

Colorado PERA's Economic & Fiscal Impacts



August 2009

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This study measures the economic and fiscal impacts of the Colorado Public Employees' Retirement Association (PERA) benefit payments to Colorado recipients and provides a description of PERA members (active and benefit recipients).



- Colorado Public Employees' Retirement Association (PERA) is the retirement plan for over 400 government agencies and public entities within the State of Colorado, with the School and State Divisions comprising 57 and 38 percent, respectively, of total recipients.
- PERA is important to the state as well as regional and local (county) economies.
 - The association provides benefit payments of \$2.45 billion annually to Colorado residents (based on March 2009 benefit payments annualized not including retiree health care payments).
 - For perspective, benefit payments can be examined on a per capita basis as well as compared to total payroll. Per capita, as opposed to per recipient, annual benefit payments average some \$480 per person at the state level to more than \$1,000 per person in the Pueblo-Southern Mountains Region. When measured against total payroll, benefit payments amount to 2.7 percent at the state level, and for rural areas, such as the Pueblo-Southern Mountains and San Luis Valley Regions, amount to 13.5 and 11.6 percent, respectively.
 - PERA payments are a critical source of reliable, predictable income and provide an "automatic stabilizing effect" on state, regional, and local economies, especially in economic downturns as these monies provide important stimulus.
- Key and commonly recognized economic impact measures include output, value-added, labor income, and employment. The \$2.45 billion in annual PERA payments to Colorado residents results in \$3.55 billion in output (all transactions), \$1.45 billion in value-added (state gross domestic product), \$834.6 million in labor income, and 20,635 jobs.
- When the impact results are analyzed on an industry sector basis, the economic impact as measured by percent of total value-added contribution is greatest in the Health care and social services (16 percent), Retail trade (13 percent), and the Public sector/Government enterprises (12 percent) sectors. In terms of labor income, the contribution is concentrated in Health care and social services (23 percent), Retail trade (14 percent), and Finance and insurance (9 percent) sectors.
- Substantial variation in impacts is evident at the county level, but the largest value-added and labor income impacts, as measured on a per capita basis, occur in a number of rural counties.



- Colorado Public Employees' Retirement Association (PERA), established by state law in 1931, operates by authority of the Colorado General Assembly and is administered under Title 24, Article 51 of the Colorado Revised Statutes.
- Initially, PERA covered only state employees but over the years was expanded to include all Colorado school districts, state judicial systems and many municipal and local governments including over 400 government agencies and public entities within the State of Colorado.
- Benefits are pre-funded, which means while a member is working both the member and the employer contribute a fixed percentage of the member's salary to the retirement trust funds. For most members, the employee's contribution is 8 percent while the employer's contribution had been some 10 percent through the 2000s, until recently, when it was increased back to the previously required level of approximately 13 percent for most divisions.
- PERA provides benefits to members at retirement (or if disabled or to a survivor upon member's death). Most PERA members do not participate in Social Security and, therefore, the PERA retirement benefit is designed and funded to embrace retirement monies consistent with private industries that incorporate their own personal retirement and Social Security.
- As of December 31, 2008, PERA's membership included 190,684 active members, 78,955 benefit recipients, and 1,967 survivor benefit recipients. The total benefit payments to recipients amounted to \$2.6 billion (including in-state and out-of-state residents) with an average monthly benefit of \$2,739.
- The trust funds are invested by PERA under the direction of a board of trustees. PERA's investment strategy uses actuarially established investment objectives with long-term goals and policies.



Initially, PERA covered only state employees but over the years the system was expanded to include all Colorado school districts (as of January 1, 2010 the last unaffiliated school district, Denver Public Schools, will join PERA), the state judicial system and many municipal and local governments, including over 400 government agencies and entities within the State of Colorado. As of December 31, 2008, PERA included 190,684 active members, 78,955 benefit recipients, and 1,967 survivor benefit recipients with approximately \$2.6 billion in annual benefit payments (including in-state and out-of-state residents) and an average benefit payment of \$2,739 per month.

PERA's membership includes

- Employees of Colorado state government
- Teachers
- Judges
- State Troopers
- Many university/college employees
- Many employees of cities/towns as well as a number of other public entities

The largest division of members and benefit recipients is the School Division followed by the State Division and the Local Government Division. The Judicial Division is the smallest. A breakdown of active members and benefit recipients by division is provided in Table A.

Table A
PERA Active Members and Benefit Recipients by Division

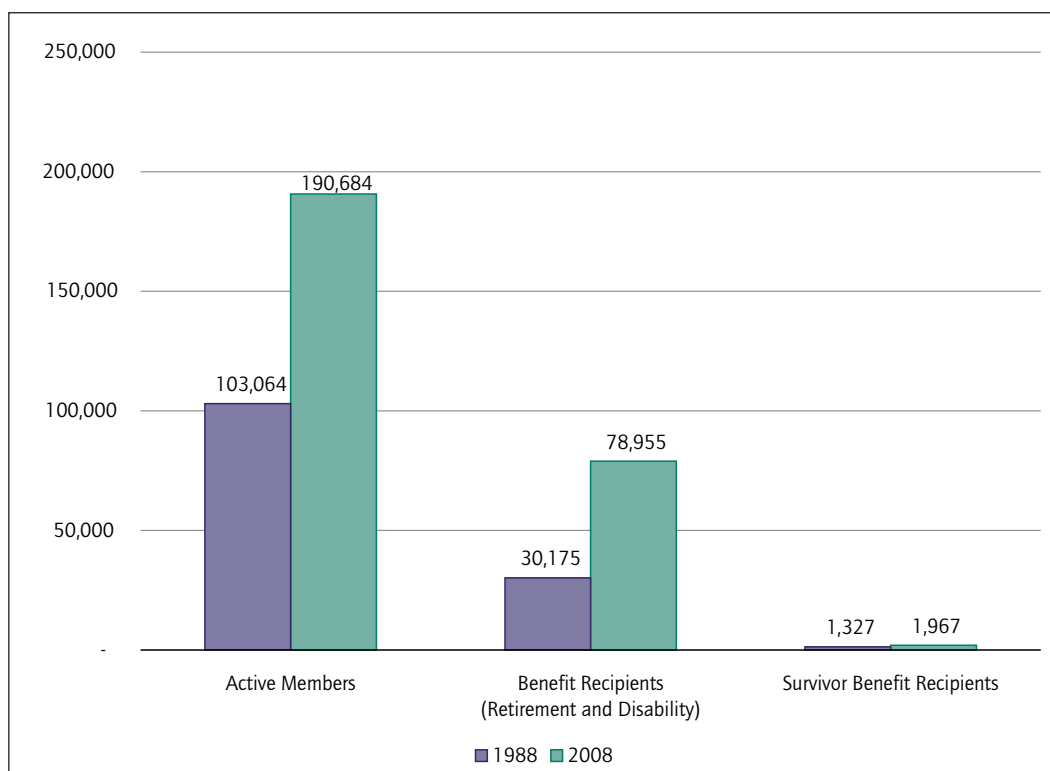
	State Division	School Division	Local Government Division	Judicial Division	Total
Active Members	54,441	118,547	17,379	317	190,684
Recipients receiving retirement benefits	29,659	44,806	4,223	267	78,955
Average monthly benefit (retirement benefits)	\$2,820	\$2,740	\$2,692	\$4,134	\$2,772
Recipients receiving survivor benefits	855	948	150	14	1,967

Source: Colorado PERA Comprehensive Annual Financial Report for the Fiscal Year Ended December 31, 2008.



Not surprisingly, a historical perspective finds the number of active members and benefit recipients has increased over the past two decades from 103,064 active members with 30,175 benefit recipients in 1988 to 190,684 active members with 78,955 benefit recipients in 2008. (The number of survivor benefit recipients has increased from 1,327 to 1,967 over the same time frame.) Also of importance is the number of participating employers which increased from 334 in 1988 to over 400 in 2008.

Figure 1
Number of PERA Active Members and Benefit Recipients
1988 and 2008

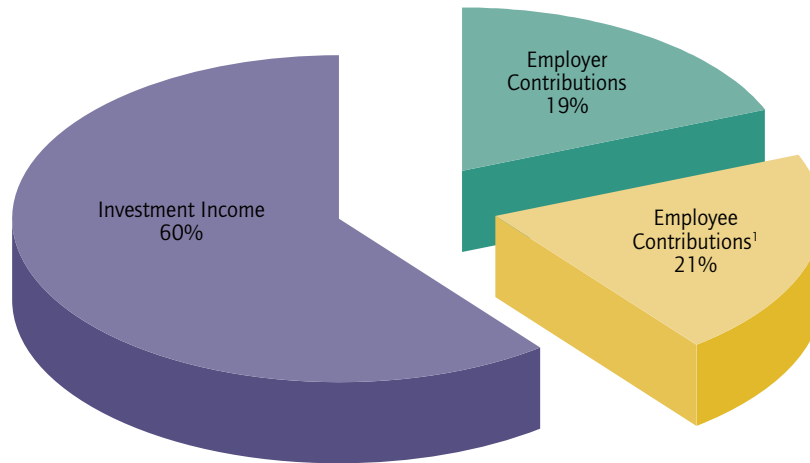


Source: Colorado PERA Comprehensive Annual Financial Reports.



A key element of PERA funding is the ability to generate income from the investment of employer and employee contributions. Over time, this becomes a substantial portion of the additions to the Trust Funds (State, School, Local Government, and Judicial Divisions). A 25-year history is provided in Figure 2 below. The largest portion of contributions is investment income amounting to 60 percent. (If 2008 is omitted, this investment income percentage increases to 69 percent with commensurate decreases in other components.)

Figure 2
Additions to the PERA Trust Funds
1984 to 2008



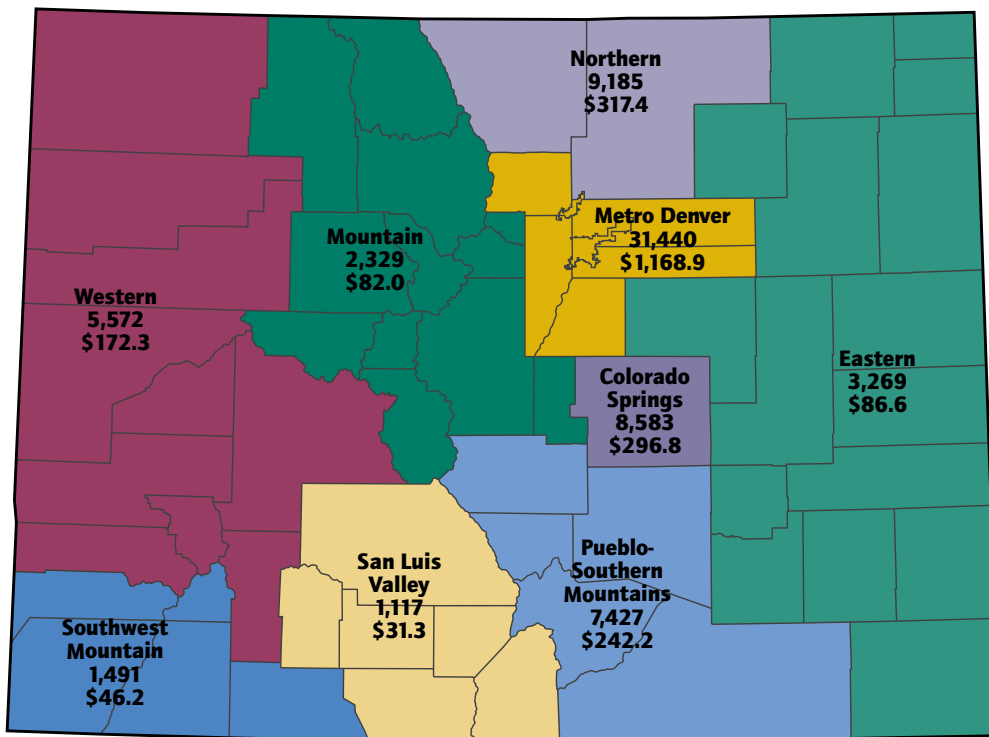
¹ Includes Service Credit Purchase.

Source: Data from Colorado PERA



The nine regions identified in this research consist of the same counties and designations as utilized by the *Colorado Legislative Council* for its economic forecasts. The figure below shows the number of PERA benefit recipients and the annual PERA payment to each region.

Figure 3
Number of PERA Recipients and Annual PERA Payments by Region
March 2009
(PERA payments shown in millions)

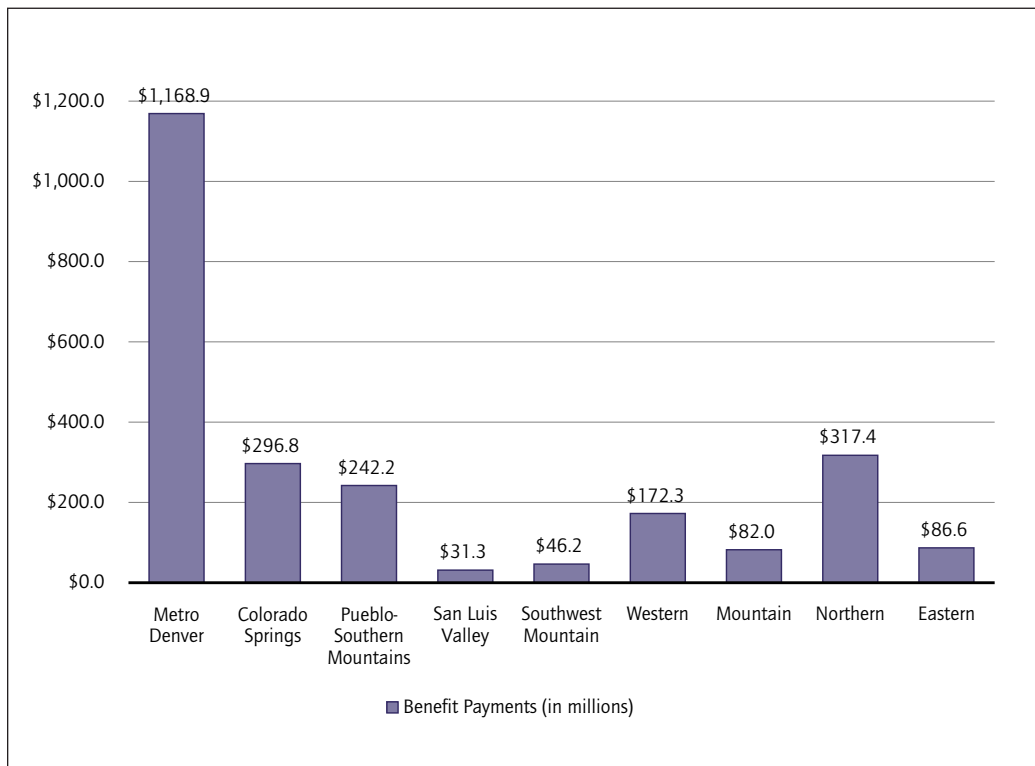


Source: Data from Colorado PERA as of March 2009. Benefit payments have been annualized.



Total PERA benefits paid in 2008 amounted to \$2.6 billion. As of March 2009, approximately \$2.45 billion dollars (on an annualized basis) was paid by PERA to recipients who continue to reside in Colorado. The distribution of PERA benefits by regions is illustrated in Figure 4 below.

Figure 4
PERA Benefit Payments by Region
March 2009
(in millions)

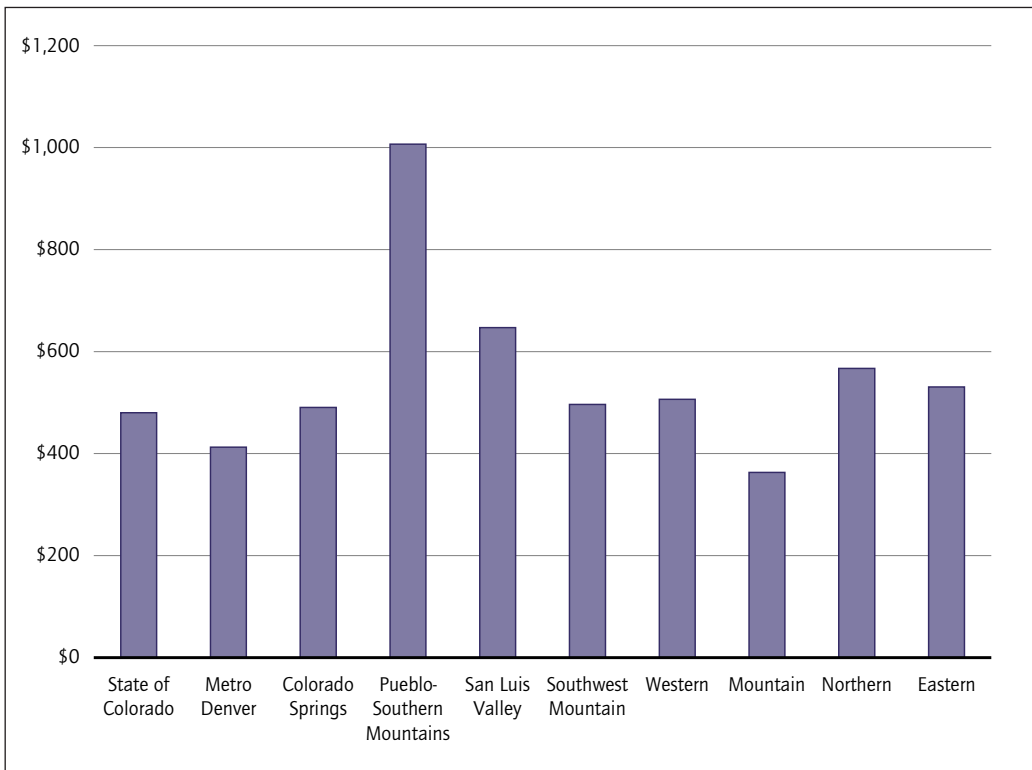


Source: Data from Colorado PERA as of March 2009. Benefit payments have been annualized.



Although total benefit payments are concentrated in the Metro Denver region (see Figure 4), Figure 5 below identifies the PERA benefits on a per capita basis demonstrating the relative importance of the PERA payments to each region. The per capita measure demonstrates that these payments are important to all regions, but are especially important in rural regions such as the Pueblo-Southern Mountains region where these payments amount to over \$1,000 per year per person (i.e., when measured by all persons in the region, not only PERA recipients).

Figure 5
Per Capita PERA Benefit Payments



Source: Data from Colorado PERA as of March 2009. Benefit payments have been annualized.



The following table and figure provide a perspective on the magnitude of PERA payments to recipients relative to the state, regional and local (county) economies. Annual PERA recipient payments to Colorado residents of \$2.45 billion amounts to approximately 2.7 percent when measured against statewide payroll. This measurement is further confirmation that PERA payments are especially important in rural regions and less critical, but important, in the Metro Denver and Mountain regions.

Table B
PERA Recipient Payments as Percentage of Payroll
(dollars in millions)

State/Region	March 2009 Benefit Payments Annualized	Annual Payroll (adjusted to 2009\$)	PERA Payments as Percentage of Payroll
State of Colorado	\$2,453.2	\$89,425.7	2.7%
Metro Denver	1,168.9	60,433.7	1.9%
Colorado Springs	296.8	8,501.9	3.5%
Pueblo-Southern Mountains	242.2	1,798.3	13.5%
San Luis Valley	31.3	269.3	11.6%
Southwest Mountain	46.2	975.9	4.7%
Western	172.3	3,686.2	4.7%
Mountain	82.0	3,878.6	2.1%
Northern	317.4	6,440.9	4.9%
Eastern	86.6	983.9	8.8%

Source: Data from Colorado PERA as of March 2009. Benefit payments have been annualized. Payroll data from 2006 County Business Patterns, U.S. Census Bureau adjusted to 2009 dollars.

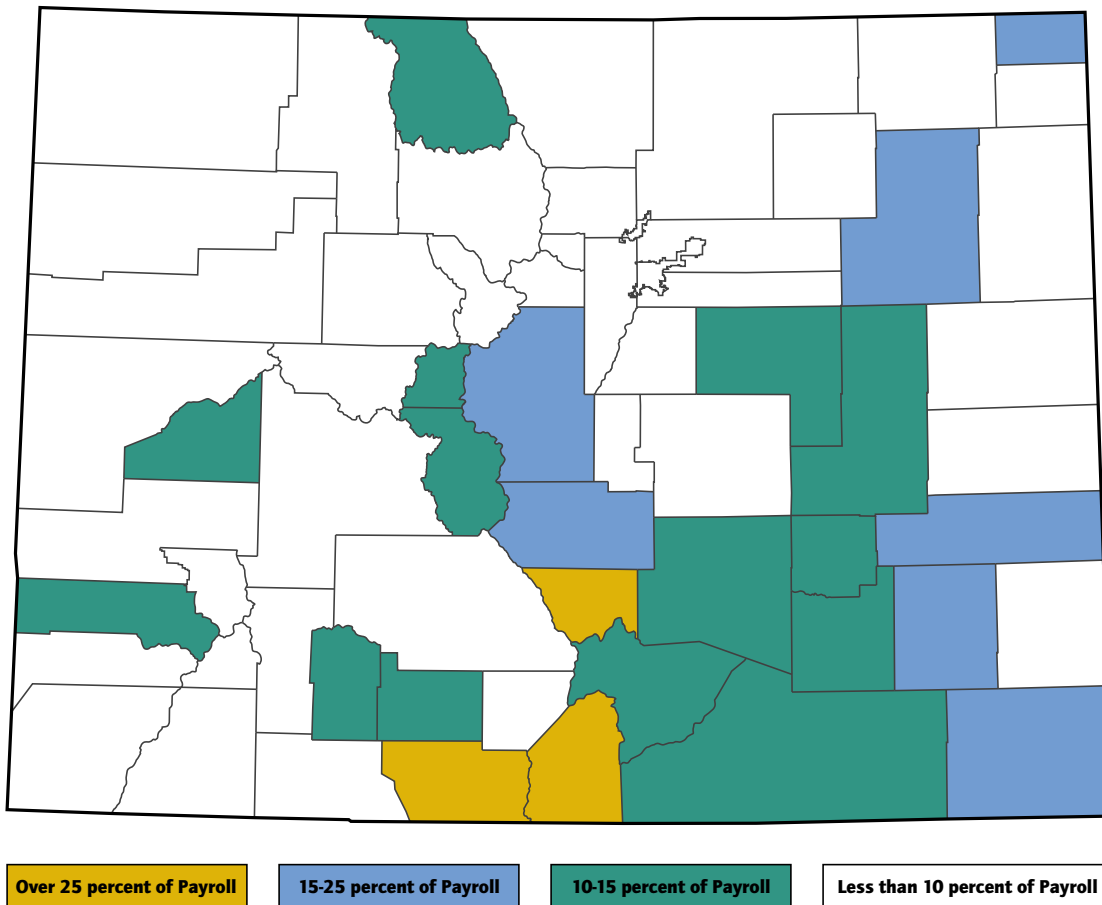
Note: PERA reports there are 346 Colorado residents (less than ½%) that could not be mapped to a county (and hence a region) as their address was not recognized by the United States Postal Service.

Note: There are statewide payroll dollars of \$2.46 billion (2009\$) (2.7% of total) which U.S. Census Bureau does not assign to a specific county and, hence, are not assigned to any region in this analysis.



As PERA payments relate to the local communities, the figure below identifies the PERA benefits as a percentage of county payroll showing PERA to be a significant contributor to many local economies.

Figure 6
PERA Benefit Payments Relative to Payroll by County



- PERA benefits represent a larger share of the local economy in the less populated regions of San Luis Valley, Pueblo-Southern Mountains, and Eastern.
- In more affluent or urban areas, this percentage is less than 10 percent; however, for a substantial number of rural counties, PERA benefits are in the range of 10 to 25 percent (highlighted in green and blue in the figure above) with some notable exceptions including the counties of Costilla 55.0 percent, Conejos 33.4 percent, and Custer 26.2 percent (highlighted in yellow in the figure above).
- Even in counties where this percentage is less than 10 percent, PERA benefits are still an important factor to the local economies.
- Appendix A includes the detail by county.



When a household receives PERA benefit payments, it represents an infusion of income into the local economy that creates a chain of economic activities whose total impact is greater than the initial benefit payment. That is, these payments have substantial “ripple” or “multiplier” effects where one recipient’s spending becomes someone else’s income. With \$2.45 billion paid to recipients who reside in Colorado, PERA has a large economic footprint on the state, regional, and local economies.

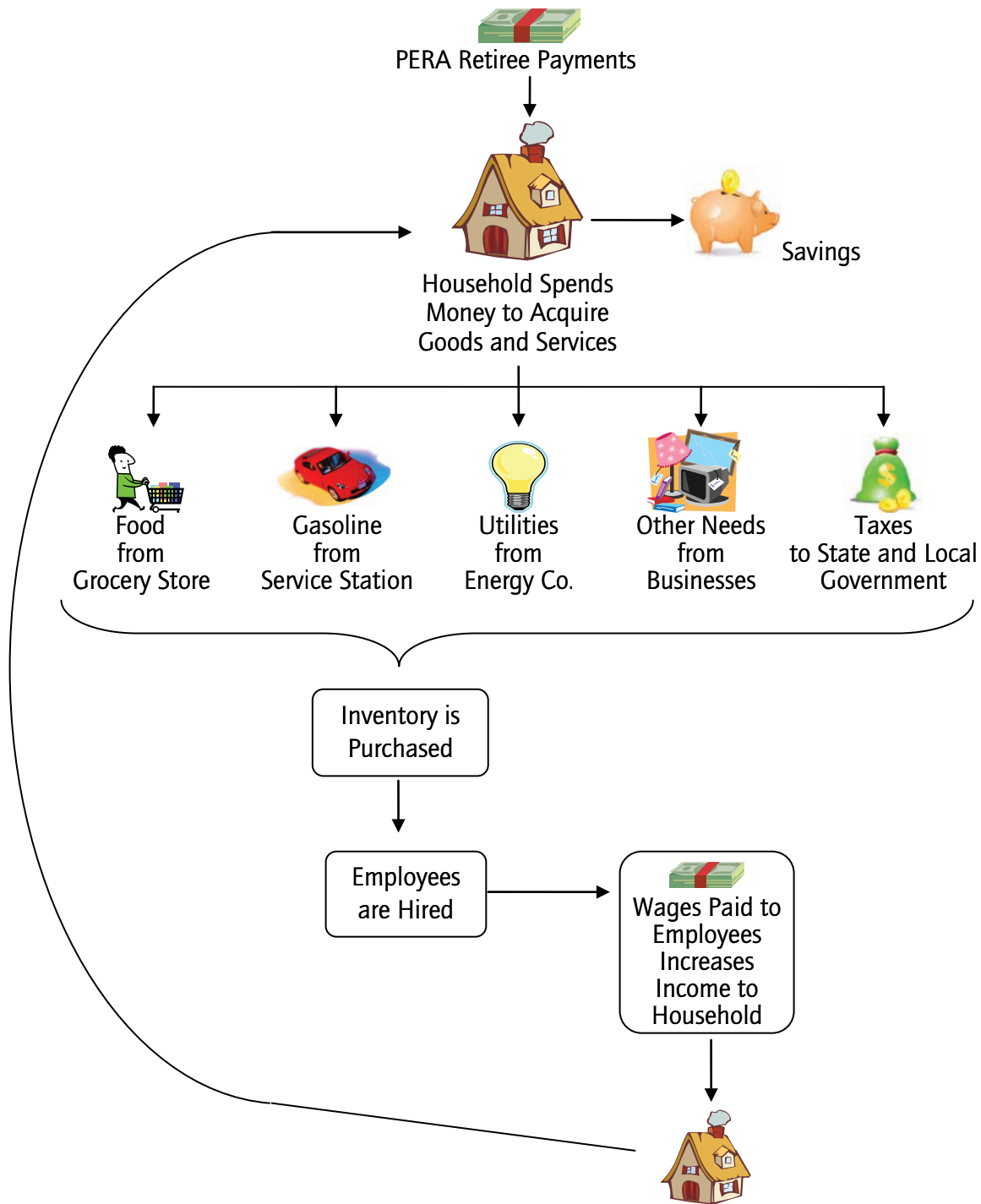
The impact of the PERA benefit payments reaches well beyond those who receive the initial benefit payments (retirees or survivors) as the recipient can fulfill obligations such as purchasing groceries, apparel, gasoline, etc. with these monthly PERA payments. This creates the “multiplier” effect as described and illustrated in more detail below.

The Multiplier Effect

- PERA makes monthly payments to recipients (retirees and survivors)
- PERA recipients spend the monthly monies on household needs (such as, food, gasoline, and utilities) and pay taxes and fees
 - PERA recipients may also “save” some of the monthly monies but this “savings” leaks out of the multiplier effect
- Businesses and/or governments providing those needs use their existing inventory or purchase new inventory and may also be required to hire labor to sell or produce their products or provide their services
- Then business owners as well as their employees obtain income from these purchases (initially by the PERA recipient) and they too then go out and buy goods and services
- Which, in turn, means added business income and wages/salaries
- And the cycle repeats



Figure 7
The Multiplier Effect of Household Expenditures



To measure the multiplier effect, sophisticated mathematical procedures (generally referred to as input-output models) are created to track the flow of dollars through an economy. These input-output models recognize the relationships between industries and institutions (households, business, and government sectors) in the economy of a certain geographic area (state, region, or county). They incorporate the prevalence of different industry sectors in different geographic regions and recognize certain industries retain more of the dollars within the region than other industries.

For example, money spent on professional services or accommodations/food are more likely to stay within the area and benefit the local community while mining or manufacturing sectors may improve employment and wages, but if much of the product is sent out of the area or the input needs are purchased elsewhere, the economic impact will be more limited. Also, another integral piece of the model is the weighting of different consumer expenditure patterns by income levels.

There are a number of well-recognized input-output models including RIMS II, IMPLAN, REMI, etc. This research utilizes the IMPLAN (formerly an acronym for **IM**Impact Analysis for **PLAN**ning) input-output model to estimate the economic and fiscal impact of PERA recipient benefits to the state and regional economies. (Appendix D provides more detailed information regarding the methodology used for this research.)

Key and commonly recognized economic impact measures include output, value-added, labor income, and employment. Definitions and examples of these measures are provided and illustrated on pages 15-17.



Definitions

OUTPUT

This broad measure includes the total sales or revenues generated by firms, government, and households, from initial stimulus (the PERA benefit payment) and subsequent expenditures.

VALUE-ADDED

A key economic performance measure that includes only "additions" in the economy, such as newly created goods and services resulting from the PERA payment; not the sum of sales at each transaction, but rather, the component of sales that represents the additional production of goods and services; commonly referred to as Gross Domestic Product (GDP).



Classic Example

A classic example is presented to assist in understanding the output and value-added measures.

**Farmer Sells
Wheat to Mill
for \$0.50 using
supplies costing
\$0.25**



**Mill Makes
Flour and Sells
to Bakery
for \$1.00**



**Bakery Makes
Bread and Sells
to Customer
for \$1.75**

$$\text{OUTPUT} = \$0.50 + \$1.00 + \$1.75 = \$3.25$$

$$\text{VALUE-ADDED} = (\$0.50 - \$0.25) + (\$1.00 - \$0.50) + (\$1.75 - \$1.00) = \$1.50$$



Output and value-added are measures of economic impact that include all types of economic activity. That is, when PERA benefit recipients spend money in grocery stores, retail shops, restaurants, and other businesses, those businesses respond by buying more supplies, utilities, and building space among other expenditures. Businesses also respond by hiring more workers. The employment component of the economic impact on workers from a stimulus to the economy, such as the PERA benefit payments, is of particular interest and is measured by labor income (which measures worker impact in wages) and employment (which measures worker impact in number of jobs).

LABOR INCOME

A component of value-added, labor income, measures the portion of newly created value that is employee compensation and self-employment income required to produce or sell the additional goods and services.

EMPLOYMENT

Employment is the level of full-time and part-time jobs generated by the PERA payments; i.e. ongoing PERA payments support this level of jobs.

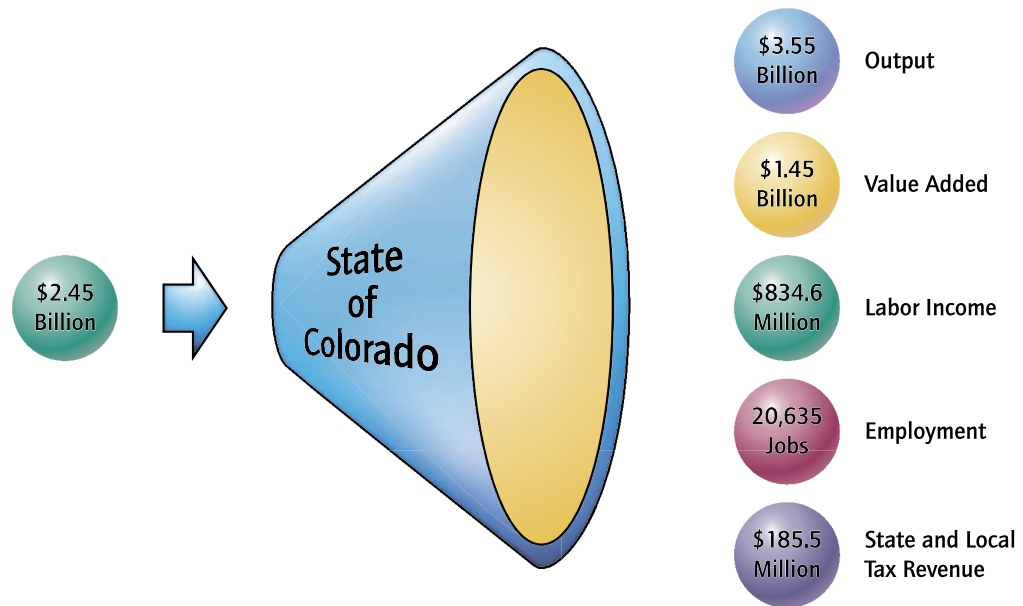


PERA payments are a critical source of reliable, predictable income and provide an “automatic stabilizing effect” on state, regional, and local economies, especially in economic downturns as these monies provide important stimulus. As noted earlier in this report, these steady monthly benefit payments are especially vital to small communities due to the lack of diverse local industries where other steady sources of income are not readily available. Households with stable incomes can be counted on to spend on basic needs and other purchases as well as pay taxes and fees generating revenue for state and local governments. The following pages estimate the effect of spending from PERA payments, including the overall economic impact and by industry sectors, as well as a more narrow analysis of the fiscal impact on state and local government revenues. (For more detailed description of the methodology used in this analysis, see Appendix D.)

Figure 8 illustrates the economic impacts of PERA on the State of Colorado computed using the IMPLAN model. The \$2.45 billion in annual PERA payments to Colorado residents results in \$3.55 billion in output, \$1.45 billion in value-added, \$834.6 million in labor income, and 20,635 jobs. Of note, the impact on employment is measured in “annual average jobs” and reflects jobs supported for one year. The ongoing PERA payments would continue to support these jobs and additional increases in payments to PERA recipients (such as, an increase in the number of recipients or increases in payments) over subsequent years will, on the margin, add new jobs to the economy. As will be discussed in more detail later in this report, the impact to state/local governments amounts to \$185.5 million.

The total output multiplier can be derived by dividing the total economic output (\$3.55 billion) by the initial benefit payments (\$2.45 billion) amounting to 1.45. This means that for every dollar spent by a PERA recipient an additional 45 cents is generated in the economy through additional rounds of spending.

Figure 8
Economic Impact for the State of Colorado



Of note, this analysis is limited to the disbursement of benefit payments to the households, the largest benefit provided by PERA. The economic activity related to other benefits provided by PERA (such as the PERACare subsidy, 401(k), and other voluntary benefit programs) has not been incorporated into this analysis but would obviously increase the overall economic and fiscal impacts provided by PERA.

The salient information by region is best demonstrated by the value-added and labor income economic impact measures. Total impact at the state and regional levels is largely driven by population and, therefore, the impact figures are further refined by adjusting for population. This demonstrates the impact on a per person basis in the region. That is, per capita impacts are obtained by dividing total impact by the relevant population base for the state, regions, and counties. The magnitude of the results varies across regions as each region has different industries and economic structures and, as such, the multiplier effect for each region will differ.

Figures 9 through 12 identify the total and per capita value-added and labor income impacts for the state and regions. As illustrated in the following figures, the value-added and labor income impacts follow the same distribution patterns across regions as benefit payments. That is, the total impacts are greater in the more populated regions, but the per capita impacts are more comparable among regions with the exception of the Pueblo-Southern Mountains region where the per capita impact is substantially greater. Also, not surprisingly, the impacts are of less importance in the Mountain region where the prevalence of the resort communities likely contribute to a large inflow of non-resident spending that overshadows the spending of PERA recipients. Of note, output and employment impacts attributable to PERA recipient spending exhibit similar patterns at both the state and regional levels.

Figures 9 and 10 identify the total and per capita value-added dollar impact, respectively.

Figure 9
Total Value-Added for State and Regions
(dollars in millions)

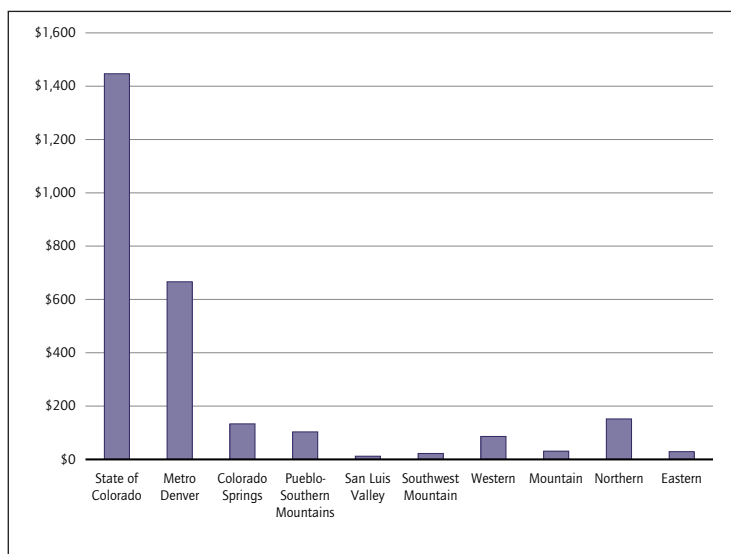
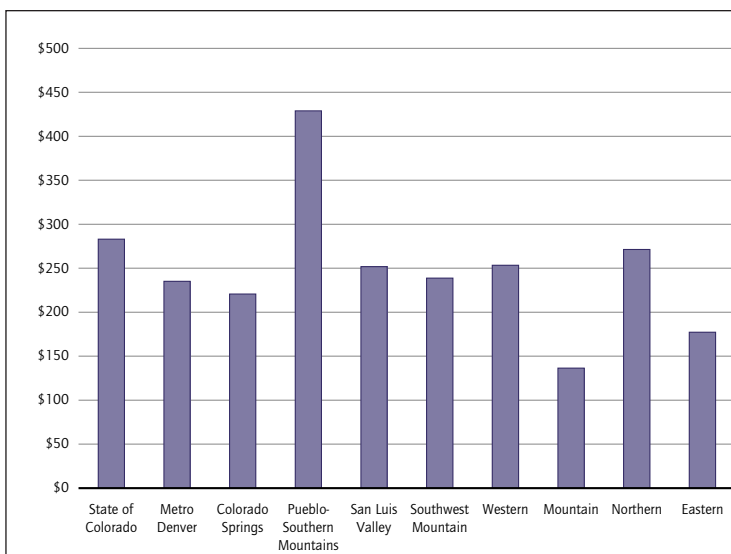


Figure 10
Per Capita Value-Added for State and Regions



Figures 11 and 12 identify the total and per capita labor income dollar impact, respectively.

Figure 11
Total Labor Income for State and Regions
(dollars in millions)

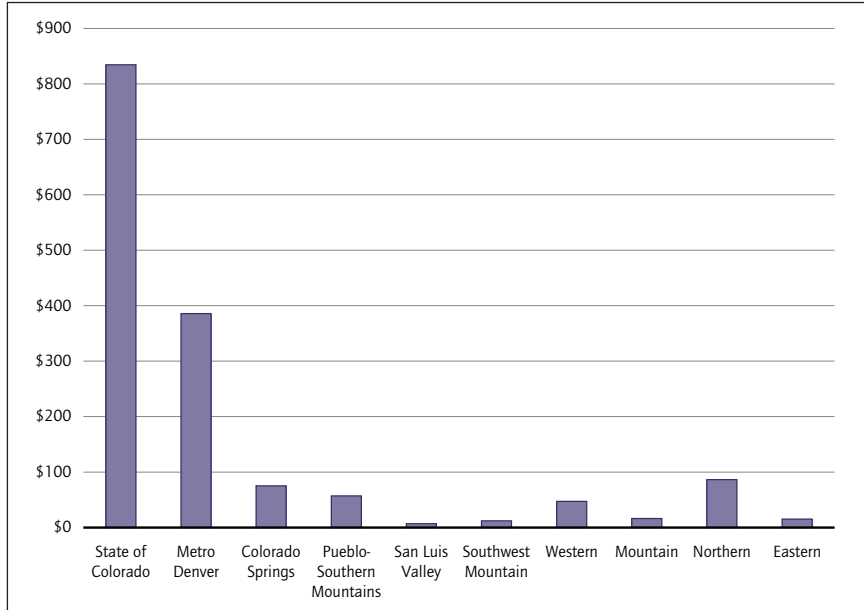
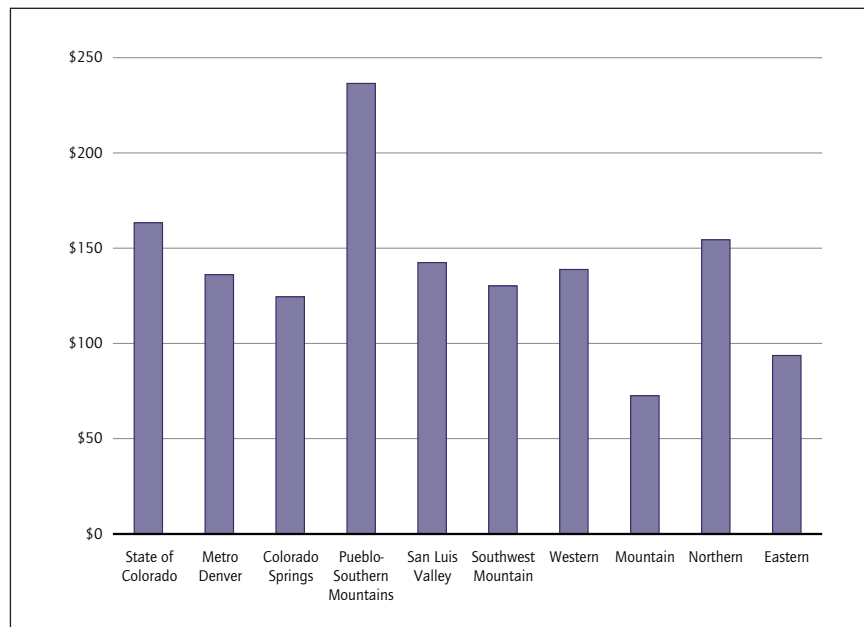


Figure 12
Per Capita Labor Income for State and Regions



A summary of the economic impacts identified in the Figures 8 to 12 for the state as well as the impacts for each region is provided below in Table C.

Table C
Total Economic Benefit to the State and Regions of PERA Benefit Payments
(dollars in millions)

State/Region	March 2009 Benefit Payments Annualized	Output	Value- Added	Labor Income	Employment
State of Colorado	\$2,453.2	\$3,550.9	\$1,446.6	\$834.6	20,635
Metro Denver	1,168.9	1,643.0	666.4	385.7	9,027
Colorado Springs	296.8	376.7	133.5	75.3	2,156
Pueblo-Southern Mountains	242.2	295.7	103.2	56.9	1,866
San Luis Valley	31.3	37.5	12.2	6.9	238
Southwest Mountain	46.2	59.5	22.2	12.1	353
Western	172.3	229.1	86.2	47.2	1,374
Mountain	82.0	97.9	30.8	16.4	428
Northern	317.4	420.2	151.9	86.5	2,610
Eastern	86.6	103.2	28.9	15.3	603

Impacts for 15 counties with the highest per capita value-added are identified in Table D below. The per capita value-added is the highest in Pueblo County at nearly \$460 per person.

Table D
Total Economic Benefit of PERA Benefit Payments to 15 Selected Counties
(dollars in millions with the exception of per capita measures)

County	Region	March 2009 Benefit Payments Annualized	Output	Value- Added	Labor Income	Employment	Per Capita Value- Added	Per Capita Labor Income
PUEBLO	Pueblo-Southern Mountains	\$171.9	\$210.3	\$74.4	\$41.4	1329.7	\$459.3	\$255.4
CHAFFEE	Mountain	18.4	21.3	6.4	3.1	109.3	369.0	179.4
ALAMOSA	San Luis Valley	13.1	15.8	5.5	3.1	96.8	342.0	193.4
FREMONT	Pueblo-Southern Mountains	48.3	55.4	16.2	8.3	315.4	329.8	168.1
LARIMER	Northern	196.1	249.6	88.1	49.9	1507.7	293.5	166.2
MESA	Western	88.9	115.7	43.0	24.0	692.6	286.9	159.9
LA PLATA	Southwest Mountain	29.4	37.8	14.3	7.9	216.6	281.6	155.6
JEFFERSON	Metro Denver	342.1	433.7	153.1	84.1	2225.7	279.8	153.6
BOULDER	Metro Denver	170.1	220.2	81.6	46.4	1156.6	272.0	154.5
OTERO	Eastern	13.5	15.5	4.6	2.6	91.8	242.6	135.6
LOGAN	Eastern	15.1	17.4	5.0	2.8	102.5	223.3	124.8
EL PASO	Colorado Springs	296.8	376.7	133.5	75.3	2156.0	220.6	124.5
LAS ANIMAS	Pueblo-Southern Mountains	12.7	14.3	3.7	1.9	68.7	219.8	113.9
WELD	Northern	121.2	157.0	56.2	31.3	987.9	216.6	120.4
MONTRORSE	Western	21.5	26.0	8.6	4.4	151.8	199.4	103.0



Fiscal Impact

Fiscal impact is a component of total economic impact, but measures only the government tax revenues generated by PERA retirement payments. PERA recipients pay a portion of the PERA benefit in income taxes and also pay additional taxes on goods and services which are subject to sales, use, or property taxes as well as fees for licenses or permits. In addition, there are additional taxes and fees paid on the subsequent rounds of spending generated by the multiplier effect. Fiscal impact recognizes the expenditures made by state and local governments to hire additional workers, make purchases in the local community for equipment needs, etc. The fiscal impact measure includes the income taxes paid on the first round of spending plus other taxes and fees paid on subsequent rounds of spending which generates revenues for state and local government budgets.

The fiscal impact of PERA payments is provided in Table E. The total impact to state/local governments amounts to \$185.5 million with regions ranging from \$1.5 million in San Luis Valley to \$84.5 million in Metro Denver.

Table E
Fiscal Impact to the State and Regions
(dollars in millions)

State/Region	State/ Local Tax
State of Colorado	\$185.5
Metro Denver	84.5
Colorado Springs	18.0
Pueblo-Southern Mountains	13.0
San Luis Valley	1.5
Southwest Mountain	2.8
Western	10.5
Mountain	4.3
Northern	20.5
Eastern	3.9



Economic Impact by Industry Sector

The economic impact measures will vary depending on the composition of industry sectors across the state, regional, and local economies. This research first identifies state Gross Domestic Product (GDP) by industry sector to provide an overall understanding the state's economy.

Table F
Industry Sectors of the Colorado Economy
(dollars in billions)

Sector	2008 Gross Domestic Product
Real estate and rental and leasing	\$31.53
Government	30.60
Professional and technical services	24.30
Information	21.14
Manufacturing	15.90
Health care and social assistance	14.86
Retail trade	14.75
Finance and insurance	14.69
Wholesale trade	13.76
Construction	12.10
Mining	11.99
Administrative and waste services	8.15
Accommodation and food services	7.89
Transportation and warehousing, excluding Postal Service	6.39
Other services, except government	5.88
Management of companies and enterprises	4.13
Utilities	3.25
Arts, entertainment, and recreation	3.19
Agriculture, forestry, fishing, and hunting	2.48
Educational services	1.63
Total	\$248.60

Source: Regional Economic Accounts, Bureau of Economic Analysis.

Note: Sectors do not necessarily add to total due to rounding.



Table F illustrates GDP for Colorado by industry sector where the top three industries accounting for over a third of the state's GDP are:

- Real estate and rental and leasing
- Government
- Professional and technical services

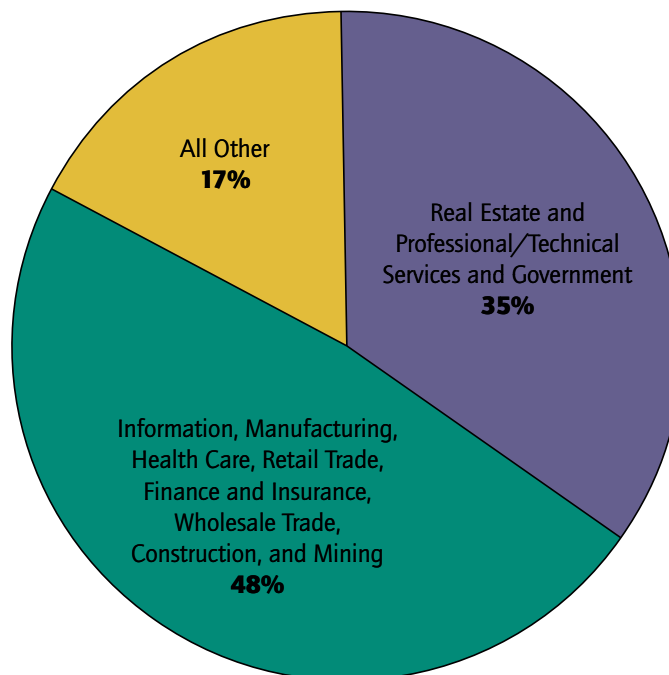
The government sector is a large sector due, in part, to Denver being a "branch" for a number of federal government and government related agencies (such as the Denver Federal Center in Lakewood and the U.S. Mint in Denver).

In addition, nearly 50 percent of the state's GDP is provided by:

- Information
- Manufacturing
- Health care and social assistance
- Retail trade
- Finance and insurance
- Wholesale trade
- Construction
- Mining

The remaining industry sectors account for approximately 17 percent of the state's GDP. This distribution is illustrated in the figure below.

Figure 13
Components of the Colorado Economy



Figures 14 through 16 demonstrate the statewide impacts by industry sector. (The data used for these figures are found in Appendix B.) The economic impact by industry sector for Value-Added (state GDP) is illustrated in Figure 14 below. Although Real estate and rental and leasing, Government, and Professional and technical services account for over one-third of the 2008 state GDP, the economic impact as measured by value-added is greatest in the Health care and social services, Retail trade, and the Public sector/Government enterprises. In fact, only six sectors (Health care and social assistance, Retail trade, Public sector/Government enterprises, Wholesale trade, Finance and insurance, and Real estate and rental and leasing) account for over 65 percent of the Value-Added impact (i.e., contribution to GDP). (The output impact is not illustrated although it has a somewhat broader distribution.) Note, impacts are likely concentrated in the health care sector given that PERA benefit payments drive household final demand while other sectors of state GDP (real estate, professional services, etc.) are largely driven by business to business transactions.

Figure 14
Value-Added by Industry Sector
State of Colorado

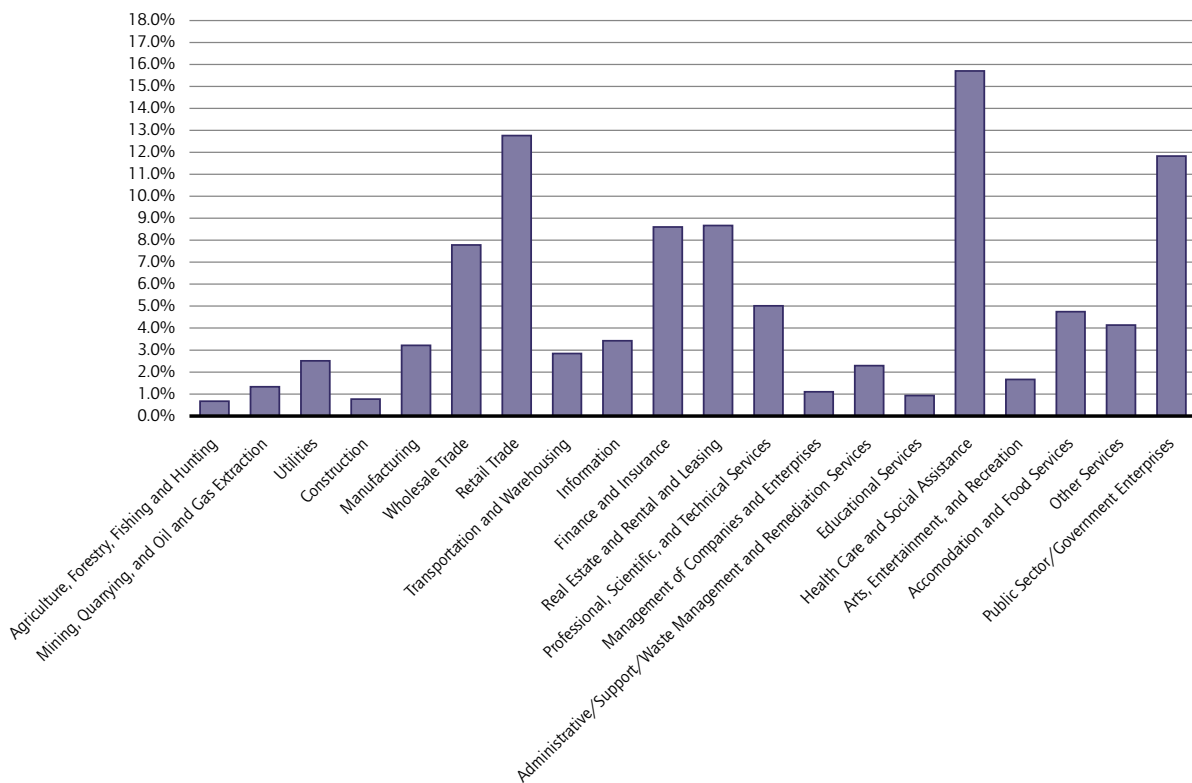


Figure 15 demonstrates the economic impact of labor income at the state level from PERA recipient spending is heavily concentrated in Health care and social assistance with Retail trade, Wholesale trade, and Finance and insurance generating an additional 30 percent of labor income.

Figure 15
Labor Income by Industry Sector
State of Colorado

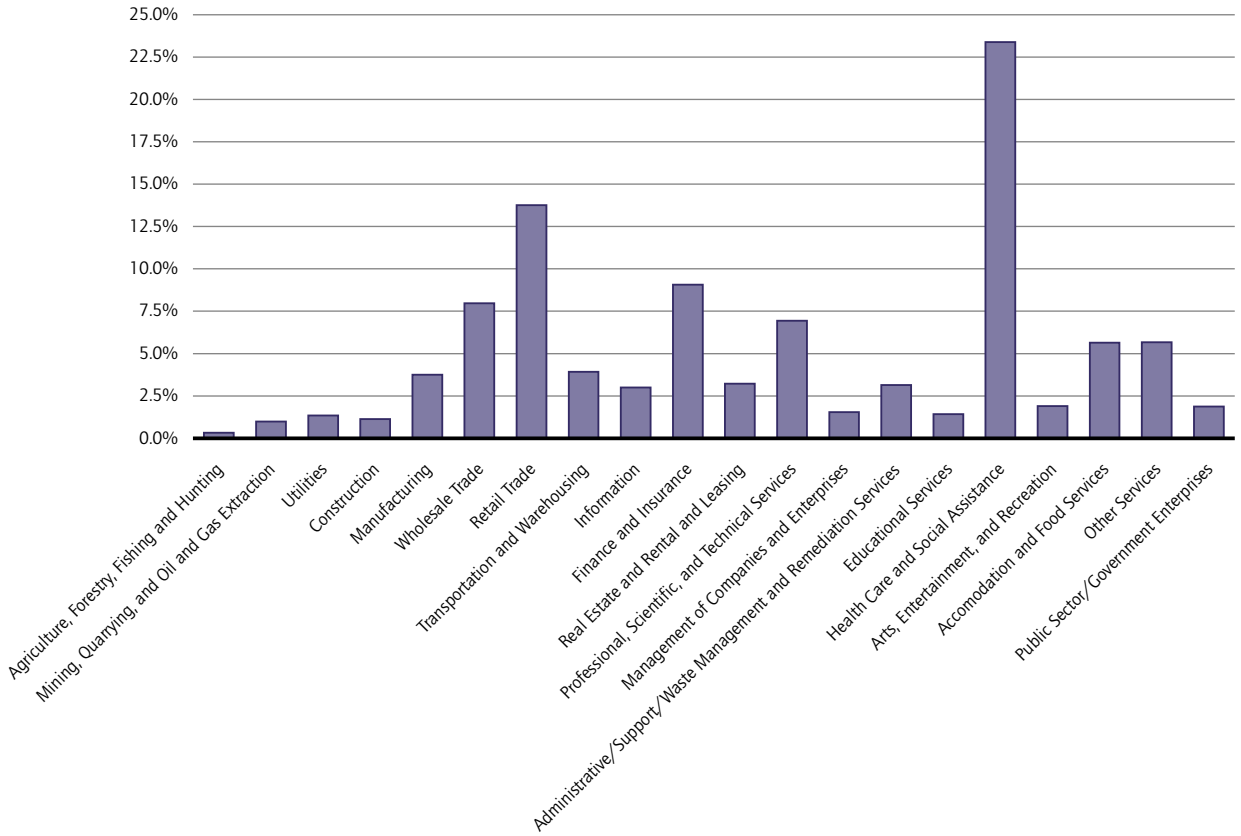
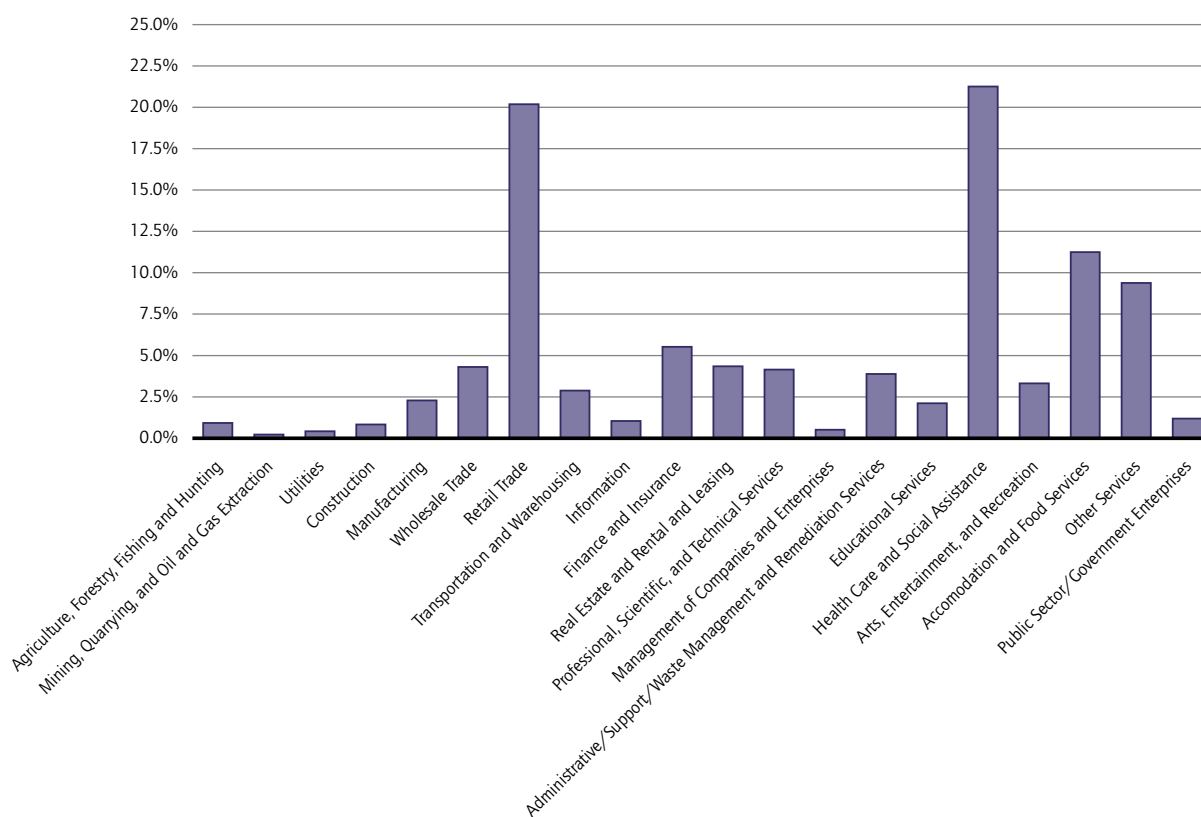


Figure 16 identifies the employment impact by sector and two sectors, Retail trade and Health care and social assistance, account for more than 40 percent of total employment impacts. This is consistent with their importance to value-added. Together, Accommodation and food services and Other services account for an additional 20 percent of employment impacts.

Figure 16
Employment by Industry Sector
State of Colorado



Appendix C provides value-added, labor income, and employment impacts at the sector level for each of the nine regions. In each of the regions, the Health care and social assistance sector plays a dominant role, though the Retail trade sector captures the plurality of impacts in several regions. With regard to value-added impacts, again Health care and social assistance is important ranging from nearly 15 percent to as much as 25 percent in the Pueblo/Southern Mountains Region. Of labor income impacts, the amount accounted for by the Health care and social assistance sector ranges from approximately 25 percent to nearly 40 percent in the Pueblo/Southern Mountains Region. In terms of employment impacts, the Retail trade sector captures a substantial number of jobs (about one in four) in the Colorado Springs and Mountain Regions, while the Health care and social assistance sector accounts for the largest job impacts in the remaining seven regions. Of note, approximately one in three jobs in the Pueblo/Southern Mountains Region occurs in the Health care and social assistance sector.



Pacey Economics Group, located in Boulder, Colorado, has over 25 years of providing consulting services and analyses on an array of economic and business issues. We are a small boutique firm, focused on providing economic analyses for state agencies and private or publicly held companies plus offering economic reports or opinions and expert witness testimony in legal matters. Over the past decade, Pacey Economics Group has been awarded many state government contracts through a number of different agencies to forecast, analyze, and evaluate programs and legislative changes. The staff contributing to this report are described below.

Patricia L. Pacey, Ph.D. – Dr. Pacey is President of Pacey Economics Group and Principal Investigator on the PERA project. She received her Ph.D. in economics and B.A. in mathematics from the University of Florida and held positions with the University of Colorado and the Congressional Budget Office before forming her own firm, Pacey Economics Group.

Alicia V. Lehan, M.A. – Ms. Lehan is the Research Director at Pacey Economics Group and Principal Investigator on the PERA project. She received her B.A. in quantitative economics and decision sciences from the University of California, San Diego and went on to obtain her M.A. in economics from the University of Colorado, Boulder while employed at Pacey Economics Group.

W. Ashley Ahrens, Ph.D. – Dr. Ahrens is a Senior Analyst at Pacey Economics Group and Principal Investigator on the PERA project. He received his Ph.D. in economics from the University of Colorado, Boulder and his M.A. in economics from the University of Washington-Seattle. He held academic positions with the University of Alaska and Mesa State College before joining Pacey Economics Group. Prior to obtaining his advanced degrees, he was a research analyst with BBC Research and Consulting.

Mark S. McNulty, Ph.D. – Dr. McNulty is a Senior Analyst at Pacey Economics Group and Principal Investigator on the PERA project. He received his Ph.D. in economics and statistics from Iowa State University, was tenured faculty with Kansas State University for 13 years before accepting a technical researcher position with Los Alamos National Laboratory. He was then employed with the University of Wyoming before joining Pacey Economics Group.

Gretchen Dahlberg, B.A., Jeff Nehls, B.A., Paul Park, B.A. – Ms. Dahlberg, Mr. Nehls, and Mr. Park are Analysts at Pacey Economics Group and supporting researchers on the PERA project. They all hold B.A. degrees in economics; Ms. Dahlberg and Mr. Park from the University of Colorado, Boulder, and Mr. Nehls from the University of Puget Sound. They all worked as interns/summer associates at Pacey Economics Group before joining on a permanent full-time basis.



Appendix A – PERA Benefit Payments as Percentage of Payroll by County (sorted by percentage of payroll)

County	Region	March 2009 Benefit Payments Annualized (in thousands)	Annual Payroll (adjusted to 2009\$) (in thousands)	PERA Payments as Percentage of Payroll
COSTILLA	San Luis Valley	\$2,112.5	\$3,843.4	55.0%
CONEJOS	San Luis Valley	5,873.5	17,607.3	33.4%
CUSTER	Pueblo-Southern Mountains	3,805.5	14,526.3	26.2%
FREMONT	Pueblo-Southern Mountains	48,346.0	235,045.2	20.6%
WASHINGTON	Eastern	2,584.6	14,440.5	17.9%
BACA	Eastern	2,132.6	11,921.0	17.9%
BENT	Eastern	2,344.3	13,319.8	17.6%
KIOWA	Eastern	950.7	5,718.9	16.6%
PARK	Mountain	6,222.0	37,472.4	16.6%
SEDGWICK	Eastern	1,504.6	9,409.1	16.0%
HUERFANO	Pueblo-Southern Mountains	5,389.3	37,221.6	14.5%
DOLORES	Southwest Mountain	807.2	5,627.7	14.3%
CHAFFEE	Mountain	18,410.6	136,731.7	13.5%
CROWLEY	Eastern	2,142.6	16,422.5	13.0%
JACKSON	Mountain	778.6	6,114.2	12.7%
PUEBLO	Pueblo-Southern Mountains	171,933.8	1,403,863.5	12.2%
MINERAL	San Luis Valley	581.9	4,895.7	11.9%
LAS ANIMAS	Pueblo-Southern Mountains	12,726.8	107,600.9	11.8%
OTERO	Eastern	13,466.2	118,105.8	11.4%
ELBERT	Eastern	9,108.9	81,379.4	11.2%
RIO GRANDE	San Luis Valley	7,833.9	71,162.3	11.0%
DELTA	Western	19,541.3	181,098.1	10.8%
LAKE	Mountain	3,124.8	30,201.7	10.3%
LINCOLN	Eastern	3,354.8	33,308.7	10.1%
LOGAN	Eastern	15,058.4	152,496.1	9.9%
ALAMOSA	San Luis Valley	13,073.2	149,186.0	8.8%
PROWERS	Eastern	7,637.6	88,286.4	8.7%
PHILLIPS	Eastern	2,101.8	25,445.0	8.3%
SAGUACHE	San Luis Valley	1,818.9	22,619.2	8.0%
KIT CARSON	Eastern	3,614.6	49,920.2	7.2%
CLEAR CREEK	Mountain	6,001.0	85,618.1	7.0%
HINSDALE	Western	302.4	4,323.4	7.0%
TELLER	Mountain	11,296.3	173,315.8	6.5%
YUMA	Eastern	5,015.1	78,236.5	6.4%
MONTEZUMA	Southwest Mountain	11,931.8	191,483.5	6.2%
MONTROSE	Western	21,484.0	378,587.2	5.7%
RIO BLANCO	Western	4,572.6	81,429.4	5.6%
MORGAN	Eastern	14,653.4	266,613.0	5.5%
OURAY	Western	2,170.1	40,070.1	5.4%
MESA	Western	88,888.4	1,705,264.4	5.2%
WELD	Northern	121,232.5	2,354,900.9	5.1%
GRAND	Mountain	7,669.9	155,770.4	4.9%
CHEYENNE	Eastern	913.4	18,826.9	4.9%
GUNNISON	Western	9,392.0	193,944.4	4.8%
LARIMER	Northern	196,117.8	4,086,016.4	4.8%
ARCHULETA	Southwest Mountain	3,777.4	83,171.3	4.5%
SAN JUAN	Southwest Mountain	253.2	5,708.0	4.4%
JEFFERSON	Metro Denver	342,082.3	7,783,894.1	4.4%
LA PLATA	Southwest Mountain	29,393.9	689,885.8	4.3%
MOFFAT	Western	5,956.1	142,246.5	4.2%
EL PASO	Colorado Springs	296,808.2	8,501,855.3	3.5%
DOUGLAS	Metro Denver	87,092.1	3,209,510.1	2.7%
BOULDER	Metro Denver	170,112.4	7,138,609.2	2.4%
ADAMS	Metro Denver	123,191.6	5,289,622.6	2.3%
GARFIELD	Western	18,425.0	808,625.8	2.3%
ARAPAHOE	Metro Denver	225,411.3	13,735,801.8	1.6%
BROOMFIELD	Metro Denver	27,066.3	1,709,635.5	1.6%
GILPIN	Mountain	2,113.5	164,199.9	1.3%
SUMMIT	Mountain	7,230.7	564,716.7	1.3%
ROUTT	Mountain	8,635.4	693,850.8	1.2%
SAN MIGUEL	Western	1,546.1	150,569.6	1.0%
DENVER	Metro Denver	193,939.6	21,566,611.2	0.9%
EAGLE	Mountain	7,287.9	1,202,140.1	0.6%
PITKIN	Mountain	3,271.7	628,507.3	0.5%





Appendix B - Economic Benefits by Industry Sector - State of Colorado

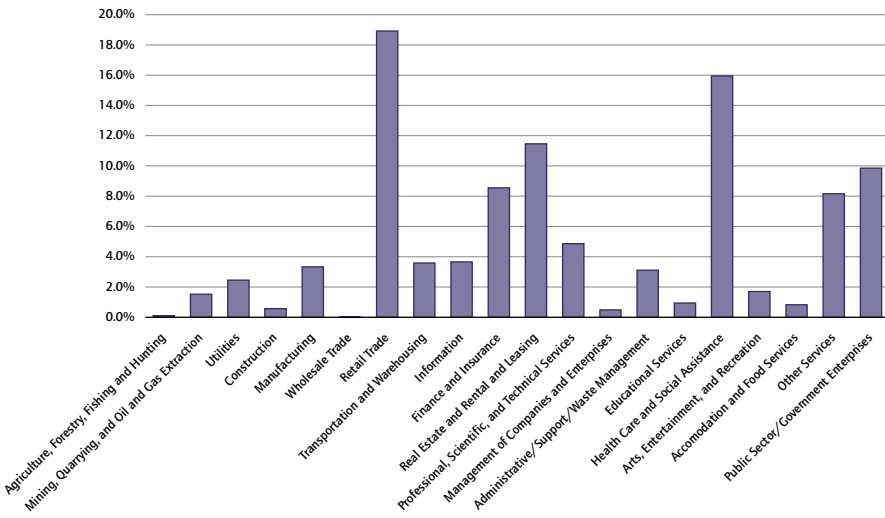
(dollars in millions)

Sector	Output	Value-Added	Labor Income	Employment
Health Care and Social Assistance	\$362.9	\$227.1	\$195.1	4,384
Public Sector/Government Enterprises	324.2	171.2	15.7	245
Retail Trade	266.0	184.6	114.9	4,164
Finance and Insurance	252.7	124.4	75.6	1,141
Manufacturing	198.1	46.5	31.3	471
Wholesale Trade	172.3	112.6	66.5	888
Real Estate and Rental and Leasing	159.8	125.4	26.8	896
Accommodation and Food Services	136.1	68.6	47.1	2,321
Professional, Scientific, and Technical Services	113.6	72.5	57.9	856
Other Services	113.3	59.8	47.3	1,937
Information	95.9	49.6	25.0	214
Transportation and Warehousing	77.7	41.2	32.8	595
Utilities	57.0	36.3	11.3	87
Administrative and Support and Waste Management and Remediation Services	55.3	33.2	26.2	800
Arts, Entertainment, and Recreation	39.7	24.0	15.9	685
Mining, Quarrying, and Oil and Gas Extraction	32.2	19.2	8.3	47
Agriculture, Forestry, Fishing and Hunting	28.1	9.8	2.8	190
Management of Companies and Enterprises	26.4	16.0	12.8	106
Educational Services	25.2	13.5	11.9	437
Construction	21.3	11.1	9.5	172

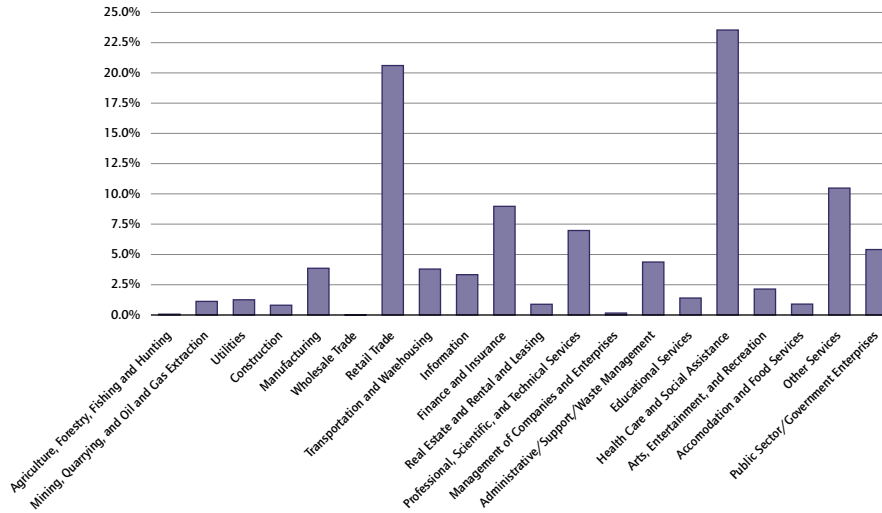
Appendix C – Economic Benefits by Industry Sector – Regional Charts

Metro Denver

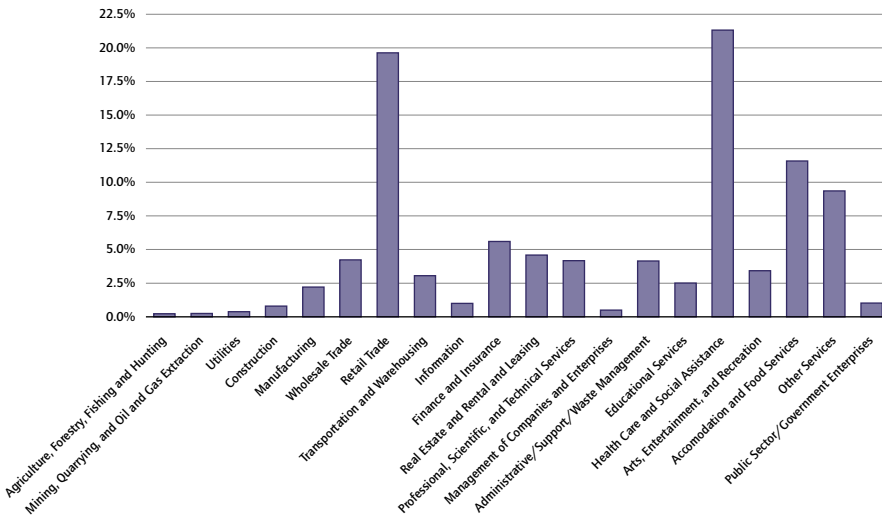
Value-Added by Industry Sector



Labor Income by Industry Sector



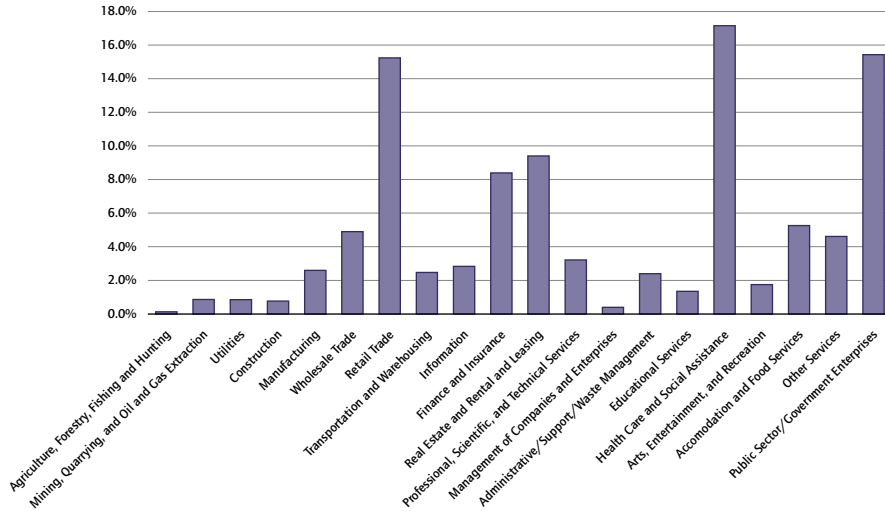
Employment by Industry Sector



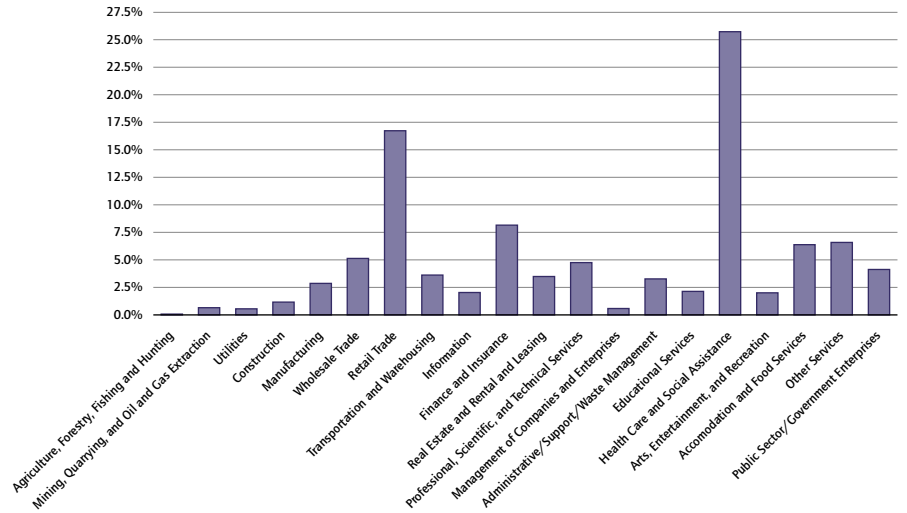


Colorado Springs

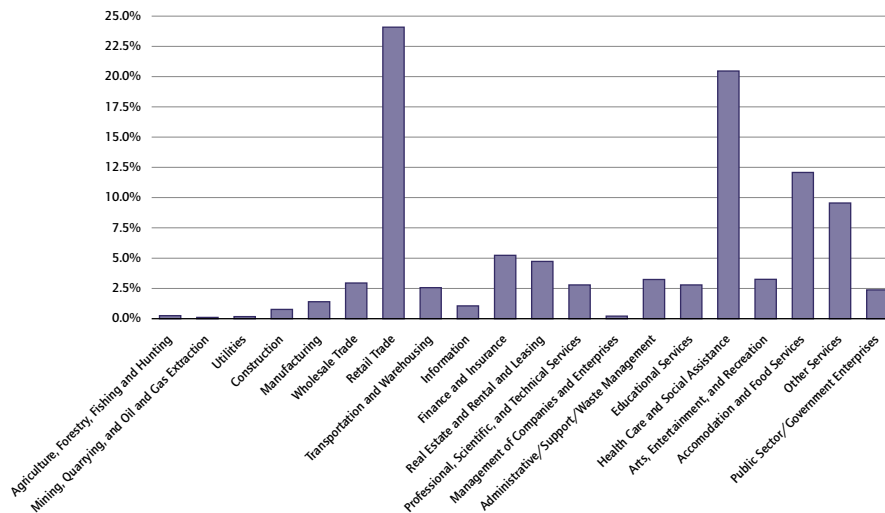
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Labor Income by Industry Sector

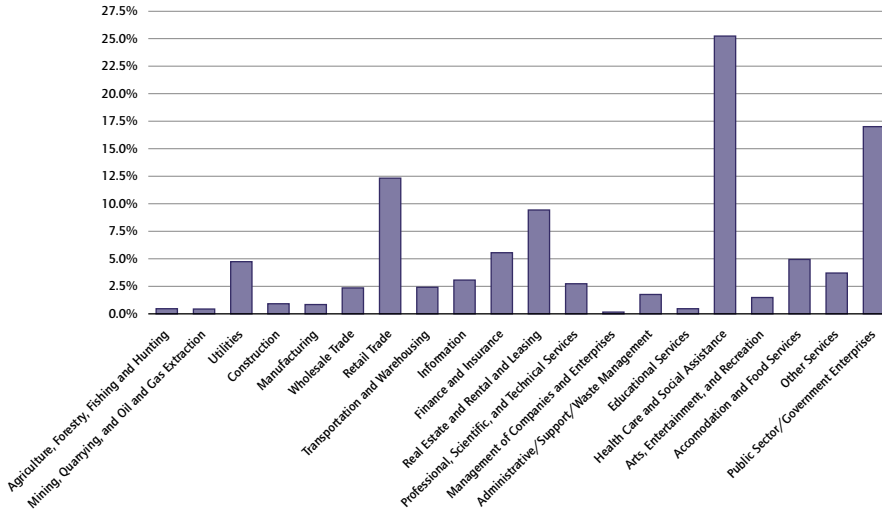


Employment by Industry Sector

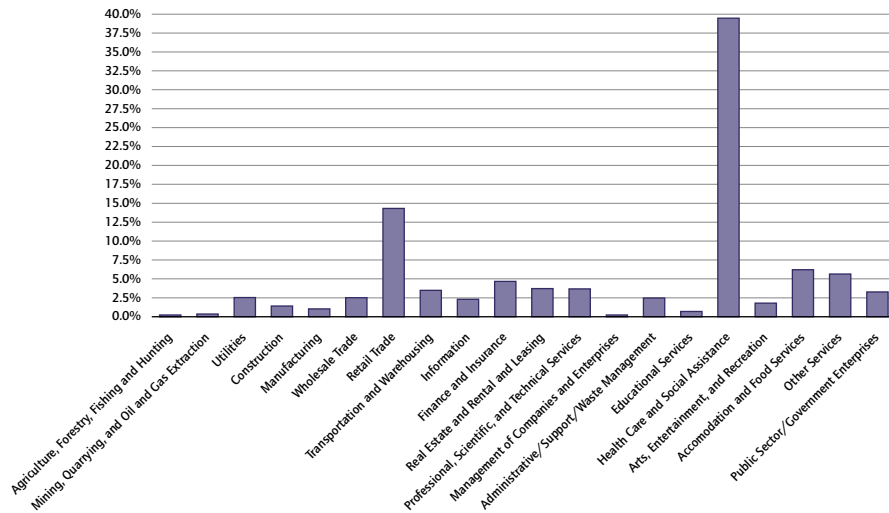


Pueblo-Southern Mountains

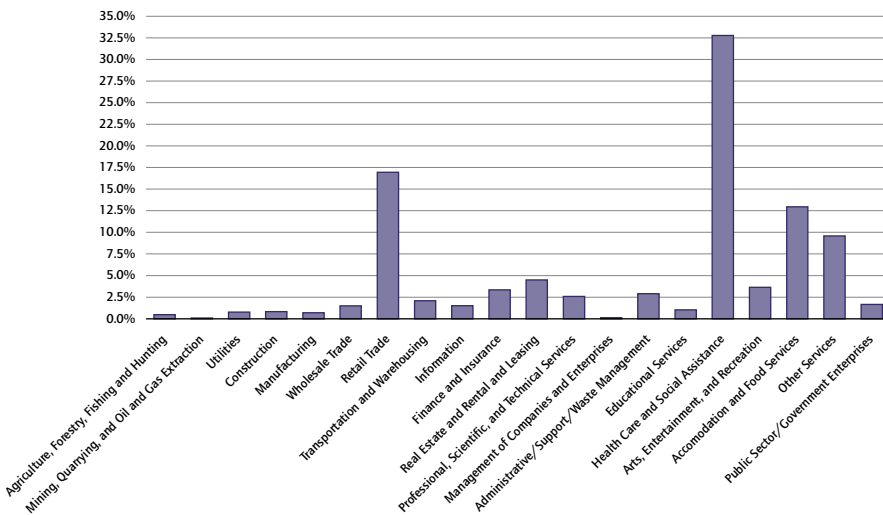
Value-Added by Industry Sector



Labor Income by Industry Sector



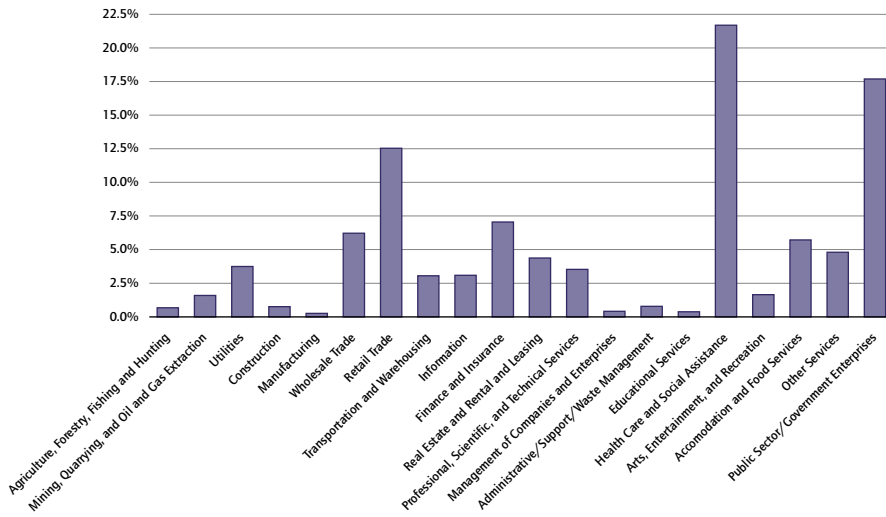
Employment by Industry Sector



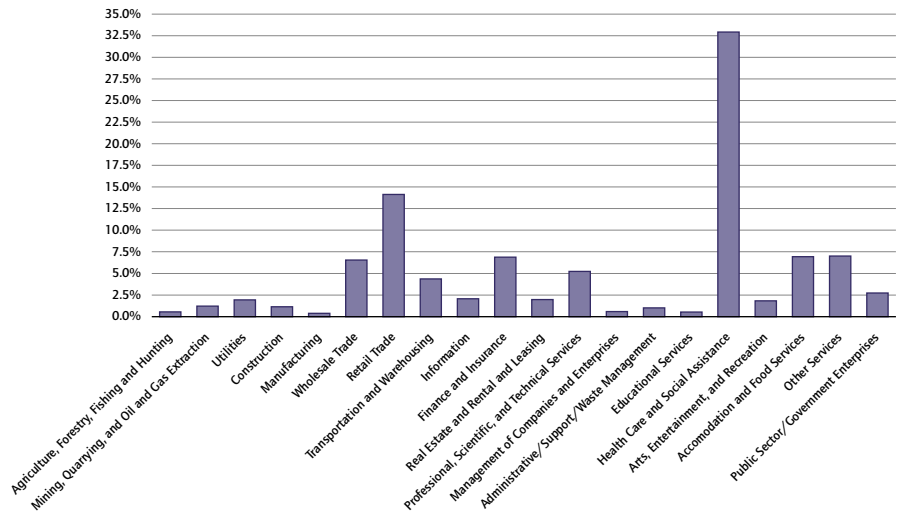


San Luis Valley

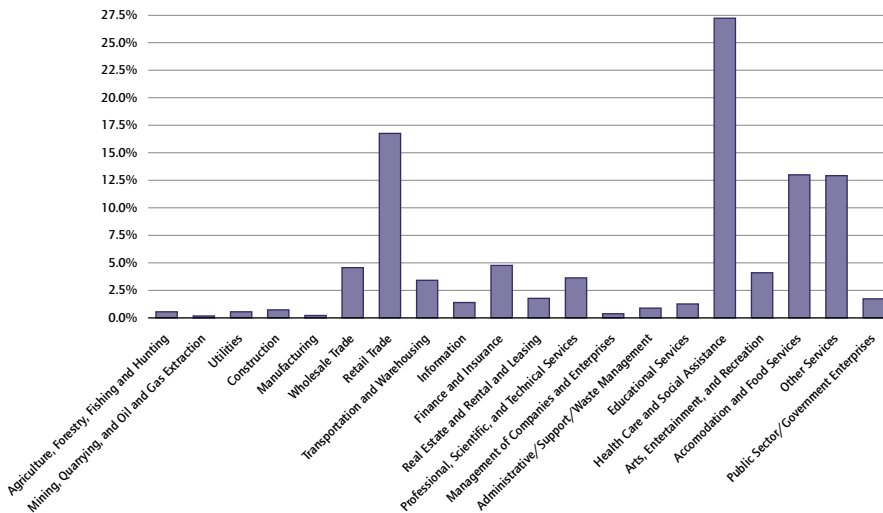
Value-Added by Industry Sector



Labor Income by Industry Sector

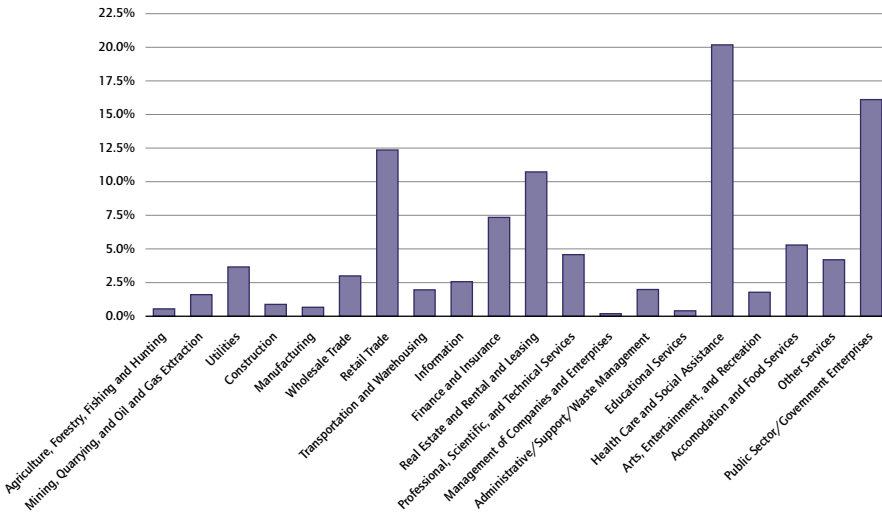


Employment by Industry Sector

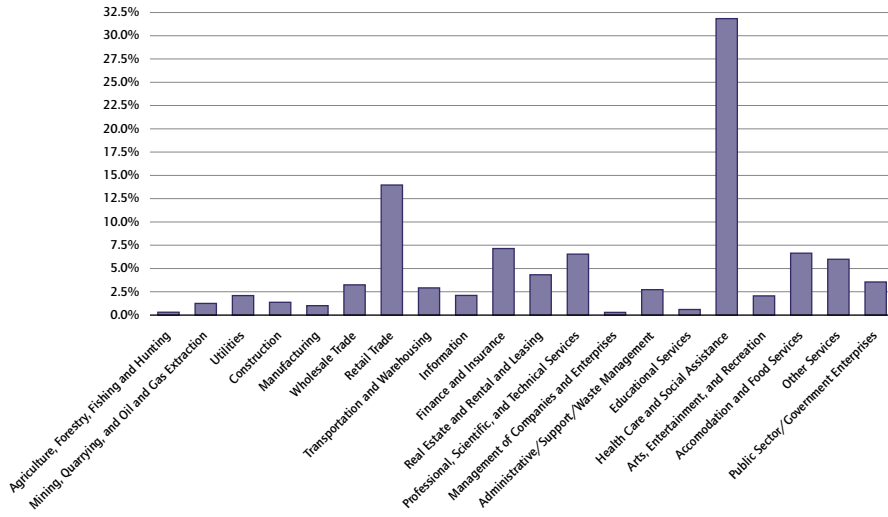


Southwest Mountain

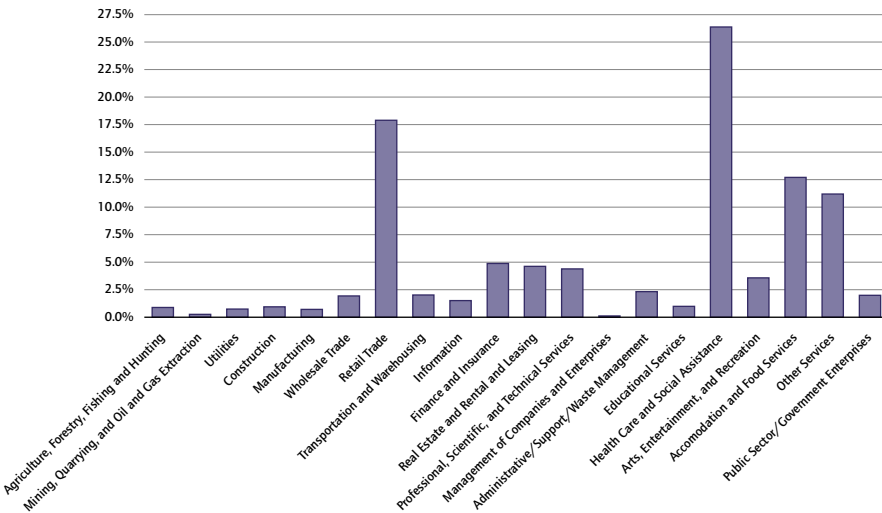
Value-Added by Industry Sector



Labor Income by Industry Sector



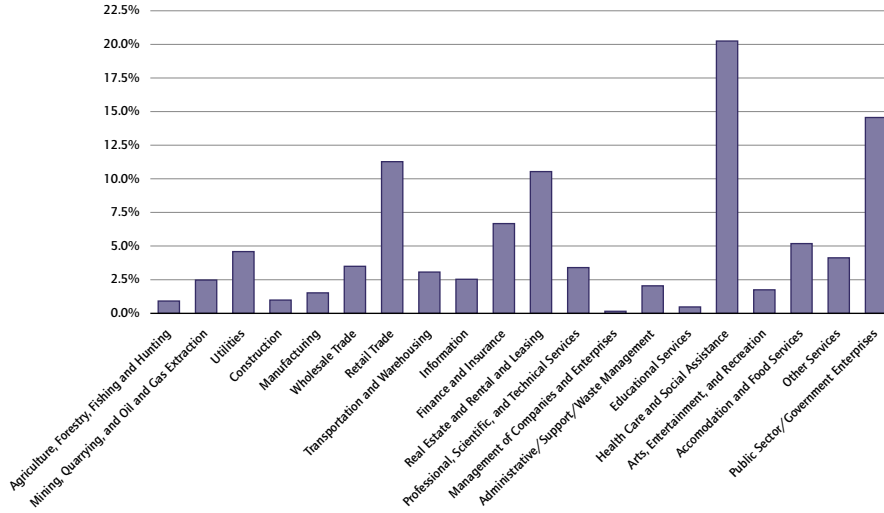
Employment by Industry Sector



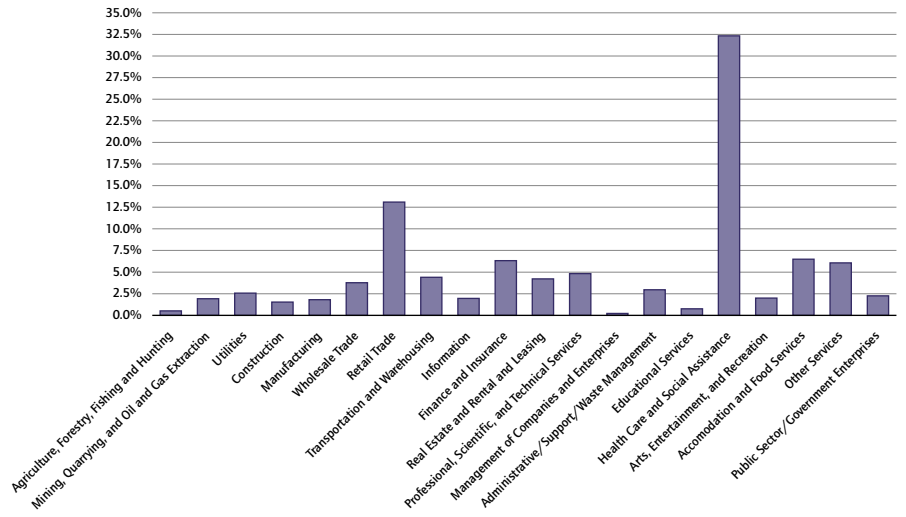


Western

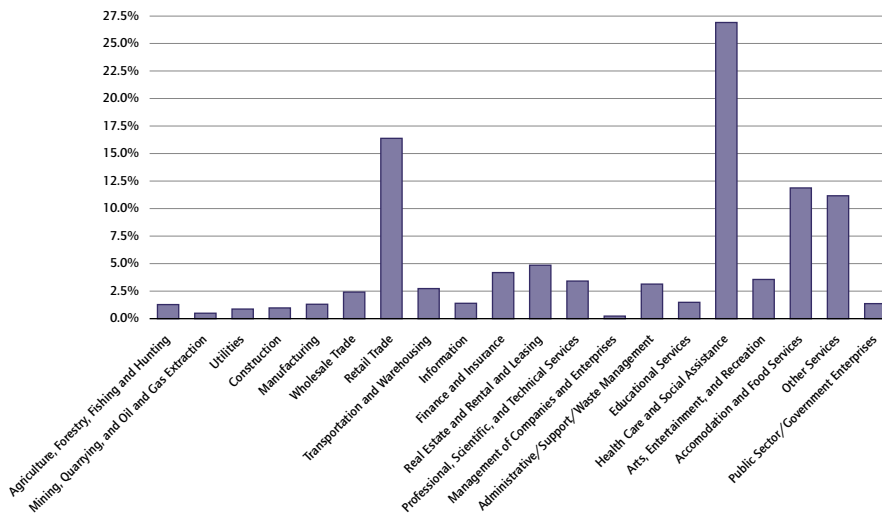
Value-Added by Industry Sector



Labor Income by Industry Sector

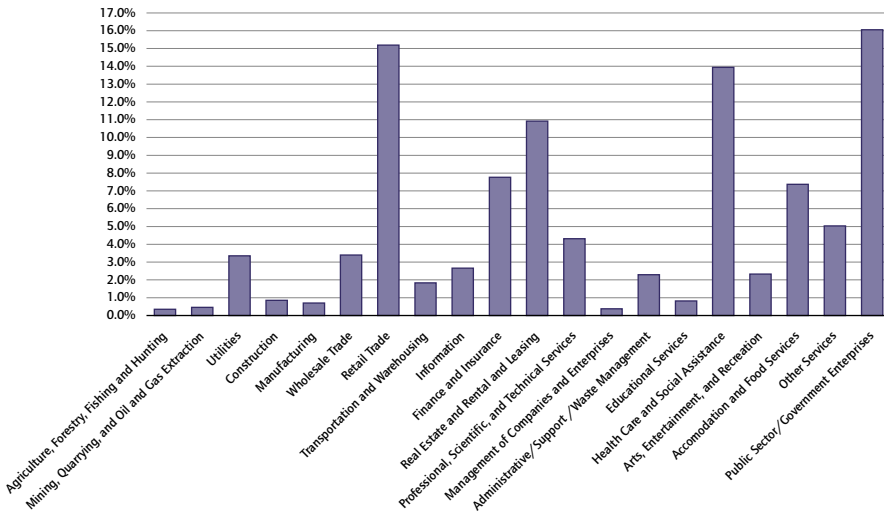


Employment by Industry Sector

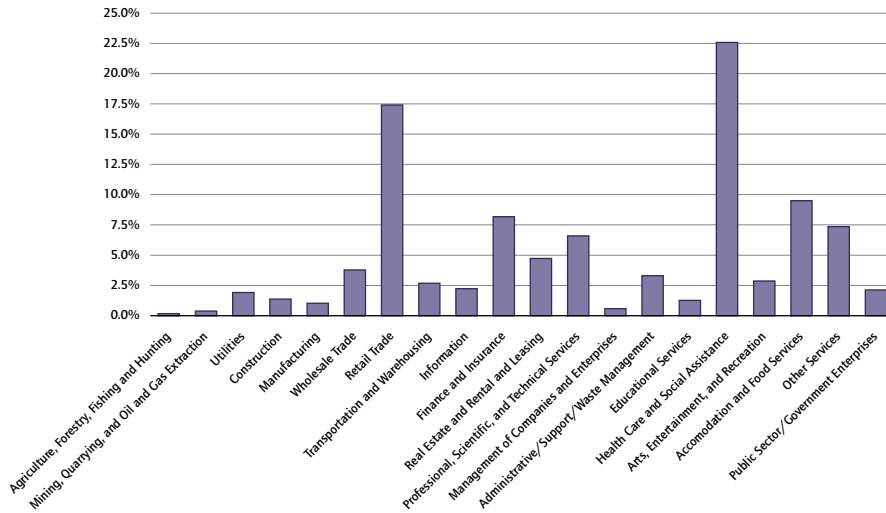


Mountain

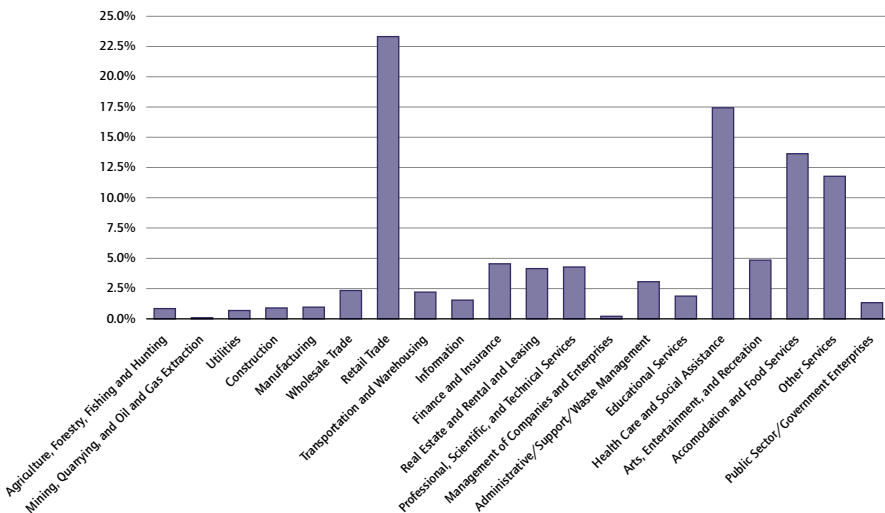
Value-Added by Industry Sector



Labor Income by Industry Sector



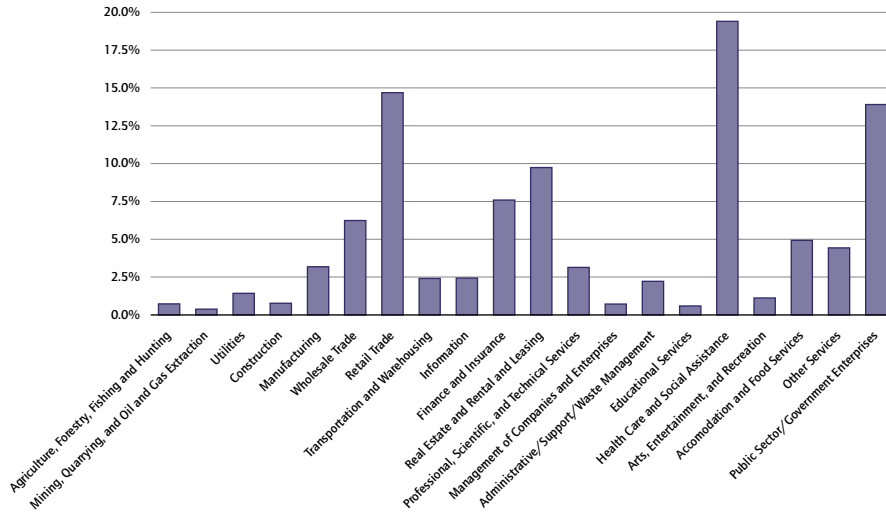
Employment by Industry Sector



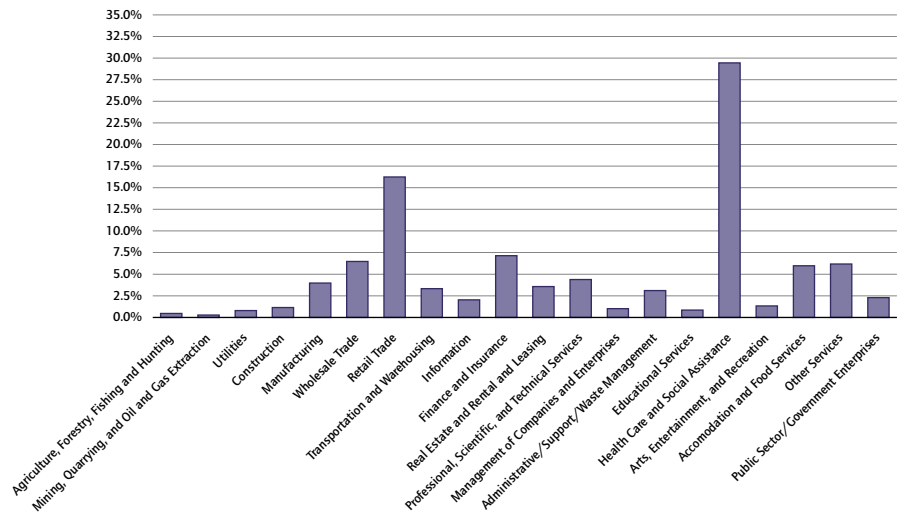


Northern

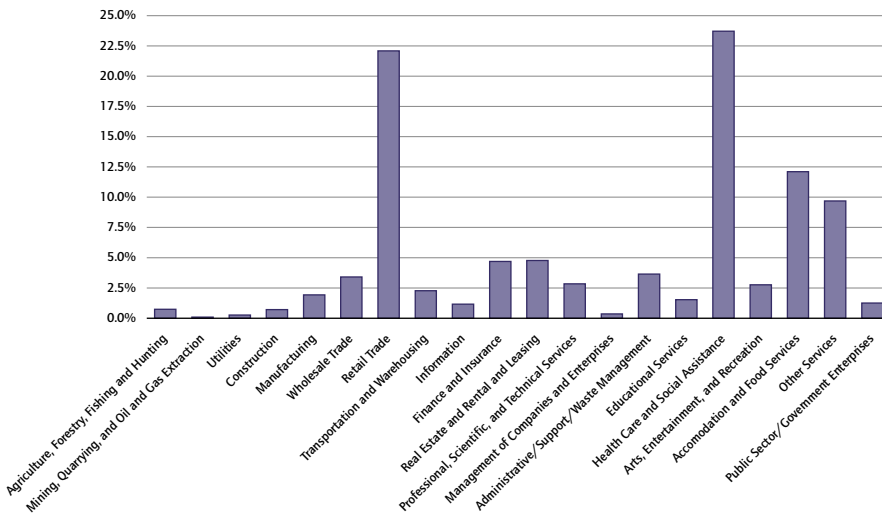
Value Added by Industry Sector



Labor Income by Industry Sector

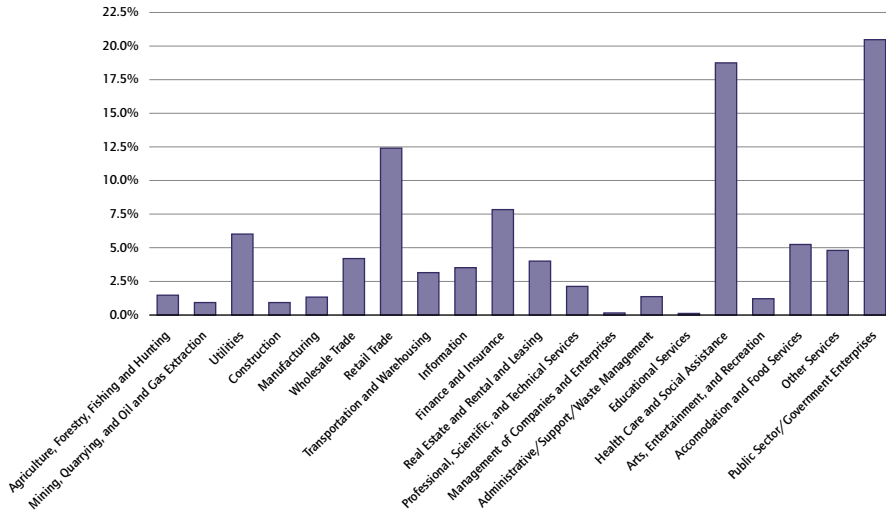


Employment by Industry Sector

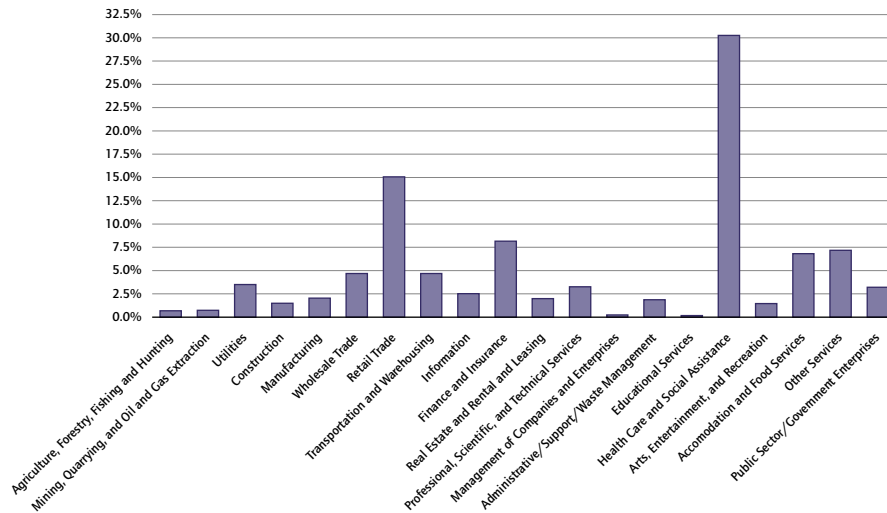


Eastern

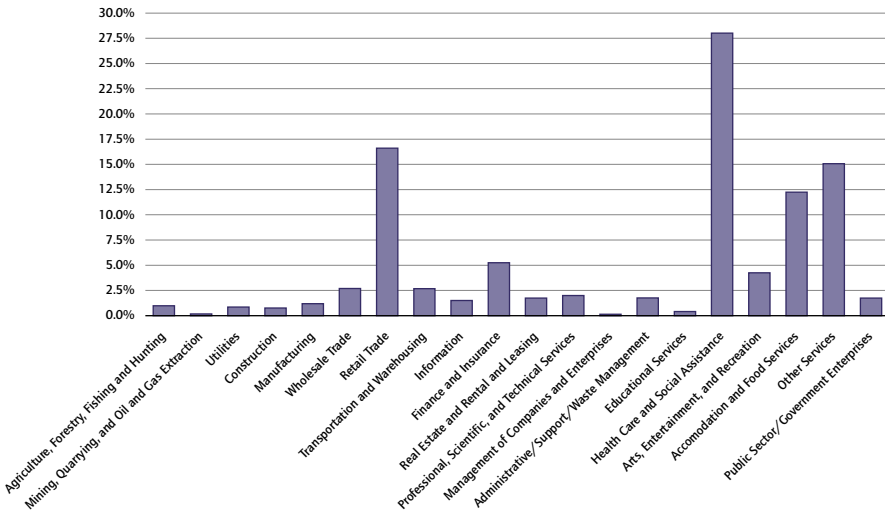
Value-Added by Industry Sector



Labor Income by Industry Sector



Employment by Industry Sector



Appendix D - Economic and Fiscal Impact Analysis Detailed Methodology

PERA benefit payment information as of March 2009 was used in the input-output modeling software, IMPLAN, to determine the economic impact of the benefit payments by county, region, and the State of Colorado. IMPLAN was initially developed in the 1970s for use by the U.S. Forest Service, in cooperation with other federal agencies, to assist in land and resource management planning. The University of Minnesota was also involved in the development of the model in the 1980s and, in 1993, the Minnesota IMPLAN Group, Inc. (MIG) was formed to privatize the development of the data and software. IMPLAN is widely used by federal, state, and local governments as well as academic institutions and businesses to assess the economic and fiscal impacts of a variety of developments, including numerous analyses of the benefit payments of publicly funded pension plans.

An input-output model, such as IMPLAN, accounts for the relationships in the economy of a certain geographic area (for example, the State of Colorado, a region, or a county). This is accomplished through a Social Accounting Matrix (SAM) framework which captures all industry and institution (including household and government) transactions in a local economy. The SAM traces the flow of dollars from purchasers to producers while also accounting for taxes paid by households and business.

The IMPLAN model measures the impact of the flow of dollars through an economy by estimating the direct effect, indirect effect, induced effect, and total effect. The distinction between these effects is best illustrated by applying them to the task at hand although only the total effect is reported in the results section of this report. The **direct effect**, the initial event, is the spending of PERA benefits by households at businesses or taxes paid to the state and local governments. The **indirect effect** identifies the impact on the economy when the businesses and government purchase inventory and hire employees. When employees of the businesses and government spend their wages and profits, this impact is considered to be an **induced effect**. The **total effect** is the sum of the direct, indirect, and induced effects.

It should be noted that state impacts are not the sum of the impacts of individual regions/counties. This is because households make some of their purchases for goods and services outside a certain region/county and, as such, those expenditures are not counted in the economic activity of the region/county where the benefit recipient resides. Given that the state encompasses a larger geographic and, therefore, larger economic area, it will include more economic activity and, hence, the economic impact for the state will be larger than the sum of the counties/regions.

Payments

This analysis recognizes that not all PERA beneficiaries continue to reside in Colorado. Those recipients that are no longer in the state are likely spending their benefit payments in their new locale. As such, payments for recipients who reside out-of-state were not included in this analysis. By not including any out-of-state PERA recipients, we assume that the expenditures by these recipients have no effect on economic impacts within the state.

For the county/regional analyses, only recipients residing in the respective county/region are included. PERA reports there are a nominal number of recipients (346 out of 70,759) who are in Colorado, but whose addresses are not recognized by the United States Postal Service and, therefore, are not mapped to a county. As such, these individuals are included in the state analysis but not the county/regional analyses.

Household Expenditure Pattern

The typical expenditure pattern of a household will vary, in part, due to their income level. For example, a higher income household may spend more on entertainment than a lower income household. IMPLAN recognizes this and has several different household expenditure groups.

Impacts were analyzed using the expenditure patterns for two household income groups: \$25,000 to \$35,000 and \$35,000 and \$50,000. These income ranges were chosen after reviewing average PERA benefit payment information and median household income data from the *U.S. Census Bureau* (American Community Survey and 2000 Census).





The household expenditure pattern of the income range \$25,000 to \$35,000 was used for the Eastern, Pueblo-Southern Mountains, San Luis Valley, Southwest Mountain, and Western regions. The household expenditure pattern of the income range \$35,000 to \$50,000 was used for the Metro Denver, Colorado Springs, Mountain, and Northern regions and the State of Colorado. For the counties, the income range for the household expenditure pattern, with a few exceptions, typically followed the respective region.

The actual expenditure pattern of the PERA households may differ somewhat from the IMPLAN average as approximately 95 percent of the PERA recipients are age 55 and older. Data from the *Consumer Expenditure Survey* showed that households with older individuals spend proportionately more on certain items (such as, health care) and less on other items (for example, education) than the average household although total spending dollars were relatively comparable within income levels.

Taxes and Saving

Households spend out of their disposable income. That is, purchases of goods and services are made once adjusted for income taxes and savings. Therefore, subtracting income taxes and savings from gross benefits is important to accurately estimate the local economic impacts. (IMPLAN assumes the dollars inputted are to be spent.) The income taxes do not go unspent and the impacts on state and local government are included in this analysis.

To perform this analysis, data from the *Colorado Department of Revenue* regarding average federal and Colorado taxes paid in 2004 by income classes for residents 65 and older was utilized. This data provides the effective tax rate, recognizing the amount of tax an individual actually pays includes tax deductions and exemptions, credits, etc. For the household income \$25,000 to \$35,000, taxes paid as a percentage of federal adjusted gross income were 5.5 percent and 0.5 percent for federal and state taxes, respectively. For the household income \$35,000 to \$50,000, these rates are 7.7 percent and 0.8 percent for federal and state taxes, respectively. (The 2004 tax year is the most recent data available from the *Colorado Department of Revenue* although it is anticipated that the effective tax rate has not changed substantially since that time frame.)

Information from the *Consumer Expenditure Survey* was evaluated to derive the savings rate. For individuals over age 55 in the lower household expenditure pattern (\$25,000 to \$35,000), essentially no monies were devoted to savings and, as such, a 0 percent rate was incorporated into the analysis; however, for the higher household expenditure pattern (\$35,000 to \$50,000), a 5 percent rate is used given the expenditure data.

State and Local Tax Generation

To calculate state and local tax generation, state income taxes paid by recipients on benefit payments are added to taxes paid in all subsequent rounds of spending. For the first, the state taxes are included as described above (0.5 percent or 0.8 percent, depending upon household income level) while IMPLAN calculates corporate, personal income, and business taxes generated from each subsequent round of spending.

Adjustments

Benefit payment data provided by PERA is in 2009 dollars while IMPLAN's data is in 2007 dollars. Given IMPLAN incorporates producer price index (PPI) information and the 2009 PPI is similar to 2007, no adjustment was deemed necessary.

Notes on Impacts

As described above, a number of assumptions were made regarding household expenditures, taxes, and savings. As such, a range of outcomes is likely appropriate and an exact dollar figure is not feasible although results provided here reflect a reasonable measure of the economic and fiscal impacts of the PERA benefit payments.

Also, of note, an economic impact study can never capture the exact benefit as economies are not static.

INTRODUCTION



