



NATIONAL INSTITUTE ON
Retirement Security

Reliable Research. Sensible Solutions.



Pensionomics 2016

Measuring the Economic Impact of DB Pension Expenditures

by Jennifer Erin Brown

September 2016

ABOUT THE AUTHOR

Jennifer Erin Brown is the Manager of Research for the National Institute on Retirement Security (NIRS). She joined NIRS in October 2015 and conducts research and analysis on pension and retirement issues. She is also a Tax Policy fellow at the American University Kogod School of Business where she serves as an Adjunct Professor. Previously, she served as an Employee Benefits Law Specialist at the U.S. Department of Labor's Employee Benefit Security Administration. There, she worked on issues related to corporate transactions, financial products, and the Affordable Care Act. She holds an LL.M. in Taxation and a Certificate in Employee Benefits Law from the Georgetown University Law Center, a J.D. from the American University Washington College of Law, an M.S. in Law & Society from the American University School of Public Affairs, and a B.A. in Philosophy and Criminology from the University of Florida.

ACKNOWLEDGEMENTS

We are grateful for the comments, advice, and assistance provided by Hanna Han, Ilana Boivie, Joseph Arena and Douglas Brown. The core methodology was reviewed by experts in previous editions of this study. Kelly Kenneally and Diane Oakley conducted interviews and provided content for the sidebars in this report. The views in this report and any errors or omissions are those of the author alone.

EXECUTIVE SUMMARY

Defined benefit (DB) pension benefits not only provide a secure source of income for many retired Americans, they also contribute substantially to local, state, and national economies. DB pensions play a vital role in sustaining consumer demand that ultimately supports millions of jobs.

Virtually every state and local economy across the country benefits from the spending of pension checks. For example, when a retired nurse residing in the state of Wisconsin receives a pension benefit payment, s/he spends the pension check on goods and services in the local community. S/he purchases food, clothing, and medicine at local stores, pays housing costs, and may even make larger purchases like a car or laptop computer. These purchases, combined with those of other retirees with pensions, create a steady economic ripple effect. In short, pension spending supports the economy and jobs where retirees reside and spend their benefits. Pension expenditures may be especially vital to small or rural communities, where other steady sources of income may not be readily found if the local economy lacks diversity.

Given that not having enough money for retirement has consistently topped the list of American's money worries, according to the Gallup financial worry metric,¹ reliable pension income can be especially important in providing retirees with peace of mind. In addition, steady income from DB pension plans plays a key role in stabilizing local economies during economic downturns. Retirees with DB pensions know they will receive a monthly check despite economic conditions. In contrast, other retirees may be reluctant to spend out of their 401(k)-type accounts if their savings are negatively impacted by market downturns.² To the extent that DB pensions provide retirees with steady income available for spending regardless of fluctuations in the stock market, DB pensions may play a stabilizing role in the economy, similar to Social Security.³

This study analyzes data on DB pension plans in both the public and private sectors to assess the overall national economic impact of benefits paid by these plans to retirees.

For state and local government pension plans, we also analyze these impacts at the state level for each of the 50 states and the District of Columbia. Because of methodological refinements explained in the Technical Appendix, the state level results are not directly comparable to those in previous versions of this study.

The economic gains attributed to DB pension expenditures are considerable. This study finds that, in 2014:

Nearly \$519.7 billion in pension benefits were paid to 24.3 million retired Americans, including:

- \$253 billion paid to some 9.6 million retired employees of state and local governments and their beneficiaries (typically surviving spouses);
- \$78.8 billion paid to some 2.6 million federal government retirees and beneficiaries; and
- \$187.9 billion paid to some 12.1 million private sector retirees and beneficiaries.

Expenditures made out of those payments collectively supported:

- 7.1 million American jobs that paid \$354.8 billion in labor income;
- \$1.2 trillion in total economic output nationwide;
- \$627.4 billion in value added (GDP); and
- \$189.7 billion in federal, state, and local tax revenue.

DB pension expenditures have large multiplier effects:

- Each dollar paid out in pension benefits supported \$2.21 in total economic output nationally.
- Each taxpayer dollar contributed to state and local pensions supported \$9.19 in total output nationally. This represents the financial value of robust long-term investment returns and the shared funding responsibility by employers and employees.

The industries that saw the largest employment impacts were the food services, real estate, health care, and retail trade sectors.

INTRODUCTION: MEASURING THE ECONOMIC IMPACT OF DB PENSIONS

Virtually every state and local economy across the country benefits from the spending of defined benefit (DB) pension payments. For example, when a retired nurse residing in the state of Wisconsin receives a pension benefit payment, s/he spends the pension check on goods and services in the local community. S/he purchases food, clothing, and medicine at local stores, and may even make larger purchases like a car or laptop computer. These purchases, combined with those of other retirees with pensions, create an economic ripple effect. In short, pension spending supports the economy and supports jobs where retirees reside and spend their benefits. Pension expenditures may be especially vital to small or rural communities, where other steady sources of income may not be readily found if the local economy lacks diversity.

Additionally, reliable pension income can be especially important not only providing retirees with peace of mind, but in stabilizing local economies during economic downturns. Retirees with DB pensions know they are receiving a steady check despite economic conditions. In contrast, other retirees may be reluctant to spend out of their 401(k)-type accounts if their savings are negatively impacted by market downturns. To the extent that DB pensions provide retirees with steady income available for spending regardless

of fluctuations in the stock market, DB pensions may play a stabilizing role in the economy, similar to Social Security.⁴

The purpose of this study is to quantify the economic impact of DB pension payments in the U.S. and in each of the 50 states and the District of Columbia (hereafter referred to as “states”). Using the IMPLAN model, we estimate the employment, output, value added, and tax impacts of pension benefit expenditures at the national and state levels.

The remainder of this introduction provides a brief background on DB pensions and an overview of the methodology. Section I outlines the major types of economic impacts measured in this study. Section II presents national level findings. Section III outlines the state-level impact analysis, and Section IV presents the state-level findings.

Background: DB Pensions in the United States

Defined benefit pension plans have existed in the United States since the 19th century. In the private sector, the first DB pension plan was introduced in 1875 by the American Express Company.⁵ Over time, many private sector employers saw the

Table 1.
Public and Private Sector Pension Benefits, 2014

	State and Local	Federal	Private Sector	Total*
Beneficiaries	9.6 million	2.6 million	12.1 million	24.3 million
Average Benefit	\$26,455	\$30,302	\$15,520	\$21,413**
Total Benefits	\$253 billion	\$78.8 billion	\$187.9 billion	\$519.7 billion

Note: Author's analysis of the Annual Survey of Public Pensions, Current Population Survey Annual Social and Economic Supplement, and annuity roll data from the U.S. Office of Personnel Management.

*Totals may not add up exactly due to rounding.

** Total average benefit represents a weighted average of public and private sector benefits.

value of offering DB pension coverage to their employees, as these benefits not only were quite valued by workers, but from a human resource management perspective, they also acted as an effective recruitment and retention tool.⁶ Although private sector DB plans have experienced a decline in recent decades (due in large part to a difficult regulatory environment),⁷ in 2014, 19 percent of full-time private sector employees had access to DB pension coverage.⁸

In the public sector, Congress created the Civil Service Retirement System (CSRS) to provide a pension for civilian federal employees in 1920. In 1986, Congress implemented the new Federal Employee Retirement System (FERS), which includes Social Security, a DB pension, and a 401(k)-type savings plan, called the Thrift Savings Plan.⁹ While many major municipalities offered pensions to police and firefighters and 21 states had pensions plans covering teachers by the 1920s,¹⁰ state and local pension systems began to take root on a large scale during the Great Depression. When Social Security was established in 1935, the system left out state and local workers, and many states acted to develop their own retirement systems for their employees. Between 1931 and 1950, nearly half of the large public employee pension plans existing today were established; 45 states had retirement systems in place by 1961.¹¹

In 2014, state and local pension plans in the United States collectively held total assets of \$3.7 trillion. They served 19.7 million working Americans, including 14.3 million active participants, 5.4 million inactive members, and 9.6 million retirees and other beneficiaries receiving regular benefit payments. Benefit payments in 2014 totaled \$253 billion, for an average benefit payment of \$2,205 per month, or \$26,455 per year.¹²

Federal pension plans currently serve 2.7 million active civilian employees.¹³ In 2014, Federal plans paid out some \$78.8 billion in pension benefits to 2.6 million retirees and beneficiaries.¹⁴ Private sector pension plans covered 41 million Americans,¹⁵ including 12.1 million retired Americans and other beneficiaries in 2014.¹⁶ With total plan assets of \$8.4 trillion in 2014,¹⁷ private DB pensions paid out some \$187.9 billion in pension benefits to retirees and beneficiaries.¹⁸ The average private sector pension benefit was \$1,293 per month, or \$15,520 per year.

DB plans are pre-funded systems, which means that a retirement fund receives regular contributions for each employee during the course of that person's career. This

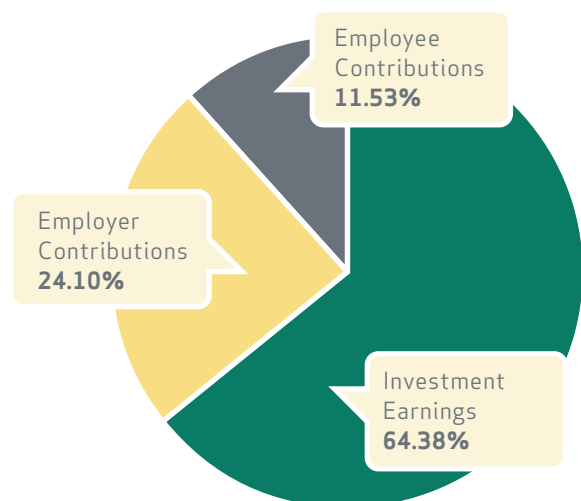
type of arrangement can be contrasted with “pay-as-you-go” systems like Social Security, whereby contributions of current employees are used to pay benefits for current retirees. Pre-funded retirement systems have the advantage that investment earnings can do much of the work of paying for benefits. In such a system, the contributions made on behalf of current employees are invested, and these investment earnings compound over time. Over a span of decades, accumulation of investment earnings can be substantial, and in many cases pay the majority of the pension benefits.

In state and local government pension plans, typically both the employee and employer make contributions to the pension fund. Pension fund trustees have a fiduciary duty to ensure that the retirement fund is operating in the best interest of workers and retirees, and hire professional managers to oversee fund investments.¹⁹ In this respect, public plans differ from private sector DB plans, which are generally funded solely by employers. In requiring that employees share the cost of their pension, public plans are similar to the approach adopted in 401(k) plans where private sector employees contribute to their accounts.

However, DB pensions are distinguishable from defined contribution (DC) plans, such as 401(k) plans, in that they provide broad-based coverage, secure money for retirement, a lifetime income, and special protections for spouses.²⁰ Research shows DB plans are more economically efficient than DC plans as pensions can deliver the same level of retirement benefits at nearly half the cost of a DC plan.²¹

State and local pension fund receipts come from three sources: employer contributions, employee contributions, and earnings on investments. **Figure 1** shows that between 1993 and 2014, 24.1 percent of public pension fund receipts came from employer contributions, 11.5 percent from employee contributions, and 64.4 percent from investment earnings. Earnings on investments—rather than employer contributions—have historically made up the bulk of pension fund receipts, even though this time period saw two very large market downturns within a single decade. Because of the continued strong stock market recovery since the 2008 downturn, the share of receipts from investment earnings has increased since our last Pensionomics report, which used data from 2012.²² Moreover, public pension reform in nearly every state since 2008 has relied heavily on increased employee contributions as a way to reduce taxpayer costs.²³

Figure 1:
Aggregate State and Local Pension Contributions by Source, 1993-2014



Note: Author's analysis of data from U.S. Census Bureau.

Just as contributions from employees and employers have an expanded impact through the compounding of investment earnings over time, a similar dynamic occurs when retirees spend their pension checks. When a retiree receives a pension benefit, s/he spends it on goods and services in the local community. These expenditures have a “ripple effect” in the economy, as one person’s expenditures become another person’s income.

Measuring the National Economic Impact of DB Pension Plans

This study measures the economic impact of pension benefits paid by public and private pension plans nationally, as well as the economic effects of state and local plans within each state economy. Our analysis rests on the recognition that expenditures have a “multiplier” effect in a regional or national economy. When money is spent at a local business to purchase, say, groceries, that initial purchase generates even more income. First, some of the money spent circulates back to the businesses that manufactured, transported, and otherwise contributed to the production of those goods. Second, the proprietors of these businesses and their employees will spend more money at other businesses, spurring another round of

income generation. Thus, with each new round of spending, additional revenue is generated, sustaining jobs, incomes, total output, and tax revenue to the local community. An example of a retiree and the impact of their spending on local businesses is illustrated in this report.

In addition, local economies benefit not only from pension spending by residents, but from pension checks spent in other localities. That is, the economic benefits generated by pension spending in one region “leak” to and are captured by other regions.

Our analysis is focused on the expenditure effects of pension benefits, measuring the economic impacts that result when expenditures made by retirees ripple throughout the economy. Because pension benefits are permanent sources of income—in that they cannot be outlived—we would expect the economic impacts to be larger than those of temporary income increases.²⁴ For this reason, we would expect the economic impacts of pension benefit expenditures to be larger than those out of, for example, unemployment insurance benefit payments. It should also be noted that this study measures the gross economic impacts of pension benefit expenditures, rather than the net economic impacts. For a detailed explanation, see the Technical Appendix.

Because taxpayers and elected officials have an interest in gauging the ultimate economic impact of each tax dollar “invested” in a state or local pension plan, we calculate a proxy measurement of the total economic impact attributable to each dollar in employer pension contributions made by the taxpayer, called the “taxpayer investment factor.” Details follow.

Data and Methodology

The data used for our analysis comes primarily from two sources: the U.S. Census and IMPLAN. We used data for 2014, as it was the most recently available at the time of our analysis.

Data on state and local pension plans comes from the Census Bureau’s Annual Survey of Public Pensions, which is a representative sample of state and local DB pension plans in the United States.²⁵ This survey provides data on revenues, expenditures, financial assets, and membership for state and local pension plans on a national basis and in each of the states. Federal pension data comes data published by the U.S. Office



Illustrating Direct, Indirect, and Induced Impacts

A Retiree's Spending on Housing and Other Daily Needs

Linda is a 62-year old single African American woman living in southern California. She recently retired after working for 30 years. Linda worked in the private sector for a technology company for about five years, then spent the bulk of her legal career working in the public sector.

During her career, she regularly contributed to her retirement plans. Linda now receives defined benefit (DB) pension income of about \$3,300 each month from both her private and public sector jobs. In addition, Linda receives retirement income from Social Security, and she also put away additional savings in her defined contribution (DC) retirement account.

Older Californians face some of the highest housing costs in the nation. In fact, the housing costs for four out of 10 Californians exceeds more than 30 percent of their income. It is not surprising that Linda must dedicate a large portion of her pension income toward her housing costs. She spends upwards of \$3,000 per month to cover principal and interest on her mortgage, maintenance, property taxes, insurance, and utilities.

"Thanks to my stable pension income, I can afford my home in retirement. And that is no easy feat," Linda says. Income from Social Security income pays for her car, food and healthcare. And if there are any remaining funds, Linda plans to take a vacation or two in retirement.

The money Linda pays in interest, maintenance, insurance and utilities creates a **direct economic impact** on the California economy. An **indirect economic impact** would be created, if she had a contractor mow her lawn and the contractor purchases a new mower or other equipment using some of the money Linda paid his business from her pension income. Additionally, from the pension money that Linda spends on her home, contractors as well as utility and insurance companies purchase supplies and services from other businesses, which generate an economic ripple effect. As these companies hire additional workers as business increases, the spending by these new employees from their paychecks further generates an **induced economic impact**.

"I'm so thankful that I have a reliable pension that I spend on my housing needs each month in retirement," Linda says. "I can be self-sufficient in retirement after a lifetime of work."

The aggregate economic impact of the spending on housing by the 24.3 million retired Americans, who like Linda receive a DB pension, plays an important role in supporting jobs in the real estate sector of the economy. Specifically in 2014, those expenditures supported nearly 383,000 jobs in the real estate industry nationwide.

of Personnel Management.²⁶ Data on private pension benefits comes from the Census Bureau and Bureau of Labor Statistics' Current Population Survey Annual Social and Economic Supplement (CPS ASEC), which reports sources of household income, including pension and survivor income, by age.²⁷

To measure the economic impacts of retiree expenditures made out of benefits paid by DB pension plans, the input-output modeling software, IMPLAN, was used. IMPLAN was first developed in the 1970's as a part of a USDA Forest Service project to analyze the economic effects of local land management projects such as timber, mining, and recreation activities.²⁸ Since that time, IMPLAN has been used by industry and government analysts throughout the country to assess economic impacts of highly varied local community development projects. These studies include many recent economic impact studies of pension benefit payments from state retirement systems.²⁹

Between the time NIRS' original *Pensionomics* study was published in 2009³⁰ and the release of this report,³¹ IMPLAN underwent significant modeling changes. Due to these changes, results of the current study are not directly comparable to those of 2009 study, and the reader should avoid drawing conclusions based on such comparisons. In relation to *Pensionomics* 2014 and *Pensionomics* 2012, the fundamental modeling structure remains the same, and the national results are comparable between this study and the 2014 and 2012 studies. Additionally, the national multipliers have increased since the last study because of fundamental changes in the U.S. economy, and the reported multipliers for many states have increased as well. Detailed information on our data and methodology and further discussion of these differences appear in the Technical Appendix.

I. ECONOMIC IMPACT MEASUREMENTS

In this report, we analyze the economic impact of expenditures made by retirees out of their DB pension payments along four dimensions: employment and labor income, output, value added, and tax revenues. Each of these is described in detail below.

1. Employment and Labor Income Impact: When retirees spend their pension checks, their expenditures help to support jobs—at the local diner, in home repair, in a hospital, or even at a factory somewhere across the country. When a retiree makes a purchase, the money spent translates into business revenues, jobs, and income. Using IMPLAN, we calculated the number of jobs supported by retirees’ expenditures. These are broken down among direct, indirect, and induced employment impacts. The direct employment impact occurs when the initial benefit payment is spent by the retiree. The indirect impact occurs as money flows back to businesses that supply goods and services to merchants receiving direct expenditures from retirees. The induced employment impact is attributable to the additional income generated through the purchase of goods and services by workers hired as a result of the direct and indirect impacts. In all cases, the employment impact constitutes an estimate of “annual average jobs” within a single year. We also present estimates of labor income supported by pension expenditures, which is a component of value added, as described below.

2. Output Impact: Total output includes the value of all goods and services produced in the economy. Using IMPLAN, we calculate the value of total output supported by retirees’ expenditures of DB pension benefits. As with the employment effects, we present estimates of the impact on total output, broken down by direct, indirect, and induced impacts. The direct impact consists of the initial round of spending. Indirect impacts consist of the rounds of spending by the local merchants. Induced impacts are the additional outputs created

when workers, whose jobs are supported by the direct and indirect spending rounds, spend their paychecks in the local economy.

We also calculate a pension expenditure multiplier and taxpayer investment factor. The pension expenditure multiplier tells us the total economic impact attributable to each dollar in pension benefits paid to a retiree. (For example, a multiplier of 2.21 means that every \$1 paid to retirees in a local economy supports \$2.21 of total output in that region.) We calculate the pension expenditure multiplier by dividing the total output (consisting of the direct, indirect, and induced impacts taken together) by the value of the “initial event” in the economy (in this case, the gross pension benefit). Expenditure multipliers usually lie between 1.0 and 3.0.

3. Value Added Impact: Value added is a net estimate of the creation of “new value” in the economy. Commonly referred to as Gross Domestic Product (GDP), it includes the value of employee compensation, profits, rents, and other aspects of production, but excludes the costs of purchased materials and services. IMPLAN calculates the value added attributable to DB pension benefit expenditures.

4. Tax Impact: Economic activity of all kinds—receiving pension income, earning wages, producing profits, selling goods and services—provides the basis for the tax revenues that are required to fund government services. To calculate the impact that pension payments have on tax revenues, we first calculate the taxes paid by beneficiaries directly on their pension benefits. Then, using IMPLAN, we calculate estimates of taxes attributable to the economic activity that results when retirees spend their after-tax pension checks, and in all subsequent rounds of spending. This includes all corporate, property, and business taxes that are generated through each spending round.

II. RESULTS: NATIONAL ECONOMIC IMPACT OF DB PENSION PLANS

Our analysis indicates that DB pension benefits not only provide a secure source of income for many retired Americans, they also contribute substantially to the national economy. DB pensions play a vital role in sustaining consumer demand that, in turn, ultimately supports millions of jobs, and hundreds of billions of dollars in income, output, value added, and tax revenues.

Employment and Income

Our analysis shows that the \$519.7 billion in gross public and private pension benefits paid out in 2014 supported 7.1 million American jobs, as shown in **Table 2**. Of these jobs, 3.4 million were supported by state and local pension benefit expenditures, 1.1 million by federal pension expenditures, and an additional 2.6 million by private pension expenditures. All told, 3.2 million jobs were attributable to direct impacts (direct spending by retirees), 1.7 million to indirect impacts (spending by merchants on businesses further up the supply chain), and 2.2 million through induced impacts (additional jobs supported when employees whose jobs are tied to direct and indirect spending rounds spend their paychecks). These jobs collectively paid out an estimated \$354.8 billion in labor income, as shown in **Table 3**.

To put these employment impacts in perspective, the 7.1 million jobs supported by pensioners' expenditures exceed the number of jobs in the entire private construction industry—6.1 million jobs in 2014.³²

In addition, in 2014 the national unemployment rate was 6.2 percent. The entire civilian labor force in the country consisted of 146.3 million potential workers, of whom 9.6 million were unemployed.³³ In light of these numbers, the fact that DB pension expenditures supported 7.1 million jobs is significant, as it represents a full 4.9 percentage points in the national labor force.

Total Output

Our model further finds that the \$519.7 billion in public and private pension benefit payments in 2014 supported \$1.2 trillion dollars in overall economic output in the national economy. This consisted of \$467.7 billion in direct impacts, \$326.4 billion in indirect impacts, and \$357.1 billion in induced impacts. In terms of benefit source, \$559.7 billion in economic activity stemmed from state and local pension benefit expenditures, \$174.4 billion from federal pension

Table 2. **DB Pensions Support 7.05 Million American Jobs**

	State and Local Pensions (# Jobs)	Federal Pensions (# Jobs)	Private Pensions (# Jobs)	Total Jobs Supported* (# Jobs)
Direct Impact	1,542,955	480,759	1,146,000	3,169,714
Indirect Impact	811,804	252,945	602,952	1,667,700
Induced Impact	1,077,568	335,753	800,343	2,213,664
Total Employment Impact	3,432,326	1,069,457	2,549,295	7,051,078

*Totals may not add up exactly due to rounding.

expenditures, and \$417.1 billion from private pension benefit expenditures. See **Table 4**.

This \$1.2 trillion dollars in overall economic output is roughly equivalent to the total output contributed by the entire construction industry, which generated \$1.2 trillion in total output in the national economy in 2014.³⁴

Value Added (GDP)

Retirees' expenditures of DB pension benefit payments supported \$627.4 billion in value added to the national economy in 2014, including \$305.4 billion supported by state and local pension benefits, \$95.2 billion by Federal pension benefits, and an additional \$226.8 supported by private pension benefit expenditures. See **Table 5**.

This \$627.4 billion in value added is roughly the same amount as was contributed by the entire construction industry, which generated \$664 billion in value added in 2014.³⁵

Tax Revenue

Our analysis finds that an estimated \$189.7 billion in total tax revenue was attributable to public and private pension benefits in 2014, including \$110.4 billion in federal tax revenue and \$79.3 billion in state and local tax revenue. (See **Tables 6 and 7**.)

Tax revenue comes from two major sources: taxes paid by beneficiaries directly on their pension benefits and taxes resulting from expenditures made in the local economy (for example, sales taxes resulting from a retail purchase). Of the total tax revenue supported, \$42.9 billion came from income taxes paid by beneficiaries on their benefits and \$146.8 billion from taxes resulting from the spending of net pension benefits.

To put these numbers in perspective, the total federal tax revenue attributable to public pension benefit payments is more than the \$90.6 billion the federal government spent on all elementary, secondary, and vocational education, higher education, education related research, and training and employment services, combined, in 2014.³⁶ The total state and local tax revenue supported is roughly \$11 billion more than state and local governments collectively spent on hospitals.

Economic Impacts by Industry

Table 8 breaks down the economic effects of public and private pension expenditures by the top ten industry sectors affected. Nationally, the largest employment impacts were seen in the real estate, hospitals, food service and wholesale trade sectors. In 2014, pension expenditures supported over 566,000 total jobs in the food services industry, 382,812 jobs in the real estate industry, 330,057 jobs at hospitals, and over 210,600 jobs in the wholesale trade industry.

Table 3. **DB Pensions Support \$354.8 Billion in Labor Income**

	State and Local Pensions	Federal Pensions	Private Pensions	Total Labor Income Supported*
Direct Impact	\$70.5 billion	\$22.0 billion	\$52.4 billion	\$144.9 billion
Indirect Impact	\$48.5 billion	\$15.1 billion	\$36 billion	\$99.7 billion
Induced Impact	\$53.7 billion	\$16.7 billion	\$39.9 billion	\$110.2 billion
Total Labor Income Impact*	\$172.7 billion	\$53.8 billion	\$128.3 billion	\$354.8 billion

*Totals may not add up exactly due to rounding.

Table 4. DB Pensions Support \$1.151 Trillion in Total Economic Activity

	State and Local Pensions	Federal Pensions	Private Pensions	Total Output Supported*
Direct Impact	\$227.4 billion	\$70.8 billion	\$169.5 billion	\$467.7 billion
Indirect Impact	\$159.4 billion	\$49.7 billion	\$117.3 billion	\$326.4 billion
Induced Impact	\$172.9 billion	\$53.9 billion	\$130.3 billion	\$357.1 billion
Total Output Impact	\$559.7 billion	\$174.4 billion	\$417.1 billion	\$1.2 trillion

*Totals may not add up exactly due to rounding.

Table 5. DB Pensions Support \$627.4 Billion in Value Added (GDP)

	State and Local Pensions	Federal Pensions	Private Pensions	Value Added Supported*
Direct Impact	\$128.5 billion	\$40 billion	\$95.5 billion	\$264 billion
Indirect Impact	\$82.7 billion	\$25.8 billion	\$61.4 billion	\$169.8 billion
Induced Impact	\$94.2 billion	\$29.4 billion	\$70 billion	\$193.6 billion
Total Value Added Impact*	\$305.4 billion	\$95.2 billion	\$226.8 billion	\$627.4 billion

*Totals may not add up exactly due to rounding.

Table 6. DB Pensions Support \$110.4 Billion in Federal Tax Revenue

	State and Local Pensions	Federal Pensions	Private Pensions	Federal Tax Revenue*
Taxes Paid by Beneficiaries on Benefits	\$10.6 billion	\$3.3 billion	\$7.9 billion	\$21.8 billion
Tax Revenue Resulting from Retiree Expenditures	\$43.1 billion	\$13.4 billion	\$32 billion	\$88.6 billion
Total Federal Tax Revenue Impact*	\$53.7 billion	\$16.7 billion	\$39.9 billion	\$110.4 billion

*Totals may not add up exactly due to rounding.

Table 7. DB Pensions Support \$79.3 Billion in State and Local Tax Revenue

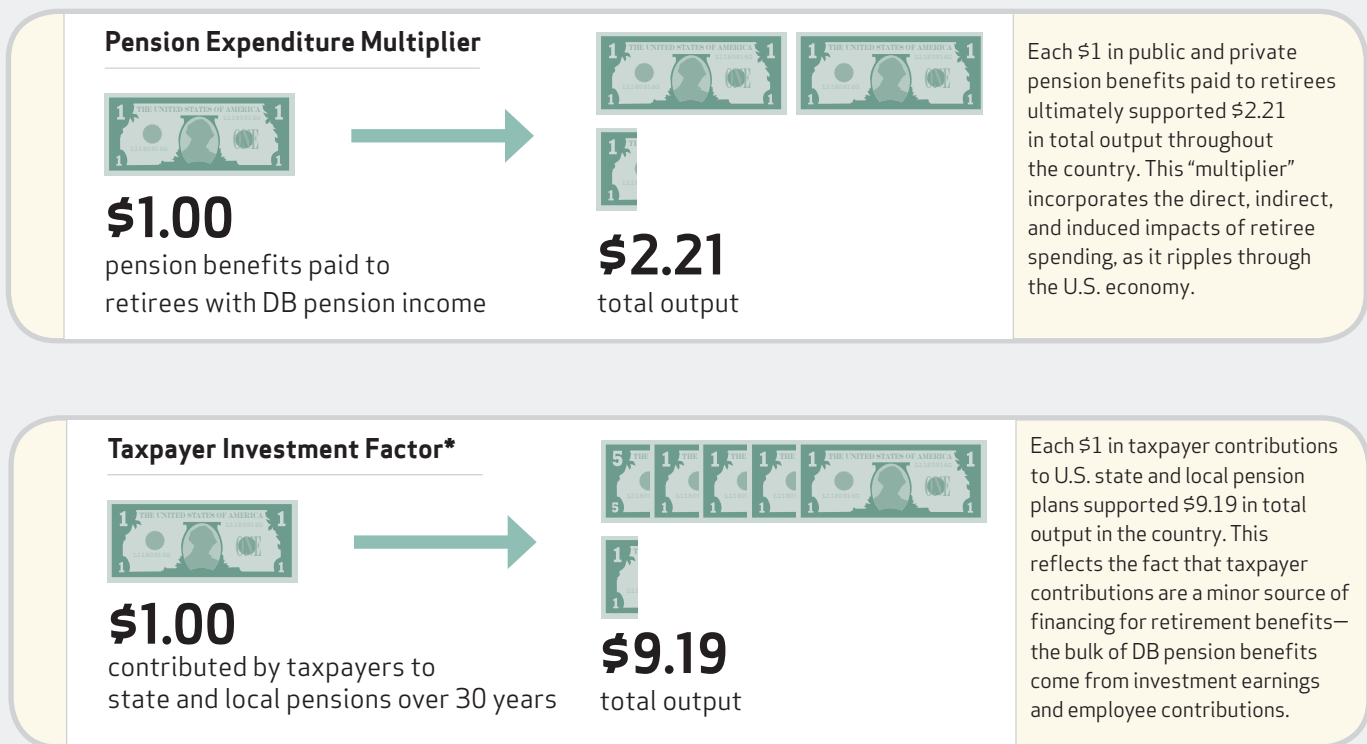
	State and Local Pensions	Federal Pensions	Private Pensions	Total State and Local Tax Revenue*
Taxes Paid by Beneficiaries on Benefits	\$10.3 billion	\$3.2 billion	\$7.7 billion	\$21.1 billion
Tax Revenue Resulting from Retiree Expenditures	\$28.3 billion	\$8.8 billion	\$21 billion	\$58.2 billion
Total State and Local Tax Revenue Impact*	\$38.6 billion	\$12 billion	\$28.7 billion	\$79.3 billion

*Totals may not add up exactly due to rounding.

Figure 2: Economic Multipliers

The pension expenditure multiplier for 2014 in the U.S, was 2.21, meaning every dollar paid out in DB pension benefits in that year generated \$2.21 of total output in the national economy.

Because DB pension plans are prefunded, only a small portion of the total pension payment in any given year is funded through employer or taxpayer dollars, as discussed previously. Therefore, for state and local plans, it may be helpful to calculate the total impact of state and local pension benefit expenditures that is attributable to the “taxpayer investment” in these plans. Because only 24.1 cents of every dollar paid out in pension benefits in 2014 was generated through taxpayer contributions (see **Figure 1**), the taxpayer investment factor is substantially higher than the expenditure multiplier. In 2014, of the \$253 billion paid out in state and local pension benefits, only \$61 billion was funded by taxpayer dollars. The total economic impact attributable to state and local pension benefits was \$560 billion. The taxpayer investment factor, then, was 9.19. That is, every taxpayer dollar contributed to state and local pension plans supported \$9.19 in national economic output.



* Caution should be used in interpreting this number. See the Technical Appendix for details.

Table 8. Top Ten Industries by National Employment Impact

Industry	Total Employment Impact (# jobs)				Total Output Impact (\$)			
	From State and Local Pensions	From Federal Pensions	From Private Pensions	Total*	From State and Local Pensions	From Federal Pensions	From Private Pensions	Total*
Real estate	186,345	58,062	138,404	382,812	\$36.7 billion	\$11.4 billion	\$27.2 billion	\$75.3 billion
Hospitals	160,665	50,061	119,331	330,057	\$23.9 billion	\$7.4 billion	\$17.7 billion	\$49.0 billion
Full-service restaurants	143,863	44,825	106,851	295,539	\$6.5 billion	\$2.0 billion	\$4.8 billion	\$13.3 billion
Limited-service restaurants	131,783	41,061	97,879	270,724	\$10.5 billion	\$3.3 billion	\$7.8 billion	\$21.6 billion
Wholesale trade	102,534	31,948	76,155	210,638	\$25.0 billion	\$7.8 billion	\$18.6 billion	\$51.3 billion
Offices of physicians	93,069	28,999	69,125	191,193	\$13.2 billion	\$4.1 billion	\$9.8 billion	\$27.2 billion
Retail - Food and beverage stores	85,186	26,542	63,270	174,998	\$5.5 billion	\$1.7 billion	\$4.0 billion	\$11.2 billion
Retail - General merchandise stores	82,594	25,735	61,345	169,674	\$5.5 billion	\$1.7 billion	\$4.1 billion	\$11.3 billion
Nursing and community care facilities	79,047	24,630	58,711	162,388	\$5.6 billion	\$1.8 billion	\$4.2 billion	\$11.6 billion
Individual and family services	73,179	22,801	54,353	150,333	\$2.4 billion	\$0.8 billion	\$1.8 billion	\$4.9 billion

*Totals may not add up exactly due to rounding.

III. MEASURING STATE-LEVEL ECONOMIC IMPACTS OF STATE AND LOCAL PENSION BENEFITS

Next, we consider the specific economic impacts of *state and local* pension benefit expenditures within each state, accounting for cross-state economic impacts and migration.

Federal and private pension plans are not included in the analysis because of data limitations.

The economic impacts and multipliers for individual states are collectively smaller than the national impacts and multipliers, because state economies are smaller and less diverse than the national economy as a whole.

The smaller and more homogeneous a local economy is, the smaller the economic multipliers will tend to be for that economy. This is because economic impact analysis, based on local production and purchasing patterns, accounts for economic benefits that leave the state. The economic benefit “lost” to other states or countries is called leakage.

However, because we are interested in assessing the economic impacts of state and local pension benefits nationally, i.e., across all states, we employ an approach that accounts for the fact that one state’s “loss” is often another state’s “gain.” We account for a significant share of the leakage caused by interstate commerce by utilizing a Multi-Regional Input-Output (MRIO) analysis for each of the fifty states and the District of Columbia.

For example, if a consumer in the state of Ohio purchases a new lawnmower, that purchase is broken down into its various components of production: the engineers and designers, the

parts manufacturers, and the retail salesperson all receive a portion of the revenue from that sale. Because the lawnmower was purchased within Ohio, the portion of output due the retailer will certainly be added to Ohio’s total output. If the lawnmower was designed in Illinois and manufactured in Georgia, however, output from these services would not be included in Ohio’s total output, because they were not performed within the state of Ohio, but in those of Illinois and Georgia, respectively.

Because most individual state economies are not as diverse as the U.S. economy as a whole, the state-level multipliers resulting from this analysis—focused on measuring economic benefits at the state rather than national level—will be smaller than the national multipliers. However, whenever all of the services in any single transaction are performed by firms and workers in the U.S., they are accounted for in the national economic impacts.

In addition, we also adjust for net flows of retirees and their pension payments across state borders, drawing on Census data on migration patterns of older households. Retirees who live and therefore spend their income outside of their state of origin contribute to economic activity in their new state of residence.

Thus, each state’s total economic impacts consist of net in-state impacts (attributable to pension payment expenditures originating in the state) and net out-of-state impacts (attributable to pension expenditures originating from any of the other states). For more information, see the Technical Appendix.

IV. RESULTS: STATE-LEVEL ECONOMIC IMPACT OF DB PENSION PLANS

While our model does not fully capture all of the state-level economic impact, the results show that every state gained substantial economic benefit from state and local DB pension payments.

Figure 3 and **Tables 9 through 12** provide the key state-level results of the economic impact analysis. Not surprisingly, the state of California—with the largest economy of the 50 states—showed the largest employment, output, and value added impacts: 394,514 jobs, \$65.42 billion in output, and \$38.1 billion in value added. But even in smaller states, the impacts of state and local pension benefits are substantial.

Figures 4 and 5 present the pension expenditure multipliers and taxpayer investment factors for each state. Pension expenditure multipliers vary somewhat by state, but generally speaking, larger states and those with more diverse economic bases will have larger multipliers than smaller states and those with a more homogeneous economic base. These multipliers account for the impact of pension expenditures originating both from within the state and those pension dollars that originate from another state but are spent within the state in question.

In 2014, the average state-level pension expenditure multiplier was 1.35, meaning that for every dollar paid out in pension benefits received by a state resident, \$1.35 in total output

was supported within that state.³⁷ The state with the largest pension expenditure multiplier was Florida, with a total output multiplier of 1.67; again, this is to say that every dollar in pension benefits paid out in Florida supports \$1.67 in total economic output in that state.

As is the case at the national level, the taxpayer investment factors for each state are much larger than the pension expenditure multipliers.

Because state and local pension plans are prefunded, only a small portion of the total pension payment in any given year is funded through taxpayer dollars. The total impact of state and local pension benefit expenditures that is attributable to the “taxpayer investment” in these plans is shown in **Figure 6**. In 2014, the average taxpayer investment factor was 5.78, meaning that for every dollar contributed by taxpayers in a single state, \$5.78 in total economic output was supported within that state, on average. The state with the largest taxpayer investment factors was South Dakota, at 11.95; again, this is to say that every dollar contributed by taxpayers to these pension plans supported \$11.95 in total economic output within that state.

Note that caution should be used in interpreting the taxpayer investment factor for some states. See the Technical Appendix for details.

PUBLIC PENSION'S REAL ESTATE INVESTMENTS ALSO HAVE AN ECONOMIC IMPACT

Public pension funds invest in broadly diversified portfolios that help deliver investment returns over the long term within an appropriate level of risk. Real estate investments represent an asset class that helps pension funds balance investment gains and risks.

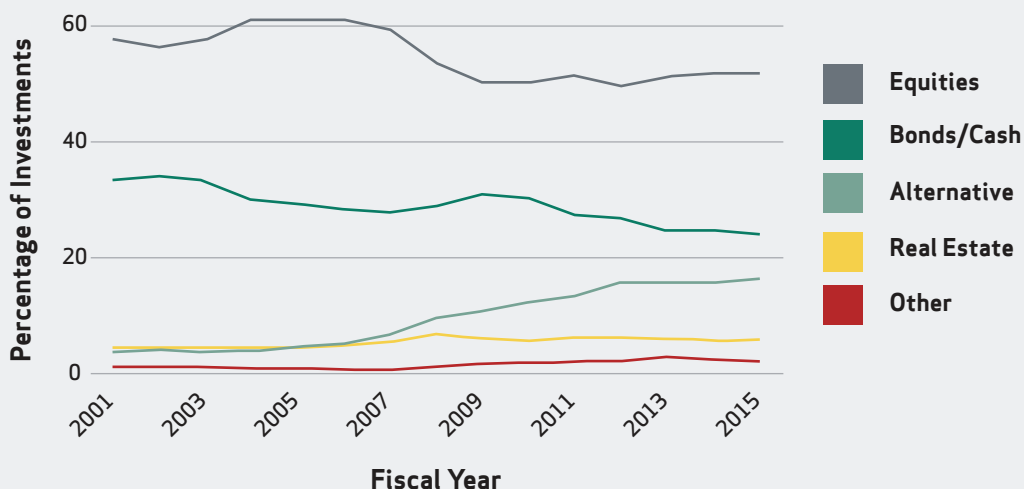
Public pension funds have maintained modest allocations to real estate investments for many years. The figure below illustrates the asset allocation of state and local pensions to key assets as a percent of total assets from 2001 to 2015.

According to the Public Fund Database, state and local pensions invested \$197 billion in real estate related assets, representing nearly six percent of the \$3.4 trillion of actuarial assets in 2015.

In addition to the jobs in the economy supported by retirees' expenditures, such as Linda's for housing related costs, public pensions also support jobs in the economy through their many investments.

For example, real estate portfolios in public pension funds typically are a mix of investments in commercial, residential and industrial properties across geographic areas. Such investments initially generate construction jobs during a property's building phase. And over the long-term, these properties provide critical infrastructure and space for retail and professional service providers to work, which further provides support for jobs and economic expansion.

Asset allocation for State and Local Pensions 2001-2015



Source: Public Plans Database
National data averages are weighted by plan size.

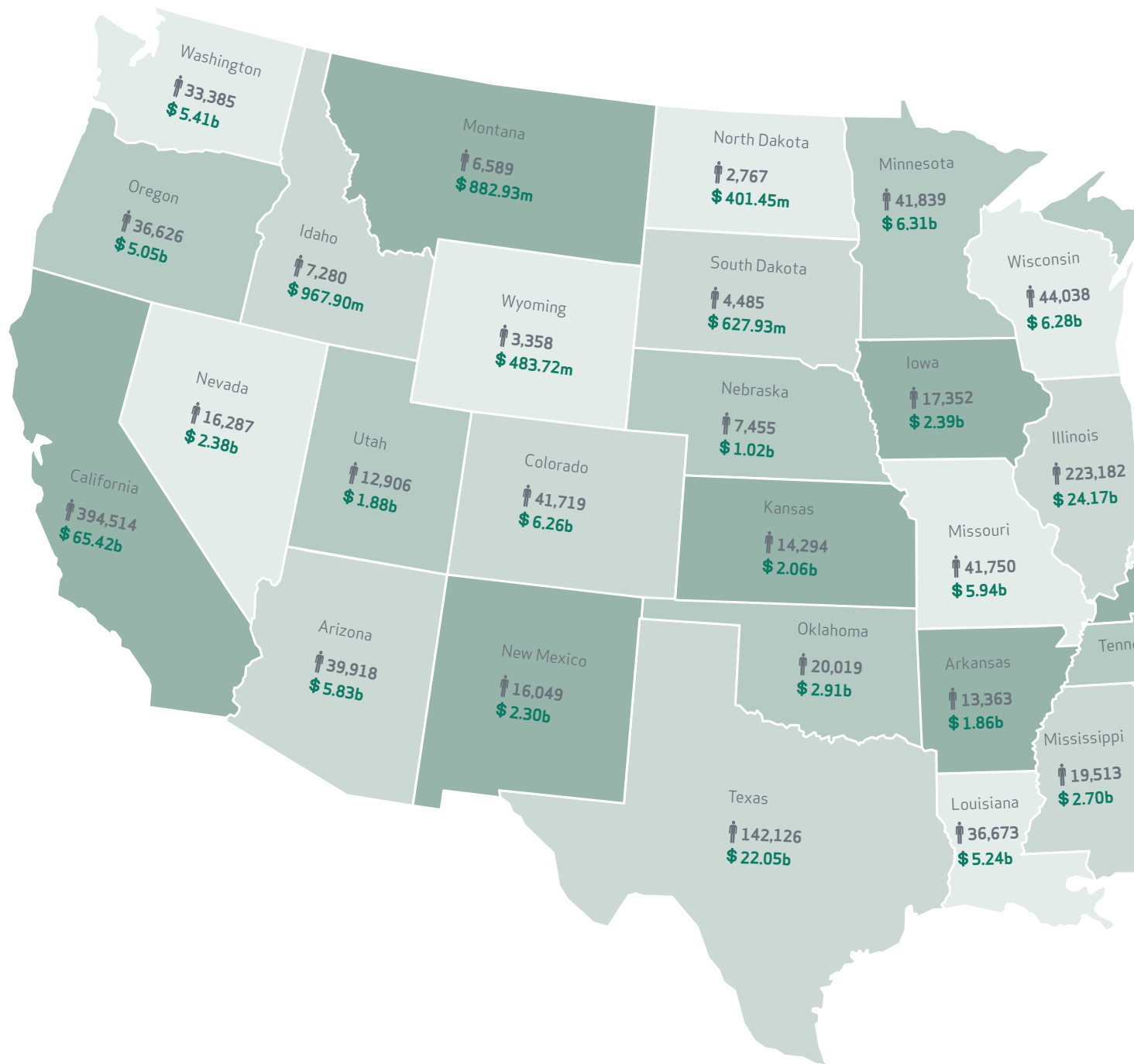
Determining the economic impact of a public pension fund's investments in real estate requires a detailed understanding of each investment. The two largest public pension systems in California asked experts to conduct economic studies of each fund's investments, including the impact of real estate investments in California on jobs in the state.

As of December 31, 2013, the California State Teachers' Retirement System (CalSTRS) had a gross value of \$7.5 billion invested in California real estate. Dr. Ashok Bardhan, former senior economist at the University of California, Berkeley, Haas School of Business, calculated that 79,000 jobs in California were supported by CalSTRS' real estate investments.

Looking at the impact of California Public Employees Retirement System's (CalPERS) investments, Pacific Community Ventures calculated that 170,000 jobs in California were supported by CalPERS' real estate investments, totaling \$7.2 billion in California as of June 30, 2015.

Sources: "Public Plans Database." Boston College, Center for Retirement Research, Chestnut Hill, MA. <http://crr.bc.edu/data/public-plans-database/>. A. Bardhan. 2014. "Impact of CALSTRS' Investments on California's Economy." CalSTRS. Sacramento, CA. http://www.calstrs.com/sites/main/files/file-attachments/impact_of_calstrs_investments_on_californias_economy.pdf. and Pacific Community Ventures, 2015, "CalPERS for California Annual Report 2015," CalPERS, Sacramento, CA. <https://www.calpers.ca.gov/docs/forms-publications/calpers-for-ca-2015.pdf>.

Figure 3: **Employment and Economic Output Impacts by State**



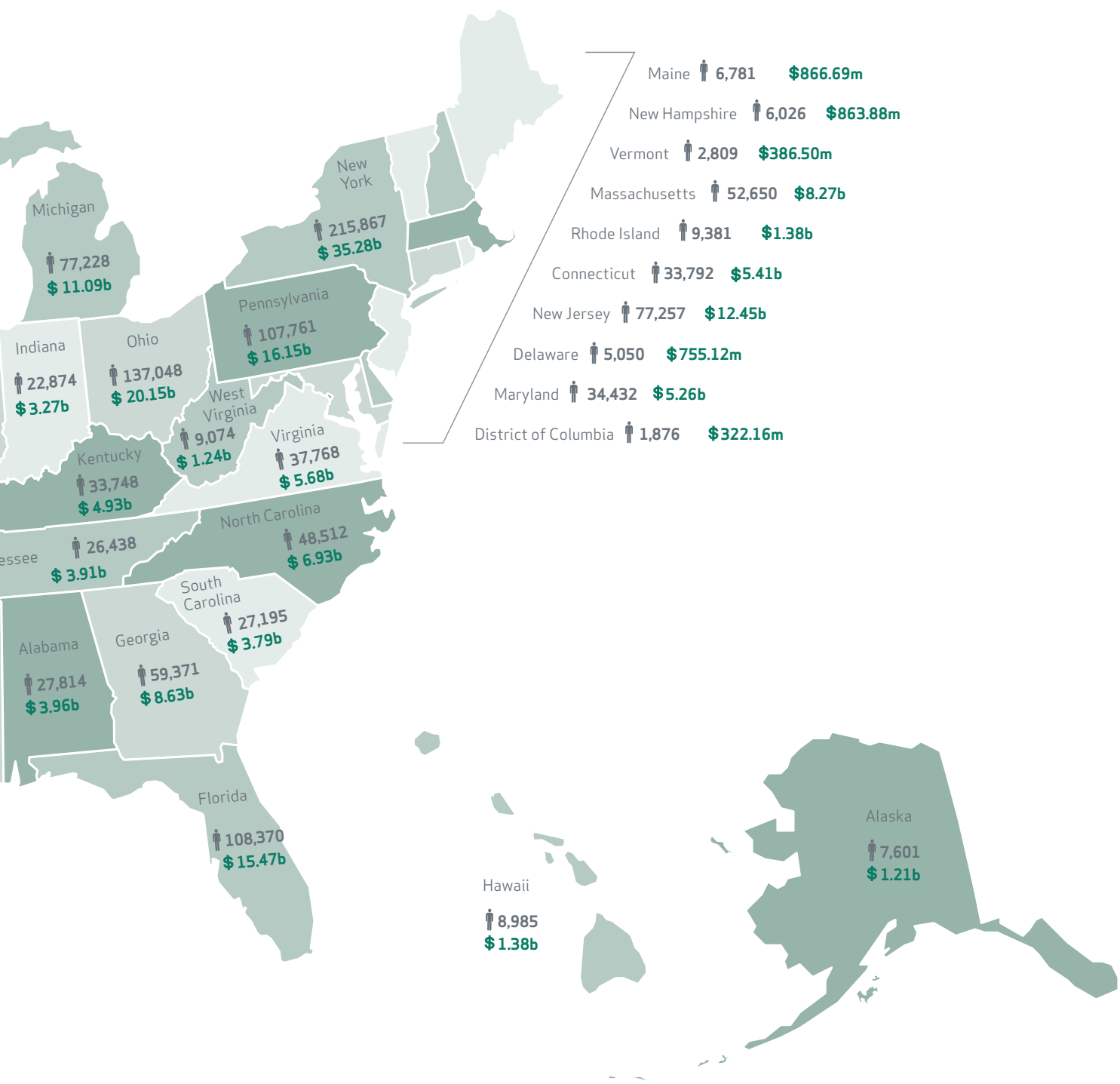


Table 9. Employment Impacts by State

	# Jobs		# Jobs
Alabama	27,814	Montana	6,589
Alaska	7,601	Nebraska	7,455
Arizona	39,918	Nevada	16,287
Arkansas	13,363	New Hampshire	6,026
California	394,514	New Jersey	77,257
Colorado	41,719	New Mexico	16,049
Connecticut	33,792	New York	215,867
Delaware	5,050	North Carolina	48,512
DC	1,876	North Dakota	2,767
Florida	108,370	Ohio	137,048
Georgia	59,371	Oklahoma	20,019
Hawaii	8,985	Oregon	36,626
Idaho	7,280	Pennsylvania	107,761
Illinois	223,182	Rhode Island	9,381
Indiana	22,874	South Carolina	27,195
Iowa	17,352	South Dakota	4,485
Kansas	14,294	Tennessee	26,438
Kentucky	33,748	Texas	142,126
Louisiana	36,673	Utah	12,906
Maine	6,781	Vermont	2,809
Maryland	34,432	Virginia	37,768
Massachusetts	52,650	Washington	33,385
Michigan	77,228	West Virginia	9,074
Minnesota	41,839	Wisconsin	44,038
Mississippi	19,513	Wyoming	3,358
Missouri	41,750		

Table 10. Income and Value Added Impacts by State
(in \$millions)

	Income	Value Added		Income	Value Added
Alabama	\$1,206.0	\$2,175.0	Montana	\$276.2	\$474.1
Alaska	\$398.8	\$712.6	Nebraska	\$318.3	\$571.5
Arizona	\$1,864.7	\$3,231.6	Nevada	\$742.0	\$1,356.0
Arkansas	\$552.4	\$1,036.0	New Hampshire	\$302.9	\$508.2
California	\$21,242.5	\$38,092.4	New Jersey	\$4,325.9	\$7,503.1
Colorado	\$1,969.2	\$3,523.1	New Mexico	\$672.9	\$1,234.0
Connecticut	\$1,935.8	\$3,347.6	New York	\$12,525.2	\$21,804.7
Delaware	\$250.0	\$454.1	North Carolina	\$2,155.3	\$3,886.0
DC	\$122.5	\$205.7	North Dakota	\$130.3	\$222.7
Florida	\$4,781.5	\$8,602.1	Ohio	\$6,320.5	\$11,427.3
Georgia	\$2,668.4	\$4,821.3	Oklahoma	\$901.5	\$1,572.5
Hawaii	\$432.7	\$788.6	Oregon	\$1,642.2	\$2,849.7
Idaho	\$295.4	\$516.7	Pennsylvania	\$5,470.0	\$9,334.6
Illinois	\$11,674.5	\$20,195.3	Rhode Island	\$466.8	\$828.0
Indiana	\$1,011.7	\$1,810.4	South Carolina	\$1,152.7	\$2,082.4
Iowa	\$743.5	\$1,326.9	South Dakota	\$194.5	\$343.0
Kansas	\$627.1	\$1,123.4	Tennessee	\$1,325.0	\$2,209.2
Kentucky	\$1,525.4	\$2,675.3	Texas	\$6,970.6	\$12,302.4
Louisiana	\$1,637.4	\$2,923.9	Utah	\$545.9	\$1,013.2
Maine	\$273.7	\$495.4	Vermont	\$127.9	\$219.7
Maryland	\$1,730.9	\$3,110.5	Virginia	\$1,804.2	\$3,294.5
Massachusetts	\$3,065.2	\$4,972.8	Washington	\$1,686.0	\$3,132.2
Michigan	\$3,513.9	\$6,156.9	West Virginia	\$399.9	\$701.0
Minnesota	\$2,060.1	\$3,511.4	Wisconsin	\$1,977.6	\$3,539.5
Mississippi	\$796.5	\$1,452.8	Wyoming	\$144.7	\$269.5
Missouri	\$1,857.1	\$3,296.3			

Figure 4: Pension Expenditure Multipliers by State

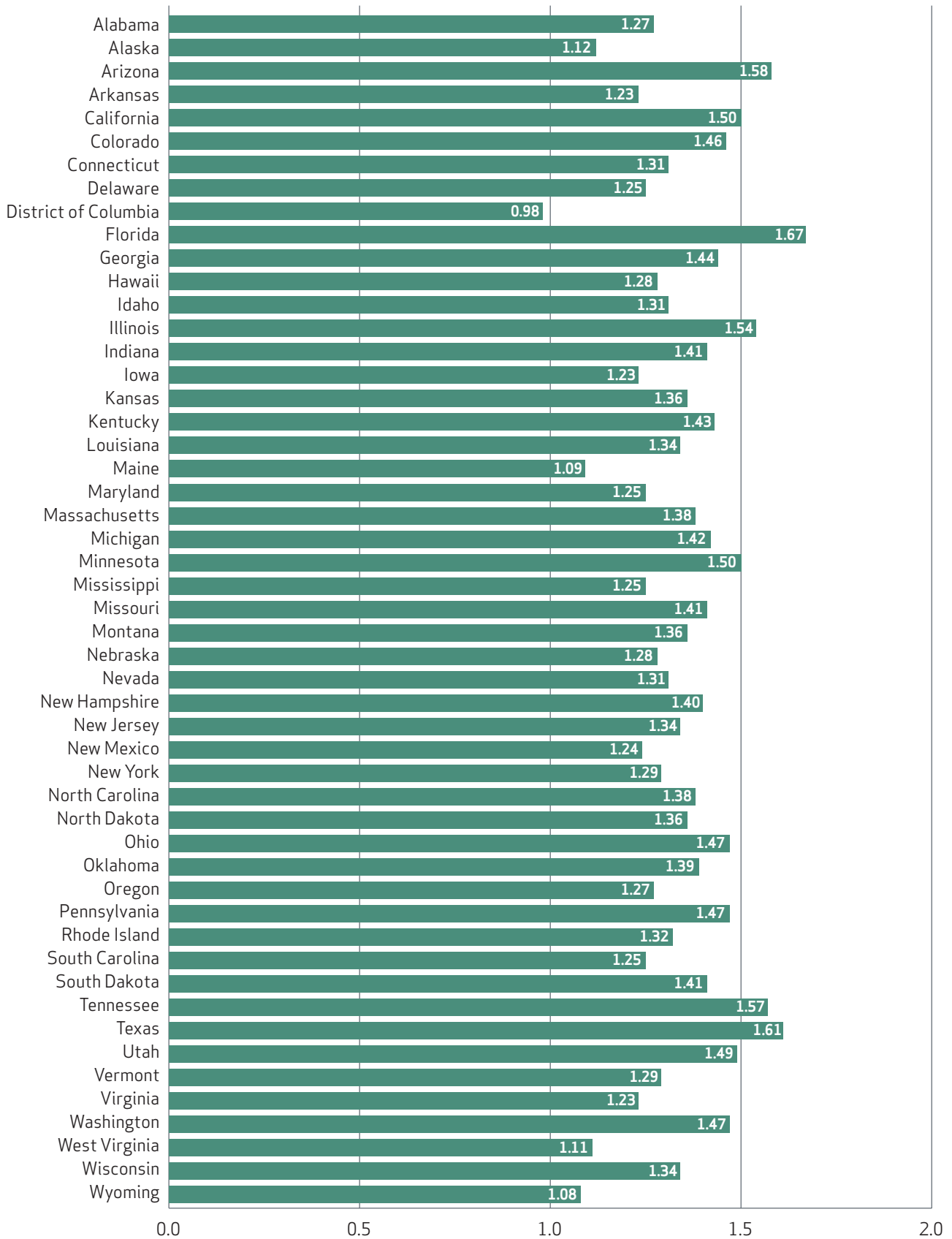


Figure 5: **Taxpayer Investment Factors by State**

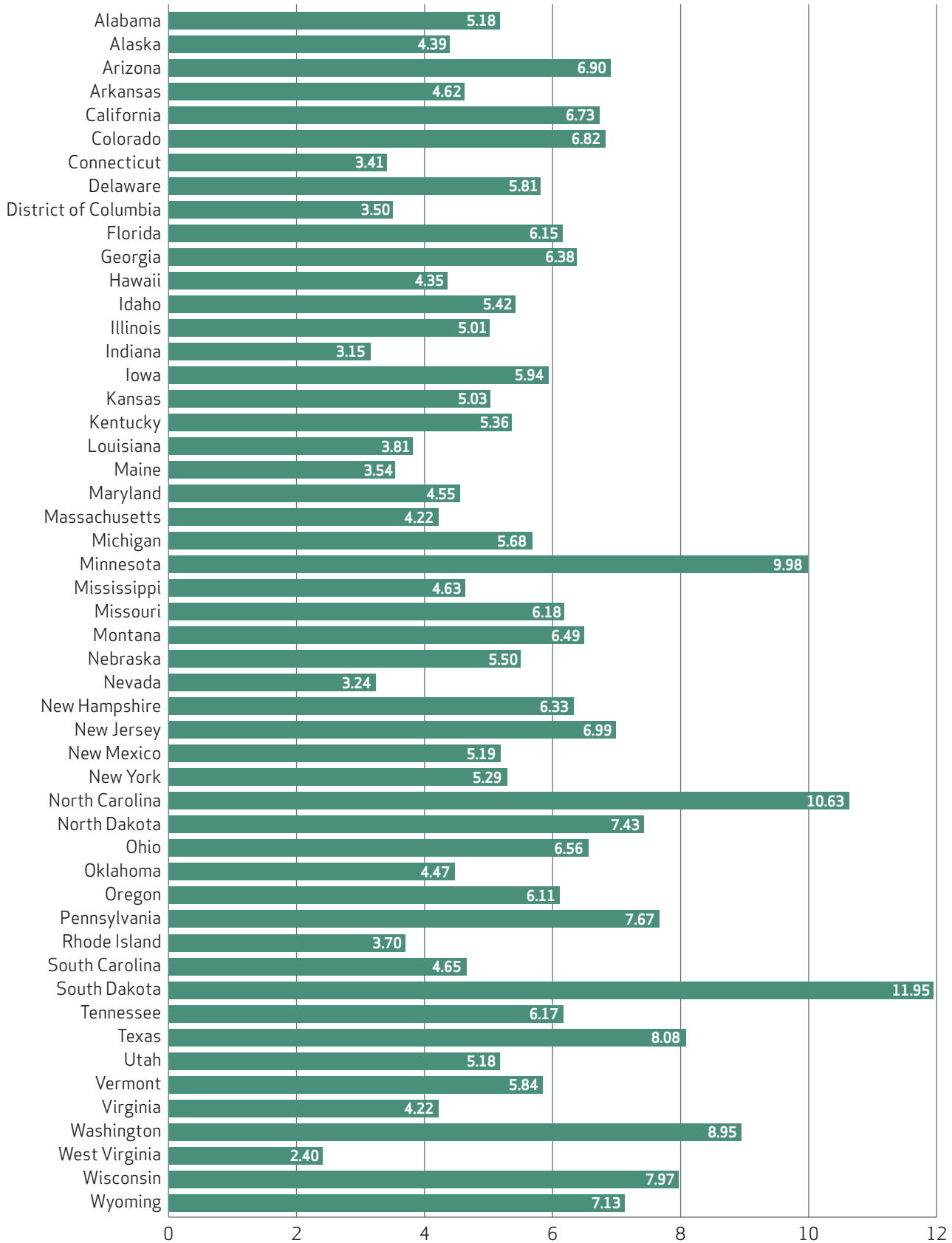


Table 11. Direct, Indirect, and Induced Output Impacts by State

Output Supported (in \$millions)					Output Supported (in \$millions)				
	Direct	Indirect	Induced	Total*		Direct	Indirect	Induced	Total*
Alabama	\$1,807.1	\$1,267.4	\$882.0	\$3,956.6	Montana	\$387.0	\$288.9	\$207.0	\$882.9
Alaska	\$602.9	\$355.7	\$246.1	\$1,204.7	Nebraska	\$476.4	\$321.9	\$224.6	\$1,022.9
Arizona	\$2,524.1	\$1,750.4	\$1,541.5	\$5,816.0	Nevada	\$1,114.9	\$734.3	\$525.4	\$2,374.6
Arkansas	\$871.9	\$588.5	\$394.4	\$1,854.8	New Hampshire	\$403.0	\$245.8	\$215.1	\$863.9
California	\$30,588.1	\$18,839.9	\$15,991.3	\$65,419.3	New Jersey	\$6,022.1	\$3,454.5	\$2,970.3	\$12,446.9
Colorado	\$2,839.5	\$1,900.1	\$1,521.5	\$6,261.1	New Mexico	\$1,040.0	\$734.0	\$491.1	\$2,265.0
Connecticut	\$2,694.2	\$1,444.5	\$1,272.9	\$5,411.5	New York	\$17,900.2	\$9,577.2	\$7,801.3	\$35,278.7
Delaware	\$374.5	\$214.5	\$166.1	\$755.1	North Carolina	\$3,156.1	\$2,125.0	\$1,649.0	\$6,930.1
DC	\$191.8	\$93.4	\$37.0	\$322.2	North Dakota	\$190.0	\$130.0	\$81.5	\$401.4
Florida	\$6,815.1	\$4,741.4	\$3,914.3	\$15,470.8	Ohio	\$9,104.2	\$5,964.7	\$5,078.0	\$20,146.8
Georgia	\$3,868.8	\$2,645.3	\$2,118.6	\$8,632.6	Oklahoma	\$1,310.3	\$942.3	\$660.3	\$2,912.9
Hawaii	\$670.3	\$403.1	\$309.9	\$1,383.2	Oregon	\$2,304.4	\$1,540.9	\$1,207.2	\$5,052.4
Idaho	\$428.7	\$320.3	\$218.9	\$967.9	Pennsylvania	\$7,381.5	\$4,644.6	\$4,125.6	\$16,151.7
Illinois	\$11,068.3	\$4,979.4	\$8,117.3	\$24,165.0	Rhode Island	\$661.9	\$384.9	\$335.7	\$1,382.6
Indiana	\$1,478.1	\$1,012.6	\$778.6	\$3,269.3	South Carolina	\$1,724.4	\$1,220.1	\$846.7	\$3,791.2
Iowa	\$1,104.0	\$759.8	\$524.3	\$2,388.2	South Dakota	\$284.9	\$202.6	\$140.4	\$627.9
Kansas	\$938.1	\$663.1	\$459.3	\$2,060.5	Tennessee	\$1,740.7	\$1,150.7	\$1,022.4	\$3,913.8
Kentucky	\$2,075.6	\$1,655.0	\$1,203.2	\$4,933.8	Texas	\$9,963.4	\$6,731.7	\$5,309.8	\$22,004.9
Louisiana	\$2,402.8	\$1,642.7	\$1,193.8	\$5,239.2	Utah	\$827.7	\$603.0	\$440.2	\$1,871.0
Maine	\$496.3	\$185.8	\$184.6	\$866.7	Vermont	\$177.7	\$117.1	\$91.7	\$386.5
Maryland	\$2,555.2	\$1,530.5	\$1,176.7	\$5,262.4	Virginia	\$2,729.3	\$1,709.3	\$1,240.5	\$5,679.1
Massachusetts	\$3,941.7	\$2,268.1	\$2,062.8	\$8,272.6	Washington	\$2,563.6	\$1,627.1	\$1,224.6	\$5,415.3
Michigan	\$4,942.5	\$3,379.1	\$2,767.3	\$11,089.0	West Virginia	\$582.1	\$380.3	\$273.4	\$1,235.9
Minnesota	\$2,756.0	\$1,903.4	\$1,649.4	\$6,308.8	Wisconsin	\$2,856.6	\$1,909.2	\$1,516.5	\$6,282.3
Mississippi	\$1,226.9	\$904.0	\$569.7	\$2,700.7	Wyoming	\$237.7	\$161.2	\$84.8	\$483.7
Missouri	\$2,655.5	\$1,827.0	\$1,455.8	\$5,938.4					

*Totals may not add up exactly due to rounding.

Table 12. Tax Impacts by State
(in \$millions)

	State/ Local	Federal	Total*
Alabama	\$383.4	\$319.8	\$703.2
Alaska	\$117.7	\$50.7	\$168.4
Arizona	\$574.8	\$454.0	\$1,028.8
Arkansas	\$185.6	\$195.8	\$381.3
California	\$7,069.2	\$6,942.5	\$14,011.7
Colorado	\$651.1	\$516.4	\$1,167.5
Connecticut	\$673.9	\$603.9	\$1,277.8
Delaware	\$81.4	\$69.6	\$150.9
DC	\$37.5	\$44.0	\$81.5
Florida	\$1,580.7	\$866.0	\$2,446.7
Georgia	\$861.5	\$732.9	\$1,594.4
Hawaii	\$150.1	\$177.3	\$327.3
Idaho	\$94.4	\$110.5	\$204.9
Illinois	\$3,423.4	\$2,003.5	\$5,426.9
Indiana	\$319.0	\$268.8	\$587.8
Iowa	\$240.2	\$237.5	\$477.8
Kansas	\$202.5	\$182.9	\$385.3
Kentucky	\$443.2	\$308.0	\$751.2
Louisiana	\$509.0	\$432.7	\$941.6
Maine	\$108.8	\$104.2	\$212.9
Maryland	\$214.5	\$274.3	\$488.8
Massachusetts	\$963.9	\$748.6	\$1,712.5
Michigan	\$1,126.6	\$945.5	\$2,072.1
Minnesota	\$646.0	\$714.8	\$1,360.7
Mississippi	\$254.8	\$223.7	\$478.5
Missouri	\$582.4	\$539.2	\$1,121.6

	State/ Local	Federal	Total*
Montana	\$87.1	\$91.2	\$178.4
Nebraska	\$103.6	\$114.0	\$217.5
Nevada	\$254.2	\$163.7	\$417.9
New Hampshire	\$94.5	\$47.8	\$142.3
New Jersey	\$1,476.5	\$1,239.2	\$2,715.7
New Mexico	\$218.8	\$231.5	\$450.3
New York	\$4,129.9	\$4,008.1	\$8,138.1
North Carolina	\$699.4	\$659.2	\$1,358.5
North Dakota	\$41.5	\$26.2	\$67.7
Ohio	\$1,978.5	\$1,619.7	\$3,598.3
Oklahoma	\$280.4	\$243.6	\$524.0
Oregon	\$541.3	\$596.4	\$1,137.7
Pennsylvania	\$1,698.7	\$1,143.3	\$2,842.0
Rhode Island	\$153.1	\$138.7	\$291.8
South Carolina	\$383.4	\$399.7	\$783.0
South Dakota	\$60.1	\$32.2	\$92.3
Tennessee	\$385.0	\$223.3	\$608.2
Texas	\$2,244.2	\$1,251.4	\$3,495.6
Utah	\$181.0	\$183.9	\$364.9
Vermont	\$40.5	\$44.6	\$85.1
Virginia	\$626.8	\$583.4	\$1,210.2
Washington	\$598.8	\$337.3	\$936.1
West Virginia	\$128.9	\$149.6	\$278.5
Wisconsin	\$639.5	\$686.9	\$1,326.4
Wyoming	\$53.2	\$29.1	\$82.3

*Totals may not add up exactly due to rounding.

CONCLUSION

DB pension plans provide a critical source of reliable income for 24.3 million Americans. These plans are a cost-effective way to provide secure lifetime income for retired Americans and their beneficiaries after a lifetime of work. Moreover, DB pension plans generate economic benefits that reach well beyond those who earned benefits during their working years.

Because pensions supply secure income to retirees, pensions provide local economies with stable sources of revenue. Retirees who spend their paychecks regularly in their local economies—especially during tough economic times—provide vital revenues to local businesses and income to local workers.

These economic gains are considerable. Nationwide, over \$1.2 trillion in total economic output resulted from DB pension expenditures in 2014. DB expenditures supported 7.1 million American jobs that paid \$354.8 billion in income in that year. Benefits paid by DB pensions supported \$189.7 billion in tax revenue at the local, state, and federal levels.

In supplying a stable source of income to retirees, DB pension plans support the national economy, as well as local economies throughout the country, with jobs, incomes, and tax revenue. Pension benefits play an important role in providing a stable, reliable source of income regardless of economic climate—not just for retired Americans, but also for the local economies in which their retirement checks are spent.

DB Pension Data

State and local pension benefit payments were taken from the U.S. Census Bureau's Annual Survey of Public Pensions, which reports on state and local government-sponsored pension plans in the United States. The survey provides data on revenues, expenditures, financial assets, and membership in public employee retirement systems.³⁸ The Census Bureau aggregates plan level data up to the state-level, and these state-level estimates are based on a representative sample of retirement systems throughout the country, weighted for accuracy. We use data for fiscal year 2014 as that was the most recent data available.

Federal pension data used in this study comes from the U.S. Office of Personnel Management.³⁹ Data on private pension benefits comes from the U.S. Census Bureau and U.S. Bureau of Labor Statistics' Current Population Survey Annual Social and Economic Supplement (CPS ASEC), which reports sources of household income, including pension and survivor income.⁴⁰

Migration

Upon retirement, not all workers continue to reside in their home states. When a pension beneficiary moves out of state, the individual takes the pension payments, spending those pension checks in the new state of residence, rather than in the state where the pension payment originated. Since our state-level analysis information on where pension benefits are spent, we need to account for the movement of retirees from one state to another. To estimate the net effects of retiree movement across state borders, we use data from the 2014 American Community Survey, which tabulates current state of residence and current residence one year before, by age.⁴¹ From this, we are able to calculate the recent net migration patterns of people aged 65 and older. We assume that migration patterns for state and local government retirees mirror those of all other older Americans.

Disposable Income and Taxation

Before calculating the economic impacts of pension benefit expenditures, we account for income taxes that are paid out of pension benefit payments. By doing so, we are able to utilize IMPLAN's institution spending pattern feature, which estimates household spending patterns by income class, and assumes that every dollar entered into the model is spent.

Disposable income is calculated by subtracting income taxes from gross pension payments. To estimate federal income taxes due from state and local pension income, we use data from the Congressional Budget Office on effective federal income tax rates for elderly households in the United States by income quintiles.⁴² Effective tax rates are different from marginal tax rates in that effective tax rates account for tax deductions, credits, or other alterations that may change the total amount of the tax that individuals actually pay. This is useful to our purposes, because, since we are using aggregated sample data, we cannot assess actual individuals' federal tax liabilities. The effective tax rate allows us to more accurately estimate the taxes that pension beneficiaries actually pay to the federal government.

Due to lack of current data, we are not able to use effective tax rates for state income taxes on the elderly as were used in *Pensionomics* 2014. Instead, we begin with average marginal tax rates on pension income from the National Bureau of Economic Research, based on their TaxSIM model.⁴³ We also use information from the National Conference of State Legislatures to account for any public pension exclusions a state may provide.⁴⁴ State income tax exclusions are important to consider, because many states offer full or partial income tax exclusions for pension benefits. About half the states either do not subject pension income to income tax, or offer sizeable tax breaks for such income. Because average marginal tax rates are higher than average effective tax rates, for the remaining states with small exclusions or no advantageous tax treatment, our calculations likely overestimate state income tax receipts, at the same time that they underestimate net pension income and resulting economic benefit.

Estimating taxes paid by pensioners requires assuming that beneficiaries are taxed by the state of residence, not the state of the pension's origin. This assumption is consistent with the treatment under federal law that was changed so that after 1995 states' rights to tax retirement income generated from work in the state by individuals who are no longer residents was eliminated for DB and other qualified retirement plans.⁴⁵ For example, a retiree moving from New York to Arizona would pay Arizona income taxes on her pension benefit, not New York taxes.

IMPLAN Modeling

This study uses IMPLAN, an input-output modeling software and data package, to estimate the economic impacts of benefits paid by DB pension plans. IMPLAN was first developed in the 1970s as a part of a USDA Forest Service project to analyze the economic effects of local land management projects such as timber, mining, and recreation activities. Since that time, IMPLAN has been used by industry and government analysts throughout the country to assess economic impacts of highly varied local community development projects; these studies include many recent economic impact studies of pension benefit payments. Because of differences in modeling and the data used, the results of our study may not be comparable with these other analyses. Thus, the reader should avoid drawing conclusions based on comparisons between our results and those of other studies.

IMPLAN is an input-output model that uses a matrix to represent the economy of a region in order to estimate the effect of events occurring in a single industry or institution on all other industries, as well as consumers, government, and foreign suppliers to the economy. IMPLAN uses a Social Accounting Matrix (SAM), which captures all the industry and institution transactions in the local area; subsections of a SAM describe various structures and functions of a local economy. The SAM describes a local economy in terms of the flow of dollars from purchasers to producers within a region, while also accounting for non-industrial transactions such as payment of taxes by businesses and households. This offers a better portrayal of the household income effect portion of local economic events than other models.

Between when NIRS' original *Pensionomics* study was published in 2009 and the release of *Pensionomics* 2014,

IMPLAN underwent significant modeling changes. Version 2, used in the original study, used an Econometric Regional Purchase Coefficient (RPC) method. The more recent Version 3, utilized in this study and in *Pensionomics* 2014, uses a trade flow model. Due to its internal consistency and by accounting for spatial variables like the proximity and size of alternative markets, the trade flow model is presumed to be superior to econometric methods for estimating regional RPCs.⁴⁶ Internet sales, for example, are given a lower impedance in the trade flows model than in the econometric RPC model, especially compared to the other retail sectors, meaning that it is more likely that such e-commerce will be imported. Thus, interstate commerce leakages in the trade flows model are likely to be higher than in the previous version. Due to these changes, results of the current study are not directly comparable to those of the 2009 *Pensionomics* study, and the reader should avoid drawing conclusions based on such comparisons.

National results in this study are generally comparable to the results in the updated edition of *Pensionomics* 2014. However, state-level results are not comparable due to technical refinements in modeling technique, described later in this section.

National and state by state IMPLAN data for 2014 were used, as this corresponded with the Census data on public pension payments, for which 2014 was the most recently available. For this study, each state's aggregated, in-state, disposable pension payments are entered into IMPLAN as direct payments to households. IMPLAN estimates household spending patterns by income class. The household income range used is based on the 2014 median household income among pension-receiving households age 65 and older, taken from the 2014 Current Population Survey ASEC.⁴⁷

Benefits that migrate out of state are assumed to be spent in the receiving state. Therefore, each state's economic impact includes out of state benefit payments in addition to benefits originating from pension systems in the state. Pension benefits, net of migration, are calculated based on the migration assumptions described above. Then estimated income taxes are subtracted to yield net after-tax pension payments. These net payments are then entered into the IMPLAN model for that state.

However, not all the economic benefits stay in the same state in which pension dollars are originally spent. One state's "leakage" is another state's inflow, and since our analysis is concerned with measuring the economic impact of state and local pension benefits, regardless of where they were originally spent, we also need to account for the economic impacts of these benefits across state lines. As IMPLAN Version 3 utilizes a trade flow model to estimate the SAM, we are able to account for the economic effects flowing out of one state and into to another by utilizing a Multi-Regional Input-Output Analysis (MRIO). For example, to determine the economic impacts of \$1 million in Alabama's pension payments that may flow to the state of Alaska, we set up an MRIO analysis of Alabama's pension payments between Alabama and Alaska. Thus, we are able to recapture some of any single state's economic leakage due to interstate commerce. Additionally, the resulting economic activity in Alaska may spill over or leak into California, and so on and so forth.

However, the ability to capture leakage in IMPLAN through MRIO has technical limitations because the program cannot run a single model that analyzes the impact of one state on all the other states simultaneously. Rather, the number of states that can be linked for such analysis in any single instance is technically limited by the software and by computing power. This means that the states need to be divided among a number of batches comprising subnational groups, and that the flow of economic impact across this groups is lost. For this study, due to improved computing power, we were able to link several more states together at the same time than was possible for *Pensionomics* 2014. (States were grouped into large economic regions for the purposes of MRIO analysis, but not aggregated, so that results could be identified for each and every state.) This allowed us to capture more of the economic impact.

Gross Economic Impacts

This study measures the gross economic impacts of pension benefit expenditures only, rather than the net economic impacts. Pension payments are a form of deferred compensation, meaning that employees and employers contribute to the pension trust over the course of an employee's career as a portion of the employee's total compensation. Had that employee received that compensation in another form—for example, a slight increase in gross pay each month—s/he would have seen higher disposable income, and presumably would have

spent a portion of that income in the local economy at that time. Accurately accounting for the net economic impacts of public pensions would require a dynamic model and data that spans several decades. Because of data limitations, this is not possible.

Although one might be tempted to simply deduct from a single year's gross benefit payments the total employee and employer contributions in that year to capture a net effect, such a measure will not be accurate. First, the contributions for any given year for active employees have no bearing on the benefits paid out in that year to retirees. Due to the nature of prefunded pension systems discussed earlier, older, more mature pension systems could likely be construed as having a larger economic impact than younger, less mature systems, simply because the older system will generally pay out more benefits per current worker. Yet this interpretation would be highly inaccurate, since the whole point of prefunding is that current workers do not pay the benefits of retirees, but pay into the system during the course of their career for their own retirement. Due to these limitations and possible misinterpretations, the analysis we present here assesses gross economic impacts, rather than net impacts.

Tax Revenue

To calculate total tax revenue attributable to state and local pension payments, income taxes paid by beneficiaries on benefit payments are added to taxes paid in all subsequent rounds of spending. For the former, the federal and state taxes are calculated as described above. For the latter, IMPLAN calculates all corporate, personal income, and business taxes that are attributable to each spending round: direct, indirect, and induced expenditures. Total tax revenue is the sum of these two figures, calculated for both in state and out of state benefits.

Multipliers

Multipliers are ratios that relate the overall economic effect to a single unit of any initial event. An output multiplier, for example, displays the total output generated for every dollar that is initially spent in the economy. We calculate a pension expenditure multiplier, which describes the impact on total output for each dollar of pension benefit. For example, a pension expenditure multiplier of 2.2 would mean that for every \$1 paid out in a pension benefit, \$2.20 of total economic

output is supported. We calculated pension expenditure multipliers at the national level and for each of the states.

Pension expenditure multipliers are calculated by dividing the total output supported by retiree expenditures by total pension payments made in that year. (For the state-level multipliers, this includes pension payments originating within the state as well as outside of the state.)

Readers should note the following caveats when interpreting state-level pension expenditure multiplier results. First, because of the current technical limits of MRIO analysis, the share of leakage captured likely varies somewhat across states. Furthermore, the method we used to calculate the state-level economic multipliers is conservative in two ways. On the one hand, for states that sent out more economic benefit to other states than they received from pension spending in other states, we used the lower in-state economic impact in our calculations. This results in a state-level multiplier that is smaller than the multiplier that results from counting the full impact of that state's pension expenditures on national economy. On the other hand, for states that received more economic benefit from pension spending in other states than they sent out, we excluded the surplus economic benefit from the multiplier calculation. Thus, the state-level multipliers published in this study are generally conservative.

We also calculate “taxpayer investment factors” at the national and state levels. This measurement is designed to capture a sense of “return on investment” for each dollar contributed in taxpayer contributions to state and local plans, following the methodology developed by Fountain and Waste.⁴⁸

First, we proxy the proportion of benefits paid out in 2014 that were attributable to taxpayer contributions. We do this by calculating (both nationally and for each state), the proportion of total state and local pension plan revenues that are attributable to taxpayer contributions over the period 1993 through 2014. We then multiply this percentage by the benefits paid by state and local pension plans (again at the national or state level) in 2014. This becomes the denominator for our taxpayer contribution factor. The numerator is the total output supported by retiree expenditures in 2014. Put another way, the taxpayer investment factor is the benefit multiplier divided by the taxpayer contribution percentage.

Caution should be used in interpreting the taxpayer investment factor for some states, due to the way the Census Bureau reports taxpayer and employee contributions. Because the Census Bureau data reflects the taxable status of contributions only, but not the pre-tax salary reduction cost-sharing methods used in some states (Nevada, for example), employee contributions may be reported as taxpayer contributions. This will tend to overstate the proportion of pension benefits that are attributable to taxpayer contributions and understate the taxpayer investment factors we report.

Alternatively, to the extent that any particular pension fund has not received its full Annual Required Contribution between 1993 and 2014, the proportion of pension fund receipts attributable to the employer contribution may be understated. This will tend to understate the proportion of pension benefits attributable to taxpayer contributions and overstate the taxpayer investment factors we report.

- 1 L. Saad, 2015, "Americans' Money Worries Unchanged From 2014," Gallup, Washington, DC.
- 2 T. Ghilarducci, J. Saad-Lessler, and E. Fisher, 2012, "The macroeconomic stabilization effects of Social Security and 401(k) plans," *Cambridge Journal of Economics*, 36(1), p. 237-51.
- 3 Ghilarducci, op cit.
- 4 Ghilarducci, op cit.
- 5 P.W. Seburn, 1991, "Evolution of employer-provided defined benefit pensions," *Monthly Labor Review*, 114, p.16-23.
- 6 For a full discussion, see I. Boivie and C. Weller, 2012, "How DB plans influence labor relations in the wake of the Great Recession," in D.J.B. Mitchell, Ed., *Public Jobs and Political Agendas: The Public Sector in an Era of Economic Stress*, Labor and Employment Relations Association Research Volume, Cornell University Press, Ithaca, NY.
- 7 I. Boivie, 2011, "Who Killed the Private Sector DB Plan?," National Institute on Retirement Security, Washington, DC., http://www.nirsonline.org/storage/nirs/documents/Who%20Killed%20DBs/final-_who_killed_the_private_sector_db_plan.pdf
- 8 U.S. Bureau of Labor Statistics, 2014, National Compensation Survey: Employee Benefits in the United States, "Table 2. Retirement benefit: Access, participation, and take-up rates, private industry workers, National Compensation Survey, March 2014," <http://www.bls.gov/ncs/ebs/benefits/2014/ebbl0055.pdf>.
- 9 For more information on FERS, see D. Oakley, 2012, "Origins of the Federal Retirement Systems and the Thrift Savings Plan," National Institute on Retirement Security, Washington, DC.
- 10 R. L. Clark, L. A. Craig, and J. W. Wilson, 2003, *A History of Public State Pension in the United States*, University of Pennsylvania Press, Philadelphia, PA.
- 11 R. L. Clark, L. A. Craig, and N. Ahmed, 2008, "The Evolution of Public Sector Pension Plans in the United States," Wharton Pension Research Council Working Paper WP 2008-16, University of Pennsylvania, Philadelphia, PA.
- 12 U.S. Census Bureau, 2016, 2014 Annual Survey of Public Pensions, Washington, DC. Annual average benefits are author's calculations from tabulated data.
- 13 U.S. Office of Personnel Management (OPM), 2015, *Historical Federal Workforce Tables – Total Government Employment Since 1962*, OPM, Washington, DC
- 14 U.S. Office of Personnel Management (OPM), 2015, *Civil Service Retirement and Disability Fund Annual Report Fiscal Year Ended September 30, 2014*, OPM, Washington, DC.
- 15 Pension Benefit Guaranty Corporation (PBGC), 2015, "Fiscal Year 2014 Annual Report," PBGC, Alexandria, VA, p. 2, <http://www.pbgc.gov/documents/2014-annual-report.pdf>.
- 16 U.S. Census Bureau and U.S. Bureau of Labor Statistics (BLS), 2014, Current Population Survey Annual Social and Economic Supplement, "Source of Income in 2014-Number with Income and Mean Income of Specified Type in 2014 of People 15 Years Old and Over by Age, Race, and Hispanic Origin, and Sex," BLS, Washington, DC.
- 17 Board of Governors of the Federal Reserve System, 2014, *Federal Reserve Statistical Release Z.1, Financial Accounts of the United States – Flow of Funds, Balance Sheets, and Integrated Macroeconomic Accounts – Historical Annual Tables 2005–2014*, Federal Reserve, Washington, DC, p. 120, "Table L.117.b Private Pension Funds: Defined Benefit Plans." <http://www.federalreserve.gov/releases/z1/current/annuals/a2005-2014.pdf>.
- 18 Census Bureau and BLS, 2013, op cit.
- 19 Many studies have shown that professional investment managers achieve higher returns than individual, nonprofessional investors, including Watson Wyatt, 2008, "Defined benefit vs. 401(k) plans: Investment returns for 2003-2006," Inside 5(18); C. Flynn and H. Lum, 2007, "DC Plans Underperformed DB Funds," CEM Benchmarking, Toronto, ON; and Towers Watson, 2011, "DB vs. DC plan investment returns: The 2008-2009 update," Insider 4(21).
- 20 B. Almeida, 2008, "Retirement Readiness: What Difference Does a Pension Make?" National Institute on Retirement Security, Washington, DC.
- 21 N.Rhee and W. Fornia, 2014, "Still A Better Bang for the Buck: An Update on the Economic Efficiencies of Defined Benefit Pensions," National Institute on Retirement Security, Washington, DC. See also Teacher Retirement System of Texas (TRS), 2012 (Sep. 1), "Pension Benefit Design Study," TRS, Houston, TX.
- 22 Boivie, 2012, op cit.
- 23 N. Rhee and D. Oakley, 2012 (Dec), "On the Right Track? Public Pension Reforms in the Wake of the Financial Crisis," National Institute on Retirement Security, Washington, DC.
- 24 For further explanation of the multiplying effects of different types of expenditures, see, for example, K.D. Hoover, 2012, *Applied Intermediate Macroeconomics*, Cambridge University Press, New York, NY.

- 25 Census Bureau, 2013, op cit.
- 26 OPM, op cit.
- 27 Census Bureau and BLS, 2013, op cit.
- 28 USDA National Resources Conservation Service, 2008, IMPLAN Model, U.S. Department of Agriculture, Washington, DC.
- 29 Examples of recent pension benefit payment economic impact studies using IMPLAN software include studies commissioned by the California Public Employees Retirement System and the Public Employees' Retirement Association of Colorado. Because of differences in data and methodology, the results of our study may not be comparable with these analyses. Readers should avoid drawing conclusions based on such comparisons.
- 30 B. Almeida, 2009, "Pensionomics: Measuring the Economic Impact of State & Local Pension Plans," National Institute on Retirement Security, Washington, DC.
- 31 I. Boivie, 2012, "Pensionomics 2012: Measuring the Economic Impact of State & Local Pension Plans," National Institute on Retirement Security, Washington, DC.
- 32 U.S. Bureau of Labor Statistics (BLS), 2015 (Dec), "Employment by Major Industry Sector," BLS, Washington, DC, http://www.bls.gov/emp/ep_table_201.htm.
- 33 U.S. Bureau of Labor Statistics (BLS), 2014, "Labor Force Statistics from the Current Population Survey – Table 1. 1. Employment status of the civilian noninstitutional population, 1943 to date," BLS, Washington, DC, <http://www.bls.gov/cps/cpsaat01.htm>.
- 34 U.S. Bureau of Economic Analysis (BEA), 2015, "Gross-Domestic-Product-(GDP)-by-Industry Data/ GDP by Industry / VA, GO, II, EMP," http://www.bea.gov/industry/gdpbyind_data.htm.
- 35 BEA, 2014, op cit.
- 36 White House Office of Management and Budget (OMB), 2014, Historical Tables, "Table 3.2—Outlays by Function and Subfunction: 1962–2019," OMB, Washington, DC, <http://www.whitehouse.gov/omb/budget/historicals>.
- 37 This is an unweighted average across states.
- 38 U.S. Census Bureau, 2014, op cit.
- 39 OPM, op cit.
- 40 Census Bureau and BLS, 2013, op cit.
- 41 U.S. Census Bureau, 2013, American Community Survey, "Table 1. State-to-State Migration Flows – 2012," U.S. Census Bureau, Washington, DC. <https://www.census.gov/hhes/migration/data/acs/state-to-state.html>. Data are 1-year estimates.
- 42 Congressional Budget Office (CBO), 2013 (Dec), "The Distribution of Household Income and Federal Taxes, 2010," CBO, Washington, DC. Author used supplemental tables available at <http://www.cbo.gov/publication/44604>.
- 43 National Bureau of Economic Research (NBER), 2013, Average Marginal State Income Tax Rates 1977+, NBER, Cambridge, MA, <http://users.nber.org/~taxsim/state-marginal/>.
- 44 R. Snell, 2011, "State Personal Income Taxes on Pensions and Retirement Income," National Conference of State Legislatures, Denver, CO.45 4 U.S.C. Section 114.
- 45 4 U.S.C. Section 114.
- 46 For further explanation, see J. Thorvaldson, D. Olson, and G. Alward, 2011, "Updating and Enhancing IMPLAN's Econometric Regional Purchase Coefficients," Proceedings from the Mid Continent Regional Science Association 42nd Annual Conference, June 8-10, Detroit, MI.
- 47 Census Bureau and BLS, 2013, op cit.
- 48 R. Fountain and R. Waste, 2007, "The Annual Economic Impacts of CalPERS Benefit Payments," Applied Research Center, California State University, Sacramento, CA.

WHO WE ARE & WHAT WE DO

Board of Directors

Gregory Smith, NIRS Chair

Executive Director, Colorado Public Employees' Retirement Association

Meredith Williams, NIRS Vice Chair

Executive Director, National Council on Teacher Retirement

Hank H. Kim, Esq., NIRS Secretary/Treasurer

Executive Director and Counsel, National Conference on Public Employee Retirement Systems

Mel Aaronson, Board Member

Board Chair, Teacher Retirement System of the City of New York

Dana Bilyeu, Board Member

Executive Director, National Association of State Retirement Administrators

Gerri Madrid Davis, Board Member

Director, Financial Security & Consumer Affairs, State Advocacy & Strategy, Government Affairs, AARP

Dick Ingram, Board Member

Executive Director, Teachers' Retirement System of the State of Illinois

Laurie Fiori Hacking, Board Member

Executive Director, Minnesota Teachers Retirement Association

James Sando, Board Member

Board Member, Pennsylvania Public Employees' Retirement System

Nick Stanojev, Board Member

Head of U.S. Public Funds, BNY Mellon Asset Management

Michael Williamson, Board Member

Executive Director, State of Wisconsin Investment Board

Staff and Consultants

Diane Oakley, Executive Director

Rachel Fauber, Manager of Membership Services

Jennifer Erin Brown, Manager of Research

Kelly Kenneally, Communications Consultant

Academic Advisory Board

Sylvia Allegretto, PhD, University of California Berkeley

Brad M. Barber, PhD, University of California Davis

Ron Gebhardtshauer, FSA, MAAA, Penn State University

Teresa Ghilarducci, PhD, The New School for Social Research

Jacob S. Hacker, PhD, Yale University

Regina T. Jefferson, JD, LLM, Catholic University of America

Jeffrey H. Keefe, PhD, Rutgers University

Eric Kingson, PhD, Syracuse University

Alicia H. Munnell, PhD, Boston College

Christian E. Weller, PhD, University of Massachusetts Boston

Jeffrey B. Wenger, PhD, University of Georgia

Our Mission

The National Institute on Retirement Security is a non-profit research and education organization established to contribute to informed policymaking by fostering a deep understanding of the value of retirement security to employees, employers, and the economy as a whole.

Our Vision

Through our activities, NIRS seeks to encourage the development of public policies that enhance retirement security in America. Our vision is one of a retirement system that simultaneously meets the needs of employers, employees, and the public interest. That is, one where:

- employers can offer affordable, high quality retirement benefits that help them achieve their human resources goals;
- employees can count on a secure source of retirement income that enables them to maintain a decent living standard after a lifetime of work; and
- the public interest is well-served by retirement systems that are managed in ways that promote fiscal responsibility, economic growth, and responsible stewardship of retirement assets.

Our Approach

- High-quality research that informs the public debate on retirement policy. The research program focuses on the role and value of defined benefit pension plans for employers, employees, and the public at large. We also conduct research on policy approaches and other innovative strategies to expand broad based retirement security.
- Education programs that disseminate our research findings broadly. NIRS disseminates its research findings to the public, policy makers, and the media by distributing reports, conducting briefings, and participating in conferences and other public forums.
- Outreach to partners and key stakeholders. By building partnerships with other experts in the field of retirement research and with stakeholders that support retirement security, we leverage the impact of our research and education efforts. Our outreach activities also improve the capacity of government agencies, non-profits, the private sector, and others working to promote and expand retirement security.

The **National Institute on Retirement Security** is a non-profit research institute established to contribute to informed policy making by fostering a deep understanding of the value of retirement security to employees, employers, and the economy as a whole. NIRS works to fulfill this mission through research, education, and outreach programs that are national in scope.



NATIONAL INSTITUTE ON
Retirement Security

Reliable Research. Sensible Solutions.

1612 K STREET, N.W. SUITE 500 • WASHINGTON, DC 20006
Tel: 202.457.8190 • Fax: 202.457.8191 • www.nirsonline.org