicaid and CHIP eligibility and health insurance rating. For example, we incorporate the fact that Vermont has relatively expansive thresholds for Children's Medicaid and CHIP compared with other states. We also incorporate the fact that Vermont had full community rating in the small group market prior to the ACA, and modified community rating in the non-group market. Under the ACA, Vermont has opted to combine the small group and non-group markets into a single risk pool, and to prohibit the sale of non-group plans outside of the Exchange. In addition, we account for Vermont's state-specific enhancements to the ACA's premium tax-credits and cost-sharing subsidies.

Estimating Inflation and Population Growth

To estimate changes in incidence between 2012 and 2017, we need to account for changes in income, health care costs, the FPL, and population growth. We describe our approach to addressing each of these trends below.

[11] Surveys of post-2014 enrollment and premiums are beginning to be made available, but these data sources are typically not complete and may not represent a "steady state," since individuals and firms are still adjusting to the law.

Income Growth

We estimate growth in income through 2017 using historic trends in adjusted gross income (AGI) growth between 2000 and 2012. Data on AGI were provided by the Vermont Tax Department and analyzed by the Vermont JFO. We calculated separate growth trends for tax filers by income quintile. Among individuals in the top quintile, we calculated separate trends for those with AGIs between the 80th and 95th percentiles, and those with AGIs in the top 5 percent of the distribution. We assumed that income growth for non-filers was similar to income growth among filers in the bottom quintile. Table A.3 shows the income growth rate assumptions derived based on this approach.

Table A.3. Trends used to Project Income Growth Through 2017

Income and Tax Filing Status	Annual Income Growth
Non-filers	1.24%
Tax filers, by income quantile	
Bottom 20 percent	1.24%
21st percentile to 40th percentile	1.67%
41st percentile to 60th percentile	1.92%
61st percentile to 80th percentile	2.15%
81st percentile to 95th percentile	2.45%
Above the 95th percentile	3.00%

SOURCE: 2000 to 2012 trends in adjusted gross income in Vermont, as analyzed by the Vermont JFO. We assume income growth among non-filers matches income growth among the lowest quintile of filers.

Growth in Health Care Costs

As a starting place for predicting future trends in health spending growth in Vermont, we analyzed trend projections developed by the CBO and the Medicare Office of the Actuary (OACT) (Centers for Medicare and Medicaid Services, 2011b). The 2012 to 2013 inflation factors derived from these sources are shown in Table A.4. Because CBO's projections for Medicare spending have been more accurate than OACT's projections in recent years, we relied on CBO for the Medicare growth rates. Trends in Medicaid growth and growth for "all else" (primarily commercial insurance) are based on the OACT projections, which can be found in the National Health Expenditure Account Reports.

Table A.4. NHEA and CBO-Based Growth Rates in Health Spending Per Capita

	Medicare	Medicaid	All Else
2012–2013	6.6%	0.4%	4.5%
2013–2014	0.6%	6.7%	5.0%
2014–2015	0.7%	1.1%	6.2%
2015–2016	2.8%	2.9%	6.1%
2016–2017	-0.7%	3.9%	7.7%

Medicare trends are based on the CBO's projections; trends for Medicaid and all else are based on CMS/OACT's projections.

Using the national figures in Table A.4 as a starting point, we then made several adjustments to address Vermont-specific issues:

Medicare: Based on Medicare spending data obtained from the Medicare Hospital Referral Region (HRR) database, we found that per-capita Medicare spending growth in Vermont has trended at about 1 percentage point above the national growth rate. In an additional analysis, we found that about 0.4 points of the 1 percentage point difference is explained by Medicare Advantage penetration, and the remaining 0.6 points are explained by a general convergence phenomenon (explained in more detail below). Payment cuts to Medicare Advantage plans, which are being phased in by the ACA, have reduced the national rate of growth in health spending. Vermont has very low Medicare Advantage penetration, so it has not been affected by these trends. The Medicare Advantage effect will likely disappear after 2017, when the Medicare Advantage cuts have reached their maximum levels. However, the cuts are relevant for our projection window, which spans from 2012 to 2017.

The remaining difference between Medicare growth rates in Vermont and national trends can be explained by a general convergence phenomenon. Historically, Vermont had lower spending than the national average. Recent evidence shows that states with historically low spending have had higher growth rates in recent years.

To address these issues, we propose to add 1 percentage point to the Medicare trends projected by the CBO.

Medicaid: The DVHA has data on Medicaid spending for 2012, 2013, and 2014. Using this information, Wakely Consulting Group estimates that per capita Medicaid spending in Vermont increased by 3.8 percent between 2012 and 2013, and by 4.9 percent between 2013 and 2014. We replace the national-level trends with the Wakely estimates, which are state-specific. In the absence of Vermont-specific data, we use national forecasts of Medicaid spending growth for 2015 and beyond.

Commercial: In a separate analysis for Vermont, Wakely Consulting Group found that growth in per-capita commercial expenditure in Vermont ranged from 5.3 percent to 7.1 percent

over the past five years. These trends are roughly consistent with the "All Else" trend found in the national data (Table A.4), with the exception that the 2012 to 2013 growth rates in the national data (4.5 percent) are low relative to Vermont's past experience.

Because Vermont currently has full-year expenditure data from VHCURES for both 2012 and 2013, there is no need to rely on the national projections for the 2012–2013 growth factor. Instead, we proposed to replace this factor with the 2012 to 2013 growth rate in average per member per month spending, as calculated based on spending reported in VHCURES, which is 6.5 percent. While Vermont-specific data on commercial spending in 2014 is incomplete at the time of this writing, early evidence suggests that the growth in health spending in commercial plans exceeded the 5 percent estimate found in the national data. As a result, we use the 6.5 percent growth trend estimated from the 2012–2013 for the 2013–2014 trend as well.

Final Trends: After implementing the modifications to the national data described above, our final trend factors are shown in Table A.5.

Table A.5. Estimated Growth Rates in Health Spending Per Capita

	Medicare	Medicaid	All Else
2012–2013	7.6%	3.8%	6.5%
2013–2014	1.6%	4.9%	6.5%
2014–2015	1.7%	1.1%	6.2%
2015–2016	3.8%	2.9%	6.1%
2016–2017	0.3%	3.9%	7.7%

NOTES: Medicare spending trends are derived based on CBO projections, plus 1 percentage point per year. Medicaid spending trends are derived using the MEGS for 2012–2015; we use the OACT trend for 2015–2016 and 2016–2017 because MEGS projections do not go beyond 2015. Trends for all else are derived based on OACT's projections, but we replace the 2012–2013 and 2013–2014 trend factors with a Vermont-specific number obtained from the VHCURES data.

Changes in the Federal Poverty Level

The FPL increases every year to reflect growth in the Consumer Price Index (CPI). To estimate program eligibility in 2017, we inflated actual 2014 poverty levels using estimates of CPI growth reported in the Congressional Budget Office's publication "An Update to the Budget and Economic Outlook: 2014–2024," Appendix Table B-1 (Congressional Budget Office, 2014c). The annual inflation factors projected by CBO ranged from 2.0 to 2.1 percent. Table A.6 shows the 2012 actual poverty levels, and the 2017 poverty levels we obtained after these adjustments.

Table A.6. Actual Federal Poverty Levels in 2012 and Projected Federal Poverty Levels in 2017

Family Size	Actual Federal Poverty Level, 2012	Estimated Federal Poverty Level, 2017
1	$11,170	$12,409
2	$15,130	$16,726
3	$19,090	$21,043
4	$23,050	$25,359

NOTE: For families with more than four members, 2012 poverty levels increased by $3,690 with each additional person. We estimate that the 2017 FPL will increase by $4,317 with each additional person.

Population Changes

We estimate population growth using consensus projections developed for the Vermont JFO and the Vermont Agency of Administration by Moody's Analytics and Kavet, Rockler, and Associates. The projections report historic and estimated future population by single year of age from 1996 through 2033. According to the estimates, the total population in Vermont in 2012 was 625,953, and will increase to 629,289 in 2017. Table A.7 shows the population estimates overall and by age group for 2012 and 2017, the focal years in our study. One notable trend is the growth in the share of the population age 65 and over, which is estimated to increase from 15.7 percent to 18.7 percent over the time period.

Table A.7. Vermont Population Estimates by Age Group, 2012 and 2017

	2012		2017	
Age Group	Number of Individuals	Share of Population	Number of Individuals	Share of Population
0–18	134,653	21.5%	129,449	20.6%
19–25	63,492	10.1%	62,721	10.0%
26–34	63,786	10.2%	66,095	10.5%
35–49	119,761	19.1%	109,939	17.5%
50–65	145,831	23.3%	143,196	22.8%
65+	98,430	15.7%	117,888	18.7%
Total	625,953	100.0%	629,289	100.0%

SOURCE: Consensus population projections develop for the Vermont Agency of Administration and JFO.

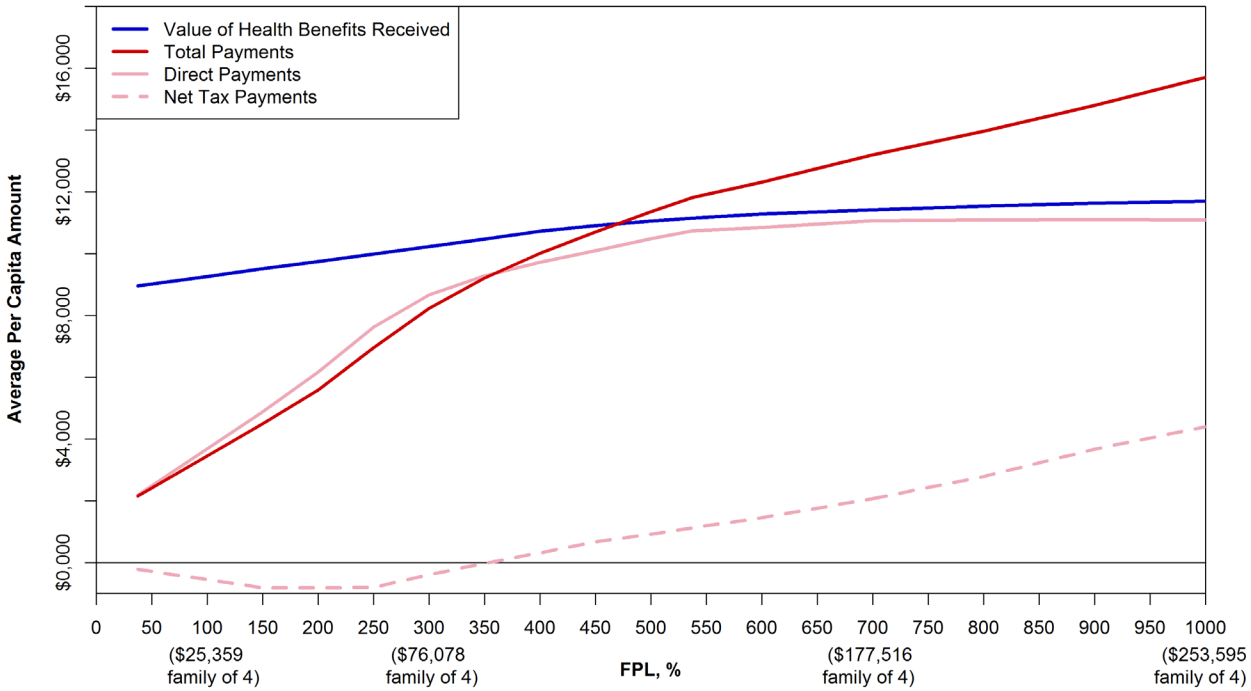
Supplementary Tables and Figures

Below, we provide some additional tables and figures to supplement the analyses presented in Chapter Three.

Figure A.2 shows total health payments and total benefits received for workers under age 65. The patterns are similar to those reported in the figures for all individuals under age 65, but

payments exceed the value of health benefits received at a lower level (450 percent of FPL as opposed to 575 percent of FPL). This stems from the fact that workers are less likely to eligible for and enrolled in publicly subsidized programs such as Medicaid and the Exchanges.

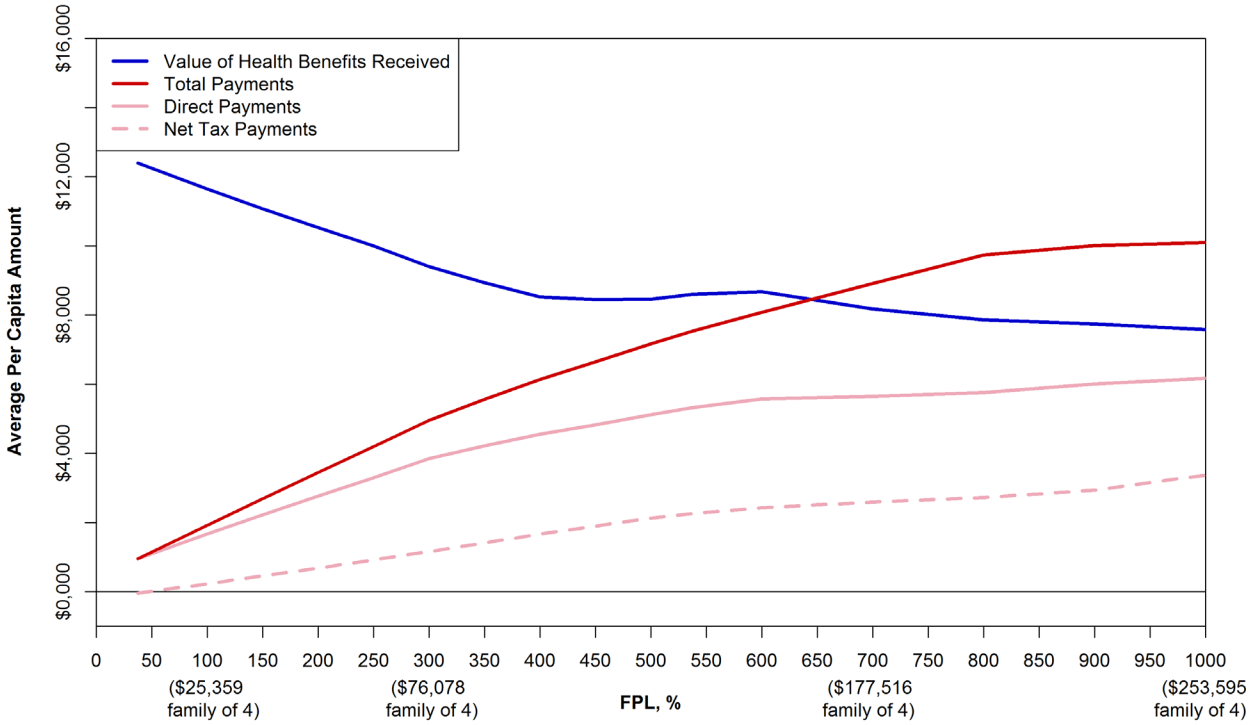
Figure A.2. Average Health Payments and Total Value of Benefits Received Per Capita by Workers Under Age 65, by Income, 2017



NOTES: Benefits received include the value of all health benefits received, including total premiums paid by an individual or through an employer, out-of-pocket payments, benefits funded through cost-sharing reductions subsidies, and benefits from public programs such as Medicaid and Medicare. Direct payments are premiums paid by the individual or through an employer, and out-of-pocket payments. Tax payments are payments made by the individual to support health care consumption, minus the tax exclusion for ESI and Exchange premium tax credits. Total payments are the aggregation of direct payments and tax payments. To allocate per capita amounts within families, we sum payments made and benefits received by a family and divide by the number of family members. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

Figure A.3 plots the same lines for nonworkers under age 65. The value of benefits received for nonworkers under age 65 drops slightly as income increases. This is because very low-income nonworkers are often dually enrolled in Medicare and Medicaid, while higher income nonworkers are more likely to be enrolled in low-actuarial value Exchange plans. The point at which payments exceed benefits is much higher for nonworkers than for workers, due to the fact that nonworkers are more likely than workers to qualify for publicly financed health programs.

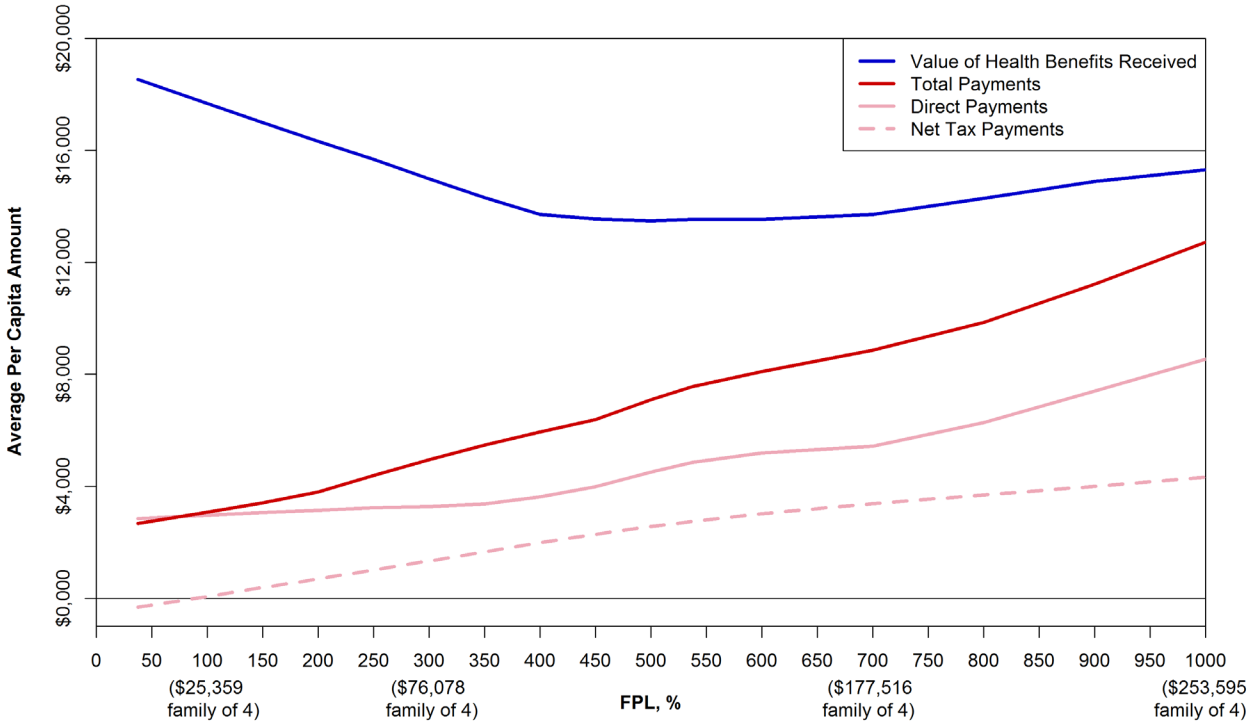
Figure A.3. Average Health Payments and Total Value of Benefits Received Per Capita by Nonworkers Under Age 65, by Income, 2017



NOTES: Benefits received include the value of all health benefits received, including total premiums paid by an individual or through an employer, out-of-pocket payments, benefits funded through cost-sharing reductions subsidies, and benefits from public programs such as Medicaid and Medicare. Direct payments are premiums paid by the individual or through an employer, and out-of-pocket payments. Tax payments are payments made by the individual to support health care consumption, minus the tax exclusion for ESI and Exchange premium tax credits. Total payments are the aggregation of direct payments and tax payments. To allocate per capita amounts within families, we sum payments made and benefits received by a family and divide by the number of family members. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

Figure A.4 shows total payments and the value of health benefits received for individuals over the age of 65. There is a steep decline in the value of benefits received among this group, due to the fact that low-income seniors are more likely to be enrolled in expensive dual Medicare and Medicaid coverage. Further, on average, people over the age of 65 at all income levels receive more in benefits than they pay to support health care in any given year. Partly, this is due to the fact that these individuals have contributed to Medicare spending throughout the course of their life but also because much of Medicare spending is not financed by current tax dollars but by deficit spending.

Figure A.4. Average Health Payments and Total Value of Benefits Received Per Capita by Individuals Age 65+, by Income, 2017



NOTES: Benefits received include the value of all health benefits received, including total premiums paid by an individual or through an employer, out-of-pocket payments, benefits funded through Exchange cost-sharing reductions, and benefits from public programs such as Medicaid and Medicare. Direct payments are premiums paid by the individual or through an employer, and out-of-pocket payments. Tax payments are payments made by the individual to support health care consumption, minus the tax exclusion for ESI and Exchange premium tax credits. Total payments are the aggregation of direct payments and tax payments. To allocate per capita amounts within families, we sum payments made and benefits received by a family and divide by the number of family members. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

Table A.8 shows per capita health payments by income among individuals who report that they are in fair or poor health. As with the general population, we see a steep gradient with income, in which higher-income people pay more than lower-income people. However, as compared with the general population (shown in Table 4.3), those in fair or poor health tend to pay more on average. Much of this difference is driven by the fact that those in fair or poor health make higher out-of-pocket payments to support health care than the general population.

Table A.8. Average Payments for Health Care Per Capita by Individuals in Fair or Poor Health, by Family Income Level, 2017

	<139% FPL	139–200%	201–300%	301–400%	401–500%	501–1,000%	1,001%+
Premium contributions	$650	$1,870	$1,750	$2,270	$1,840	$1,910	$2,780
Out-of-pocket payments	$500	$1,630	$2,030	$3,640	$3,090	$4,860	$10,930
State tax payments	$90	$250	$310	$390	$420	$570	$1,480
Federal tax payments							
Medicare Hospital Insurance payroll tax	$90	$160	$280	$520	$780	$1,160	$2,760
Income tax	$70	$120	$250	$550	$1,010	$1,930	$7,530
Wage offsets for ESI							
Value of employer premiums (foregone wages)	$280	$920	$1,680	$2,290	$2,020	$3,020	$1,700
Value of the tax exclusion for ESI	($90)	($410)	($640)	($1,060)	($770)	($1,700)	($670)
Exchange premium tax credits	$0	($480)	($150)	($250)	$0	$0	$0
Total with wage offsets	$1,600	$4,060	$5,500	$8,350	$8,380	$11,740	$26,520
Total without wage offsets	$1,410	$3,550	$4,470	$7,110	$7,140	$10,430	$25,490
Share of population	3%	2%	2%	1%	1%	1%	<1%

NOTES: Total payments include premiums paid by the individual, out-of-pocket payments, tax payments made by the individual to support health care consumption, premiums paid by the employer, minus the tax exclusion for ESI and Exchange premium tax credits. We sum payments for all individuals within each income category, and divide by the total number of individuals in the income category. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four. Health payments include both payments made to support individual consumption, and payments made to support others' consumption (e.g., taxes paid to support Medicaid, Medicare, and other state and federal programs).

Tables A.9, A.10, and A.11 report the share of the population contributing less than 5, 6 to 10, 11 to 20, and more than 20 percent of income toward out-of-pocket health payments, premium contributions, and tax payments. Premium contributions do not include employer spending on premiums.

Table A.9. Share of Population by Out-of-Pocket Payments for Health Care as a Percentage of Income, by Family Income Level, 2017

Share of Income Spent Out-of-Pocket	<139% FPL	139200%	201–300%	301–400%	401–500%	501–1,000%	1,001%+
≤5%	84%	74%	72%	66%	63%	65%	78%
6–10%	7%	13%	15%	20%	26%	23%	18%
11–20%	5%	11%	9%	10%	9%	10%	2%
>20%	4%	3%	4%	4%	2%	3%	2%

NOTES: Out-of-pocket payments include out-of-pocket medical, dental, vision, and over-the counter spending paid directly by the individual, minus cost-sharing subsidies. The share of income spent on out-of-pocket payments is calculated by the out-of-pocket payments made by a family divided by the family's modified adjusted gross income. The share of the population is calculated by dividing the number of individuals in each share of income category (≤5%, 6–10%, 11–20%, >20%) by the number of individuals in the income category. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

Table A.10. Share of Population by Individual Premium Payments as a Percentage of Income, by Family Income Level, 2017

Share of Income Spent on Premiums	<139% FPL	139–200%	201–300%	301–400%	401–500%	501–1,000%	1,001%+
≤5%	67%	29%	28%	34%	54%	73%	95%
6–10%	6%	28%	42%	42%	33%	23%	5%
11–20%	18%	20%	23%	20%	10%	4%	1%
>20%	9%	23%	7%	5%	3%	0%	0%

NOTE: Premium payments include premiums paid directly by the individual. Premiums paid on the individuals' behalf through an employer are not included in this table. The share of income spent on individual premium payments is calculated by the premium payments made by a family divided by the family's modified adjusted gross income. The share of the population is calculated by dividing the number of individuals in each share of income category (≤5%, 6–10%, 11–20%, >20%) by the number of individuals in the income category. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

Table A.11. Share of Population by Tax Payments for Health Care as a Percentage of Income, by Family Income Level, 2017

Share of Income Spent on Taxes to Support Health Care	<139% FPL	139–200%	201–300%	301–400%	401–500%	501–1,000%	1,001%+
≤5%	63%	64%	45%	37%	24%	17%	7%
6–10%	35%	36%	55%	63%	76%	82%	59%
11–20%	2%	0%	0%	0%	0%	1%	34%
>20%	1%	0%	0%	0%	0%	0%	0%

NOTES: Tax payments include taxes paid to support health care, minus premium tax credits. The tax exclusion for ESI is not included in this table. The share of income spent on tax payments is calculated by the tax payments made by a family divided by the family's modified adjusted gross income. The share of the population is calculated by dividing the number of individuals in each share of income category (≤5%, 6–10%, 11–20%, >20%) by the number of individuals in the income category. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

Comparison to the Expenditure Analysis

Table A.12 shows a comparison of our estimates to estimates of total resident health care expenditures from the 2012 Vermont expenditure analysis conducted by the Green Mountain Care Board (GMCB). Our estimate of total expenditure, $5.1 million in 2012, is within 1 percent of the total estimated by GMCB. We are also within 3 percent of the GMCB totals for Medicare, Medicaid, and out-of-pocket payments. Our estimates for private insurance spending are slightly low relative to the expenditure analysis. This stems largely from the fact that we reduce private premiums by the amount of the claims assessment tax, which is used to fund Medicaid. In our analysis, the claims tax is counted as a tax expenditure, and the incidence falls on privately insured individuals. However, counting it as a line item in both Medicaid and private spending would lead to a double counting of total health spending in Vermont.

Our estimates of "other state" and "other federal" funding differ substantially from those published by GMC. Because these line items are small, they have little impact on our total spending estimate, even though the relative differences between our numbers and GMC's numbers are large. We believe these differences are driven by differences in how we account for certain types of public health spending that are eligible for federal assistance matching percentages and are therefore counted as Medicaid spending in some administrative data sources, and as non-Medicaid related spending in other sources.

Table A.12. Comparison of RAND Nominal Incidence Estimates to the 2012 Vermont Expenditure Analysis

Type of Spending	Expenditure Report	RAND	Difference
Out-of-pocket	$716	$720	0.6%
Private insurance	$1,886	$1,774	-5.9%
Medicare	$1,062	$1,074	1.1%
Medicaid	$1,279	$1,246	-2.6%
Other Federal	$126	$194	53.7%
Other State	$55	$76	38.4%
TOTAL	$5,124	$5,084	-0.8%

NOTES: Private insurance includes ESI spending, spending on non-group premiums including Catamount, and spending on Medigap coverage. Other federal and state spending includes DVHA appropriations, DSH payments, and non-Medicaid health-related appropriations. The 2012 Vermont Expenditure Analysis was conducted by the Green Mountain Care Board.

Sensitivity Analysis

We conducted two types of sensitivity analyses to understand the degree to which our results depend on key assumptions used in our analysis. First, we increased the uninsurance rate in 2017 to 4 percent. Second, we increased and decreased the health care cost inflations used this in this analysis by a factor of 2 percentage points per year. Table A.13 shows how these estimates affect our aggregate level economic incidence results. Neither change has a major effect on our conclusions. However, under different assumptions about the rate of health care cost inflation, net federal inflows might support anywhere between 28 and 31 percent of health spending in Vermont (compared with the 30 percent estimate using our baseline assumption).

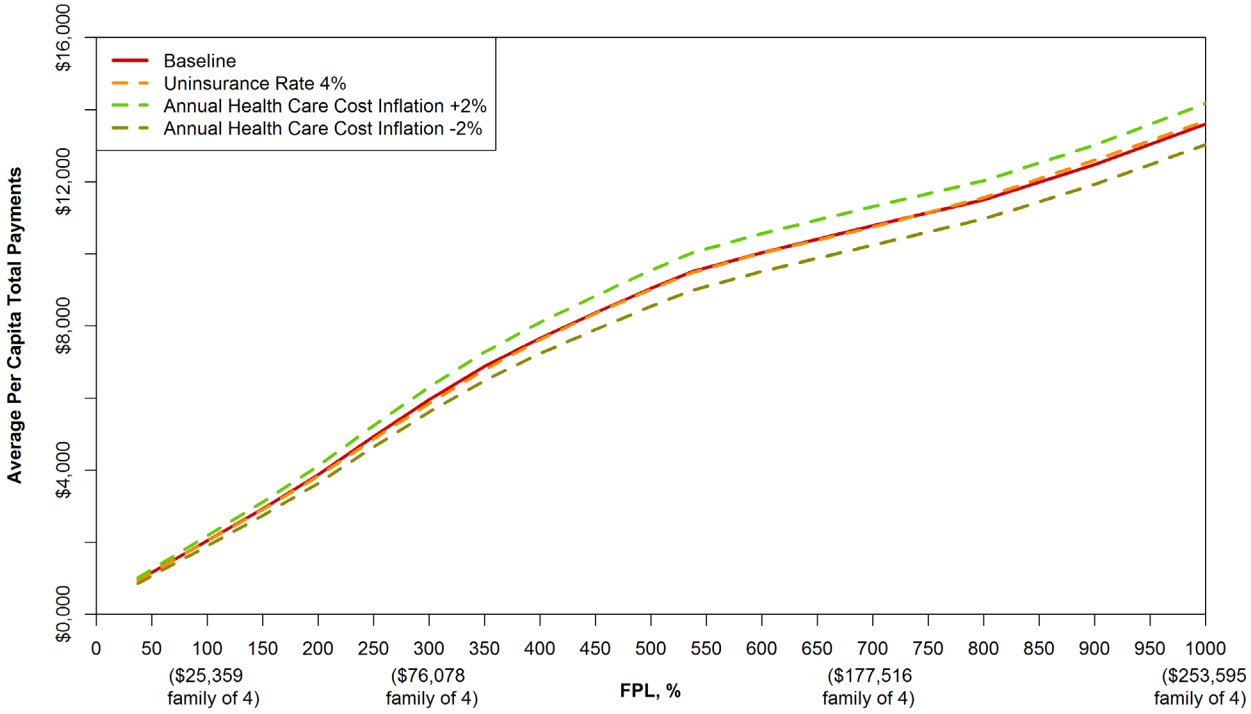
Table A.13. Sensitivity of Economic Incidence of Health Care Spending in Vermont

	Economic Incidence			
	2017 Baseline	Uninsurance Rate 4%	Annual Health Care Cost Inflation +2%	Annual Health Care Cost Inflation -2%
Total Payments by Vermont residents	69%	69%	67%	70%
Vermont residents direct payments	53%	52%	53%	53%
Vermont residents tax payments	16%	16%	15%	17%
Corporate income tax payments by Vermont businesses	1%	1%	1%	1%
Vermont state tax payments by out-of-state residents	<1%	<1%	<1%	<1%
Federal government (net federal inflows)	30%	30%	31%	28%
Retiree health incidence	<1%	<1%	<1%	<1%
TOTAL	100%	100%	100%	100%

NOTES: Direct payments include all premiums, including employee and employer premium contributions, and out-of-pocket payments minus cost-sharing reduction subsidies. Tax payments from Vermont residents include federal income tax, Medicare hospital insurance payroll tax, and state taxes supporting health care minus the tax exclusion for ESI and Exchange premium tax credits. Corporate income tax payments include federal and state taxes paid by Vermont businesses. Tax payments from out-of-state residents consist of Vermont income taxes, sales taxes, and meals and room taxes. The incidence on the federal government equals the net federal inflows, i.e. the difference between all federal spending on health care for Vermont residents—through Medicare, Medicaid, premium tax credits and cost-sharing subsidies, non-Medicaid health-related appropriations, DVHA appropriations, military health spending, the tax exclusion associated with ESI, and DSH payments—and federal taxes paid by Vermont residents to support health care programs. Retiree health incidence is employer premium contributions for retired employees.

Figure A.5 shows how different assumptions about the uninsurance rate and the rate of health care cost inflation affect payments for health care, by income. As in our main results, payments increase systematically with income in all scenarios. However, with lower health care cost inflation, the increase is slightly less steep as income rises.

Figure A.5. Sensitivity of Payments for Health Care Per Capita, by Income, 2017



NOTES: Total payments include premiums paid by the individual or through an employer, out-of-pocket payments, and tax payments made by the individual to support health care consumption, minus the tax exclusion for ESI. To allocate per capita payments within families, we sum total payments made by a family and divide by the number of family members. We estimate that, in 2017, 100 percent of the FPL will be $12,506 for a single individual and $25,559 for a family of four.

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