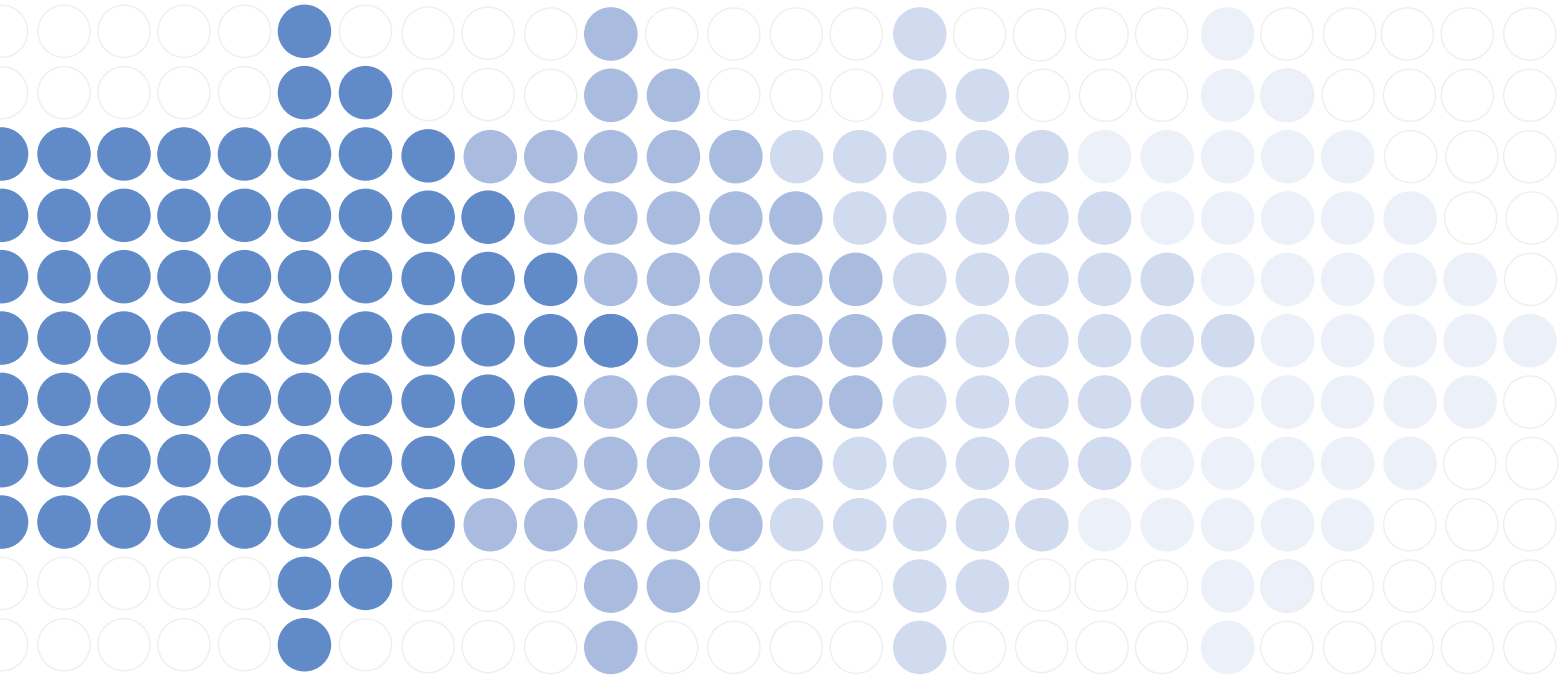
2017 THE KAUFFMAN INDEX

startup activity

STATE TRENDS

MAY 2017



Ewing Marion KAUFFMAN Foundation

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About the Kauffman Index of Entrepreneurship Series

The Kauffman Index of Entrepreneurship is a series of annual reports that measures U.S. entrepreneurship across national, state, and metro levels. Rather than focusing on inputs, the Kauffman Index focuses primarily on entrepreneurial outputs—the actual results of entrepreneurial activity—such as new companies, business density, and growth rates. The Kauffman Index series consists of three in-depth studies: Startup Activity, Main Street Entrepreneurship, and Growth Entrepreneurship.

- The Kauffman Index of Startup Activity is an early indicator of the beginnings of entrepreneurship in the United States, focusing on new business creation, market opportunity, and startup density.
- The Kauffman Index of Main Street Entrepreneurship measures business ownership and density of established, local small businesses.
- The Kauffman Index of Growth Entrepreneurship focuses on the growth of entrepreneurial businesses, as measured by growth in both revenue and employment. .

In this release, we present the Kauffman Index of Startup Activity, a comprehensive indicator of new business creation in the United States. The Startup Activity Index integrates several high-quality sources of timely entrepreneurship information into one composite indicator, relying on three components to measure startup activity:

- Rate of New Entrepreneurs
- Opportunity Share of New Entrepreneurs
- Startup Density

The Kauffman Index of Entrepreneurship series represents extensive research and attempts to present a balanced perspective on how to measure entrepreneurship; however, because we recognize that entrepreneurship is a complex phenomenon, we expect to further revise and enhance the Index in the coming years.

The specific indicators from each report help tell America's entrepreneurship story. All current and past reports, along with the data relevant to their locales, are available at www.kauffmanindex.org.

Startup Activity Executive Summary

The Startup Activity Index is a comprehensive indicator of new business creation in the United States, integrating several high-quality sources of timely entrepreneurship information into one composite indicator of startup activity. The Index captures business activity in all industries and is based on both a nationally representative sample size of more than a half-million observations each year and on the universe of all employer businesses in the United States—which covers approximately five million companies. This allows us to look at both entrepreneurs and the startups they create.

This report presents trends in startup activity for the fifty U.S. states and analyzes trends for these states, looking at them in two cohorts: one for the twenty-five largest states by population and another for the twenty-five smallest states by population. Data on each state is benchmarked against the national average, with further details available for metropolitan areas in the *Kauffman Index of Startup Activity: Metropolitan Area and City Trends* and trends and demographics at the national level in the *Kauffman Index of Startup Activity: National Trends*.

After two years of large increases, startup activity rose slightly in 2016, continuing an upward trend started in 2014. Only three years ago, the Startup Activity Index was at its lowest point in the last twenty years. Today it has gone up three years in a row, reaching close to the peak before the Great Recession drop, as shown in Figure 1.

High-performing metros include perennial favorites such as Austin and San Diego, as well as some less-highlighted places, such as Los Angeles and Miami, which are covered in the *Kauffman Index of Startup Activity: Metropolitan Area and City Trends*.

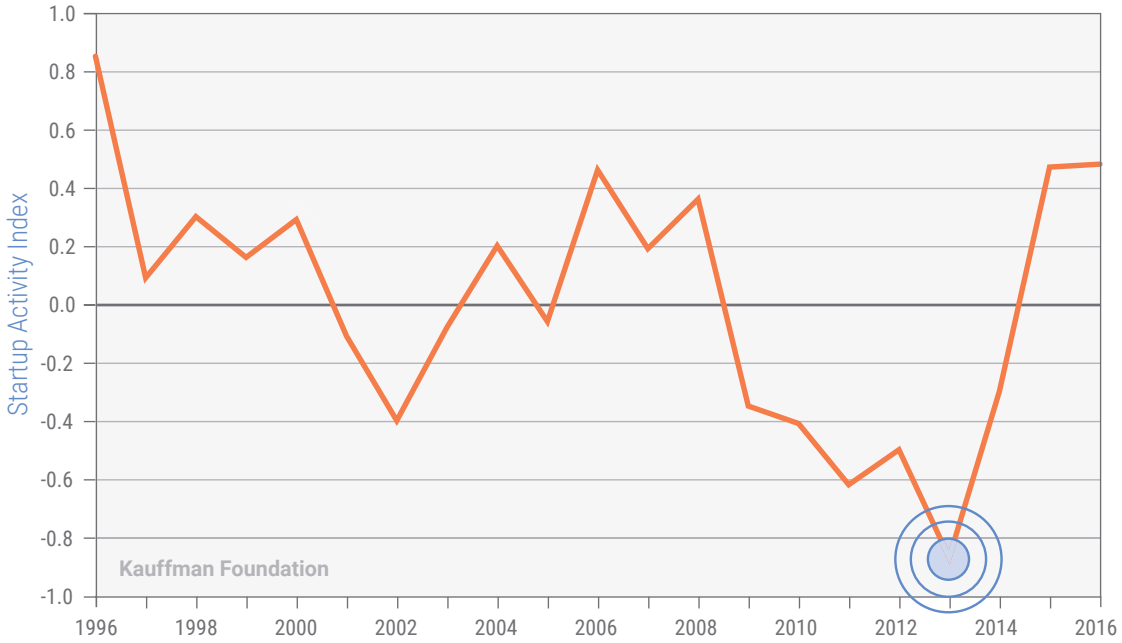
State Trends in Startup Activity

Startup Activity and Rankings

- Among the twenty-five largest states, the five states with the highest startup activity in the 2017 Index were California, Texas, Florida, Arizona, and Colorado. Seventeen out of the twenty-five largest states had higher levels of startup activity in 2017 compared to last year.
- In the twenty-five smallest states, the five states with the highest startup activity in the 2017 Index were Nevada, Oklahoma, Wyoming, Montana, and Idaho. Eleven smaller states had higher Startup Activity Index measures this year.
- Among the twenty-five largest states, the four that experienced the biggest increase in ranks in 2017 were Massachusetts, Tennessee, Washington, and Minnesota. The three that experienced the biggest negative shifts in rank in 2017 compared to 2016 were Louisiana, Maryland, and Virginia.

Figure 1

Startup Activity Index (1996–2016)



In 2013 the Startup Activity Index was at its lowest point in the last twenty years. Today it has gone up three years in a row, reaching close to the peak before the Great Recession drop.

SOURCE: Startup Activity Index, calculations based from CPS and BDS.

- Among the twenty-five smallest states, the three that experienced the biggest increase in ranks in 2017 were Connecticut, Vermont, and Kansas. The three that experienced the biggest negative shifts in rank in 2017 compared to 2016 were Hawaii, Rhode Island, and Delaware.

Rate of New Entrepreneurs

- Looking at the first component of the Startup Activity Index, the Rate of New Entrepreneurs varied widely across larger states in the 2017 Index, going from 170 new entrepreneurs for every 100,000 adults (Pennsylvania) in a given month to 420 new entrepreneurs for every 100,000 adults (California) in a given month.
- Among smaller states, the Rate of New Entrepreneurs ranged from a low in Delaware and Iowa of 200 per 100,000 adults up to 450 new entrepreneurs per month for every 100,000 adults in Oklahoma and Wyoming.

Opportunity Share of New Entrepreneurs

- Among larger states, the Opportunity Share of New Entrepreneurs—the second component of the Index—varied from 66.4 percent in Wisconsin to 88.7 in Tennessee. This means that, in Wisconsin, approximately seven out of every ten new entrepreneurs started businesses driven by opportunity, while in Tennessee, about nine out of every ten new entrepreneurs were opportunity-driven.
- Narrowing in on the smaller states, the Opportunity Share of New Entrepreneurs ranged from 72.4 percent in Alaska to 92.5 percent in Iowa.

Startup Density

- Startup Density—a component of the Index measuring larger startups that employ other people besides the founder—has high variation across larger states, ranging from 57.4 startups per 1,000 employer businesses in Ohio to 98.7 startups per 1,000 employer businesses in Florida.
- Among smaller states, Nevada topped out with 108.4 startups per 1,000 employer businesses, compared to West Virginia with 51.1 new employer businesses per 1,000 businesses.
- From 2006 to 2014, Startup Density declined at an average of 28 percent at the state level, indicating that larger startups, those that employ other people, remain precariously below historical norms.

Understanding Startup Activity—A Look at the Indicators

The Startup Activity Index is an index measure of a broad range of startup activity in the United States across national, state, and metropolitan-area levels. The Startup Activity Index captures startup activity along three dimensions:

1. The **Rate of New Entrepreneurs** in the economy—the percentage of adults becoming entrepreneurs in a given month.
2. The **Opportunity Share of New Entrepreneurs**—the percentage of new entrepreneurs driven primarily by "opportunity" as opposed to "necessity."
3. **Startup Density**—the rate at which businesses with employees are created in the economy.

The combination of these three distinct and important dimensions of new business creation creates this broad view of startup activity in the country, across national, state, and metropolitan-area levels.

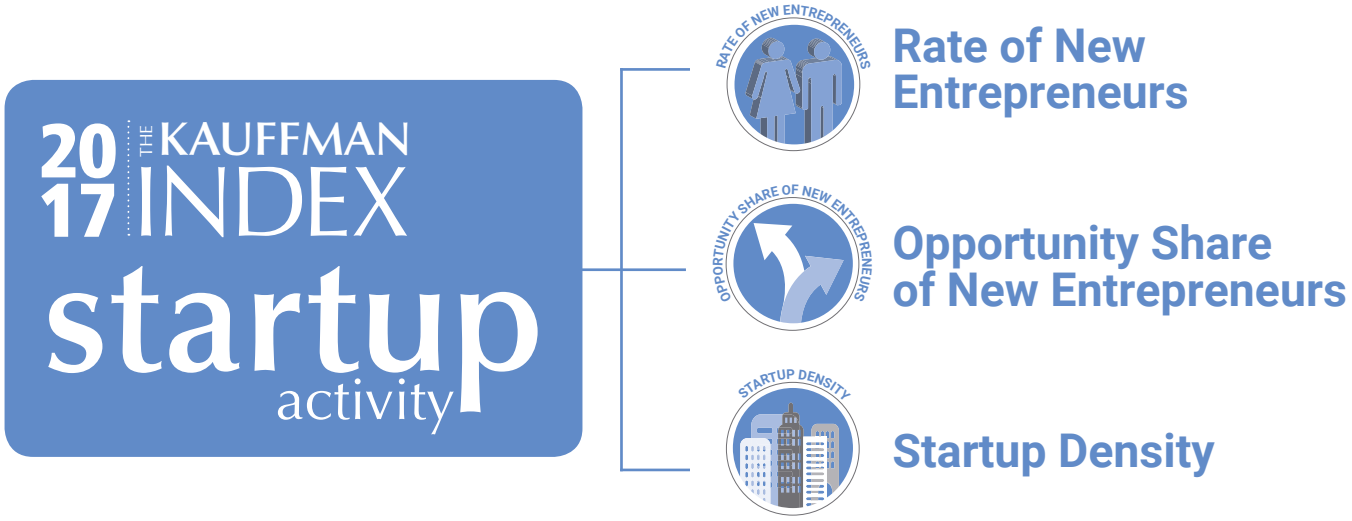
The Startup Activity Index is an early indicator of new business creation in the United States. Capturing new entrepreneurs in their first month and new employer businesses in their first year, the Index provides the earliest documentation of new business development across the country.

The Startup Activity Index captures all types of business activity and is based on nationally representative sample sizes of more than a half million observations each year or administrative data covering the universe of employer business entities—a dataset covering more than five million businesses. The separate components of the Startup Activity Index also provide evidence on potentially different trends in business creation created by "opportunity" business creation relative to unemployment-related ("necessity") business creation over the business cycle. The Startup Activity Index improves over other possible measures of entrepreneurship because of its timeliness, dynamic nature, exclusion of "casual" businesses, and inclusion of all types of business activity, regardless of industry.

The Components of the Startup Activity Index

The Startup Activity Index provides a broad index measure of business startup activity in the United States. It is an equally weighted index of three normalized measures of startup activity.[1] The three component measures of the Startup Activity Index are:

1. The **Rate of New Entrepreneurs** in the economy, calculated as the percentage of adults becoming entrepreneurs in a given month.
2. The **Opportunity Share of New Entrepreneurs**, calculated as the percentage of new entrepreneurs driven primarily by "opportunity" vs. "necessity."
3. The **Startup Density** of a region, measured as the number of new employer businesses, normalized by the business population.



1. We normalize each of three measures by subtracting the mean and dividing by the standard deviation for that measure (i.e., create a z-score for each variable). This creates a comparable scale for including the three measures in the Startup Activity Index. We use annual estimates from 1996 to the latest year available (2016) to calculate the mean and standard deviations for each component measure (see Methodology and Framework for more details).

Rate of New Entrepreneurs

- Defined as the percent of the U.S. adult population that became entrepreneurs, on average, in a given month.
- Provides an early and broad measure of business ownership.
- Includes entrepreneurs with incorporated or unincorporated businesses, and those with or without employees.
- Uses data based on the Current Population Survey, jointly produced by the U.S. Census Bureau and the U.S. Bureau of Labor Statistics.
- What the number means:
  - For example, assume that the Rate of New Entrepreneurs was 0.33 percent for the United States in a given year. That would mean that, on average, 330 people out of every 100,000 adults became entrepreneurs in the United States in each month.

Before presenting trends in the Startup Activity Index, we briefly discuss each component measure (see Methodology and Framework for more details).

First, the Rate of New Entrepreneurs captures the percentage of the adult, non-business-owner population that starts a business each month. This component was formerly known as the Kauffman Index of Entrepreneurial Activity and was presented in a series of reports over about a decade beginning in 1996 (Fairlie 2014).[2] The Rate of New Entrepreneurs as measured here captures all new business owners, including those who own incorporated or unincorporated businesses and those who are employers or non-employers.[3] The Rate of New Entrepreneurs is calculated from matched data from the Current Population Survey (CPS), a monthly survey conducted by the Bureau of Labor Statistics.

Another component measure of the Startup Activity Index is the percentage of new entrepreneurs driven by "opportunity entrepreneurship" as opposed to "necessity entrepreneurship." The Rate of New Entrepreneurs includes businesses of all types, and thus cannot cleanly disaggregate between the

Opportunity Share of New Entrepreneurs

- Serves as a proxy indicator of the percent of new entrepreneurs starting businesses because they saw market opportunities.
- Measures the percentage of new entrepreneurs who were not unemployed before starting their businesses (e.g., new entrepreneurs who were previously working for another organization or in school).
- Acts as a broad proxy for business growth prospects. Entrepreneurs who were previously unemployed may be acting out of necessity and, therefore, may be more likely to start businesses with lower growth potential.
- Offers a more nuanced understanding of changes in the rate of new entrepreneurs, especially during weak job markets or economic recessions. If the rate of new entrepreneurs increases but the opportunity share of new entrepreneurs is low, we understand that many new entrepreneurs were unemployed before starting their businesses and may have started these companies largely out of necessity.
- Uses data based on the Current Population Survey, jointly produced by the U.S. Census Bureau and the U.S. Bureau of Labor Statistics.
- What the number means:
  - For example, if the opportunity share of new entrepreneurs were 80 percent for a state in a given year, it would mean that approximately eight out of every ten new entrepreneurs in that state in that year had other jobs or were in school (or were in another labor market state) before they started their businesses. Meanwhile, two out of every ten entrepreneurs in that state would have started their businesses while they were unemployed.

2. See http://www.kauffman.org/what-we-do/research/2014/04/the-kauffman-index-of-entrepreneurial-activity-1996-2013.

3. The U.S. Census Bureau notes that the definitions of non-employers and self-employed business owners are not the same. Although most self-employed business owners are non-employers, about a million self-employed business owners are classified as employer businesses. http://www.census.gov/econ/nonemployer/index.html.

Startup Density

- Estimates the number of startup firms by total employer population.
- Measures the number of new employer startup businesses normalized by the employer firm population of an area. Because companies captured by this indicator have employees, they tend to be at a more advanced stage than are the companies in the rate of new entrepreneurs measure.
- Defines startup businesses as employer firms less than one year old that employ at least one person besides the owner. This measure includes all industries.
- Uses data based on the U.S. Census's Business Dynamics Statistics.
- What the number means:
  - For example, if the startup density for a metropolitan area were eighty-nine per 1,000 businesses in a given year, it would mean that, for every 1,000 employer businesses in the metro area, there were eighty-nine employer startup firms that were less than one year old in that year.

creation of high-growth-potential businesses and individuals starting businesses because of limited job opportunities.[4] One approximate method for disentangling these two types of startups is to examine the share of new entrepreneurs coming out of unemployment compared to the share of new entrepreneurs coming out of wage and salary work, school, or other labor market statuses (Fairlie 2014). Individuals starting businesses out of unemployment might be more inclined to start those businesses out of necessity than opportunity (although many of those businesses eventually could be very successful).

The third component of the Startup Activity Index is a measure of the rate of creation of businesses with employees. These employer businesses are generally larger and have higher growth potential than non-employer businesses do. Startup Density is defined as the number of newly established employer businesses to the total employer business population (in 1,000s). Both numbers come from the Bureau of Labor Statistics Business Dynamics Statistics (BDS) and are taken from the universe of businesses with payroll tax records in the United States, as recorded by the Internal Revenue Service. Although new businesses with employees represent only a small share of all new businesses, they represent an important group for job creation and economic growth.

In this report, we present national estimates of the Startup Activity Index first. We then present trends in each of the three component measures of the Index. Some of the component measures provide information that allows for a presentation of trends by demographic groups.

A Big-Tent Approach to Entrepreneurship

The Kauffman Index of Entrepreneurship—the umbrella under which all the topical Kauffman Index reports reside—attempts to view the complex phenomenon of entrepreneurship from many angles, each adding insight into the people and businesses that contribute to America's overall entrepreneurial dynamism.

Entrepreneurship is not a monolithic phenomenon, but instead includes many diverse and moving parts. Creating new businesses is a different economic activity from running small businesses, which in turn is different from growing businesses. The Kauffman Index attempts to concretely measure these different kinds of entrepreneurship—Startup Activity, Main Street, and Growth—through its three sets of reports that present a more holistic view of entrepreneurship in the United States, each with a deeper dive at the national, state, and metropolitan levels:

1. The **Startup Activity Index** focuses on the beginnings of entrepreneurship, specifically new business creation, market opportunity, and startup density.
2. The **Main Street Index** focuses on the prevalence of local, small business ownership.
3. The **Growth Entrepreneurship Index** focuses on growing companies.

Entrepreneurship is not a monolithic phenomenon, but instead includes many diverse and moving parts. Creating new businesses is a different economic activity from running small businesses, which in turn is different from growing businesses.

4. See Fairlie (2011) for more evidence and discussion.

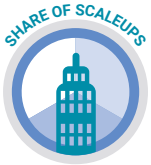
Together, these three indices present a more holistic view of entrepreneurship in America.

Each of the three indices is constructed to give a spectrum of entrepreneurship measures from an industry-agnostic perspective. Table 1 summarizes the approach we use across the reports.

While at first pass, one might expect certain patterns that appear in the Startup Activity Index to be tied to patterns that appear in future years of the Main Street and Growth Entrepreneurship indices, we have taken steps to mitigate direct relationships. Different locations will have different performances on each of the indices, and high (or low) levels of activity in any given index does not cause or imply high (or low) levels of activity in the others.

Table 1

Summary of Components Used Across Reports

Startup Activity	Main Street Entrepreneurship	Growth Entrepreneurship
 **Rate of New Entrepreneurs** The percentage of adults transitioning into entrepreneurship at a given point in time	 **Rate of Business Owners** The total number of business owners in a location at a given point in time	 **Rate of Startup Growth** The average growth of a cohort of new startups in their first five years
 **Opportunity Share of New Entrepreneurs** The percentage of new entrepreneurs driven primarily by "opportunity" vs. "necessity"	 **Survival Rate of Firms** The percentage of firms in operation throughout their first five years	 **Share of Scaleups** The number of businesses that started small and grew to employ at least fifty people by their tenth year of operation as a percentage of all businesses ten years and younger
 **Startup Density** The number of new employer businesses, normalized by population	 **Established Small Business Density** The number of businesses five years old and older with less than fifty employees, normalized by population	 **High-Growth Company Density** The number of fast-growing companies with at least $2 million in annual revenue, normalized by business population

State Trends in Startup Activity

The Startup Activity Index calculates a broad index measure of business startup activity across all fifty states of the United States.

Nationally, the Startup Activity Index rose for the third year in a row, as shown in Figure 1 on page 3, rebounding from its lowest point in almost twenty years.[5] Most states followed a similar positive trajectory, with thirty states experiencing an increase in startup activity. Six states saw little to no changes compared to the previous year, and fourteen saw their startup activity levels fall in the past year.

Throughout this report, to facilitate comparison across peer groups of states, we focus our analysis on looking at states in two groups: the twenty-five largest states by population and the twenty-five smallest states by population.[6] As such, the twenty-five smallest states have a median population of 1.8 million people, with resident populations ranging from 500,000 residents to 4.5 million residents. The twenty-five largest states have a median population of 6.9 million people, with resident populations ranging from 4.5 million to about 38 million.

While the states are grouped by population, they tend to share an additional similarity: larger states are overwhelmingly urban, while smaller states are less so. Among the twenty-five largest states, twenty-four have 65 percent or more urban population, and sixteen of them are among the twenty-five most urban states in the United States.[7] On the other hand, among the twenty-five smallest states, populations tend to be more dispersed, with twelve of them having fewer than 65 percent urban population and just nine of them among the twenty-five U.S. states with the highest share of urban population.

While most states experienced an increase in startup activity, changes in state rankings—which measure relative yearly performance across states, as opposed to performance relative to a state's own startup activity rates in the previous year—were different. Twenty states ranked higher than they did last year, ten experienced no changes in rankings, and twenty ranked lower. For complete rankings, see Table 2 for larger states' rankings and Table 3 for smaller states' rankings.

Startup Activity—Trends in Larger States

For the twenty-five largest states in the country, California was top in startup activity, followed by Texas, Florida, Arizona, and Colorado. Among larger states, nine ranked higher than they did last year, five experienced no changes in rankings, and another eleven ranked lower. Among the twenty-five largest states, the four that experienced the biggest increase in ranks in 2017 were:

Larger States with the Biggest Positive Shift in Rank—Startup Activity Index			
State	**Rank 2017**	**Rank 2016**	**Change**
Massachusetts	12	18	6
Tennessee	14	20	6
Washington	11	16	5
Minnesota	16	21	5

The three larger states that experienced the biggest negative shifts in rank in 2017 compared to 2016 were:

Larger States with the Biggest Negative Shift in Rank—Startup Activity Index			
State	**Rank 2017**	**Rank 2016**	**Change**
Louisiana	17	10	-7
Maryland	20	14	-6
Virginia	22	17	-5

Among the twenty-five largest states, twenty-four have 65 percent or more urban population, and sixteen of them are among the twenty-five most urban states in the United States.

5. A full discussion of this is in the national report for the Kauffman Startup Activity Index, available at http://www.kauffmanindex.org.

6. We use the Bureau of Economic Analysis population data for 2012 to do this grouping.

7. According to the U.S. Census Bureau data (https://www.census.gov/geo/reference/ua/urban-rural-2010.html).

TABLE 2

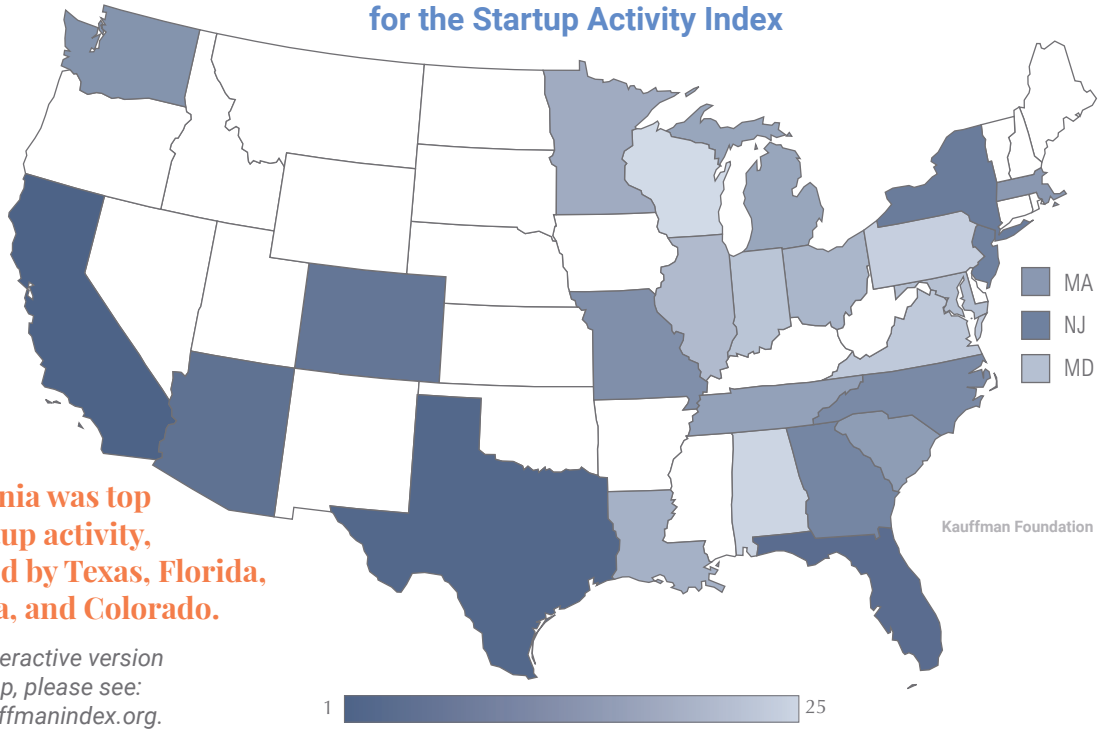
Startup Activity Index—Twenty-Five Largest U.S. States by Population

Rank 2017	Index 2017	State Name	Rank 2016	Change in Rank	Rate of New Entrepreneurs	Opportunity Share of New Entrepreneurs	Startup Density
1	1.93	California	3	2	0.42%	82.50%	89.6
2	1.86	Texas	1	-1	0.40%	84.59%	90.9
3	1.66	Florida	2	-1	0.38%	83.31%	98.7
4	1.54	Arizona	6	2	0.40%	82.68%	85.8
5	1.26	Colorado	5	0	0.35%	87.18%	88.2
6	0.98	New York	4	-2	0.36%	84.10%	83.3
7	0.84	New Jersey	7	0	0.34%	88.03%	76.1
8	0.73	Georgia	11	3	0.33%	86.60%	82.4
9	0.41	North Carolina	8	-1	0.34%	83.88%	74.7
10	0.33	Missouri	9	-1	0.30%	83.20%	95.5
11	-0.14	Washington	16	5	0.27%	87.39%	81.5
12	-0.44	Massachusetts	18	6	0.29%	85.40%	66.8
13	-0.80	South Carolina	13	0	0.29%	79.56%	73.3
14	-0.98	Tennessee	20	6	0.23%	88.66%	69.3
15	-1.08	Michigan	11	-4	0.26%	84.19%	64.4
16	-1.30	Minnesota	21	5	0.28%	78.65%	64.2
17	-1.33	Louisiana	10	-7	0.27%	79.73%	64.8
18	-1.36	Ohio	15	-3	0.23%	88.22%	57.4
19	-1.91	Illinois	19	0	0.23%	78.80%	69.1
20	-1.99	Maryland	14	-6	0.26%	73.11%	68.6
21	-2.14	Indiana	22	1	0.22%	80.23%	61.6
22	-2.19	Virginia	17	-5	0.21%	77.64%	73.7
23	-2.68	Pennsylvania	24	1	0.17%	83.00%	60.6
24	-2.69	Alabama	23	-1	0.23%	72.13%	63.4
25	-3.65	Wisconsin	25	0	0.21%	66.39%	59.1

For an interactive version of the rankings, please see: www.kauffmanindex.org.

Figure 2

2017 Larger State Rankings for the Startup Activity Index



California was top in startup activity, followed by Texas, Florida, Arizona, and Colorado.

For an interactive version of the map, please see: www.kauffmanindex.org.

Startup Activity—Trends in Smaller States

For the twenty-five smallest states in the country, Nevada was top in startup activity, followed by Oklahoma, Wyoming, Montana, and Idaho. Among smaller states, eleven ranked higher than they did last year, five experienced no changes in rankings, and another nine ranked lower. Among the twenty-five smallest states, the three that experienced the biggest increase in ranks in 2017 were:

Smaller States with the Biggest Positive Shift in Rank—Startup Activity Index			
State	Rank 2017	Rank 2016	Change
Connecticut	18	22	4
Vermont	9	13	4
Kansas	15	18	3

The three smaller states that experienced the biggest negative shifts in rank in 2017 compared to 2016, with several ties, were:

Smaller States with the Biggest Negative Shift in Rank—Startup Activity Index			
State	Rank 2017	Rank 2016	Change
Hawaii	14	8	-6
Rhode Island	25	20	-5
Delaware	20	16	-4

TABLE 3

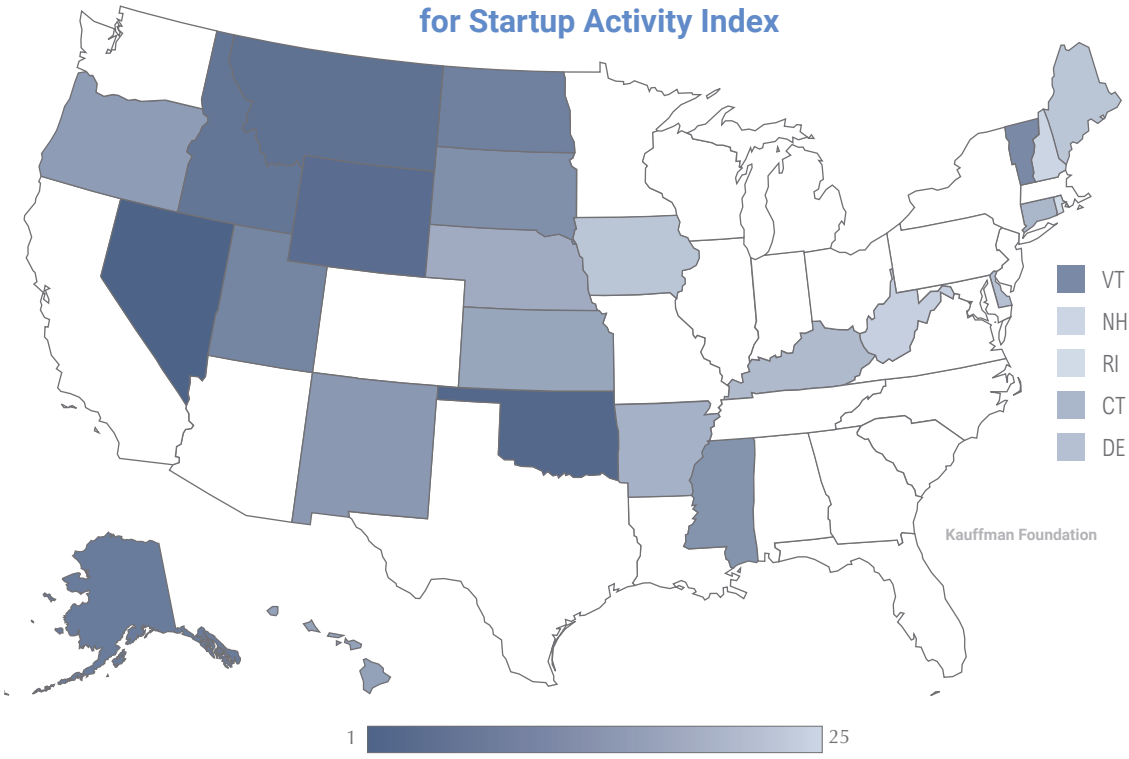
Startup Activity Index—Twenty-Five Smallest U.S. States by Population

Rank 2017	Index 2017	State Name	Rank 2016	Change in Rank	Rate of New Entrepreneurs	Opportunity Share of New Entrepreneurs	Startup Density
1	3.22	Nevada	2	1	0.41%	92.14%	108.4
2	2.56	Oklahoma	4	2	0.45%	89.49%	72.9
3	2.22	Wyoming	3	0	0.45%	86.40%	70.9
4	1.61	Montana	1	-3	0.43%	83.93%	68.5
5	0.77	Idaho	7	2	0.32%	89.31%	80.2
6	0.73	Alaska	5	-1	0.44%	72.39%	69.9
7	0.56	North Dakota	6	-1	0.31%	87.30%	84.7
8	0.35	Utah	10	2	0.28%	88.06%	91.0
9	0.32	Vermont	13	4	0.40%	78.27%	58.0
10	0.14	South Dakota	9	-1	0.31%	89.68%	62.6
11	0.07	Mississippi	11	0	0.37%	78.57%	64.1
12	-0.08	New Mexico	12	0	0.35%	79.93%	65.2
13	-0.25	Oregon	15	2	0.34%	76.07%	77.0
14	-0.33	Hawaii	8	-6	0.31%	84.63%	62.7
15	-0.62	Kansas	18	3	0.30%	82.46%	64.8
16	-0.64	Nebraska	14	-2	0.25%	91.44%	61.7
17	-0.77	Arkansas	17	0	0.29%	81.96%	66.6
18	-1.37	Connecticut	22	4	0.27%	81.12%	58.9
19	-1.44	Kentucky	20	1	0.24%	79.95%	76.3
20	-1.46	Delaware	16	-4	0.20%	86.09%	77.0
21	-1.50	Maine	19	-2	0.29%	75.22%	62.8
21	-1.50	Iowa	23	2	0.20%	92.53%	54.7
23	-2.09	West Virginia	25	2	0.21%	85.66%	51.1
24	-2.19	New Hampshire	24	0	0.24%	77.40%	58.3
25	-2.32	Rhode Island	20	-5	0.21%	80.42%	60.0

For an interactive version of the rankings, please see: www.kauffmanindex.org.

Figure 3

2017 Smaller State Rankings for Startup Activity Index



Nevada was top in startup activity, followed by Oklahoma, Wyoming, Montana, and Idaho.

For an interactive version of the map, please see: www.kauffmanindex.org.

TABLE 4

Combined All States List—Startup Activity Index

Index 2017	State Name	Rate of New Entrepreneurs	Opportunity Share of New Entrepreneurs	Startup Density
3.22	Nevada	0.41%	92.14%	108.4
2.56	Oklahoma	0.45%	89.49%	72.9
2.22	Wyoming	0.45%	86.40%	70.9
1.93	California	0.42%	82.50%	89.6
1.86	Texas	0.40%	84.59%	90.9
1.66	Florida	0.38%	83.31%	98.7
1.61	Montana	0.43%	83.93%	68.5
1.54	Arizona	0.40%	82.68%	85.8
1.26	Colorado	0.35%	87.18%	88.2
0.98	New York	0.36%	84.10%	83.3
0.84	New Jersey	0.34%	88.03%	76.1
0.77	Idaho	0.32%	89.31%	80.2
0.73	Georgia	0.33%	86.60%	82.4
0.73	Alaska	0.44%	72.39%	69.9
0.56	North Dakota	0.31%	87.30%	84.7
0.41	North Carolina	0.34%	83.88%	74.7
0.35	Utah	0.28%	88.06%	91.0
0.33	Missouri	0.30%	83.20%	95.5
0.32	Vermont	0.40%	78.27%	58.0
0.14	South Dakota	0.31%	89.68%	62.6
0.07	Mississippi	0.37%	78.57%	64.1
-0.08	New Mexico	0.35%	79.93%	65.2
-0.14	Washington	0.27%	87.39%	81.5
-0.25	Oregon	0.34%	76.07%	77.0
-0.33	Hawaii	0.31%	84.63%	62.7
-0.44	Massachusetts	0.29%	85.40%	66.8
-0.62	Kansas	0.30%	82.46%	64.8
-0.64	Nebraska	0.25%	91.44%	61.7
-0.77	Arkansas	0.29%	81.96%	66.6
-0.80	South Carolina	0.29%	79.56%	73.3
-0.98	Tennessee	0.23%	88.66%	69.3
-1.08	Michigan	0.26%	84.19%	64.4
-1.30	Minnesota	0.28%	78.65%	64.2
-1.33	Louisiana	0.27%	79.73%	64.8
-1.36	Ohio	0.23%	88.22%	57.4
-1.37	Connecticut	0.27%	81.12%	58.9
-1.44	Kentucky	0.24%	79.95%	76.3
-1.46	Delaware	0.20%	86.09%	77.0
-1.50	Maine	0.29%	75.22%	62.8
-1.50	Iowa	0.20%	92.53%	54.7
-1.91	Illinois	0.23%	78.80%	69.1
-1.99	Maryland	0.26%	73.11%	68.6
-2.09	West Virginia	0.21%	85.66%	51.1
-2.14	Indiana	0.22%	80.23%	61.6
-2.19	Virginia	0.21%	77.64%	73.7
-2.19	New Hampshire	0.24%	77.40%	58.3
-2.32	Rhode Island	0.21%	80.42%	60.0
-2.68	Pennsylvania	0.17%	83.00%	60.6
-2.69	Alabama	0.23%	72.13%	63.4
-3.65	Wisconsin	0.21%	66.39%	59.1

For an interactive version of the rankings, please see: www.kauffmanindex.org.

In the following sections, we discuss state-level trends for each component of the Startup Activity Index: 1) Rate of New Entrepreneurs, 2) Opportunity Share of New Entrepreneurs, and 3) Startup Density

State Trends in Rate of New Entrepreneurs

The Rate of New Entrepreneurs component of the Kauffman Index is a broad measure of startup activity capturing the percentage of the adult population starting a new business each month, regardless of incorporation status and how many people the business employs, if any. We use the Bureau of Labor Statistics Current Population Survey as the data source for this rate, a source with a nationally representative sample with more than a half million observations each year. The Rate of New Entrepreneurs is calculated on a three-year moving average for states from 1998 to 2016 (the latest year with data available).

The Rate of New Entrepreneurs provides a very early measure of startup activity—when someone first starts working on a business as his or her main job.

The Rate of New Entrepreneurs varies across states, and does so at a wider range for smaller states than for larger states.

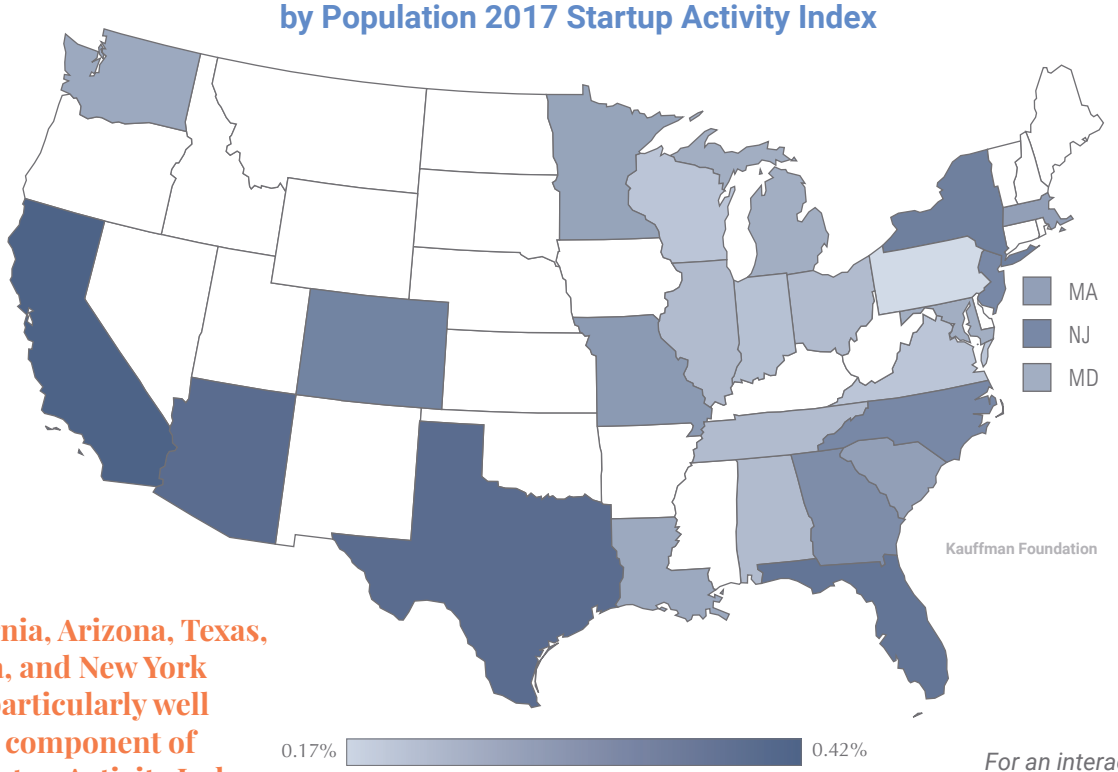
Rate of New Entrepreneurs— Trends in Larger States

Among the twenty-five largest states, the Rate of New Entrepreneurs ranged from 0.17 percent in Pennsylvania to 0.42 percent in California. On the lower end of the spectrum, Pennsylvania's Rate of New Entrepreneurs of 0.17 percent means that 170 out of every 100,000 adults became entrepreneurs per month in the state. On the high end of the spectrum, California's rate of 0.42 percent means that 420 out of every 100,000 adults became entrepreneurs per month in each of these states.

Of the twenty-five largest states in the country, California, Arizona, Texas, Florida, and New York fared particularly well on this component of the Startup Activity Index.

Figure 4

Rate of New Entrepreneurs by State | Twenty-Five Largest U.S. States by Population 2017 Startup Activity Index



California, Arizona, Texas, Florida, and New York fared particularly well on this component of the Startup Activity Index.

For an interactive version of the map, please see: www.kauffmanindex.org.

Rate of New Entrepreneurs— Trends in Smaller States

Among the twenty-five smaller states, the Rate of New Entrepreneurs ranged from 0.2 percent in Delaware and Iowa to 0.45 percent in Oklahoma and Wyoming. On the lower end of the spectrum, Delaware's Rate of New Entrepreneurs of 0.2 percent means that 200 out of every 100,000 adults became entrepreneurs per month in the state. On the high end of the spectrum, Oklahoma's rate of 0.45 percent means that 450 out of every 100,000 adults became entrepreneurs per month in the state.

Of the twenty-five smallest states in the country, Oklahoma, Wyoming, Alaska, Montana, and Nevada fared particularly well on this component of the Startup Activity Index.

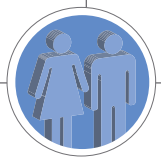
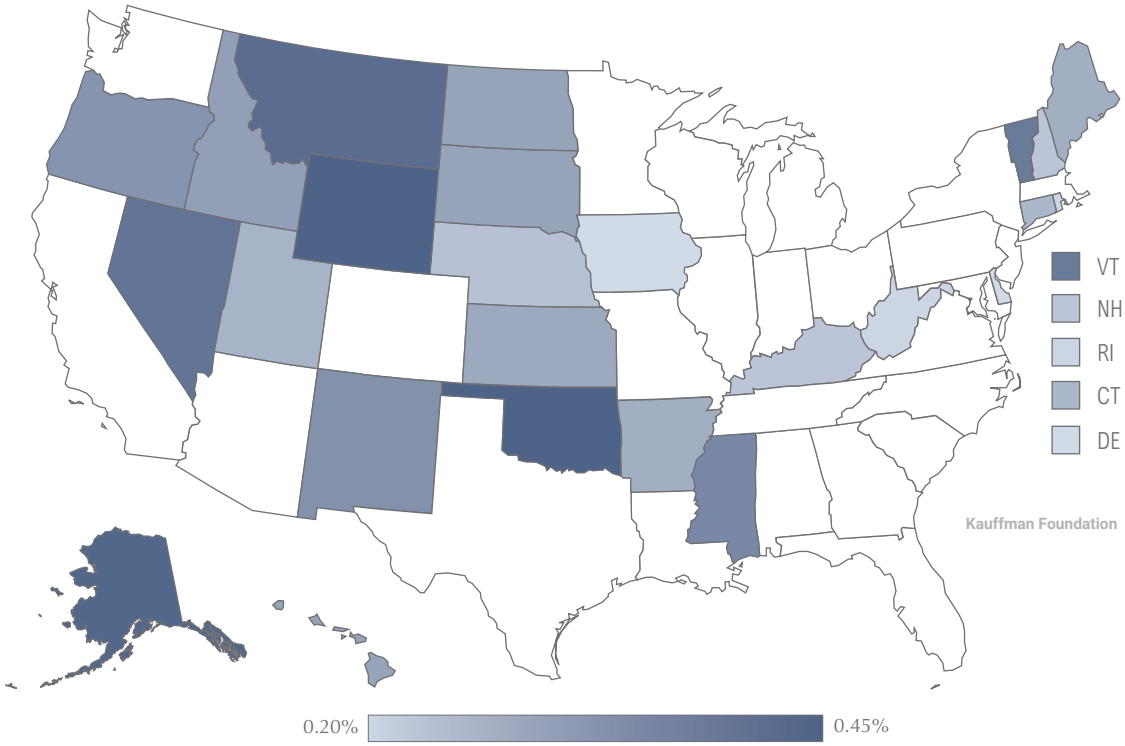


Figure 5

Rate of New Entrepreneurs by State | Twenty-Five Smallest U.S. States by Population 2017 Startup Activity Index



Oklahoma, Wyoming, Alaska, Montana, and Nevada fared particularly well on this component of the Startup Activity Index.

For an interactive version of the map, please see: www.kauffmanindex.org.

State Trends in Opportunity Share of New Entrepreneurs

The Opportunity Share of New Entrepreneurs component of the Startup Activity Index measures the percentage of the new entrepreneurs—measured by Rate of New Entrepreneurs described in the previous section—not coming out of unemployment. For each state, we calculate Opportunity Shares of New Entrepreneurs on a three-year moving average, from 1998 to 2016 (the latest year with data available). The data source for this indicator is the Bureau of Labor Statistics Current Population Survey.

The Opportunity Share provides additional nuance to understand the Rate of New Entrepreneurs. Entrepreneurs coming from unemployment are more likely to start new companies for necessity reasons rather than for opportunity reasons; thus, Opportunity Share is a broad proxy used to identify the new businesses more likely to grow. Of course, entrepreneurs coming out of unemployment also can achieve high growth, but Opportunity Share can give us an early indicator of potential.

Moreover, the Opportunity Share helps us understand changes in the Rate of New Entrepreneurs that potentially are driven by weak job markets.

As with other Startup Activity indicators, there is high variance on Opportunity Share across areas of the country.

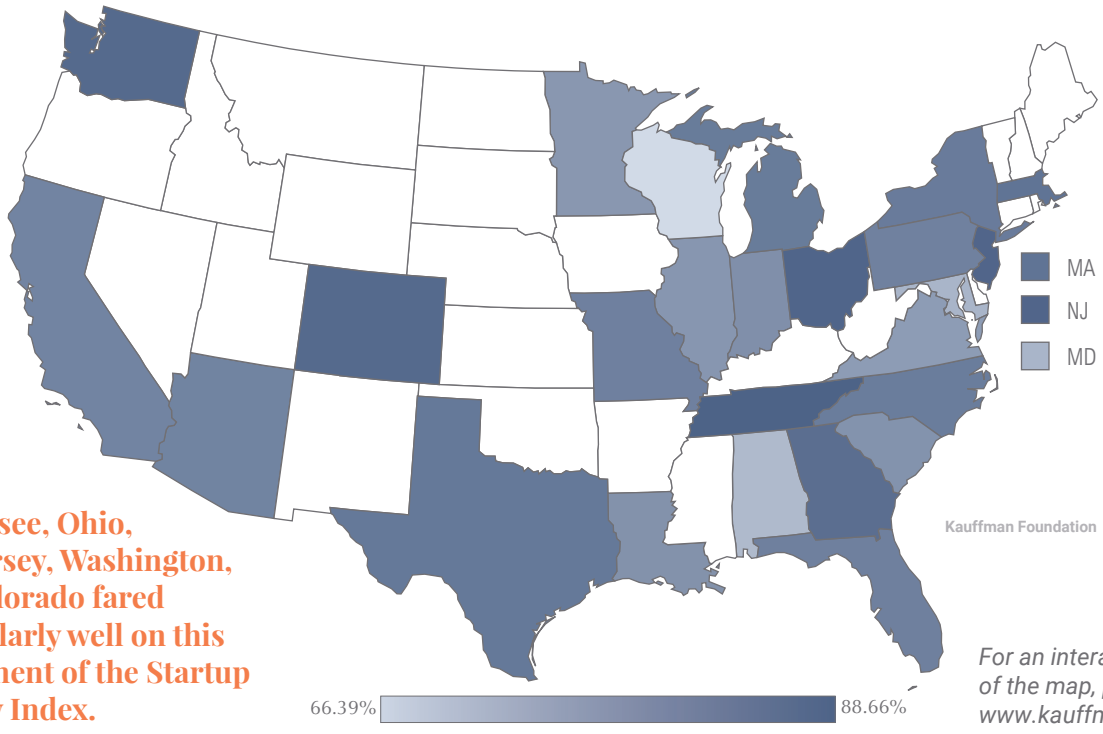
Opportunity Share of New Entrepreneurs—Trends in Larger States

Among the twenty-five largest states, the Opportunity Share of New Entrepreneurs ranged from 66.4 percent in Wisconsin to 88.7 percent in Tennessee. On the lower end of the spectrum, Wisconsin's Opportunity Share of New Entrepreneurs of 66.4 percent means that out of every 100 new entrepreneurs in Wisconsin, approximately thirty-four came directly from unemployment. On the high end of the spectrum, Tennessee's share of 88.7 percent means that only 11 out of every 100 new entrepreneurs in the state came directly from unemployment—or just above one in ten.

Of the twenty-five largest states in the country, Tennessee, Ohio, New Jersey, Washington, and Colorado fared particularly well on this component of the Startup Activity Index.

Figure 6

Opportunity Share of New Entrepreneurs by State | Twenty-Five Largest U.S. States by Population 2017 Startup Activity Index



Tennessee, Ohio, New Jersey, Washington, and Colorado fared particularly well on this component of the Startup Activity Index.

For an interactive version of the map, please see: www.kauffmanindex.org.

Opportunity Share of New Entrepreneurs—Trends in Smaller States

Among the twenty-five smallest states, the Opportunity Share of New Entrepreneurs ranged from 72.4 percent in Alaska to 92.5 percent in Iowa. On the lower end of the spectrum, Alaska's Opportunity Share of New Entrepreneurs of 72.4 percent means that out of every ten new entrepreneurs in Alaska, approximately three came directly from unemployment. On the high end of the spectrum, Iowa's share of 92.5 percent means that only one out of every ten new entrepreneurs in the state came directly from unemployment.

Of the twenty-five smallest states in the country, Iowa, Nevada, Nebraska, South Dakota, and Oklahoma fared particularly well on this component of the Startup Activity Index.

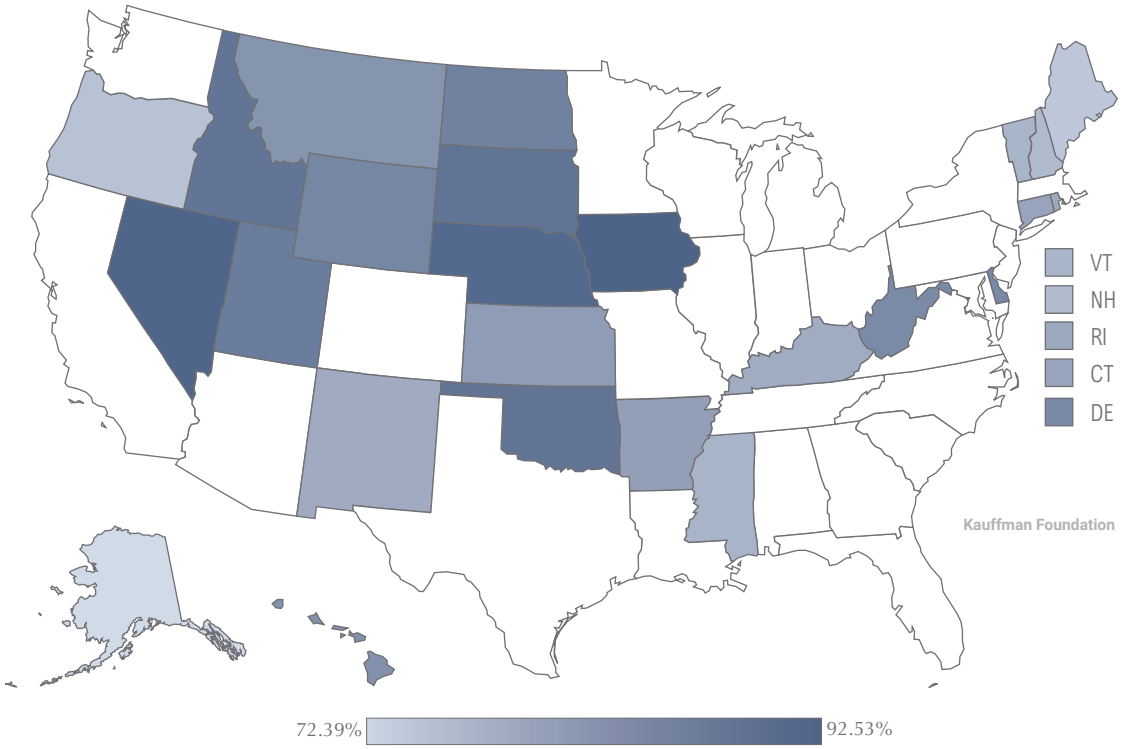


Figure 7

Opportunity Share of New Entrepreneurs by State | Twenty-Five Smallest U.S. States by Population 2017 Startup Activity Index

Iowa, Nevada, Nebraska, South Dakota, and Oklahoma fared particularly well on this component of the Startup Activity Index.

For an interactive version of the map, please see: www.kauffmanindex.org.

State Trends in Startup Density

The Startup Density component of the Kauffman Index measures the number of startups per 1,000 employer businesses. Here, we define startups as firms that are less than one year old and employing at least one person. This is a yearly measure calculated from the Bureau of Labor Statistics BDS—a dataset covering more than five million companies, the universe of employer businesses in the United States.

We present this indicator going back from 1977 to 2014 (the latest year for which the data are available). This measure differs from the Rate of New Entrepreneurs in two key ways:

1. The Rate of New Entrepreneurs tracks the percentage of individuals starting new businesses, while the Startup Density indicator tracks the new businesses themselves; and
2. The Rate of New Entrepreneurs is a very early and broad measure of startup activity, including all entrepreneurs, regardless of how many people their businesses employ, if any.

Startup Density only includes businesses employing at least one person, so it is a slightly more mature measure of startup activity.

Both researchers and entrepreneurs have suggested density as a key indicator of vibrancy in entrepreneurial ecosystems, and there is high variation on this indicator across U.S. states (Stangler and Bell-Masterson 2015 and Feld 2012).

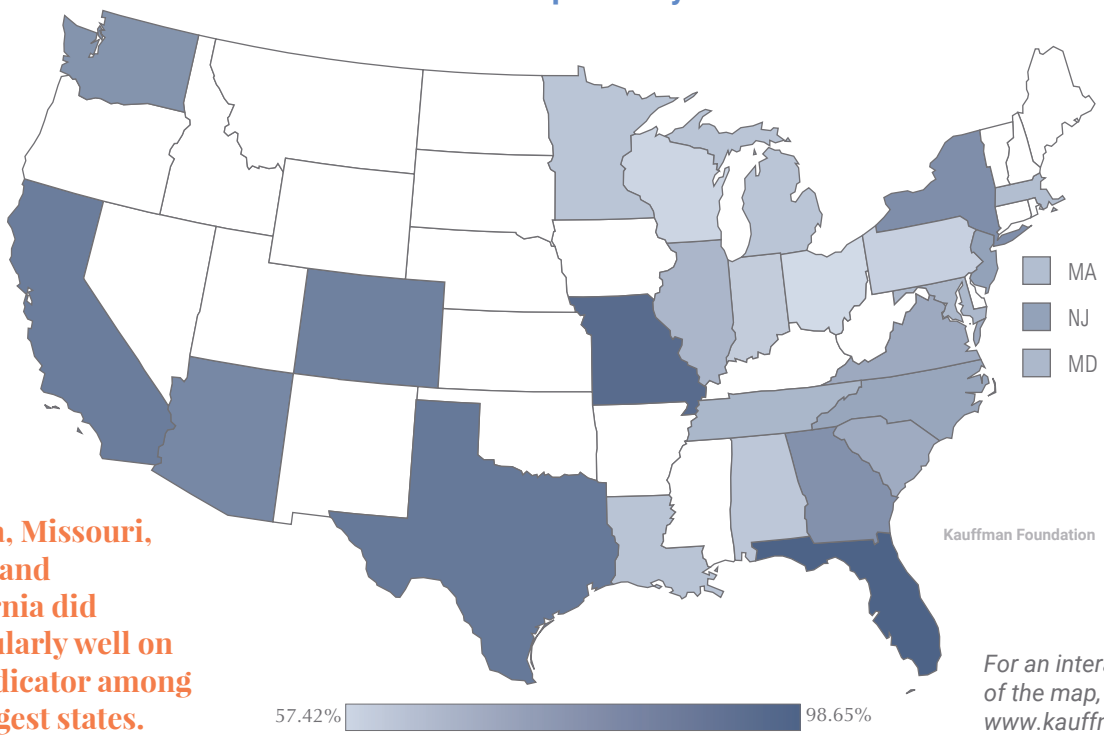
Startup Density—Trends in Larger States

Among the twenty-five largest states, Startup Density ranges all the way from the lower end of 57.4 startups per 1,000 employer firms in Ohio to the higher end of 98.7 startups per 1,000 employer firms in Florida. This means that the density of startups in the Florida area is almost 72 percent higher than the density of startups in Ohio.

Florida, Missouri, Texas, and California did particularly well on this indicator among the largest states.

Figure 8

Startup Density by State | Twenty-Five Largest U.S. States by Population
2017 Startup Activity Index



Florida, Missouri, Texas, and California did particularly well on this indicator among the largest states.

For an interactive version of the map, please see: www.kauffmanindex.org.

Startup Density—Trends in Smaller States

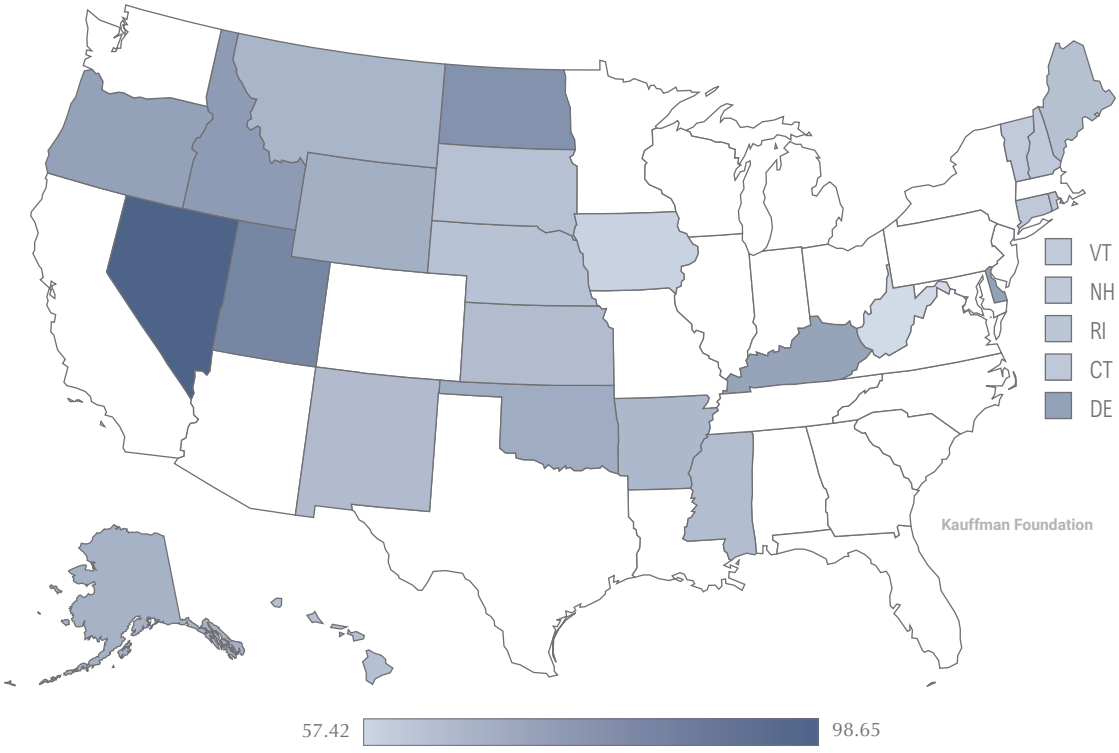
Among the twenty-five smallest states, the Startup Density ranges all the way from the lower end of 51.1 startups per 1,000 employer firms in West Virginia to the higher end of 108.4 startups per 1,000 employer firms in Nevada. This means that the density of startups in the Nevada area is more than twice as high as the density of startups in West Virginia.

Nevada, Utah, and North Dakota did particularly well on this indicator among the smallest states.

Startup density levels in the United States overall have been roughly 20 percent lower than pre-Great Recession levels for the last four years and have trended downward for some time. A similar downward trend holds for states, with larger startups, those that employ other people, remaining precariously below historical norms.

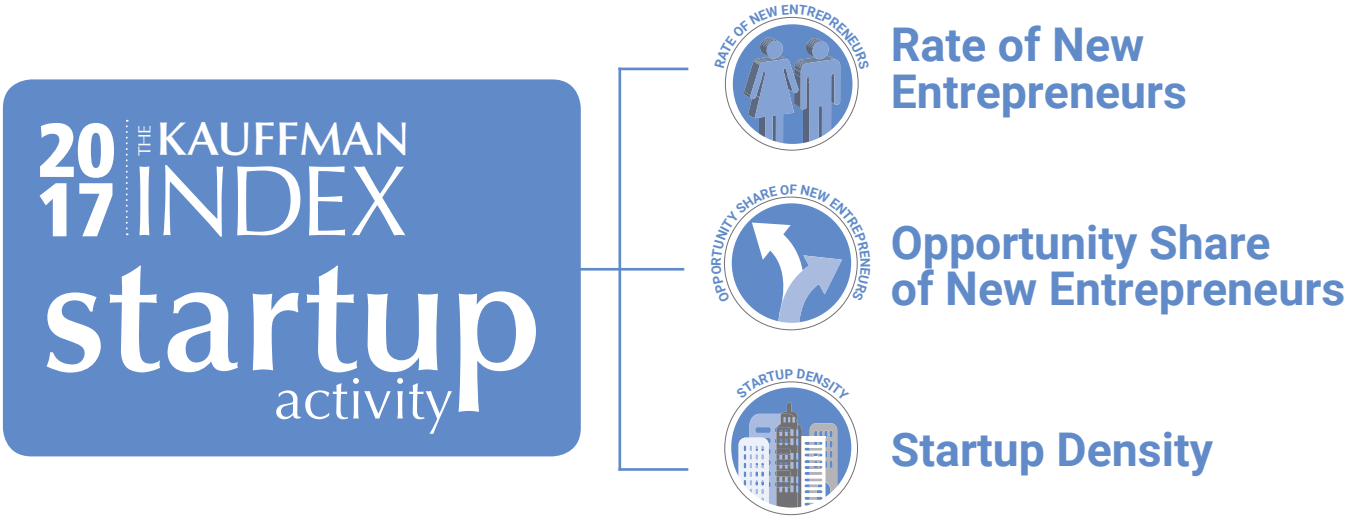
Figure 9

Startup Density by State | Twenty-Five Smallest U.S. States by Population
2017 Startup Activity Index



Nevada, Utah, and North Dakota did particularly well on this indicator among the smallest states.

For an interactive version of the map, please see: www.kauffmanindex.org.



Methodology and Framework

This section of the report discusses the methodology and framework for the Startup Activity Index reports across all geographic levels: national, state, and metropolitan area.

Definitions of Startup Activity Index Components

The Startup Activity Index is calculated based on three components: Rate of New Entrepreneurs, Opportunity Share of New Entrepreneurs, and Startup Density. In this section, we share detailed definitions of each of these components.

Component A: Rate of Entrepreneurs

Component A of the Startup Activity Index comes from the Current Population Survey (CPS) and is calculated by author Rob Fairlie. The CPS microdata capture all business owners, including those who own incorporated or unincorporated businesses and those who are employers or non-employers. To create the Rate of New Entrepreneurs, all individuals who do not own a business as their main job are identified in the first survey month. By matching CPS files, it is then determined whether these individuals own a business as their main job with fifteen or more usual hours worked in the following survey month. Reducing the likelihood of reporting spurious changes in business ownership status from month to month, survey-takers ask individuals whether they currently have the same main job as reported in the previous month. If the answer is yes, the interviewer carries forward job information, including business ownership, from the previous month's survey. If the answer is no, the respondent is asked the full series of job-related questions. Survey-takers ask the initial question at the beginning of the job section to save time during the interview process and improve consistency in reporting.

The main job is defined as the one with the most hours worked. Individuals who start side businesses therefore will not be counted if they are working more hours on a wage/salary job. The requirement that business owners work fifteen or more hours per week in the second month is imposed to rule out part-time business owners and very small business activities. It therefore may result in an understatement of the percent of individuals creating any type of business.

The Rate of New Entrepreneurs also excludes individuals who owned a business and worked fewer than fifteen hours in the first survey month. As a result, the Rate of New Entrepreneurs does not capture business owners who increased their hours from less than fifteen per week in one month to fifteen or more hours per week in the second month. In addition, the Rate of New Entrepreneurs does not capture when these business owners changed from non-business owners to business owners with less than fifteen hours worked. These individuals are excluded from the sample, but may have been at the earliest stages of starting businesses. More information concerning the definition is provided in Fairlie (2006).

The Rate of New Entrepreneurs component of the Startup Activity Index also may overstate entrepreneurship rates in certain respects because of small changes in how individuals report their work status. Longstanding business owners who also have salaried positions may, for example, report that they are not business owners as their main jobs in a particular month

Building from the same data used for component A, the Opportunity Share of New Entrepreneurs is defined as the share of the new business owners coming out of wage and salary work, school, or other labor market statuses.

because their wage/salary jobs had more hours in that month. If the individuals then switched to having more hours in business ownership the following month, it would appear that a new business had been created.

For the definition of the Rate of New Entrepreneurs discussed in this report, all observations from the CPS with allocated labor force status, class of worker, and hours worked variables are excluded. The Rate of New Entrepreneurs is substantially higher for allocated or imputed observations. These observations were included in the first Kauffman Index of Entrepreneurial Activity report (Fairlie 2005). See Fairlie (2006) for a complete discussion of the issues and comparisons between unadjusted and adjusted Rate of New Entrepreneurs.

The CPS sample was designed to produce national and state estimates of the unemployment rate and additional labor-force characteristics of the civilian, non-institutional population ages sixteen and older. The total national sample size is drawn to ensure a high level of precision for the monthly national unemployment rate. For each of the fifty states and the District of Columbia, the sample also is designed to guarantee precise estimates of average annual unemployment rates, resulting in varying sample rates by state (Polivka 2000). Sampling weights provided by the CPS, which also adjust for non-response and post-stratification raking, are used for all national and state-level estimates. The CPS also can be used to calculate metropolitan-area estimates, but only for the largest U.S. metropolitan areas. For example, the Bureau of Labor Statistics reports annual labor-force participation and unemployment rates for the largest fifty-four metropolitan statistical areas (MSAs). We focus on the forty largest MSAs in our analysis and calculate moving averages when needed to ensure adequate precision in all reported estimates.

Component B: Opportunity Share of New Entrepreneurs

Building from the same data used for component A, the Opportunity Share of New Entrepreneurs is defined as the share of the new business owners coming out of wage and salary work, school, or other labor market statuses. Alternatively, individuals can start businesses coming out of unemployment. The initial labor market status is defined in the first survey month. The Rate of New Entrepreneurs is measured in the second (or following) survey month.

Component C: Startup Density

The Startup Density component of the Startup Activity Index uses Bureau of Labor Statistics data from the Business Dynamics Statistics (BDS), and it measures the number of new employer firms normalized by the employer business population of a given area. We define startups here as employer firms younger than one year old, and we divide the number of startups in a region by the number of active employer businesses. The Startup Density rate is per 1,000 employer businesses in the area. Our definition here largely is based on the entrepreneurship density measure suggested by our Kauffman Foundation colleagues Stangler and Bell-Masterson (2015) in their "Measuring an Entrepreneurial Ecosystem" paper.

Because the BDS data has a lag of about two years, we created a nowcast of startup density for the most recent years for the United States overall. For the national report, we estimated startup density for the years 2015 and 2016 using data from the Business Employment Dynamics (BED) available through the Bureau of Labor Statistics. The key difference between the BED and the BDS are their timeliness and units of analysis. In terms of timeliness, the BED is available for 2016, while the BDS is only available until 2014; however, the unit of analysis for the BED is establishments, while the BDS has data for both firms and establishments. For the purposes of this data, a new establishment is a location where business is conducted, whether it is a new business or not (e.g., a startup is a new establishment, as is a new store opening from an existing company). A new firm, on the other hand, is a new legal entity conducting business (e.g., a business that just opened is a new firm, but a new store opening from an existing company is not). We used the new establishment data from the BED to estimate the number of new firms for the most recent years (2015 and 2016), years for which the BDS is not yet available.

To do so, we used national establishment-level data stratified by age for the years 1994 to 2014 to calculate a yearly ratio of new employer firms to new establishments in the United States. We use that ratio for the most recent year with full data available to estimate the startup density. We do so by using the product of these ratios and the number of new establishments to predict the number of all startups in the United States. The resulting 2015 and 2016 figures for the number of firms in the United States were used to estimate the startup density for these years.

We attempted other nowcasting approaches, including using data such as GDP growth and unemployment rates, but this estimation offered better results.

Below is a graph showing the difference in values between actual and estimated Startup Density. The median estimation error was +/- 3.3 percent and the range of the estimation error varied between -6.91 percent and -5.7 percent.

Calculating the Startup Activity Index

The Startup Activity Index provides a broad index measure of business startup activity in the United States. It is an equally weighted index of three normalized measures of startup activity. The three component measures of the Startup Activity Index are:

i. the Rate of New Entrepreneurs among the U.S. adult population,

ii. the Opportunity Share of New Entrepreneurs, which captures the percentage of new entrepreneurs primarily driven by "opportunity" vs. by "necessity," and

iii. the Startup Density (new employer businesses less than one year old, normalized by population).

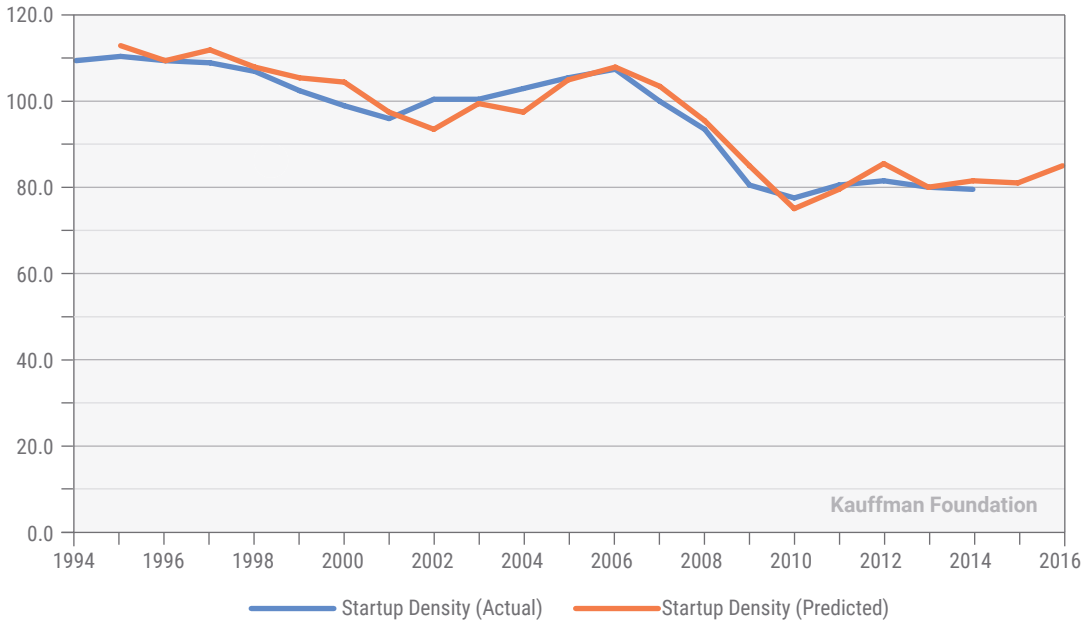
Each of these three measures is normalized by subtracting the mean and dividing by the standard deviation for that measure (i.e., creating a z-score for each variable). This creates a comparable scale for including the three measures in the Startup Activity Index. We use national annual estimates from 1996 to the latest year available (2016) to calculate the mean and standard deviation for each of the CPS-based components. Similarly, we use national annual numbers from 1996 to the latest year available (2016) to calculate the mean and standard deviation for the Startup Density. Only for our national report, we predicted 2015 and 2016 Startup Density as discussed above. The same normalization method is used for all three geographic levels—national, state, and metropolitan area—for comparability and consistency over time.

The components we use for the national-level Startup Activity Index are all annual numbers. The Rate of New Entrepreneurs covers years from 1996 to the latest year available (2016). The Opportunity Share of New Entrepreneurs covers years from 1996 to the latest year available (2016). The Startup Density covers years from 1977 to the latest year available (2016).

The Rate of New Entrepreneurs and the Opportunity Share of New Entrepreneurs components of the state-level Startup

Figure 10

Startup Density, Actual and Predicted



SOURCE: Kauffman Foundation calculations from the Business Dynamics Statistics and Business Employment Dynamics.

Activity Index are calculated on three-year moving averages with the same yearly coverage as the national-level numbers. The reason we do three-year moving averages on the sample-based CPS measures is to reduce sampling issues. Because these are three-year moving averages with annual estimates starting in 1996, the first year for which three-year moving averages are available is 1998. The Startup Density component of the Index is presented yearly, from 1977 to the latest year available (2014).

For the metropolitan-area level Startup Activity Index, we present the Rate of New Entrepreneurs component on a three-year moving average from 2008 to the latest year available (2016). Because these are three-year moving averages, annual estimates are first calculated in 2006. The Opportunity Share of New Entrepreneurs component of the Startup Activity Index is presented on five-year moving averages, starting in 2010 and going up to the latest year available (2016). Annual estimates used to calculate the moving average start in 2006. Again, the reason behind presenting moving averages is to reduce sampling issues. The Startup Density component of the Index is presented yearly, from 1977 to the latest year available (2014).

Data Sources and Component Measures

Data Sources

In this section, we discuss the underlying data sources used to calculate each of the components of the Startup Activity Index.

Rate of New Entrepreneurs and Opportunity Share of New Entrepreneurs

To calculate the Rate of New Entrepreneurs and the Opportunity Share of New Entrepreneurs, the underlying dataset used is the basic monthly files of the Current Population Survey. These surveys, conducted monthly by the Census Bureau and the Bureau of Labor Statistics, represent the entire U.S. population and contain observations for more than 130,000 people each month. By linking the CPS files over time, longitudinal data are created, allowing for the examination of the Rate of New Entrepreneurs. Combining the monthly files creates a sample size of roughly 700,000 adults ages twenty to sixty-four each year.

Households in the CPS are interviewed each month over a four-month period. Eight months later, they are re-interviewed in each month of a second four-month period. Thus, individuals who are interviewed in January, February, March, and April of one year are interviewed again in January, February, March, and April of the following year. The CPS rotation pattern makes it possible to match information on individuals monthly and, therefore, to create two-month panel data for up to 75 percent of all CPS respondents. To match these data, the household and individual identifiers provided by the CPS are used. False matches are removed by comparing race, sex, and age codes from the two months. After removing all non-unique matches, the underlying CPS data are checked extensively for coding errors and other problems.

Monthly match rates generally are between 94 percent and 96 percent (see Fairlie 2005). Household moves are the primary reason for non-matching. Therefore, a somewhat non-random sample (mainly geographic movers) will be lost as a result of the matching routine. Moves do not appear to create a serious problem for month-to-month matches, however, because the observable characteristics of the original sample and the matched sample are very similar (see Fairlie 2005).

Startup Density

We use a firm-level dataset covering approximately five million businesses to calculate Startup Density.

This firm-level dataset is the Bureau of Labor Statistics BDS, which is constructed using administrative payroll tax records from the Internal Revenue Service (IRS). The BDS data present, among other things, numbers of firms tabulated by age and by geography (national, state, and metropolitan area). We make use of that data to calculate the raw number of employer firms younger than one year old by geographic levels. We then normalize this number by employer business population to arrive at the Startup Density of an area. In the 2015 Index, an alternative measurement for Startup Density was normalized by people population from the Bureau of Economic Analysis. The updated normalization method allows for easier calculation because of matching location definitions without meaningful change in the spirit of the measurement.

For predicting the Startup Density for our national report, we obtained establishment-level data from BED data available through the Bureau of Labor Statistics. BED is a set of statistics generated from the Quarterly Census of Employment and Wages program. This estimation method is described in more detail under the "Definitions of Startup Activity Index Components" header of this Methodology section.

Standard Errors and Confidence Intervals

Rate of New Entrepreneurs and Opportunity Share of New Entrepreneurs

The analysis of Rate of New Entrepreneurs by state includes confidence intervals that indicate confidence bands of approximately 0.15 percent around the Rate of New Entrepreneurs. While larger states have smaller confidence bands, the smallest states have larger confidence bands of approximately 0.20 percent. Oversampling in the CPS ensures that these small states have sample sizes of at least 5,000 observations and, therefore, provides a minimum level of precision.

The standard errors used to create the confidence intervals reported here may understate the true variability in the state estimates. Both stratification of the sample and the raking procedure (post-stratification) will reduce the variance of CPS estimates (Polivka 2000 and Train, Cahoon, and Maken 1978). On the other hand, the CPS clustering (i.e., nearby houses on the same block and multiple household members) leads to a larger sampling variance than would have been obtained from simple random sampling. It appears as though the latter effect dominates in the CPS, and treating the CPS as random generally understates standard errors (Polivka 2000). National unemployment rate estimates indicate that treating the CPS as a random sample leads to an understatement of the variance of the unemployment rate by 23 percent. Another problem associated with the estimates reported here is that multiple observations (up to three) may occur for the same individual.

All of the reported confidence intervals should be considered approximate, as the actual confidence intervals may be slightly larger. The complete correction for the standard errors and confidence intervals involves obtaining confidential replicate weights from the BLS and employing sophisticated statistical procedures. Corrections for the possibility of multiple observations per person, which may create the largest bias in standard errors, are made using statistical survey procedures for all reported confidence intervals. It is important to note, however, that the estimates of the Rate of New Entrepreneurs are not subject to any of these problems. By using the sample weights provided by the CPS, all estimates of the Rate of New Entrepreneurs are correct.

Startup Density

Because the BDS is based on administrative data covering the overall employer business population, sampling concerns such as standard errors and confidence intervals are irrelevant for the Startup Density numbers from 1977 to 2014. Nonetheless, nonsampling errors still could occur. These could be caused, for example, by data entry issues with the IRS payroll tax records or by businesses submitting incorrect employment data to the IRS; however, these are probably randomly distributed and are unlikely to cause significant biases in the data. Please see Jarmin and Miranda (2002) for a complete discussion of potential complications on the dataset caused by changes in the administrative data on which the BDS is based.

For the Startup Density estimates for 2015 and 2016, we expect an estimation error up to the levels described in more detail under the "Definitions of Startup Activity Index Components" header of this Methodology section.

Advantages over Other Possible Measures of Entrepreneurship

The Startup Activity Index has several advantages over other possible measures of entrepreneurship based on household or business-level data. We chose to focus primarily on two distinct datasets: one based on individuals (CPS) and another based on businesses (BDS). This allows us to study both entrepreneurs and the startups they create. These datasets have complementary strengths that make this index a robust measure of startup activity.

Rate of New Entrepreneurs and Opportunity Share of New Entrepreneurs

The Rate of New Entrepreneurs and the Opportunity Share of New Entrepreneurs components of Startup Activity Index are based on the CPS, and this dataset provides four prominent advantages as an early and broad measure of startup activity:

1. The CPS data are available only a couple of months after the end of the year, whereas even relatively timely data such as the American Community Survey (ACS) take more than a year to be released.
2. These components of the Startup Activity Index include all types of business activities (employers, non-employers, unincorporated, and incorporated businesses), but do not include small-scale side business activities such as consulting and casual businesses (because only the main job activity is recorded, and the individual must devote fifteen or more hours a week to working in the business).
3. The panel data created from matching consecutive months of the CPS allow for a dynamic measure of entrepreneurship, whereas most datasets only allow for a static measure of business ownership (e.g., ACS).
4. The CPS data include detailed information on demographic characteristics of the owner, whereas most business-level datasets contain no information on the owner (e.g., employer and non-employer data).

It is worth mentioning that the CPS components of the Startup Activity Index also differ from another entrepreneurship measure that may, on a first glance, look similar: the Global Entrepreneurship Monitor's Total early-stage Entrepreneurial Activity (TEA). The TEA captures the percentage of the age eighteen-to-sixty-four population who currently are nascent entrepreneurs (i.e., individuals who are actively involved in setting up businesses) or who are currently owner-managers of new businesses (i.e., businesses with no payments to owners or employees for more than forty-two months). The nascent entrepreneurs captured in the TEA who are still in the startup phase of business creation are not necessarily captured in the Rate of New Entrepreneurs because they may not be working on

the new business for fifteen hours or more per week. The CPS components of the Startup Activity Index also differ from the TEA in that, because they are based on panel data, they capture entrepreneurship at the point in time when the business is created. In addition, the Global Entrepreneurship Monitor (GEM) measures in the United States use a much smaller sample, allowing for significant estimation challenges.

Startup Density

The Startup Density component of the Startup Activity Index, based on the BDS, presents four main advantages compared to other business-level datasets:

1. It is based on administrative data covering the overall employer business population. As such, it has no potential sampling issues.
2. It has detailed coverage across all levels of geography, including metropolitan areas.
3. It provides firm-level data, rather than just establishment-level data. This is an important feature because new establishments may show another location of an existing firm, rather than an actual new business.
4. It provides a detailed age breakdown of firms, allowing us to clearly identify new and young firms.

As mentioned in the definition of Component C, a dataset we use that is similar to the BDS data is the BED product from the Bureau of Labor Statistics, which we use in conjunction with the BDS to estimate Startup Density for the two most recent years. We chose not to rely exclusively on the BED for this report because of two distinct advantages we see the BDS having over the BED alone. First, the BDS tracks firm-level data, as opposed to the establishment-level data tracked by the BED. Second, the BDS has data available at the metropolitan level, while the BED does not.

Because the BED tracks establishments rather than firms, the numbers from the BDS are different than the ones on the BED. Nonetheless, the trends on the two datasets move largely in tandem, and that is why we are able to use the BED data to predict Startup Density as would it be measured by the BDS.

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