

Broad Industry Sector Trends in Massachusetts, 1998-2018

A MassEconmix Report



PIONEER INSTITUTE
PUBLIC POLICY RESEARCH

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This report is a publication of Pioneer Opportunity, which seeks to keep Massachusetts competitive by promoting a healthy business climate, transparent regulation, small business creation in urban areas and sound environmental and development policy. Current initiatives promote market reforms to increase the supply of affordable housing, reduce the cost of doing business, and revitalize urban areas.



Infogroup is the provider of the Licensed Database used to create the Your-economy Time Series (YTS). This work/research was authorized to use YTS through the Business Dynamics Research Consortium (BDRC) by the University of Wisconsin-System's Institute for Business and Entrepreneurship. The contents of this publication are solely the responsibility of the authors.

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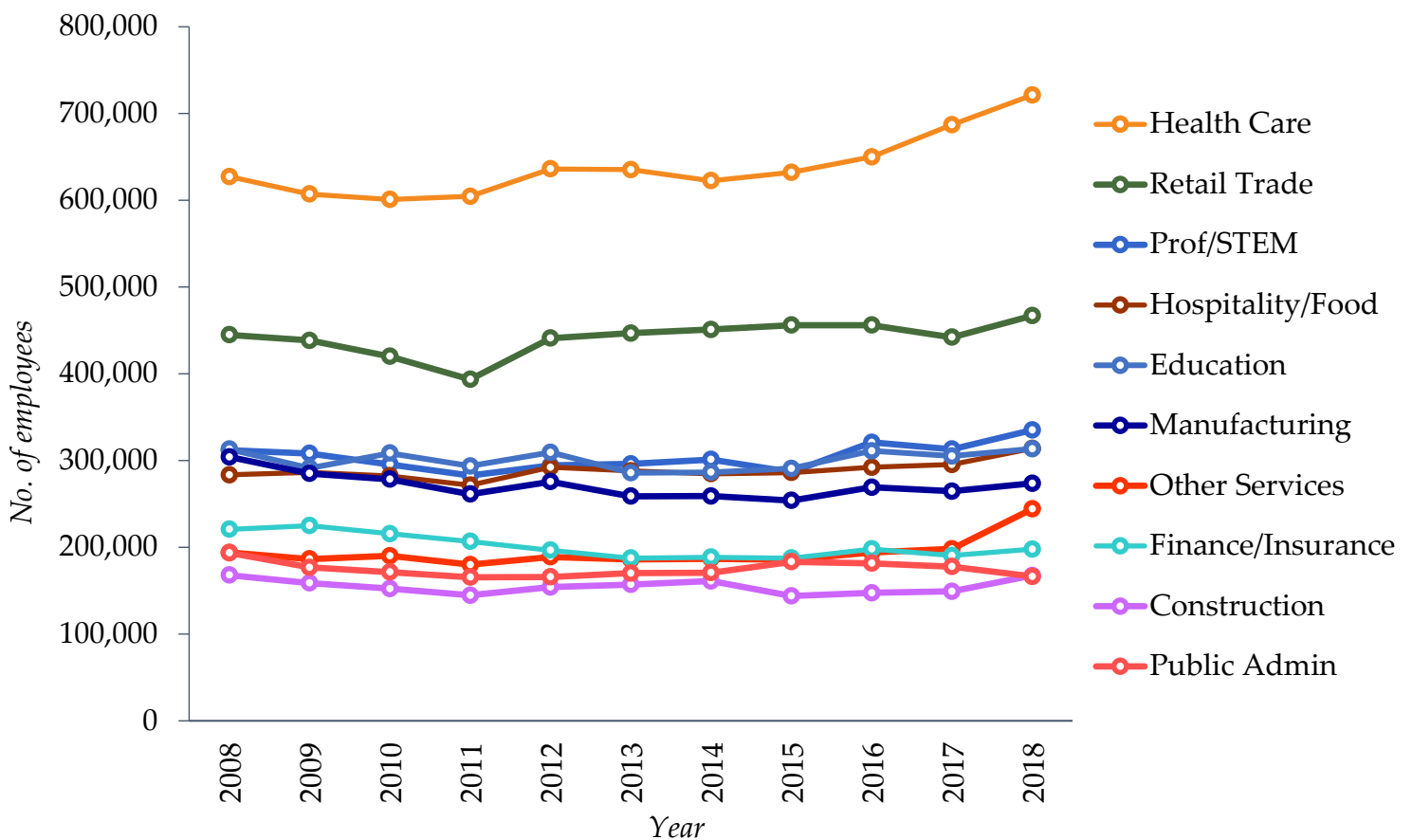
Summary

In Massachusetts, Healthcare and Social Assistance is the most common industry to work in, and Educational Services is the most economically specialized industry. The Healthcare and Social Assistance industry also has the most individual employers in the state. The industry with the most firms headquartered in Massachusetts is Professional, Scientific, and Technical Services.

Between 2008 and 2018, Mining, Quarrying, and Oil and Gas Extraction has been the fastest-growing industry in Massachusetts in terms of employment, while Public Administration has been the fastest-shrinking. The average number of workers at an individual establishment is the largest in the Utilities industry and the smallest in the Agriculture, Forestry, Fishing, and Hunting industry.

Basic Metrics of Growth

Number of Employees by Sector and Year Among Top 10 Sectors

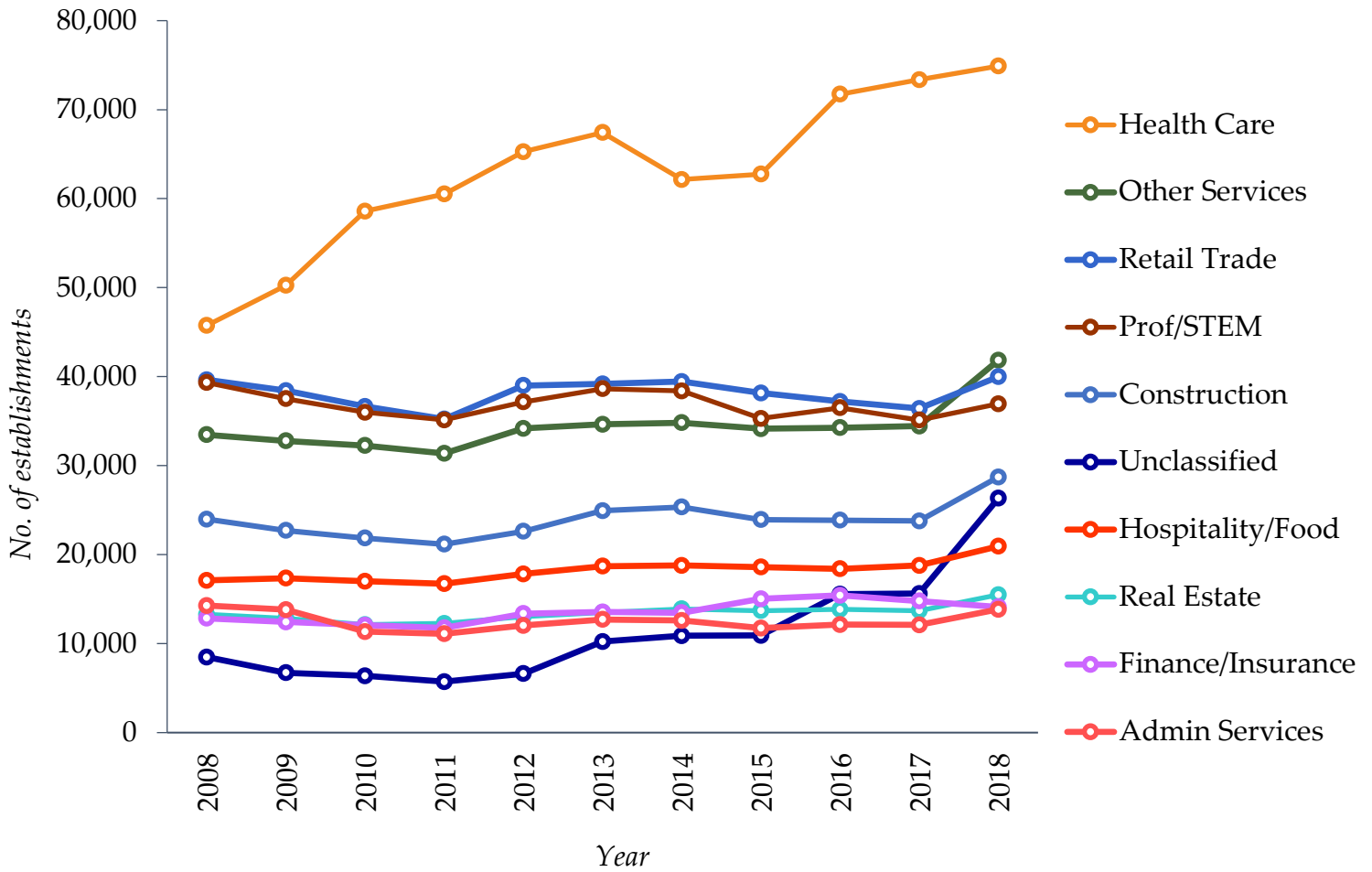


Employment Growth by Sector, 2008-2018

<i>Name of Sector</i>	<i>No. of Employees in 2008</i>	<i>No. of Employees in 2018</i>	<i>Employment Growth, 2008-2018</i>
Unclassified ¹	42,572	107,943	153.6%
Mining/Extraction	1,388	2,407	73.4%
Management	6,027	10,397	72.5%
Arts/Entertainment	58,383	86,887	48.8%
Agriculture/Forestry	3,771	4,952	31.3%
Other Services	193,947	244,265	25.9%
Healthcare	627,234	721,274	15.0%
Real Estate	92,727	104,281	12.5%
Hospitality/Food	283,445	313,925	10.8%
Information	120,058	130,160	8.4%
Professional/STEM	311,739	335,202	7.5%
Retail Trade	444,892	466,994	5.0%
Education	312,996	313,510	0.2%
Construction	167,844	167,417	-0.3%
Utilities	15,624	15,273	-2.2%
Admin Services	114,040	111,440	-2.3%
Transportation	84,523	81,351	-3.8%
Manufacturing	304,177	273,767	-10.0%
Finance/Insurance	220,782	197,765	-10.4%
Wholesale Trade	170,295	146,859	-13.8%
Public Administration	193,624	166,267	-14.1%

¹ Used to denote missing data, or otherwise business types that don't neatly correspond to categories in the North American Industry Classification System.

Number of Establishments by Sector and Year Among Top 10 Sectors

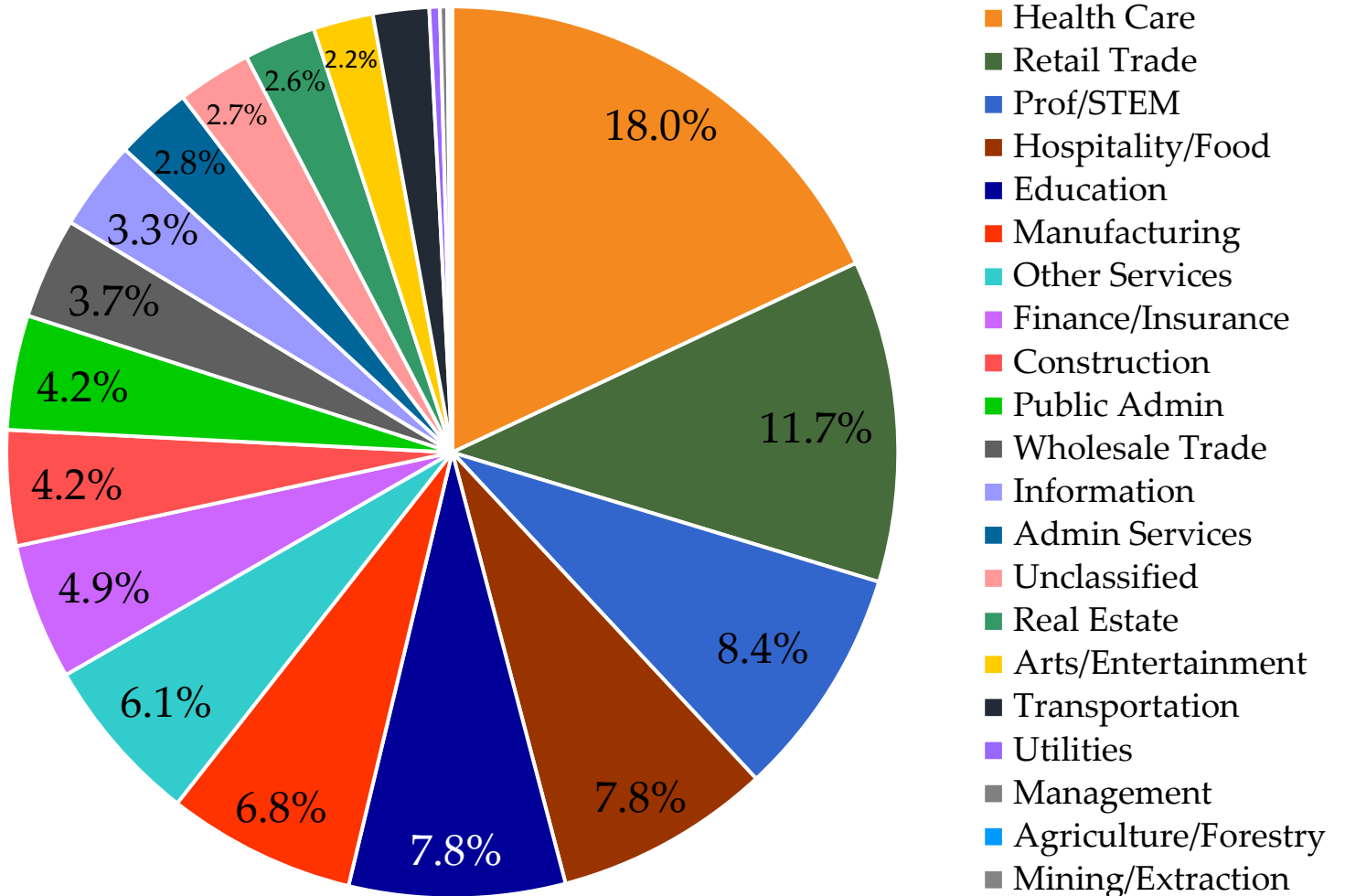


Establishment Growth by Sector, 2008-2018

<i>Name of Sector</i>	<i>No. of Establishments in 2008</i>	<i>No. of Establishments in 2018</i>	<i>Establishment Growth, 2008-2018</i>
Management	105	529	403.8%
Unclassified	8,483	26,335	210.4%
Health Care	45,741	74,900	63.7%
Agriculture/Forestry	657	966	47.0%
Information	5,556	7,884	41.9%
Arts/Entertainment	4,993	6,978	39.8%
Mining/Extraction	158	203	28.5%
Education	7,807	9,846	26.1%
Other Services	33,474	41,849	25.0%
Hospitality/Food	17,105	20,935	22.4%
Construction	23,975	28,725	19.8%
Real Estate	13,292	15,493	16.6%
Transportation	5,123	5,956	16.3%
Finance/Insurance	12,840	14,124	10.0%
Utilities	421	452	7.4%
Retail Trade	39,649	39,986	0.8%
Manufacturing	10,577	10,552	-0.2%
Admin Services	14,278	13,841	-3.1%
Professional/STEM	39,333	36,941	-6.1%
Public Administration	9,569	7,958	-16.8%
Wholesale Trade	12,499	9,877	-21.0%

Current Year Snapshot

Number of Employees by Sector in 2018²

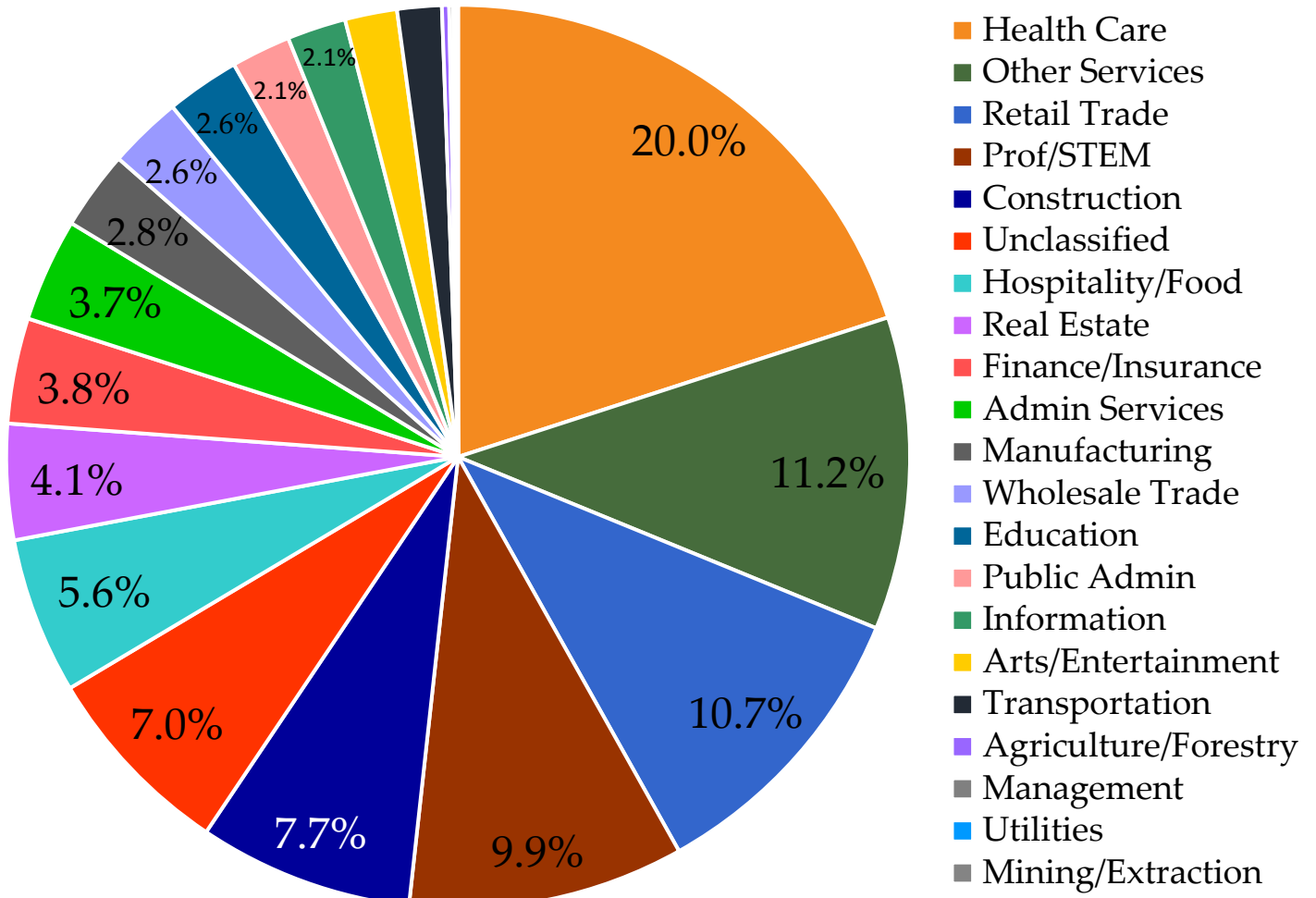


² All percentages not shown on the graph are 2.0% or less.

Share of Employees by Sector in 2018

<i>Name of Sector</i>	<i>No. of Employees</i>	<i>Share of Total Employment</i>
Health Care	721,274	18.0%
Retail Trade	466,994	11.7%
Professional/STEM	335,202	8.4%
Hospitality/Food	313,925	7.8%
Education	313,510	7.8%
Manufacturing	273,767	6.8%
Other Services	244,265	6.1%
Finance/Insurance	197,765	4.9%
Construction	167,417	4.2%
Public Administration	166,267	4.2%
Wholesale Trade	146,859	3.7%
Information	130,160	3.3%
Admin Services	111,440	2.8%
Unclassified	107,943	2.7%
Real Estate	104,281	2.6%
Arts/Entertainment	86,887	2.2%
Transportation	81,351	2.0%
Utilities	15,273	0.4%
Management	10,397	0.3%
Agriculture/Forestry	4,952	0.1%
Mining/Extraction	2,407	0.06%

Number of Establishments by Sector in 2018³

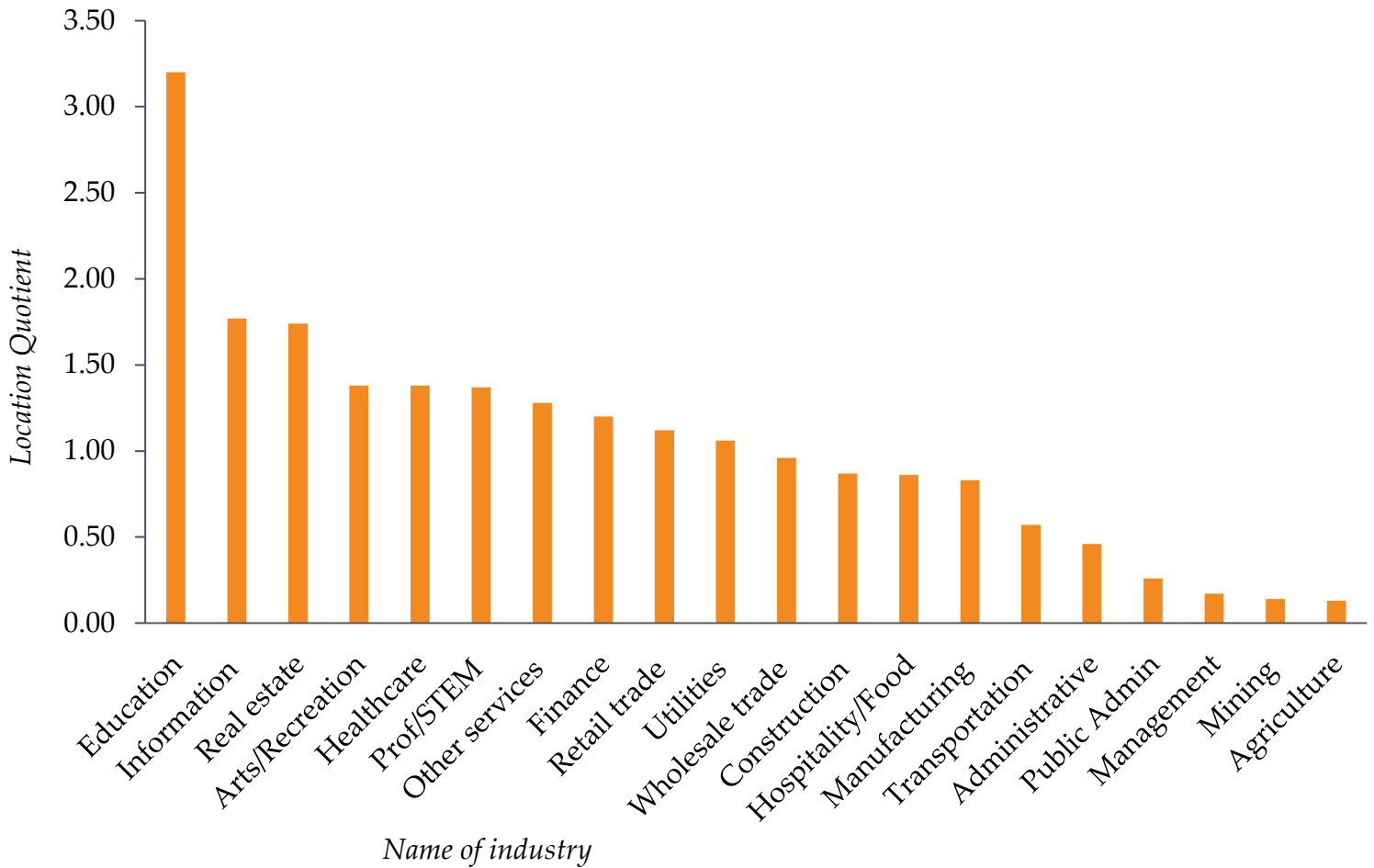


³ All percentages not shown on the graph are 2.0% or less.

Share of Establishments by Sector in 2018

<i>Name of Sector</i>	<i>No. of Establishments</i>	<i>Share of Total Establishments</i>
Health Care	74,900	20.0%
Other Services	41,849	11.2%
Retail Trade	39,986	10.7%
Professional/STEM	36,941	9.9%
Construction	28,725	7.7%
Unclassified	26,335	7.0%
Hospitality/Food	20,935	5.6%
Real Estate	15,493	4.1%
Finance/Insurance	14,124	3.8%
Admin Services	13,841	3.7%
Manufacturing	10,552	2.8%
Wholesale Trade	9,877	2.6%
Education	9,846	2.6%
Public Administration	7,958	2.1%
Information	7,884	2.1%
Arts/Entertainment	6,978	1.9%
Transportation	5,956	1.6%
Agriculture/Forestry	966	0.3%
Management	529	0.1%
Utilities	452	0.1%
Mining/Extraction	203	0.05%

Location Quotient⁴ by Sector in 2018



⁴ The location quotient is an industry’s share of employment in Massachusetts relative to its share of employment in the United States as a whole. It is often used as an indicator of economic specialization within an industry. Specifically, it is calculated as follows:

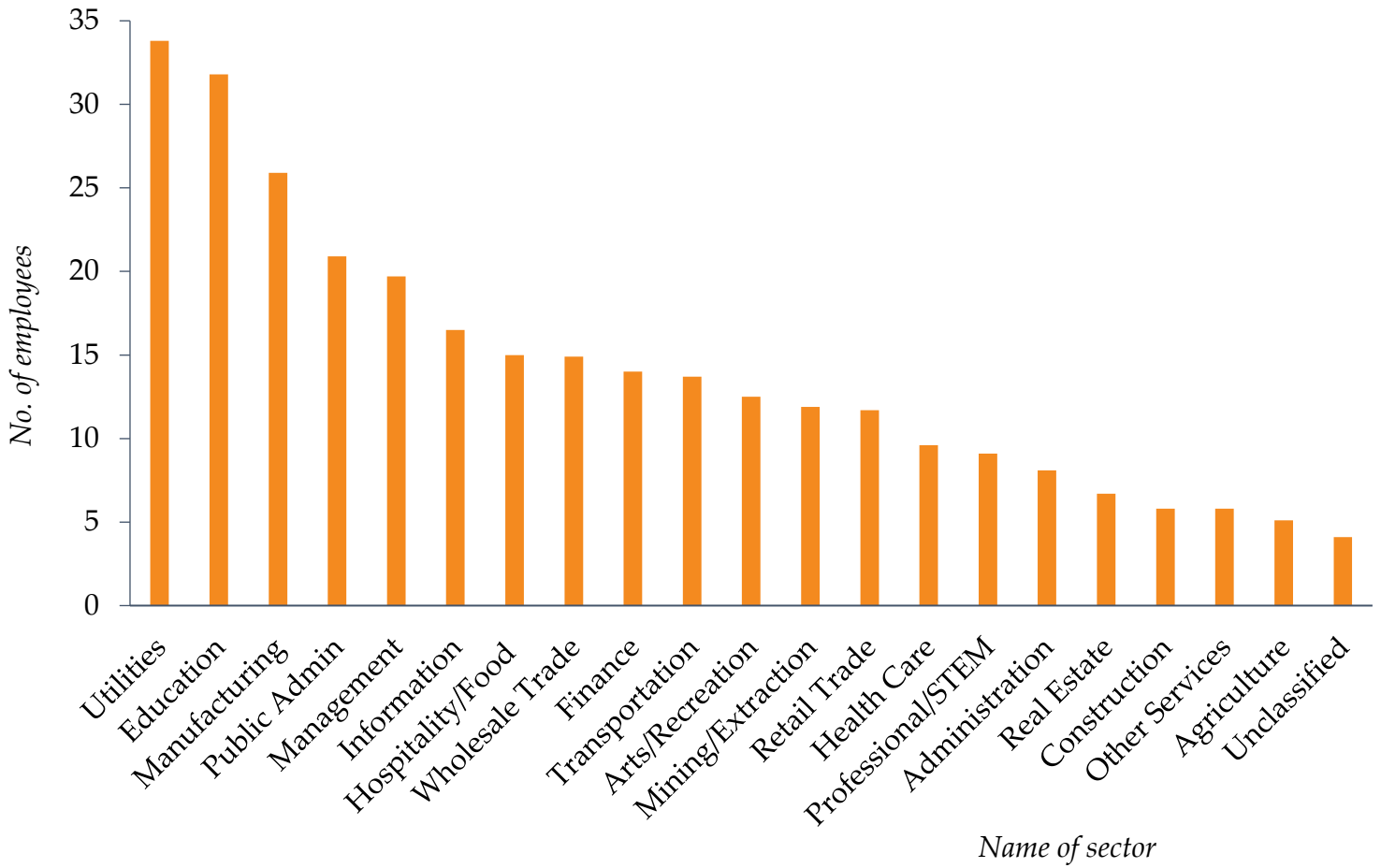
$$\frac{(\text{no. of employees in industry in state})/(\text{total employees in state})}{(\text{no. of employees in industry in country})/(\text{total employees in country})}$$

Any industry with a location quotient more than 1 is more highly concentrated in Massachusetts than in the nation as a whole. Any industry with a location quotient less than 1 is more concentrated in the United States as a whole than in Massachusetts.

Nationwide figures used to calculate the location quotient above originate from the National Income and Product Accounts database, Table 6.4D., as published by the U.S. Bureau of Economic Analysis.

Firm Size

Average Firm Size by Sector in 2018



<i>Name of Sector</i>	<i>Average No. of Employees per Establishment</i>
Utilities	33.79
Educational Services	31.84
Manufacturing	25.94
Public Administration	20.89
Management	19.65
Information	16.51
Hospitality/Food	15.00
Wholesale Trade	14.87
Finance/Insurance	14.00
Transportation	13.66
Arts/Entertainment	12.45
Mining/Extraction	11.86
Retail Trade	11.68
Health Care	9.63
Professional/STEM	9.07
Administration	8.05
Real Estate	6.73
Other Services	5.84
Construction	5.83
Agriculture/Forestry	5.13
Unclassified	4.10

Methodology

YTS stands for “Your-economy Time Series”, a database compiled by the Business Dynamics Research Consortium (BDRC), which is housed at the University of Wisconsin System Institute for Business and Entrepreneurship in Madison, Wisconsin. YTS contains annual, establishment-level, time series data on companies that are considered to be “in-business” in a given year. In order to be considered as an “in-business” company, an establishment must have intent on conducting commercial activities in that year, or have a DBA (doing business as) physical location. Businesses included in YTS are for-profit (both private and public), nonprofit, and government establishments. The YTS database provides access to information regarding employment trends, establishment level affiliations, relocation, and industrial sectors in any geographical area.

YTS is assembled from annual Infogroup Business Data historical files. This “snapshot” reflects the first half of a calendar year for all years except 2018, after which the snapshot includes the full calendar year to ensure the most accurate account of active establishments. Infogroup business records are culled from public and government sources (secretaries of state, city clerks, county courthouses, and business journals). Infogroup then works to verify this information through internet “crawling” of URLs and website scripts, telephone calls, U.S. Yellow Pages, industry directories, business registrations, and press releases. Teams also work to identify new businesses each year, and also corporate linkages between companies that may have experienced mergers or acquisitions. Infogroup contacts 55,000 businesses daily to verify company information. Over a typical month, 15% of the dataset is re-verified. For employment data specifically 49% of establishments have their jobs data verified via telephone interview. For the remaining 51%, a model using already-verified employment numbers estimates employment size at individual locations.

The Business Dynamics Research Consortium (BDRC) compiles all yearly snapshots and links businesses using the unique ABI (American Business Identifier) number for each listing. This creates a time-series database of active companies for the years after 1997. BDRC then adds more time-series variables to the data, derived from the original Infogroup variables. BDRC also removes “gaps” in missing years of data for an individual firm by “rolling” values for existing years into the next or previous year until a company’s record is complete. Algorithms are occasionally used to identify and remove major outliers, although BDRC states this occurs with less than 1 percent of the data. This process occurs with each annual snapshot release and the entire YTS database (1997-last year) is assembled and released.

Pioneer Institute then aggregates and visualizes this data using various software, including SQL, Tableau, QlikSense, and Microsoft Excel. Most of the core summary statistics, such as the number of employees over time, are extracted directly from Pioneer’s interactive tool, [MassEconmix](#). All sector codes used in compiling this report are from the North American Industry Classification System, any population figures referenced are from the U.S. Census Bureau, and any other external sources consulted are referenced in footnotes.