



A Profile of Service Sectors

Beartooth Region

Selected Geographies:

Big Horn County, MT; Carbon County, MT; Stillwater County, MT; Sweet Grass
County, MT; Yellowstone County, MT

Benchmark Geographies:

U.S.

Produced by
Headwaters Economics'
Economic Profile System (EPS)
<https://headwaterseconomics.org/eps>

December 6, 2018

About the Economic Profile System (EPS)

EPS is a free web tool created by Headwaters Economics to build customized socioeconomic reports of U.S. counties, states, and regions. Reports can be easily created to compare or aggregate different areas. EPS uses published statistics from federal data sources, including the U.S. Census Bureau, Bureau of Economic Analysis, and Bureau of Labor Statistics.

The Bureau of Land Management and Forest Service have made significant financial and intellectual contributions to the operation and content of EPS.

See <https://headwaterseconomics.org/eps> for more information about the capabilities of EPS. For technical questions, contact Patty Gude at eps@headwaterseconomics.org or telephone 406-599-7425.



headwaterseconomics.org

Headwaters Economics is an independent, nonprofit research group. Our mission is to improve community development and land management decisions.



www.blm.gov

The Bureau of Land Management, an agency within the U.S. Department of Interior, administers 249.8 million acres of America's public lands, located primarily in western states. It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations.



www.fs.fed.us

The Forest Service, an agency of the U.S. Department of Agriculture, administers national forests and grasslands encompassing 193 million acres. The Forest Service's mission is to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations.

Table of Contents

Services Employment

Services Sectors	1
Services Sectors (cont.)	2
Employment Trends	3
Employment Trends (cont.)	4

Services Wages

Wages and Employment	5
Wages and Employment (cont.)	6

Economy

Comparisons	7
Comparisons Over Time	8

Data Sources & Methods	9
Endnotes	10

Note to Users:

This is one of 14 reports that can be created and downloaded from EPS. Topics include land use, demographics, specific industry sectors, the role of non-labor income, the wildland-urban interface, the role of amenities in economic development, and payments to county governments from federal lands. The EPS reports are downloadable as Excel or PDF documents. See <https://headwaterseconomics.org/eps>.

Services

Beartooth Region

Services Sectors

	Big Horn County, MT	Carbon County, MT	Stillwater County, MT	Sweet Grass County, MT	Yellowstone County, MT	Montana	Beartooth Region	U.S.
Total Private Employment, 2016	2,365	2,164	2,640	1,130	70,372	378,463	78,671	126,752,238
Services Total	1,730	1,919	1,246	542	61,804	328,022	67,241	108,079,950
Utilities	23	27	13	2	313	3,080	378	638,917
Wholesale trade	34	48	22	19	5,626	16,643	5,749	6,110,748
Retail Trade	379	276	246	154	10,826	59,582	11,881	15,967,893
Transportation and Warehousing	91	50	17	31	2,789	13,412	2,978	4,729,709
Information	16	34	8	13	1,448	8,503	1,519	3,447,950
Finance and Insurance	71	59	50	41	4,361	16,982	4,582	6,336,795
Real Estate and Rental and Leasing	18	29	8	8	1,061	5,774	1,124	2,111,418
Professional, Scientific, and Tech.	43	84	48	42	3,422	20,616	3,639	8,799,893
Mgmt. of Companies and Enterprises	0	2	250	0	336	3,803	588	3,380,437
Administrative and Support Services	82	17	27	8	2,494	24,473	2,628	11,628,509
Educational Services	0	10	2	0	691	6,175	703	3,677,275
Health Care and Social Assistance	597	283	260	18	14,309	70,286	15,467	19,735,708
Arts, Entertainment, and Recreation	118	447	33	19	1,775	10,712	2,392	2,311,437
Accommodation and Food Services	226	468	171	148	9,103	51,557	10,116	13,704,017
Other Services	32	85	91	39	3,250	16,424	3,497	5,499,244
Non-Services	634	245	1,200	562	8,562	50,342	11,203	18,649,112
Unclassified	0	1	1	1	6	99	9	23,176

This table does not include employment data for government, agriculture, railroads, or the self-employed because these are not reported by County Business Patterns. Estimates for data that were not disclosed are indicated with tildes (-).

Services Sectors

What do we measure on this page?

This page describes the number of jobs in each service sector. The information in this report is useful for exploring the growth of services, details on service sectors, and the mix of high- and low-wage services across locations.

Services: Services comprise 15 service-related sectors at the 2-digit level, according to the North American Industrial Classification System (NAICS).¹ Sectors are: Utilities; Wholesale Trade; Retail Trade; Transportation & Warehousing; Information; Finance & Insurance; Real Estate & Rental & Leasing; Professional, Scientific, & Tech.; Mgmt. of Companies & Enterprises; Administrative & Support Services; Educational Services; Health Care & Social Assistance; Arts, Entertainment, & Recreation; Accommodation & Food Services; and Other Services.

Non-Services: Non-services comprise all industries that are not classified by the federal government as services. Non-service sectors are: Mining; Construction; Manufacturing; and Agriculture, Forestry, Fishing, and Hunting.

In the past some non-service industries, such as manufacturing and mining, were sometimes referred to as "goods-producing" sectors. In today's economy this terminology is no longer useful because many activities that take place in the service industries are part of the process of producing a good. For example, architects who design homes are part of the production process of building a home. Also part of goods production are engineers who design a product that will be manufactured, chemists who design new drugs that become part of pharmaceuticals production, as well as the people who finance these activities and the attorneys who file the patents.

Data on this page were obtained from the U.S. Census Bureau's County Business Patterns (CBP) series. We use this source because it has fewer data gaps (instances when the federal government will not release information to protect the confidentiality of individual businesses) compared to other sources. It also includes both full- and part-time employment. The disadvantage of CBP data is that they do not include employment in government, agriculture, railroads, or the self-employed and as a result under-count the size of industry sectors. Also, CBP data are based on mid-March employment and do not take into account seasonal fluctuations. For these reasons, the data are most useful for showing long-term trends, displaying differences between locations, and showing the relationships among sectors over time.

Some data are withheld by the federal government to avoid the disclosure of potentially confidential information. Headwaters Economics uses data from the U.S. Department of Commerce to estimate these data gaps.² These values are indicated with tildes (~).

Why is it important?

Nationally, services account for more than 95 percent of the net growth in new jobs since 2000. Despite the strong growth of employment in services, the term "services" is often misunderstood. Services consist of a wide mix of jobs including high-wage, high-skilled occupations (e.g., doctors, engineers, software developers) and low-wage, low-skilled occupations (e.g., restaurant workers, tour bus operators). The service sector typically provides services, such as banking and education, rather than creating tangible objects. However, many service sectors such as utilities, engineering, and architecture can be closely associated with the production of goods.

Services

Beartooth Region

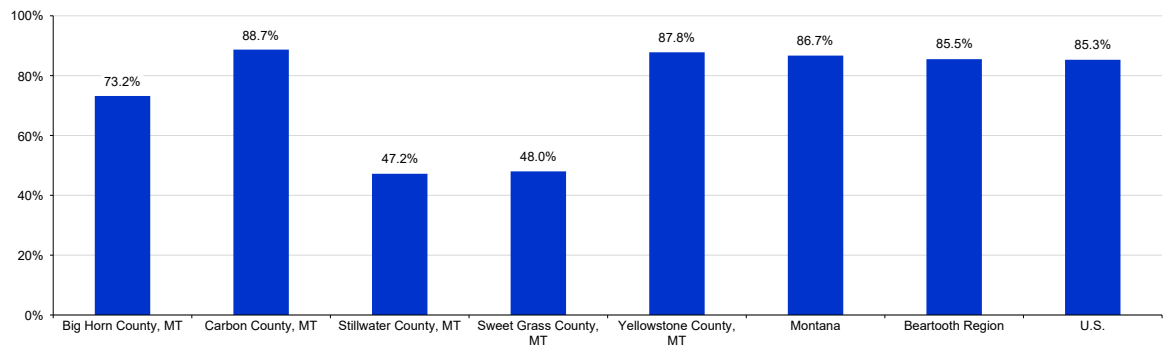
Services Sectors (cont.)

	Big Horn County, MT	Carbon County, MT	Stillwater County, MT	Sweet Grass County, MT	Yellowstone County, MT	Montana	Beartooth Region	U.S.
Services Total, 2016	73.2%	88.7%	47.2%	48.0%	87.8%	86.7%	85.5%	85.3%
Utilities	1.0%	1.2%	0.5%	0.2%	0.4%	0.8%	0.5%	0.5%
Wholesale trade	1.4%	2.2%	0.8%	1.7%	8.0%	4.4%	7.3%	4.8%
Retail Trade	16.0%	12.8%	9.3%	13.6%	15.4%	15.7%	15.1%	12.6%
Transportation and Warehousing	3.8%	2.3%	0.6%	2.7%	4.0%	3.5%	3.8%	3.7%
Information	0.7%	1.6%	0.3%	1.2%	2.1%	2.2%	1.9%	2.7%
Finance and Insurance	3.0%	2.7%	1.9%	3.6%	6.2%	4.5%	5.8%	5.0%
Real Estate and Rental and Leasing	0.8%	1.3%	0.3%	0.7%	1.5%	1.5%	1.4%	1.7%
Professional, Scientific, and Tech.	1.8%	3.9%	1.8%	3.7%	4.9%	5.4%	4.6%	6.9%
Mgmt. of Companies and Enterprises	0.0%	0.1%	9.5%	0.0%	0.5%	1.0%	0.7%	2.7%
Administrative and Support Services	3.5%	0.8%	1.0%	0.7%	3.5%	6.5%	3.3%	9.2%
Educational Services	0.0%	0.5%	0.1%	0.0%	1.0%	1.6%	0.9%	2.9%
Health Care and Social Assistance	25.2%	13.1%	9.8%	1.6%	20.3%	18.6%	19.7%	15.6%
Arts, Entertainment, and Recreation	5.0%	20.7%	1.2%	1.7%	2.5%	2.8%	3.0%	1.8%
Accommodation and Food Services	9.6%	21.6%	6.5%	13.1%	12.9%	13.6%	12.9%	10.8%
Other Services	1.4%	3.9%	3.4%	3.5%	4.6%	4.3%	4.4%	4.3%
Non-Services, 2016	26.8%	11.3%	45.5%	49.7%	12.2%	13.3%	14.2%	14.7%
Unclassified, 2016	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%

This table does not include employment data for government, agriculture, railroads, or the self-employed because these are not reported by County Business Patterns. Estimates for data that were not disclosed are indicated with tildes (~).

Percent of Total Private Employment in Services, 2016

* In 2016, Carbon County, MT had the largest percent of total employment in services (88.7%), and Stillwater County, MT had the smallest (47.2%).



Services Sectors (cont.)

What do we measure on this page?

This page describes the numbers of jobs in services broken out by individual service sectors.

Services consist of 15 service-related sectors shown in the table. Non-services consist of all industries that are not classified by the federal government as services.

Services: Services comprise 15 service-related sectors at the 2-digit level, according to the North American Industrial Classification System (NAICS).¹ Sectors are: Utilities; Wholesale Trade; Retail Trade; Transportation & Warehousing; Information; Finance & Insurance; Real Estate & Rental & Leasing; Professional, Scientific, & Tech.; Mgmt. of Companies & Enterprises; Administrative & Support Services; Educational Services; Health Care & Social Assistance; Arts, Entertainment, & Recreation; Accommodation & Food Services; and Other Services.

Non-Services: Non-services comprise all industries that are not classified by the federal government as services. Non-service sectors are: Mining; Construction; Manufacturing; and Agriculture, Forestry, Fishing, and Hunting.

Data on this page were obtained from the U.S. Census Bureau's County Business Patterns (CBP) series. We use this source because it has fewer data gaps (instances when the federal government will not release information to protect the confidentiality of individual businesses) compared to other sources. It also includes both full- and part-time employment. The disadvantage of CBP data is that they do not include employment in government, agriculture, railroads, or the self-employed and as a result under-count the size of industry sectors. Also, CBP data are based on mid-March employment and do not take into account seasonal fluctuations. For these reasons, the data are most useful for showing long-term trends, displaying differences between locations, and showing the relationships among sectors over time.

Some data are withheld by the federal government to avoid the disclosure of potentially confidential information. Headwaters Economics uses data from the U.S. Department of Commerce to estimate these data gaps.² These values are indicated with tildes (~).

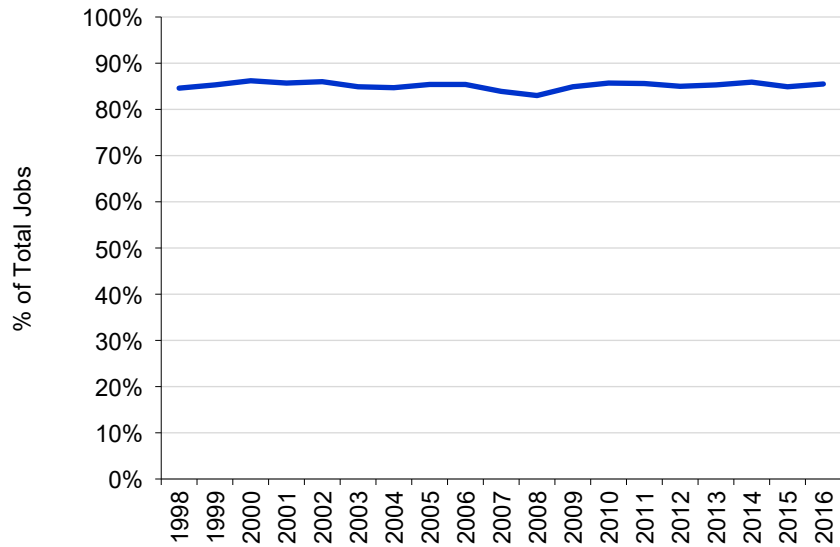
Why is it important?

Nationally, services account for more than 95 percent of the growth in new jobs since 2000. Despite the strong growth of employment in services, the term "services" is often misunderstood. Services consist of a wide mix of jobs including high-wage, high-skilled occupations (e.g., doctors, engineers, software developers) and low-wage, low-skilled occupations (e.g., restaurant workers, tour bus operators). The service sector typically provides services, such as banking and education, rather than creating tangible objects. However, many service sectors such as utilities, engineering, and architecture are closely associated with the production of goods.

Employment Trends

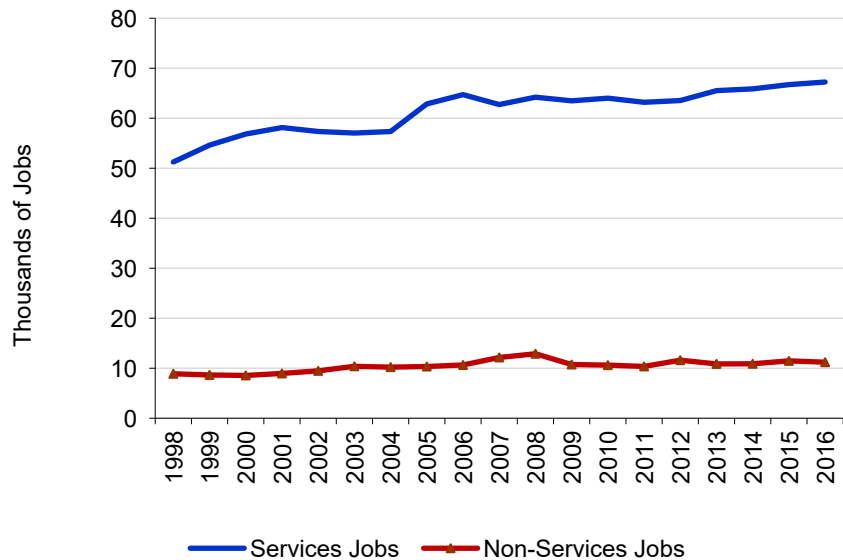
- In 1998, employment in services was 85% of total jobs. In 2016, employment in services was 86% of total jobs.

Percent of Total Private Employment in Services, Beartooth Region



- From 1998 to 2016, employment in services grew from 51,247 to 67,241 jobs, an increase of 31 percent.
- From 1998 to 2016, employment in non-services grew from 8,890 to 11,203 jobs, an increase of 26 percent.

Total Jobs in Services and Non-Services, Beartooth Region



Employment Trends

What do we measure on this page?

This page describes employment trends in services as a percent of all jobs, and compares services to non-services over time.

Why is it important?

Services account for more than 95 percent of the growth in new jobs since 2000.^{3, 4} When services are a large proportion of existing jobs and new jobs in the local economy, it may be important for decision makers to evaluate whether policies and management actions play a role in stimulating new service industry growth. Policies and management actions can create a setting that attracts and retains service businesses.^{5, 6} For example, recreational and environmental amenities can attract "footloose" (i.e., able to live almost anywhere) service workers. Also, it is possible that a shift toward a service-based economy corresponds with a shift in values and expectations that decision makers should be aware of.

The figure at the bottom of this page shows the growth of service industries relative to the rest of the economy. A common trend is for most of the growth coming from services, and for there to be a significant loss of manufacturing jobs. A partial explanation for the loss of manufacturing jobs and the growth of service jobs may be attributed to how industries are counted in official statistics. Some functions, such as accounting and marketing, are sometimes outsourced and therefore now counted as part of services rather than manufacturing. In other words, the U.S. still makes things, but engineering, finance, and marketing are no longer taking place in the factory and therefore these jobs are no longer counted as "manufacturing." According to one estimate, about a quarter of the decline in manufacturing in the last 60 years may be attributable to a shift in how industries are measured.⁷

Data on this page were obtained from the U.S. Census Bureau's County Business Patterns (CBP) series. We use this source because it has fewer data gaps (instances when the federal government will not release information to protect the confidentiality of individual businesses) compared to other sources. It also includes both full- and part-time employment. The disadvantage of CBP data is that they do not include employment in government, agriculture, railroads, or the self-employed and as a result under-count the size of industry sectors. Also, CBP data are based on mid-March employment and do not take into account seasonal fluctuations. For these reasons, the data are most useful for showing long-term trends, displaying differences between locations, and showing the relationships among sectors over time.

The line charts that show employment trends in services begin in 1998 because that is the year the U.S. Census Bureau (and County Business Patterns) shifted to using the new North American Industrial Classification System (NAICS).⁸

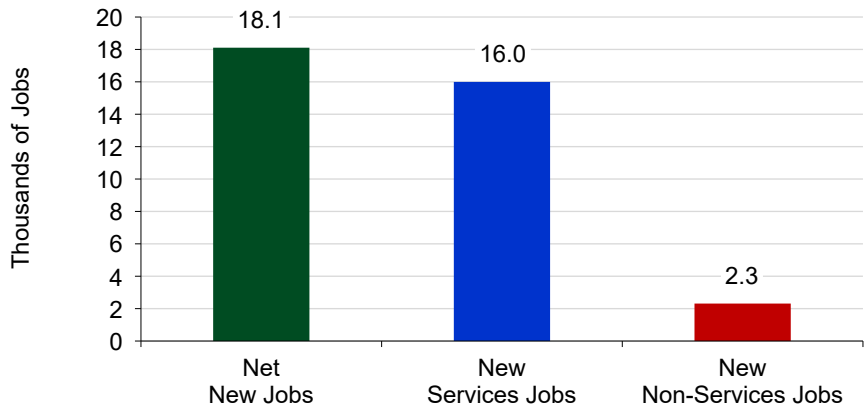
Services

Beartooth Region

Employment Trends (cont.)

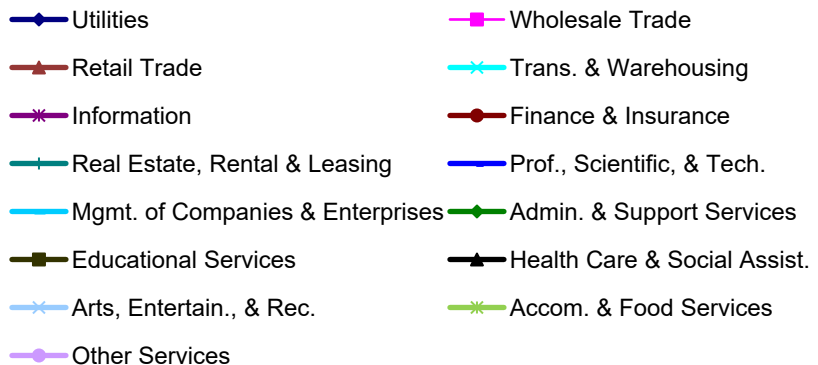
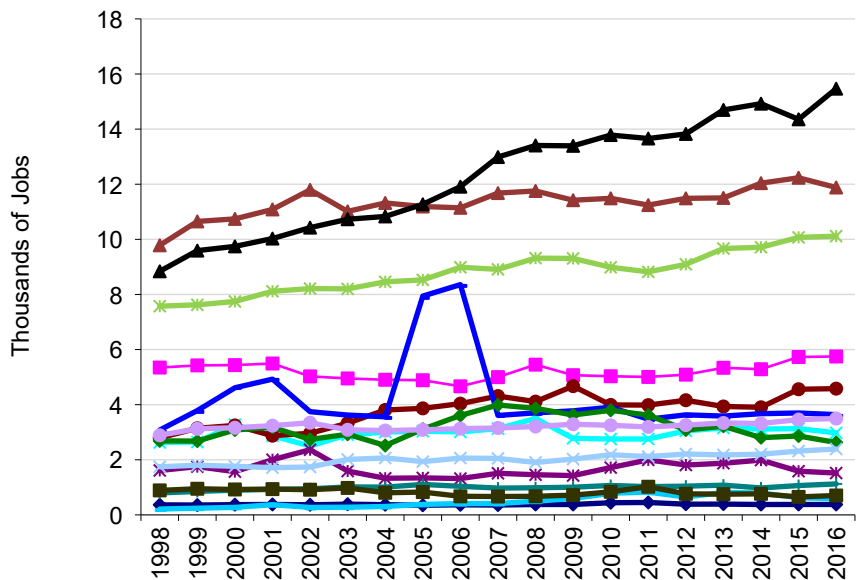
- From 1998 to 2016, employment in services increased by 15,994 jobs.
- From 1998 to 2016, employment in non-services increased by 2,313 jobs.

New Jobs in Services & Non-Services, Beartooth Region, 1998-2016



- In 2016, the top three service sectors in terms of employment were health care & social assist. (15,467 jobs), retail trade (11,881 jobs), and accom. & food services (10,116 jobs).
- From 1998 to 2016, the three service sectors that had the most job growth were health care & social assist. (from 8,840 jobs to 15,467 jobs, a 75% change), accom. & food services (from 7,574 to 10,116 jobs, a 34% change) and retail trade (from 9,783 to 11,881 jobs, a 21% change)

Jobs in Service Sectors, Beartooth Region, 1998-2016



Employment Trends (cont.)

What do we measure on this page?

This page compares the size of employment growth in services to non-services and shows employment trends in service sectors.

Data on this page were obtained from the U.S. Census Bureau's County Business Patterns (CBP) series. We use this source because it has fewer data gaps (instances when the federal government will not release information to protect the confidentiality of individual businesses) compared to other sources. It also includes both full- and part-time employment. The disadvantage of CBP data is that they do not include employment in government, agriculture, railroads, or the self-employed and as a result under-count the size of industry sectors. Also, CBP data are based on mid-March employment and do not take into account seasonal fluctuations. For these reasons, the data are most useful for showing long-term trends, displaying differences between locations, and showing the relationships among sectors over time.

The line chart that shows employment trends in services begins in 1998 because that is the year the Census Bureau (and County Business Patterns) shifted to using the new North American Industrial Classification System (NAICS).

Why is it important?

In the U.S., and in many counties and regions across the country, service sectors have created the majority of new jobs in recent decades.⁹ Because the bulk of recent economic growth has been related to services and there are wide discrepancies between the skills and wages of service sectors, it is important to understand the mix of industries that make up services.

The chart New Jobs in Services and Non-Services illustrates whether services or non-services account for new job growth. The line chart Jobs in Service Sectors shows the components of service sectors to indicate which service industries are driving job growth.

Services

Beartooth Region

Wages and Employment

Wages*, 2017	Big Horn County, MT	Carbon County, MT	Stillwater County, MT	Sweet Grass County, MT	Yellowstone County, MT	Montana	Beartooth Region	U.S.
All Sectors, 2017 (2017 \$s)	\$41,240	\$34,102	\$60,475	\$49,585	\$46,291	\$42,045	\$46,224	\$55,390
Private	\$44,068	\$32,605	\$64,987	\$52,138	\$45,426	\$40,891	\$45,781	\$55,338
Services	\$31,535	\$28,572	\$31,527	\$26,591	\$43,003	\$38,658	\$42,026	\$53,530
Trade, Transportation, Utilities	\$34,229	\$35,964	\$31,299	\$32,220	\$41,950	\$38,067	\$41,389	\$46,151
Information	\$32,870	\$24,544	\$71,831	\$15,845	\$51,537	\$51,904	\$50,595	\$105,722
Financial Activities	\$35,988	\$53,412	\$37,267	\$41,494	\$63,075	\$56,708	\$61,842	\$92,023
Professional and Business	\$36,507	\$34,894	\$60,706	\$38,673	\$51,378	\$50,921	\$50,936	\$72,525
Education and Health	\$39,581	\$35,398	\$31,714	\$27,157	\$55,347	\$46,171	\$53,968	\$49,201
Leisure and Hospitality	\$17,432	\$17,666	\$16,689	\$15,734	\$18,806	\$18,625	\$18,616	\$23,188
Other Services	\$24,227	\$19,660	\$22,733	\$25,305	\$28,995	\$29,178	\$28,560	\$37,320
Non-Services	\$70,242	\$48,858	\$90,779	\$80,033	\$61,220	\$52,728	\$65,584	\$63,961
Natural Resources and Mining	\$71,770	\$61,311	na	\$96,281	\$70,366	\$64,779	\$75,845	\$56,859
Construction	na	\$43,781	na	\$32,660	\$55,038	\$50,370	\$54,290	\$60,735
Manufacturing (Incl. Forest Prod.)	na	\$32,561	\$39,606	\$36,945	\$68,164	\$48,758	\$65,346	\$66,840
Government	\$38,167	\$39,780	\$36,102	\$35,128	\$53,508	\$47,208	\$49,210	\$55,686

Percent of Employment*, 2017	Big Horn County, MT	Carbon County, MT	Stillwater County, MT	Sweet Grass County, MT	Yellowstone County, MT	Montana	Beartooth Region	U.S.
Total Private	52.2%	79.1%	84.4%	85.0%	89.3%	81.7%	87.1%	85.1%
Services	35.3%	63.4%	36.7%	44.4%	77.4%	68.8%	73.2%	70.3%
Trade, Transport., Utilities	12.4%	14.0%	11.6%	11.3%	24.2%	19.8%	22.8%	18.9%
Information	0.4%	1.1%	0.6%	0.9%	1.4%	1.4%	1.3%	1.9%
Financial Activities	2.0%	3.0%	1.3%	3.5%	4.9%	4.6%	4.6%	5.6%
Professional and Business	2.9%	6.1%	4.0%	3.2%	10.8%	8.9%	10.0%	14.1%
Education and Health	8.3%	11.5%	8.5%	7.9%	17.8%	15.9%	16.7%	15.4%
Leisure and Hospitality	8.4%	24.3%	8.7%	13.5%	13.9%	14.1%	13.8%	11.1%
Other Services	0.8%	3.2%	2.0%	4.3%	4.3%	3.9%	4.0%	3.1%
Non-Services	16.9%	15.7%	47.7%	40.6%	11.9%	13.0%	13.9%	14.7%
Natural Resources and Mining	15.9%	6.1%	na	30.0%	0.9%	2.6%	2.2%	1.3%
Construction	na	7.2%	na	5.7%	6.4%	6.0%	5.9%	4.8%
Manufacturing (Incl. Forest Prod.)	na	2.4%	7.7%	4.9%	4.6%	4.3%	4.4%	8.6%
Government	47.7%	20.9%	15.5%	15.0%	10.7%	18.3%	12.9%	14.9%

* These tables show data from the Bureau of Labor Statistics, which does not report data for proprietors or the value of benefits and uses slightly different industry categories than those shown on previous pages of this report.

Wages and Employment

What do we measure on this page?

This page describes wages (in real terms) in service sectors compared to wages in non-service sectors and government. It also describes the percent of jobs in each category. Shown together, these illustrate where the high- and low-wage occupations are located (by geography and industry) and whether the jobs in each category comprise a large or small proportion of total employment.

The wage and employment data on this page are from the Bureau of Labor Statistics, which does not report data for proprietors or the value of benefits and uses slightly different industry categories than those shown on the initial pages of this report.^{10, 11}

Depending on the geographies selected, some data may not be available due to disclosure restrictions. Some data are withheld by the federal government to avoid the disclosure of potentially confidential information. Headwaters Economics uses custom data aggregations calculated from various NAICS codes. Occasionally, one or more data values underlying these aggregations are non-disclosed. These values are indicated with tildes (~).

Why is it important?

While nationally nearly all new jobs since 1990 have been in services, they are not equally distributed across the country. Not all counties are able to attract and retain the relatively high-wage services. Some counties may have high average annual wages in a particular sector but few people employed in that sector. Others may have low wages in a particular sector and many people employed in that sector.

Additional research would be needed to determine whether a location has the elements that need to be in place to attract and keep high-wage services workers. Those elements may include access to reliable transportation including airports,¹² amenities,¹³ recreation opportunities, a trained workforce, and good schools.

Services

Beartooth Region

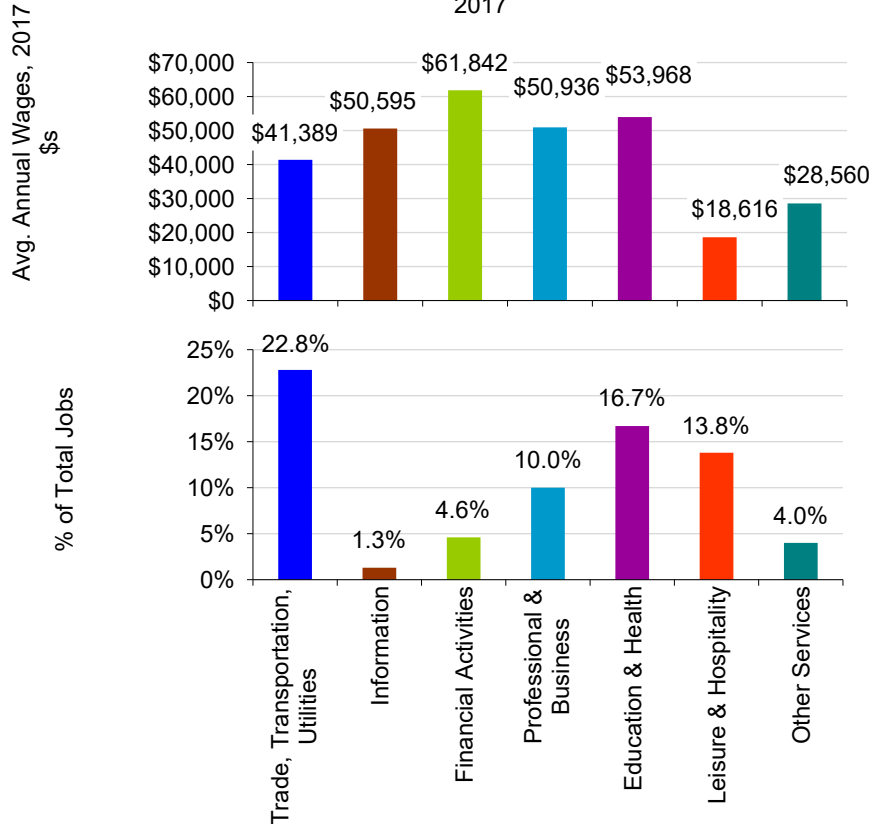
Wages and Employment (cont.)

- In 2017, the three service sectors that paid the highest wages were financial activities (\$61,842), education & health (\$53,968), and professional & business (\$50,936).

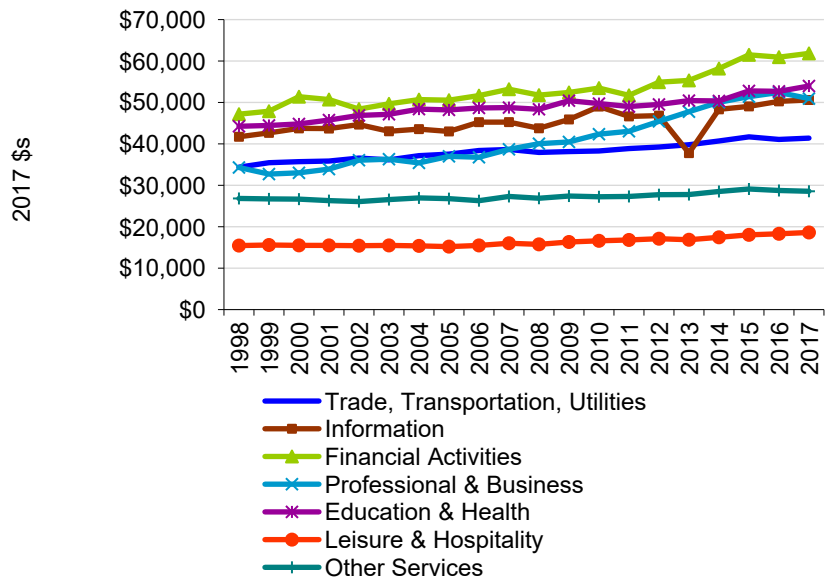
- In 2017, the three service sectors that employed the highest proportion of people were trade, transportation, utilities (22.8% of total jobs), education & health (16.7% of total jobs), and leisure & hospitality (13.8% of total jobs).

- From 1998 to 2017, the three service sectors that had the largest increase in average annual wages were professional & business (from \$34,301 to \$50,936, an increase of 48%), financial activities (from \$47,171 to \$61,842 an increase of 31%), and education & health (from \$44,252 to \$53,968, an increase of 22%).

Avg. Annual Wages & Jobs in Service Sectors, Beartooth Region, 2017



Avg. Annual Wages in Service Sectors, Beartooth Region, 1998-2017



Wages and Employment (cont.)

What do we measure on this page?

This page describes average wages (in real terms) and employment levels in different service sectors. It also shows average wage trends (in real terms) for service sectors at the regional level.

The graph Avg. Annual Wages in Service Sectors is useful for describing how many people are working in relatively high- and low-wage service sectors. The line chart Avg. Annual Wages in Service Sectors is useful for comparing wage trends by service sector.

The wage and employment data on this page are from the Bureau of Labor Statistics, which does not report data for proprietors or the value of benefits and uses slightly different industry categories than those shown on the initial pages of this report.^{10, 11}

Depending on the geographies selected, some data may not be available due to disclosure restrictions.

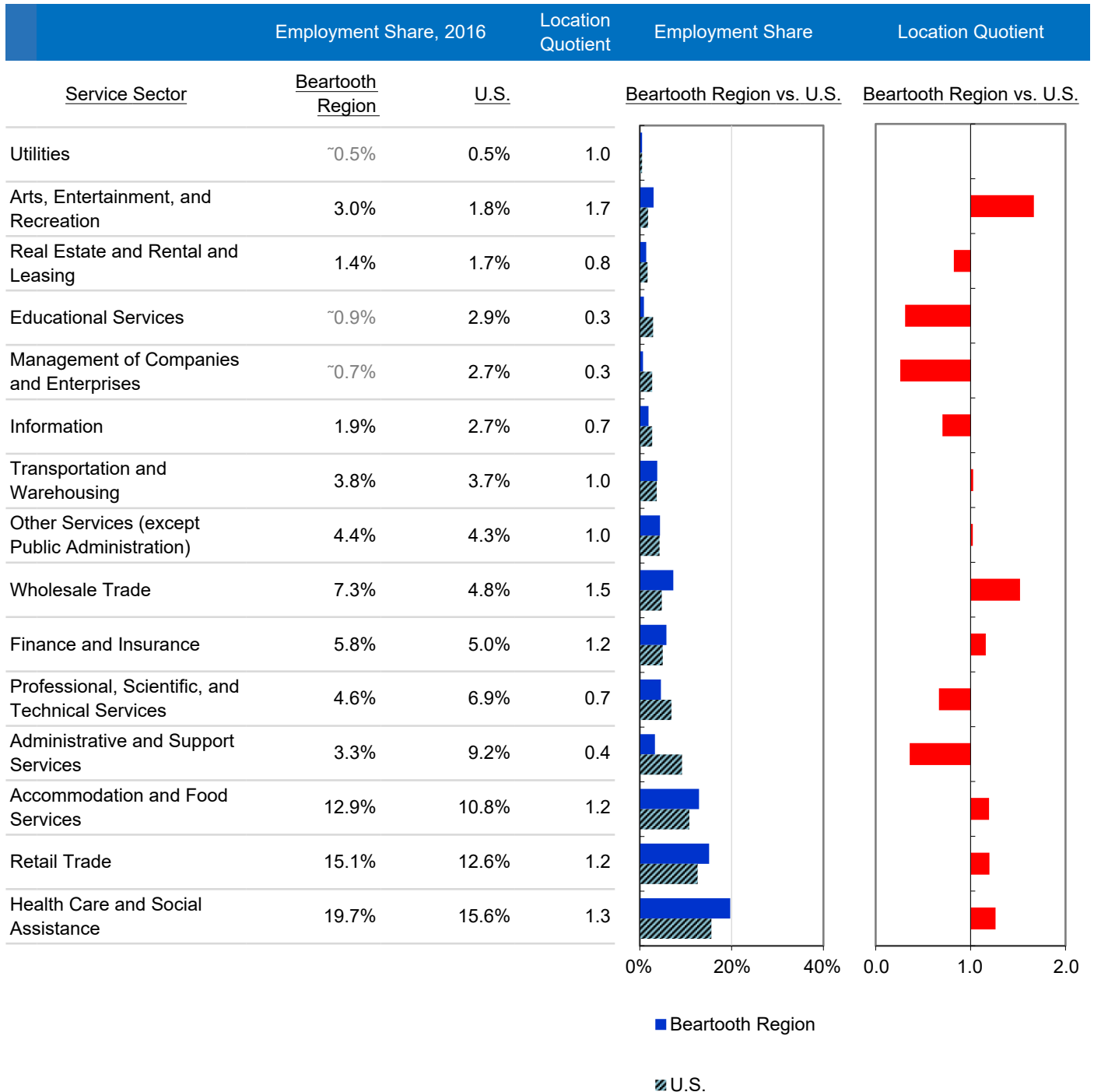
Why is it important?

While much of the growth in the economy has been in service industries, they do not all pay the same wages or employ the same number of people. Sometimes the lowest-wage service occupations employ the most people, and a few high-wage service-related occupations employ only a few people. For a county or region to perform well economically, it helps to have a diversity of service industries and a large number of people employed in the higher-wage components of services.

Services

Beartooth Region

Comparisons



- In 2016, arts, entertainment, and recreation had the highest location quotient score (1.7) and management of companies and enterprises had the lowest (0.3).

Data Sources: U.S. Department of Commerce. 2018. Census Bureau, County Business Patterns, Washington, D.C.

Find more reports like this at headwaterseconomics.org/eps

Comparisons

What do we measure on this page?

This page describes how the region is specialized in services employment. The chart illustrates the difference between the region and the selected benchmark area¹⁴ by comparing jobs in services as a share of total employment and with location quotients. (If no custom benchmark area was selected, EPS defaults to benchmarking against the U.S.)

Location quotient¹⁵: A ratio that compares an industry's share of total employment in a region to the benchmark. More precisely, it is the percent of local employment in a sector divided by the percent employment in the same sector in the benchmark area. In other words, it is a ratio that measures specialization using the benchmark area for comparison. A location quotient of more than 1.0 means the local area is more specialized in that sector relative to the benchmark area. A location quotient of less than 1.0 means it is less specialized.¹⁶

Another way to think about location quotients is as a measure of whether a place produces enough goods or services from an industry to satisfy local demand for those goods or services. Results above or below the 1.0 standard indicate the degree to which a place may import or export a good or service. Although there is no precise cutoff, location quotients above 2.0 indicate a strong industry concentration (and that an area is likely exporting goods or services) and those less than 0.5 indicate a weak industry concentration (and that an area is likely importing goods or services).

Why is it important?

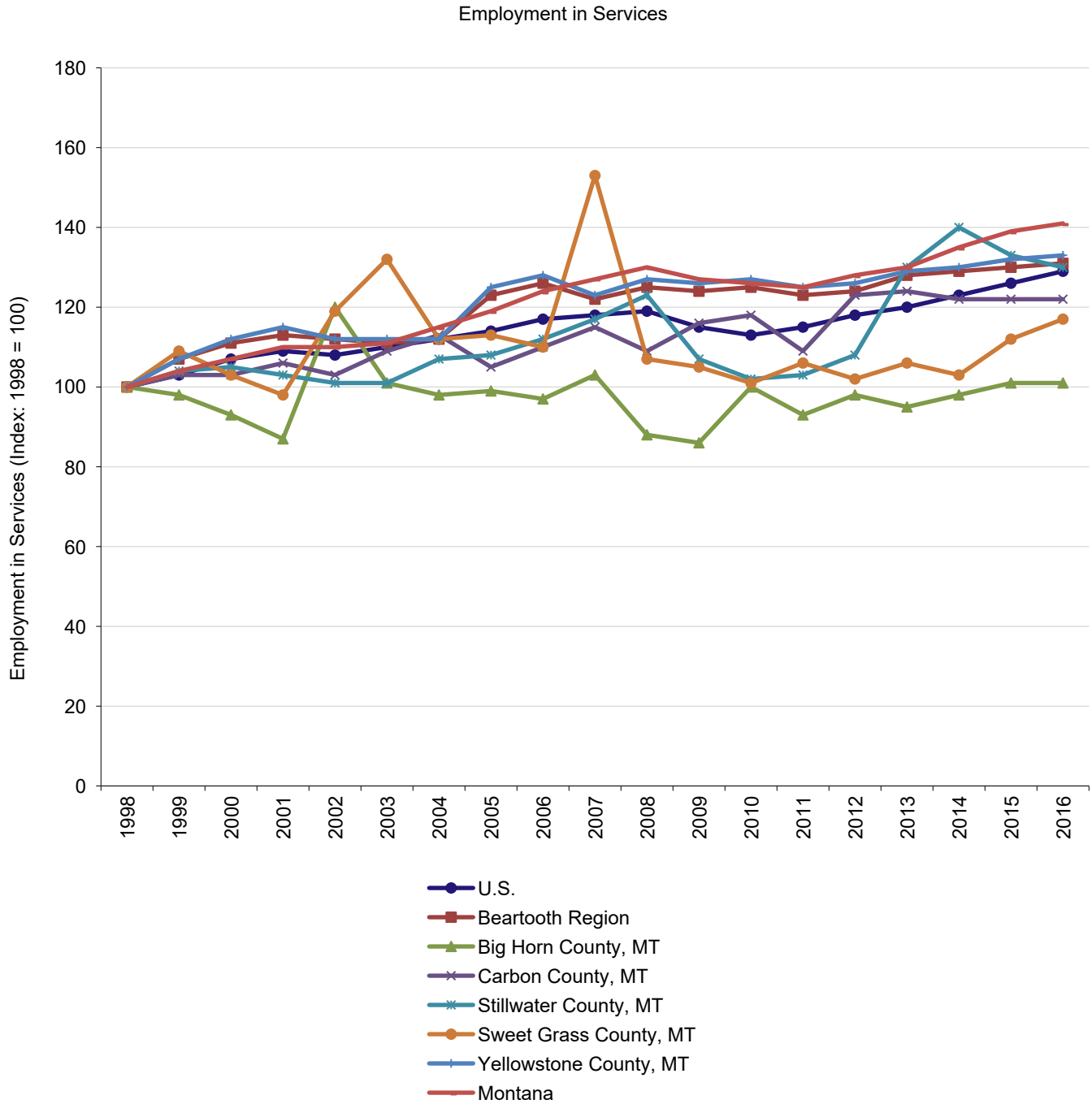
Areas that are less specialized ($LQ < 1.0$) may indicate opportunities for business expansion. Areas that are more specialized ($LQ > 1.0$) may indicate that the selected region produces more than it needs in that particular industry and exports goods and services to outside markets.

A few caveats: (1) A large location quotient for a particular sector does not necessarily mean that sector is a significant contributor to the economy. (2) LQs greater than 1.0 only suggest potential export capacity when compared to the benchmark area and do not take into account local demand. Local demand may be greater than average, and therefore all goods and services may be consumed locally (i.e., not exported). (3) LQs can change from year to year. (4) LQs can vary when one uses income or wage data rather than employment.

Services

Beartooth Region

Comparisons Over Time



- From 1998 to 2016, Beartooth Region had the fastest rate of change in services employment and Big Horn County, MT had the slowest.

Comparisons Over Time

What do we measure on this page?

This page compares the change in services employment for all selected locations and the benchmark area.¹⁴ The information is indexed (1998=100) so that data from locations with different-sized economies can be compared. Indexing makes it easier to understand the relative rate of growth or decline of services employment over time.¹

Index: Indexed numbers are compared with a base value. In the line chart, employment in 1998 is the base value and is set to 100. The employment values for subsequent years are expressed as 100 times the ratio to the base value. The indexing used in the line chart enables easier comparisons between geographies over time. (If many locations are selected, it may be difficult to read the figure on this page.)

The line chart begins in 1998 because that is the year the Census Bureau and County Business Patterns shifted to using the new North American Industrial Classification System (NAICS).

Why is it important?

Not all locations have attracted or lost service sectors and employment at the same rate.¹⁷

An indexed chart illustrates where the rate of services growth or decline has been the fastest. Lines above 100 indicate positive absolute growth while those below 100 show absolute decline. The steeper the curve, the faster the rate of change.

This line chart can also be used to examine differences in volatility (i.e., year-to-year fluctuations) of growth or decline between locations.

Data Sources & Methods

The EPS Services report uses statistics from public government sources. All data used in EPS can be readily verified with the original sources:

- **County Business Patterns**
Census Bureau, U.S. Department of Commerce
<https://www.census.gov/programs-surveys/cbp.html>
Contacts:
<https://www.census.gov/about/contact-us.html>
- **Quarterly Census of Employment and Wages**
Bureau of Labor Statistics, U.S. Department of Labor
<https://www.bls.gov/cew>
Contacts:
<https://www.bls.gov/bls/contact.htm>

EPS core approaches

EPS is designed to focus on long-term trends across a range of important measures. Trend analysis provides a more comprehensive view of changes than spot data for select years. We encourage users to focus on major trends rather than absolute numbers. EPS displays detailed industry-level data to show changes in the composition of the economy over time and the mix of industries at points in time. EPS employs cross-sectional benchmarking – comparing smaller areas such as counties to larger regions, states, and the nation – to give a sense of relative performance. EPS allows users to aggregate data for multiple locations to allow for more sophisticated cross-sectional comparisons.

Adjusting dollar figures for inflation

Because a dollar in the past was worth more than a dollar today, data reported in current dollar terms should be adjusted for inflation. The U.S. Department of Commerce reports personal income figures in terms of current dollars. All income data in EPS are adjusted to real (or constant) dollars using the Consumer Price Index. Figures are adjusted to the latest date for which the annual Consumer Price Index is available.

Data gaps and estimation

Some data are withheld by the federal government to avoid the disclosure of potentially confidential information. Headwaters Economics uses supplemental data from the U.S. Department of Commerce to estimate these data gaps. These are indicated in italics in tables. Documentation explaining methods developed by Headwaters Economics for estimating disclosure gaps is available at <https://headwaterseconomics.org/eps>.

Endnotes

- 1 - The definitions of the service sectors can be found in the online NAICS manual available from the U.S. Census Bureau at <https://www.census.gov/eos/www/naics/>, and a description of services specifically is available from <https://www.census.gov/econ/services.html>.
- 2 - Documentation explaining methods developed by Headwaters Economics for estimating disclosure gaps is available at <https://headwaterseconomics.org/eps>.
- 3 - The Bureau of Labor Statistics provides a detailed overview of service industries (<https://www.bls.gov/iag/tgs/iag07.htm>) as well as projections of where new jobs will be created (https://www.bls.gov/careeroutlook/2017/data-on-display/projections-industry-sectors.htm?view_full). For example, "...of the 11.5 million new jobs BLS projects over the decade, about 10.5 million—more than 90 percent—will be in service-providing industries."
- 4 - For a review of the role of services in the western U.S., see Shumway JM and Otterstrom SM. 2001. Spatial Patterns of Migration and Income Change in the Mountain West: The Dominance of Service-Based, Amenity-Rich Counties. *Professional Geographer* 53(4): 492–502. <https://onlinelibrary.wiley.com/doi/abs/10.1111/0033-0124.00299>.
- 5 - To read more about the attraction of high-skilled service workers to places with amenities and quality of life (referred to by some as the "creative class"), see the U.S. Department of Agriculture's Economic Research Service: <https://www.ers.usda.gov/amber-waves/2007/april/the-creative-class-a-key-to-rural-growth/> (*The Creative Class: Key to Rural Growth*). This website links to creative class and amenity scores for every county in the nation. It may also be useful to run the EPS Land Use report to learn about the presence of national parks and other forms of protected lands, and the EPS Public Land Amenities report to investigate whether a connection exists between local amenities and economic growth. Reports can be downloaded at <https://headwaterseconomics.org/eps>.
- 6 - For a critique of the Creative Class, see: Hoyman M and Faricy C. 2008. It Takes a Village: A Test of the Creative Class, Social Capital, and Human Capital Theories. *Urban Affairs Review* 44: 311-332. <http://uar.sagepub.com/content/44/3/311>.
- 7 - See Berlingieri G. 2014. Outsourcing and the shift from manufacturing to services. VOX. Washington, DC: Center for Economic and Policy Research. <https://voxeu.org/article/outsourcing-and-shift-manufacturing-services>.
- 8 - For an overview of how historical changes in employment have affected rural America, see Whitenar LA and McGranahan DA. 2003. Rural America: Opportunities and Challenges. *Amber Waves* 1(1): 1-8. https://www.agclassroom.org/teen/ars_pdf/social/amber/rural_america.pdf.

Endnotes (cont.)

- 9 - To compare employment trends in services to other sectors, run the EPS Socioeconomic Measures report at <https://headwaterseconomics.org/eps>. Charts in that report display all sectors over time. It may be useful to see whether employment in services follows employment in other sectors. For example, in the early 1980s in counties with mining activity, service employment often went up and down with mining employment. In some counties this relationship held until the early 1990s, after which service employment began to grow even when mining declined. By viewing line charts and the relationships among sectors over time, one can develop hypotheses that can be tested via other means (for example, by closer examination of the components of the service sector, and by a review of the literature).
- 10 - For an overview of how the Bureau of Labor Statistics treats employment, see <https://www.bls.gov/bls/employment.htm>. For an overview of how the Bureau of Labor Statistics treats pay and benefits, see <https://www.bls.gov/bls/wages.htm>.
- 11 - Employment and wage estimates are available from the Bureau of Labor Statistics for more than 800 occupations. Looking at services by occupation rather than by sector or industry is helpful since wages vary dramatically across occupations associated with different services. For more information, see <https://www.bls.gov/oes>.
- 12 - For a peer-reviewed journal article and interactive web tool on the importance of transportation to attracting high-wage "knowledge-based" workers to areas with high amenities, see Rasker R, Gude PH, Gude JA, and van den Noort J. 2009. The Economic Importance of Air Travel in High-Amenity Rural Areas. *Journal of Rural Studies* 25(2009): 343-353, available at <https://headwaterseconomics.org/dataviz/three-wests/>, and https://headwaterseconomics.org/wp-content/uploads/Rasker_et_al_2009_Three_Wests.pdf.
- 13 - Knapp TA and Graves PE. 1989. On the Role of Amenities in Models of Migration and Regional Development. *Journal of Regional Science* 29(1): 71-87. This article specifically captures the idea that amenity values are capitalized into wages.
- 14 - The term "benchmark" in this report should not be construed as having the same meaning as in the National Forest Management Act (NFMA).
- 15 - $LQ = (e_i/e)$ divided by (E_i/E)
Where: e_i = Local employment in industry i ; e = Total local employment; E_i = U.S. employment in industry i ;
 E = Total U.S. employment.
- 16 - A succinct definition of a location quotient is offered by Indiana Business Research Center at IU's Kelley School of Business. <http://www.incontext.indiana.edu/2006/march/1.as>.
- 17 - To verify the growth in services nationwide, in terms of jobs and personal income, visit the Bureau of Economic Analysis' interactive web site and select tables SA05 and SA25: <https://apps.bea.gov/iTable/iTable.cfm?acrdn=7&isuri=1&reqid=70&step=1#reqid=70&step=1&isuri=1>.