
HAWAII BUSINESS DYNAMICS

An Analysis of Business Births, Deaths, and Survival Rates



Department of Business, Economic Development and Tourism
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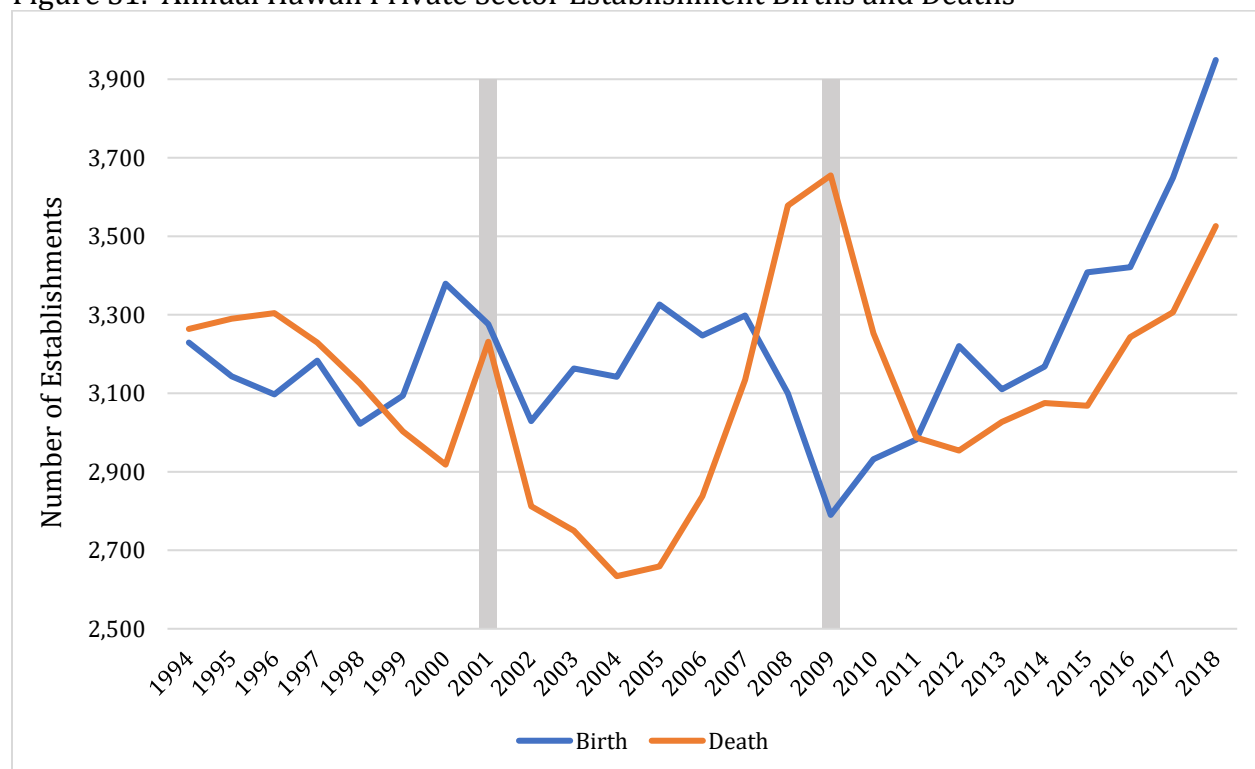
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EXECUTIVE SUMMARY

From 1994 through 2018, Hawaii had an average of 3,214 establishment births annually, which created an average of 14,392 jobs annually. During the same period, the average annual number of establishment deaths was 3,115 and the average annual number of jobs lost from establishment deaths was 13,307 jobs. In other words, the average annual net gain (births – deaths) for this period was 99 establishments and 1,085 jobs.

Figure S1. Annual Hawaii Private Sector Establishment Births and Deaths

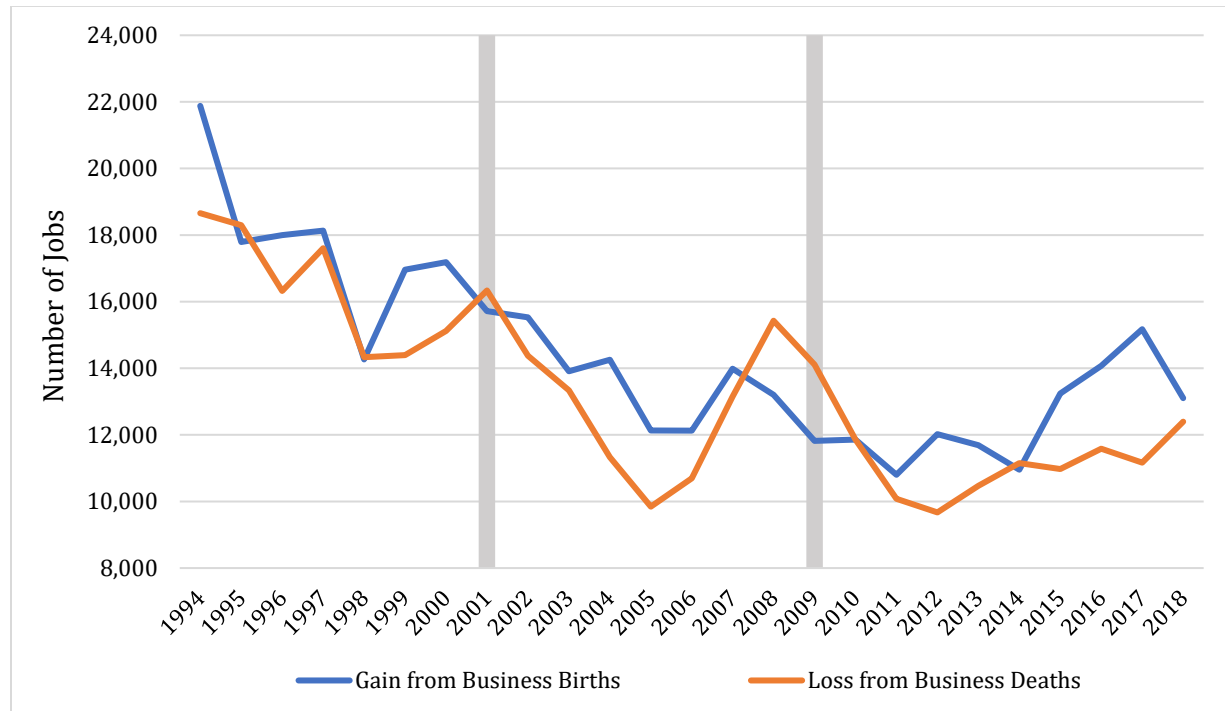


Source: Bureau of Labor Statistics, BED--shaded areas are Hawaii recessions 2001 and 2009, data are seasonally adjusted

Establishment births were relatively stable between 1994 and 2007 with an average of 3,188 births per year. Birth decreased significantly during the 2008-2011 period with an average of 2,951 per year. Establishment deaths decreased from 3,264 in 1994 to 2,634 in 2004, then increased and peaked at 3,655 in 2009. During the 2008-2010 period, Hawaii had a net loss of 554 establishments per year. Since 2011, births have been larger than deaths, the net gain was 215 businesses annually between 2011 and 2018.

The data also showed that the business dynamics followed the business cycles in Hawaii. During economic upturns, more new businesses established than those terminated, while during economic downturns, business deaths were larger than births.

Figure S2. Annual Hawaii Job Gains and Losses from Establishment Births and Deaths



Source: Bureau of Labor Statistics, BED— shaded areas are Hawaii recessions 2001 and 2009, data are seasonally adjusted

In 1994, the average number of jobs per establishment birth was 6.0 for the U.S. and 6.8 for Hawaii and, by 2018, these numbers had decreased to 3.4 and 3.3 respectively. The decline in jobs created from establishment births can be attributed to the fact that establishments can open and operate with fewer employees as technology increases labor productivity.

The data showed that establishment births for the U.S. and Hawaii have been recovering gradually since the last recession. From 1994 through 2018, Hawaii lagged the U.S. in the percentage of establishment births by 0.5% on average. Jobs generated from establishment births declined for both the U.S. and Hawaii from 1994 through 2011. From 2012 through 2015, jobs from establishment births flattened for the U.S. and Hawaii followed slightly behind. Hawaii's job numbers from establishment births surpassed U.S. numbers in 2017 by .03 percent.

In addition to births and deaths, this paper analyzes the “survival rate” of establishments. In Hawaii, the data showed that 50 percent of establishments remain after 5.5 years in business which is longer than the U.S. at 4.6 years for the same survival rate. After 25 years, there are still over 20 percent of establishments in business. The rate of decline in establishment survival rates decreases with time due to the fact that the weaker establishments are weeded out and the remaining establishments grow stronger.

Compared with the U.S., Hawaii had lower business birth rate but higher survival rate during the 24 years analyzed.

This report also examines persons that are defined by the U.S. Census Bureau as “nonemployer” firms. Nonemployer firms have generally had strong growth in the past decade, with the exception of the recession. Excluding the years of the recession 2007 through 2009, nonemployer firm annual growth averaged at approximately 3.3 percent from 2003 through 2017. Growth slowed in 2013 to 1.4 percent and then increased to 4.1 percent in 2014. Annual growth continued within this range, with data showing growth at 2.5 percent by 2017, for a total of 111,003 nonemployer firms.

INTRODUCTION

New business formation is the pipeline for Hawaii's future economy. Each day new businesses are formed bringing innovative ideas to the market, creating jobs, and increasing tax revenue. This is the foundation of economic development and it is important to understand the trends in business formation and how Hawaii compares to the overall U.S. economy.

The economic development literature includes studies that support the hypothesis that smaller firms grow jobs faster than larger firms. An earlier study in this area examined the growth of manufacturing firms between 1976 and 1983 and found that smaller firms had higher employment growth rates than larger firms (Hall, 1987). While another examined the relationship between firm size and job growth between 1992 and 2004 and found that smaller firms created jobs at a higher rate than larger firms (Neumark et al., 2011). Haltiwanger et al. (2013) found similar evidence that small businesses create more jobs. Another study found small firms are often more labor-intensive than large firms (Komarek & Loveridge, 2015). A more recent study found most of net jobs were created in small firms, however, most productivity gains were created in large firms (Heyman et al., 2018).

There is also a body of literature that has focused on firm age as a driver for economic growth, rather than firm size. Haltiwanger (2006) examined the effect of firm age and job growth and found that younger firms had higher job growth than older firms, even when controlled for firm size. One reason for this appears to be that younger firms have more organizational flexibility and agility when compared with older firms. Another study examined the relationship between firm age and the response to economic opportunities and found that younger firms react quicker to economic opportunities than older firms (Adelino et al, 2014). In addition to firm age, founder age also has been examined in the literature. Contrary to popular belief, the founders of startups analyzed were generally middle-aged, with a mean age of 45.0 (Azoulay et al., 2019). Middle-aged founders also were more likely to have successful exits by being acquired by larger firms.

Another factor that can help propel economies forward is the rate of business churn. Churn is the rate of business attrition or death. While this may seem counter-intuitive, a high rate of business churn has been linked to higher rates innovation (Robinson et al., 2006). The concept is that a steady pipeline of new businesses brings new innovations into an economy often faster than established businesses. Even if a large percentage of the new businesses fail, a portion of the benefits of the innovation remain through knowledge gained by employees and related companies. In order to be sustainable, a high rate of business churn must be accompanied by a high rate of business formation or births.

One trend identified by a U.S. Bureau of Labor Statistics study was that business establishments in the U.S. are starting smaller and staying smaller. The study noted that the average number of employees per establishment decreased during the decade of 2000 through 2010. The authors concluded that this decline was due to a greater emphasis on technology and less on labor (Choi and Spletzer, 2012).

As old businesses close, new businesses must be created to move the economy forward. The growth of Hawaii's future economy will benefit from a steady pipeline of new businesses bringing innovative ideas to market. The purpose of the report is to examine business dynamics of Hawaii's economy relating to establishment births and deaths, and the resulting changes in employment from establishment births and deaths.

Unit of Measure

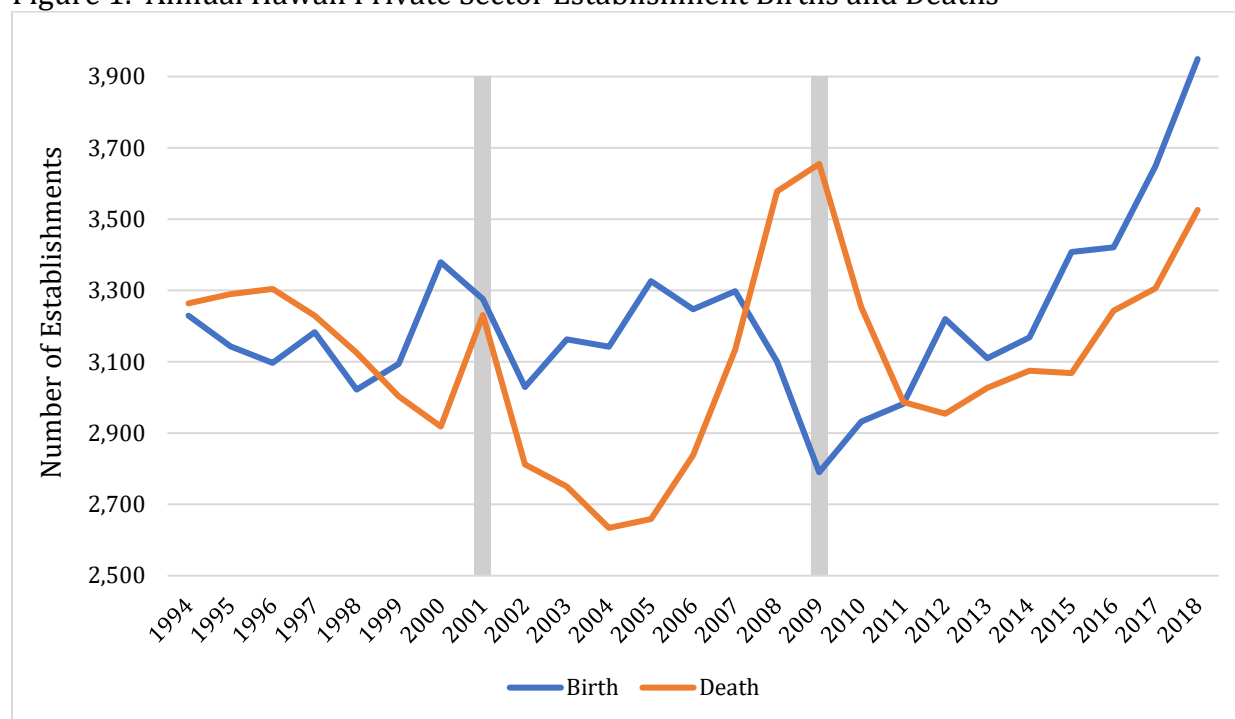
The U.S. Bureau of Labor Statistics (BLS) compiles data called the Business Employment Dynamics (BED). This data set uses *establishments* in the tabulation of statistics by industry. The U.S. Bureau of Labor Statistics (BLS) defines an establishment as an economic unit that produces goods or services, usually at a single physical location, and is engaged in one or predominantly one activity. It is important to note that there is a distinct difference between *firms* and *establishments*. A firm is a legal business, either corporate or otherwise, which consists of one or more establishments. For example, a retail company with one store would be counted as one firm and one establishment. However, if the same retailer had two stores, the count would be one firm and two establishments. The establishment birth rate is defined as establishment births as a percentage of total establishments, and the job creation rate is defined as jobs created from establishment births as a percentage of total jobs.

In the case of the BED data, the unit of measure is establishments. The BED provides data regarding establishment creation or "births" and establishment permanent closings or "deaths." A birth is defined as an establishment that had positive employment in the third month of a quarter and zero employment in the third month of the previous four quarters and a death is a unit that reported zero employment in the third month of a quarter and did not report positive employment in the third month of the next four quarters (Sadeghi, 2008). The BED data are generated from the Quarterly Census of Employment and Wages (QCEW) program. It is important to note that the BED data does not include self-employed establishments and therefore, these will be analyzed separately using U.S. Census Bureau data.

BIRTHS AND DEATHS OF HAWAII BUSINESS ESTABLISHMENTS

From an economic development standpoint, it is essential that business establishment births exceed business establishment deaths. An economy where businesses are closing faster than new businesses are opening is not sustainable. Figure 1 compares annual establishment births and deaths from 1994 through 2018. Generally, Hawaii's establishment births have exceeded establishment deaths. The main exception was Hawaii's recent recession, with four consecutive years of establishment deaths exceeding establishment births from 2008 through 2011. After this period, births and deaths began to converge and then 2012 through 2018, births exceeded deaths.

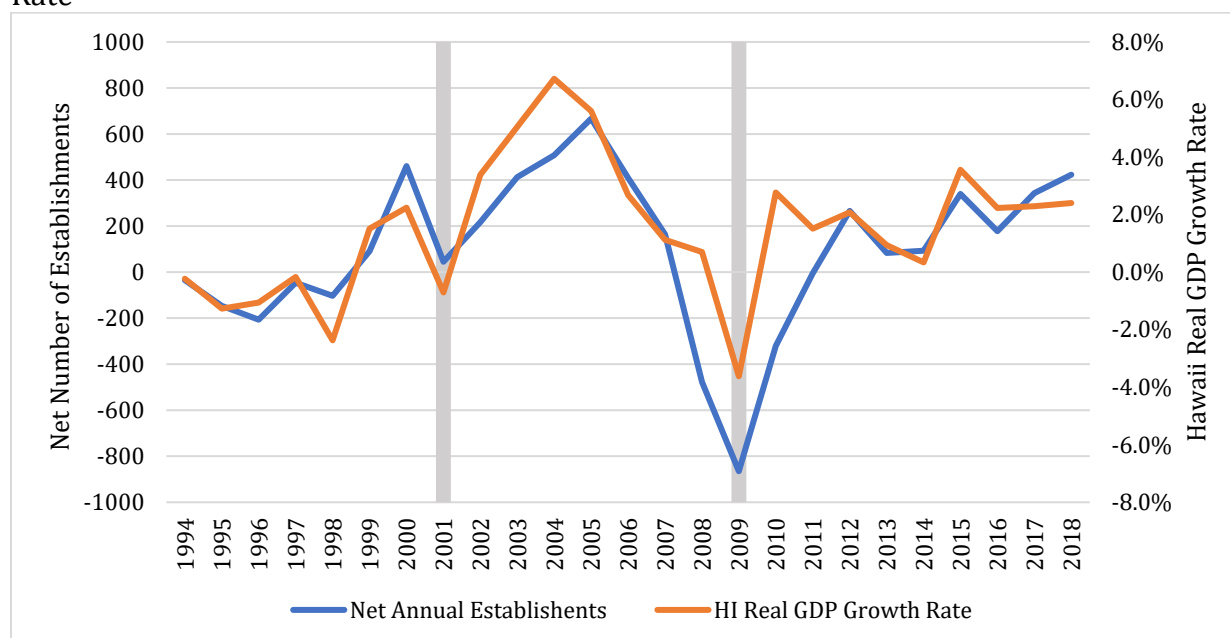
Figure 1. Annual Hawaii Private Sector Establishment Births and Deaths



Source: Bureau of Labor Statistics, BED--shaded areas are Hawaii recessions 2001 and 2009, data are seasonally adjusted

Figure 2 shows that Hawaii's net annual establishments of business births and deaths closely follows Hawaii's real GDP growth rate. Peak numbers of establishments occurred in 2000 at 461 and in 2005 at 667 net establishments created. During this time frame, Hawaii's real GDP growth rate reached 2.2 percent in 2000 and 6.7 percent in 2004. Net establishments followed a similar trend, increasing and decreasing along with the business cycle. This shows Hawaii's businesses are greatly impacted by the business cycle.

Figure 2. Hawaii Net Annual Establishment Creation (Births-Deaths) and Real GDP Growth Rate



Source: Bureau of Labor Statistics, BED— shaded areas are Hawaii recessions 2001 and 2009, data are seasonally adjusted

Table 1 shows that from 1994 through 2000, when Hawaii's economy was in stagnation, the average annual number of establishment births was 3,164 and deaths was 3,162, with a net increase of only 2 establishments per year. Births surpassed deaths by an average of 396 establishments with 3,201 births and 2,805 deaths per year during the 2002 through 2007 period when Hawaii's economy was in expansion. The 4.1 percent average Hawaii real GDP growth rate for period 2002 through 2007 partially explains why there was a large drop in establishment deaths. During the great recession period (2008-2010), Hawaii had a net loss of 554 establishments a year. During the most recent expansion, 2011 through 2018, the average number of births and deaths were 3,363 and 3,148 respectively with 215 net gains in business establishments annually.

Table 1. Average Annual Establishment Births, Deaths, and Real GDP Growth Rate

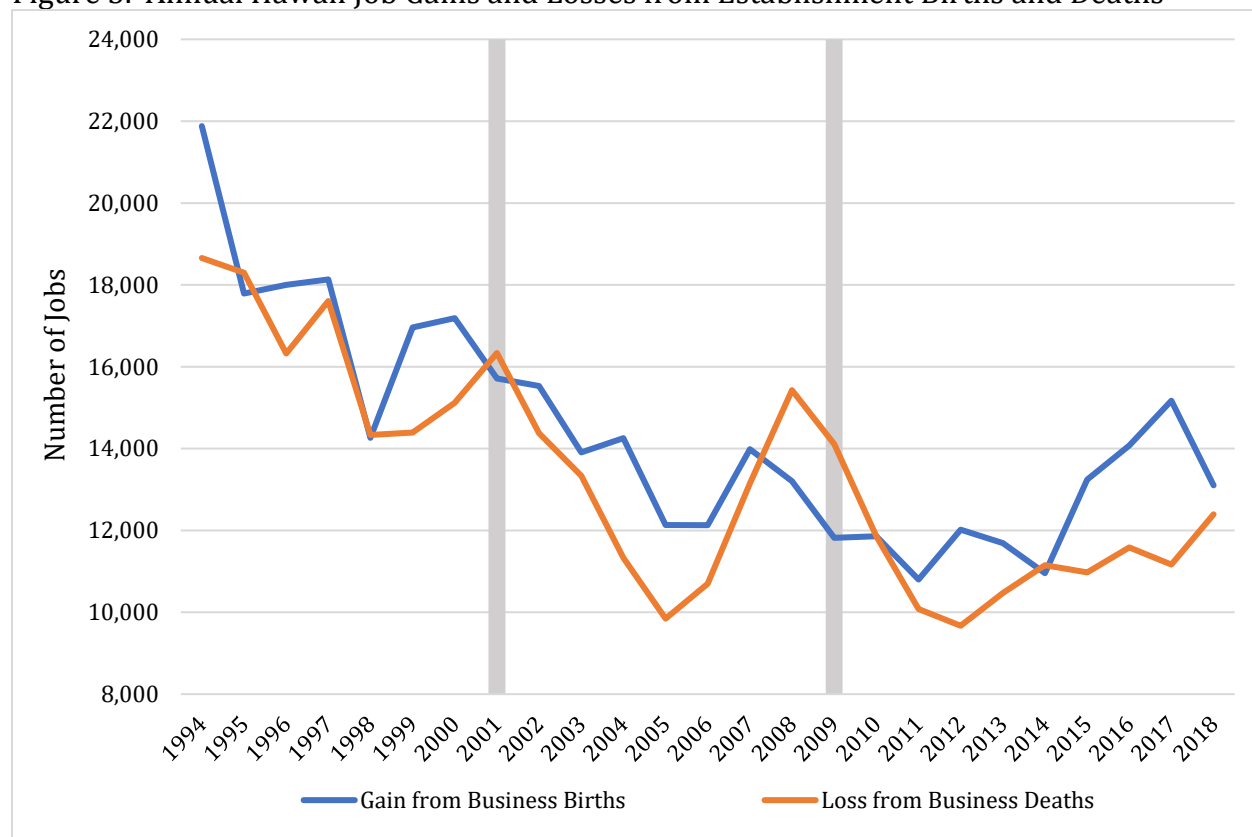
Period	Birth	Death	Net	HI Real GDP Growth Rate
1994-2000	3,164	3,162	2	-0.2%
2001-2001	3,276	3,231	45	-0.7%
2002-2007	3,201	2,805	396	4.1%
2008-2010	2,941	3,495	-554	-0.1%
2011-2018	3,363	3,148	215	1.9%
1994-2018	3,214	3,115	99	1.5%

Source: Bureau of Labor Statistics, BED

Overall during the 1994-2018, Hawaii gained 99 business establishments per year.

In contrast to slight variations in establishment births and deaths, the jobs gained from establishment births and lost from deaths has declined dramatically (Table 1 and 2). As shown in Figure 3, 1994 had 21,880 jobs gained from establishment births and 18,657 lost jobs from deaths. By 2018, the birth and death job numbers had declined to 13,100 and 12,396 respectively. The recession accelerated job losses from establishment deaths, while reducing jobs gained from births. From 2008 through 2010, job losses from establishment deaths exceeded jobs gained from births. From 2011 through 2013, jobs created from establishment births overtook job losses from establishment deaths. Due to the economic slowdown in 2014 (first quarter real GDP decreased by 1.2%), there were 194 job losses from deaths over jobs from births in 2014. By 2015, job gains from establishment births trended upward until 2018, when jobs began to converge ending with a gap between births and deaths of 704 jobs.

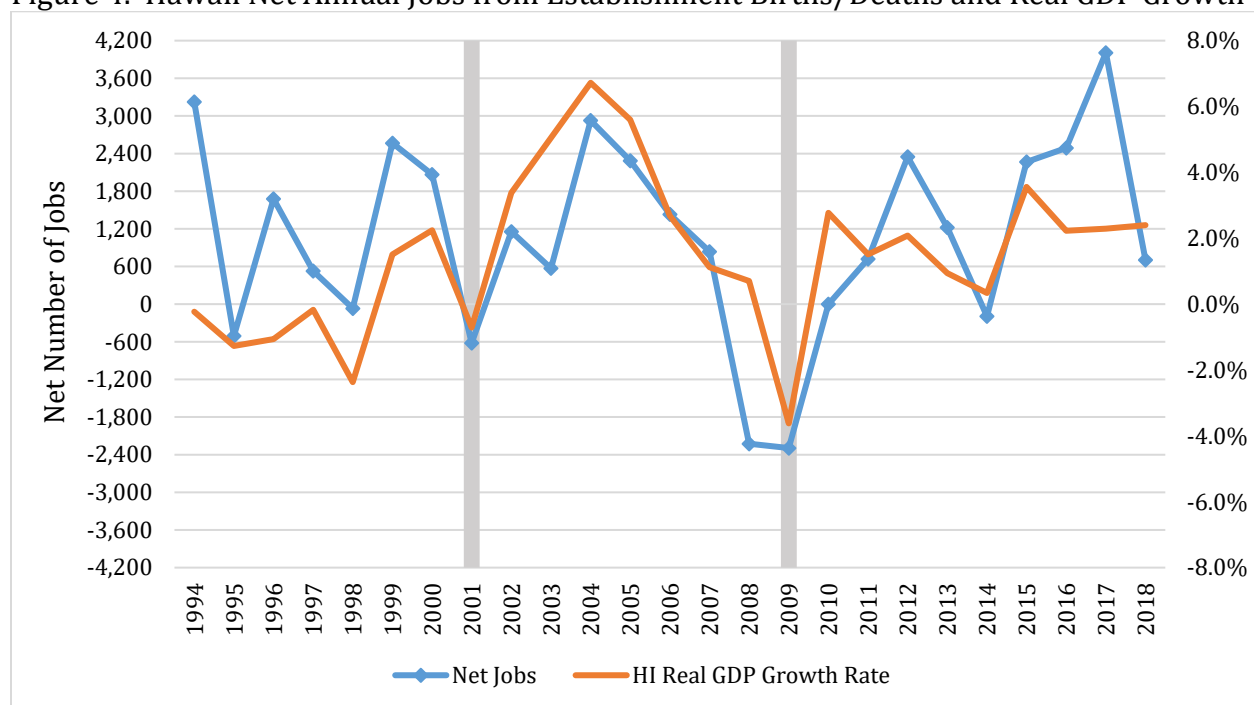
Figure 3. Annual Hawaii Job Gains and Losses from Establishment Births and Deaths



Source: Bureau of Labor Statistics, BED— shaded areas are Hawaii recessions 2001 and 2009, data are seasonally adjusted

Figure 4 shows Hawaii's net annual jobs from establishment births and deaths which followed the Hawaii real GDP growth rate fairly closely.

Figure 4. Hawaii Net Annual Jobs from Establishment Births/Deaths and Real GDP Growth



Source: Bureau of Labor Statistics, BED— shaded areas are Hawaii recessions 2001 and 2009, data are seasonally adjusted

As shown in Table 2, average annual jobs gained from establishment births exceeded jobs lost from establishment deaths in the three periods not including Hawaii recessions (2001 and 2009). Furthermore, jobs gained and lost from establishment births and deaths declined in all periods except during the last recession. The average jobs gained/lost from establishment births and deaths for the period of 1994 through 2000 was 17,745 and 16,389 respectively; for the 2011 through 2018 period, these averages declined to 12,632 and 10,937 respectively. Net jobs gained were highest during the 2002-2007 and 2011-2018 periods, which also had the highest average Hawaii real GDP growth rates at 4.1 and 1.9 percent respectively.

Table 2. Average Annual Jobs Gained from Hawaii Establishment Births and Deaths

Period	Birth	Death	Net	HI Real GDP Growth Rate
1994-2000	17,745	16,389	1,355	-0.2%
2001-2001	15,714	16,334	-620	-0.7%
2002-2007	13,657	12,122	1,535	4.1%
2008-2010	12,293	13,800	-1,507	-0.1%
2011-2018	12,632	10,937	1,695	1.9%
1994-2018	14,392	13,307	1,085	1.5%

Source: Bureau of Labor Statistics, BED

Table 3 compares the percentage changes for establishment births and deaths for the 1994 through 2018 period using annual averages for each respective year. The data show

that, during 1994 through 2018 period, establishment births increased greater than establishment deaths. In looking at the number of establishments, the total growth for births was 22.3 percent and for deaths was 8.0 percent between the two years. Jobs declined 40.1 percent for establishment births and 33.6 percent for establishment deaths. Although both job gains from establishment births and job losses from establishment deaths were smaller in 2018 as compared with 1994, the net was a gain in jobs.

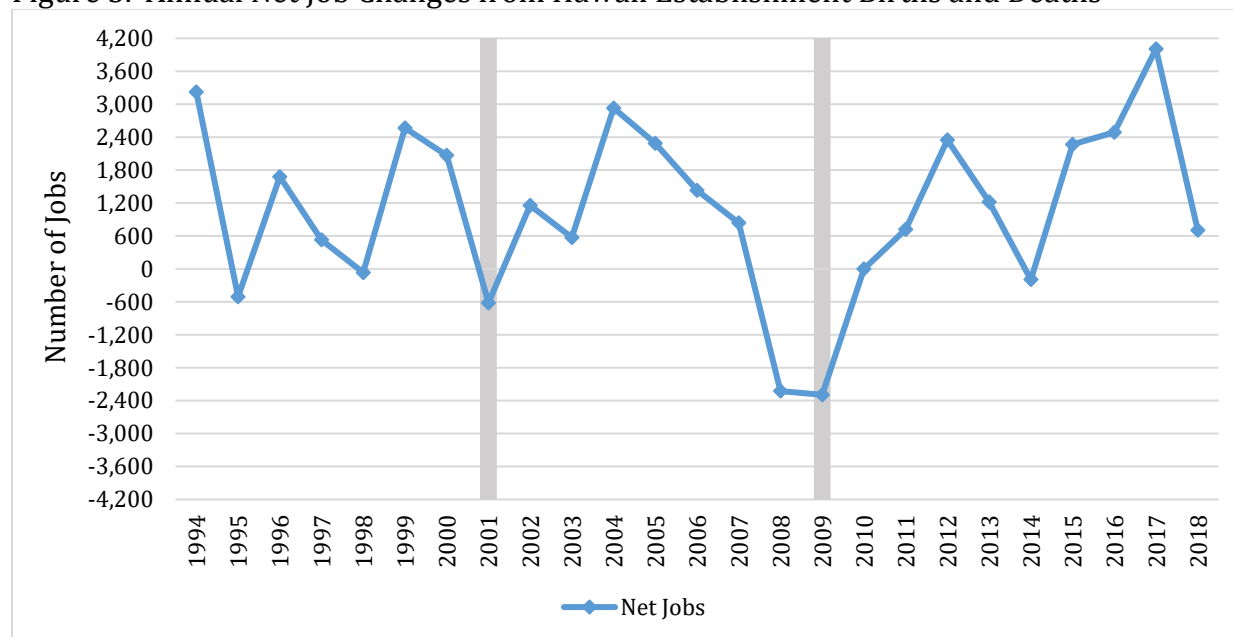
Table 3. Hawaii Average Annual Percent Change in Establishments and Jobs from Births and Deaths

Year	Birth		Death	
	Establishments	Jobs	Establishments	Jobs
1994	3,229	21,880	3,264	18,657
2018	3,949	13,100	3,526	12,396
% Change	22.3%	-40.1%	8.0%	-33.6%
Average Annual	0.8%	-2.1%	0.3%	-1.7%

Source: Bureau of Labor Statistics, BED

Another way to look at this is net job gains (job gains from establishment births minus job lost from establishment deaths). As shown in Figure 5, net job gains was strong for most of 1994 to 2007 period. The recession impacted net job changes from 2008 to 2010. Job gains recovered from 2011 through 2013, dipped negative in 2014, and then remained positive through 2018.

Figure 5. Annual Net Job Changes from Hawaii Establishment Births and Deaths

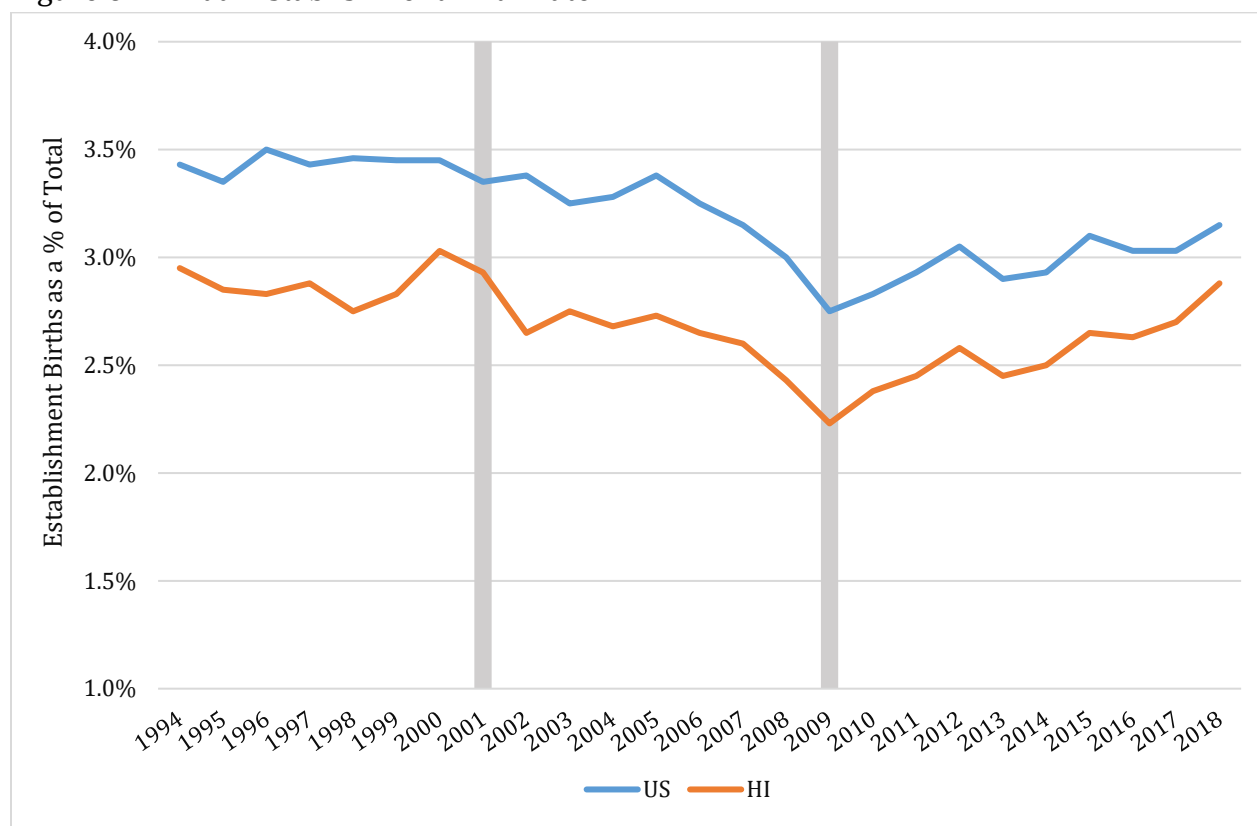


Source: Bureau of Labor Statistics, BED Data and DBEDT estimate-- shaded areas are Hawaii recessions 2001 and 2009, data are seasonally adjusted

Comparison of Hawaii and U.S. Establishment Births

This section compares Hawaii's establishment birth rate and the job creation rate to that of the overall U.S. The establishment birth rate is defined as establishment births as a percentage of total establishments, and the job creation rate is defined as jobs created from establishment births as a percentage of total jobs. Figure 6 shows the annual establishment birth rate from 1994 through 2018. The higher the percentage the higher the rate of new establishment formation, indicating a higher level of entrepreneurial activity. The data showed that Hawaii generally lagged the overall U.S. economy in the percentage of establishment births. The percentage of establishment births declined sharply in both Hawaii and the overall U.S. economy as a result of the great recession. However, since 2010 Hawaii gradually recovered, and was slightly below the previous peak in 2018.

Figure 6. Annual Establishment Birth Rate



Source: Bureau of Labor Statistics, BED--shaded areas are Hawaii recessions are 2001 and 2009; data are seasonally adjusted

The average establishment birth rate was 3.2 percent for the U.S. and 2.7 percent for Hawaii for the period from 1994 through 2018. As Table 4 shows, the average birth rate for the overall U.S. from 1994 through 2000 was 3.4 percent and this declined to 3.0 percent for the period of 2011 through 2018. Hawaii had a similar decline from an average of 2.9

percent for the period of 1994 through 2000 to an average of 2.6 percent for the 2011 through 2018 period.

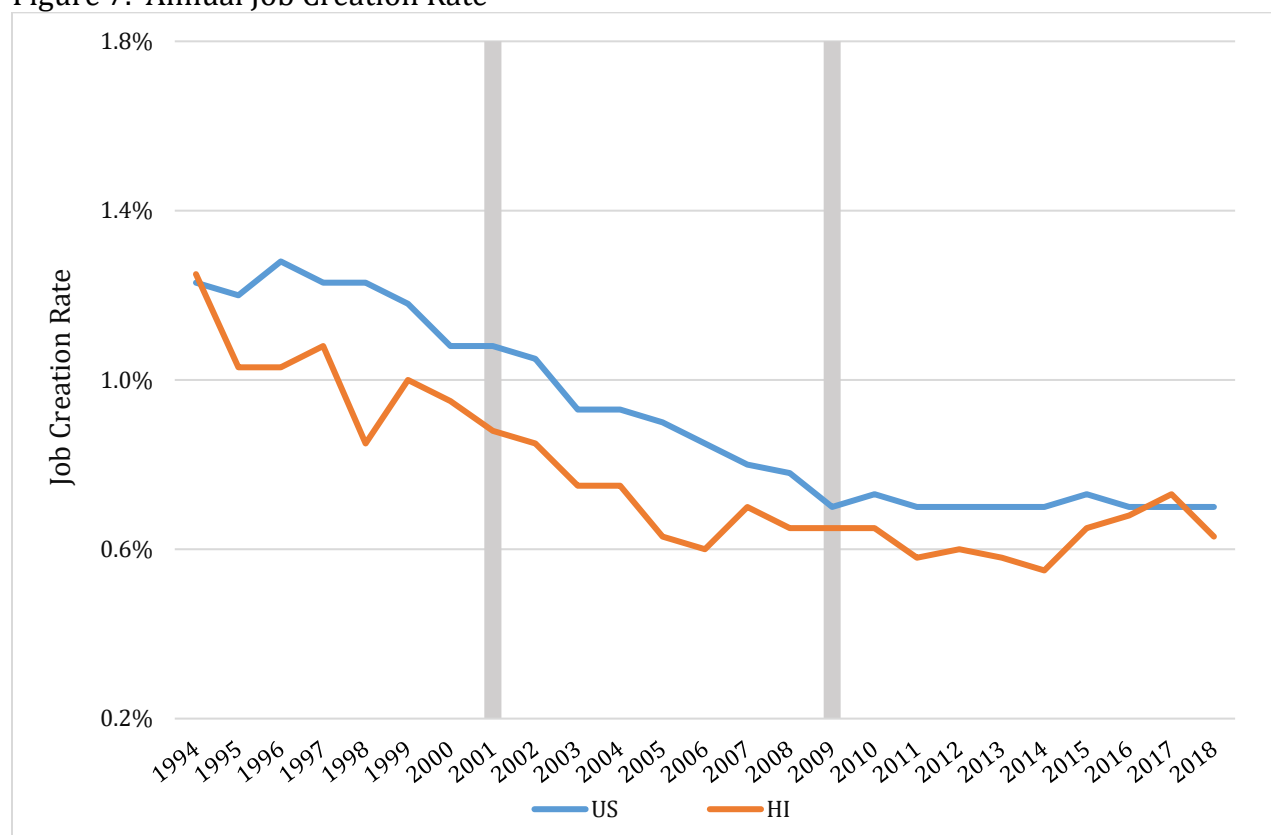
Furthermore, as shown in Figure 7, the annual job creation rate declined steadily for both Hawaii and the overall U.S. As with the establishment birth rate, Hawaii's job creation rate trailed the overall U.S. economy. In 2017, Hawaii temporarily surpassed the U.S. job creation rate by 0.3 percentage points.

Table 4. Average Annual Establishment Birth Rate

Period	U.S.	HI	Difference
1994-2000	3.4%	2.9%	0.6%
2001-2001	3.4%	2.9%	0.4%
2002-2007	3.3%	2.7%	0.6%
2008-2010	2.9%	2.3%	0.5%
2011-2018	3.0%	2.6%	0.4%
1994-2018	3.2%	2.7%	0.5%

Source: Bureau of Labor Statistics, BED

Figure 7. Annual Job Creation Rate



Source: Bureau of Labor Statistics, BED-- shaded areas are Hawaii recessions are 2001 and 2009; data are seasonally adjusted

As presented in Table 5, the average annual job creation rate was 0.9 percent for the U.S. and 0.8 percent for Hawaii for the period from 1994 through 2018. From 1994 through 2000, the job creation rate for the overall U.S. economy averaged 1.2 percent and Hawaii had 1.1 percent. During the most recent period of 2011 through 2018, the job creation rate declined to 0.7 percent for the U.S. and 0.6 percent for Hawaii.

Previous research has shown that improvements in technology have increased productivity, which led to a decline in jobs per establishment birth (Choi and Spletzer, 2012). The productivity gains can be seen in the increase in real GDP per job for both the U.S. and Hawaii (Figure 8).

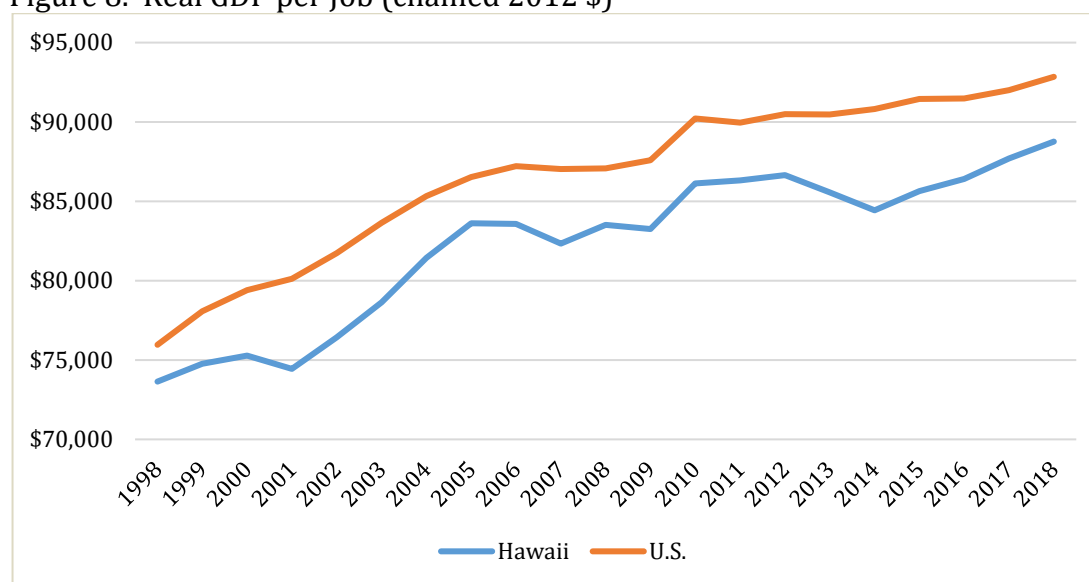
Between 1998 and 2018, Hawaii's real GDP per job increased 20.5 percent or at an average annual compound rate of 1.0 percent. The U.S. had slightly stronger productivity gains with a 22.2 percent increase or an average annual compound rate of 1.1 percent. U.S. labor productivity has been higher than Hawaii due to the different industry structure between the two economies. The productivity gains resulted in less demand for labor for start-up businesses.

Table 5. Average Annual Job Creation Rate

Period	U.S.	HI	Difference
1994-2000	1.2%	1.1%	0.2%
2001-2001	1.1%	0.9%	0.2%
2002-2007	0.9%	0.7%	0.2%
2008-2010	0.7%	0.7%	0.1%
2011-2018	0.7%	0.6%	0.1%
1994-2018	0.9%	0.8%	0.1%

Source: Bureau of Labor Statistics, BED

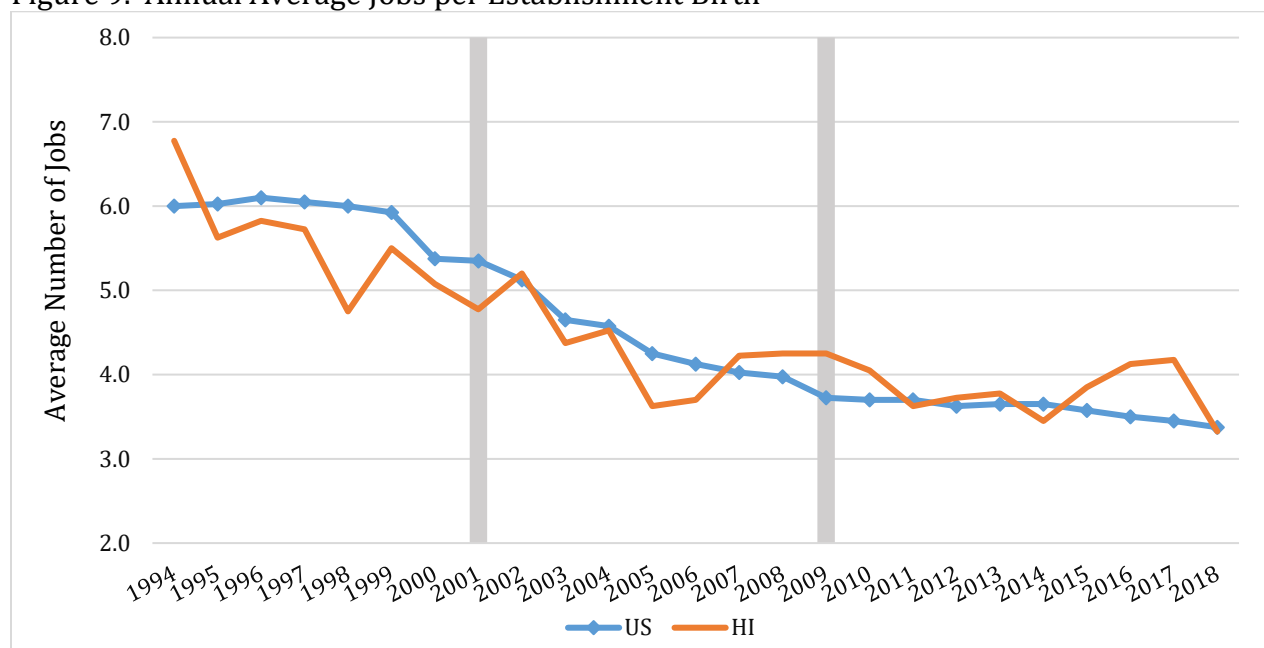
Figure 8. Real GDP per Job (chained 2012 \$)



Source: Bureau of Economic Analysis, Regional Data

The increased productivity trend can be seen in Figure 9, the number of jobs created per establishment birth has been steadily declining for both the U.S. and Hawaii. In 1994, the annual average number of jobs per establishment birth was 6.0 for the U.S. and 6.8 for Hawaii and, by 2018, these numbers had decreased to 3.4 and 3.3 respectively. A company can start with a product or service, with a few employees, and mobile payment processing. This same company would have required up to twice the employees in 1994. Additionally, shifting labor patterns, such as an increase in temporary jobs, could be a contributing factor.

Figure 9. Annual Average Jobs per Establishment Birth



Source: Bureau of Labor Statistics, BED-- shaded areas are Hawaii recessions are 2001 and 2009; data are seasonally adjusted

In summary, the analysis identified three trends for establishment births. First, the establishment birth rate and the job creation rate declined for both the U.S. and Hawaii. Second, the Hawaii establishment birth rate and job creation rate are both below that of the U.S. economy. Third, the number of jobs per establishment birth declined in both the overall U.S. economy and Hawaii.

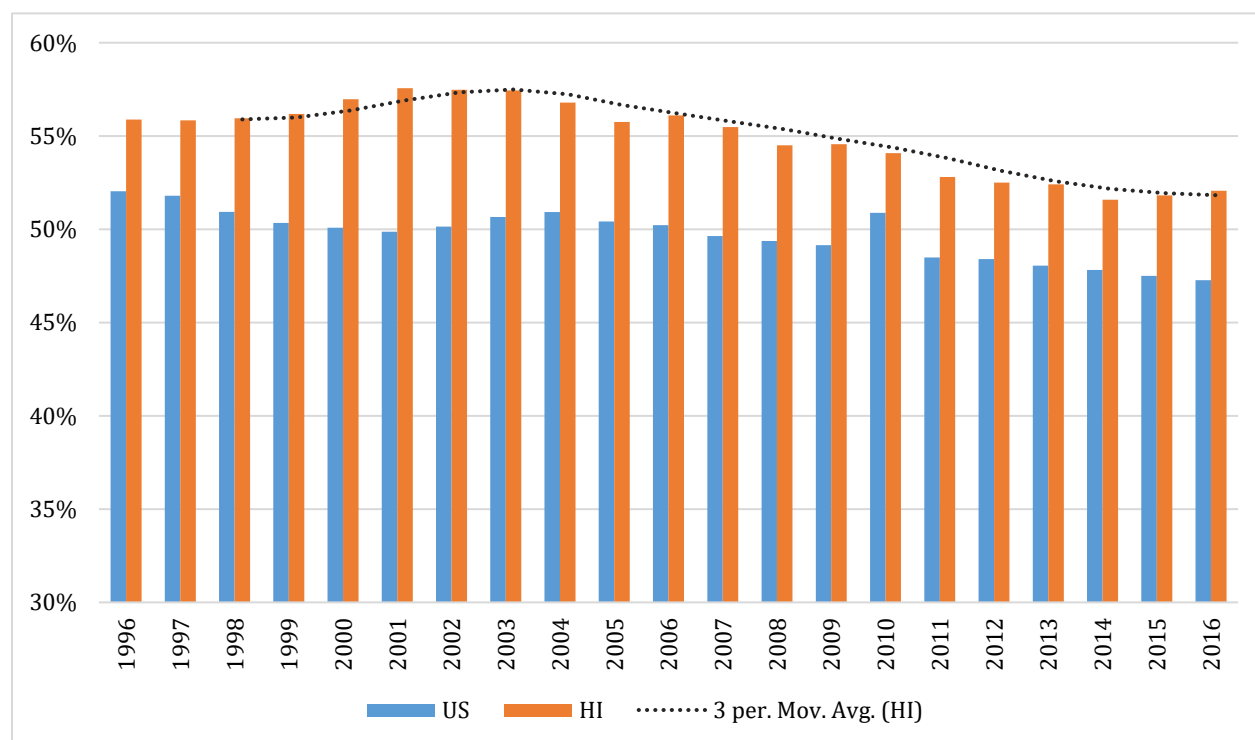
Small Business Employment

While small business is not the main focus of this paper, it is important to understand the significance of small business and how establishment births feeds the small business pipeline. The U.S. Small Business Administration (SBA) has varying definitions of small business depending on the industry. For the purpose of this paper, we chose the SBA definition of 500 employees or less, which applies to wholesale/distribution and other industries (SBA, 2019). As of this writing, the most recent data available was 2016 and, Hawaii's small business employment was 52.1 percent as a percentage of total employment. This was 4.8 percentage points higher than the overall U.S. figure of 47.3 percent. For the period of 1996 through 2016, Hawaii's average percentage for small business employment was 54.9 percent, which was 5.2 percentage points higher than the U.S. at 49.7 percent. Furthermore, Hawaii had a higher percentage of small business employment than the overall U.S. economy for the total period analyzed (Figure 10).

The percentage of small business employment to total employment in Hawaii has been declining. The three-year moving average trend line for Hawaii showed a downward

trend starting in 2003 at 57.4 percent and continuing to 2016 at 52.1 percent. This decline was especially pronounced in Hawaii's post-recession economy, with 2010 and 2011 reaching new lows at 54.1 percent and 52.8 percent respectively. Since 2011, the three-year moving average trended down and then leveled out, with 2016 at 52.1 percent.

Figure 10. Small Business Employment as a Percentage of Total Employment



Source: U.S. Census Bureau, Statistics of U.S. Business, 2016

In looking at the gap between Hawaii and the overall U.S. economy, one explanation appears to be that smaller states have a higher percentage of small business employment. Table 6 compares Hawaii to four other states with similar population sizes: New Hampshire, Rhode Island, Idaho, and Maine. All four had higher percentages of small business than the overall U.S., indicating that larger businesses tend to locate in states with larger populations.

Table 6. % of Small Business Employment in 2016

State	% Small Business	Pop (millions) in 2016
NH	49.8%	1.3
HI	52.1%	1.4
RI	52.8%	1.1
ID	56.2%	1.7
ME	56.5%	1.3
US	47.3%	323.1

Source: U.S. Census Bureau, Statistics of U.S. Business

SURVIVAL RATE FOR NEW ESTABLISHMENTS

One indicator that illustrates the importance of having a steady pipeline of establishment births is the survival rate of establishments. The survival rate is defined as the percentage of establishments that are still in existence after a given number of years in business. The data below are from the BLS' Business Employment Dynamics dataset, which is from 1994 through 2018. The data are calculated on an annual basis from March to March. One assumption of the data is that all establishments started in a given year survive that year and the decline in establishment rate starts the following year.

Table 7. Average Survival Rate for Establishments Started in 1994 by Years in Business

Years in Business	HI	U.S.	Difference
Startup Year = 1994	100%	100%	n/a
1 year	80.5%	79.6%	0.9%
2 years	69.7%	68.1%	1.6%
3 years	62.2%	60.6%	1.6%
4 years	55.3%	54.3%	1.0%
5 years	49.3%	49.6%	-0.3%
6 years	45.0%	45.2%	-0.2%
7 years	41.0%	41.5%	-0.5%
8 years	38.8%	38.3%	0.5%
9 years	36.9%	35.7%	1.2%
10 years	34.3%	33.6%	0.7%
11 years	33.1%	31.8%	1.3%
12 years	31.5%	30.3%	1.2%
13 years	30.7%	28.7%	2.0%
14 years	29.2%	27.2%	2.0%
15 years	27.8%	25.5%	2.3%
16 years	26.4%	24.1%	2.3%
17 years	25.3%	23.0%	2.3%
18 years	23.8%	22.0%	1.8%
19 years	24.8%	21.2%	3.6%
20 years	23.8%	20.3%	3.5%
21 years	23.5%	19.5%	4.0%
22 years	22.2%	18.8%	3.4%
23 years	21.9%	18.0%	3.9%
24 years	21.5%	17.2%	4.3%

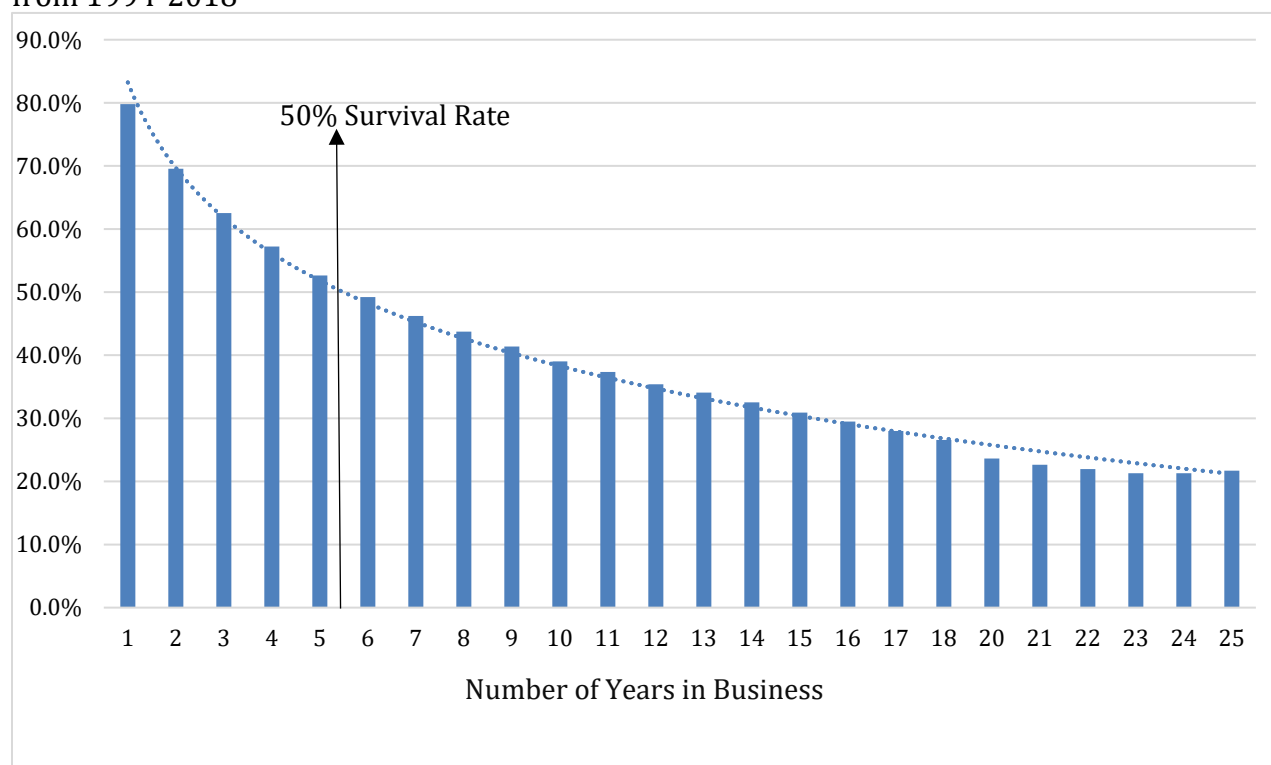
Source: Bureau of Labor Statistics Establishment Age and Survival Rates, 2019

In comparing Hawaii to the overall U.S., Hawaii's survival rate was higher in each of the years examined except for year five through seven (Table 7). In looking at establishments started in 1994, the average survival rate for those that have been in business for one year was 80.5 percent for Hawaii and 79.6 percent for the U.S., ten years was 34.3 percent for Hawaii and 33.6 percent for the U.S., and twenty-four years was 21.5

percent for Hawaii and 17.2 percent for the U.S. This difference was especially pronounced in year 19 through 24 years in business, where Hawaii's survival rate surpassed that of the U.S. by over 3.0 percentage points.

There is an inverse relationship between the number of years in business and the survival rate, as the survival rate declines with time. Another way to think about establishment survival rates is natural selection; the weaker establishments tend to die out after a few years and the stronger establishments survive and grow. As shown in Figure 11, the rate of decline was the steepest in the first five years, with approximately 50 percent of the establishments gone by the middle of the fifth year. After the fifth year, the rate of decline decreases as establishments compete successfully in the market and grow.

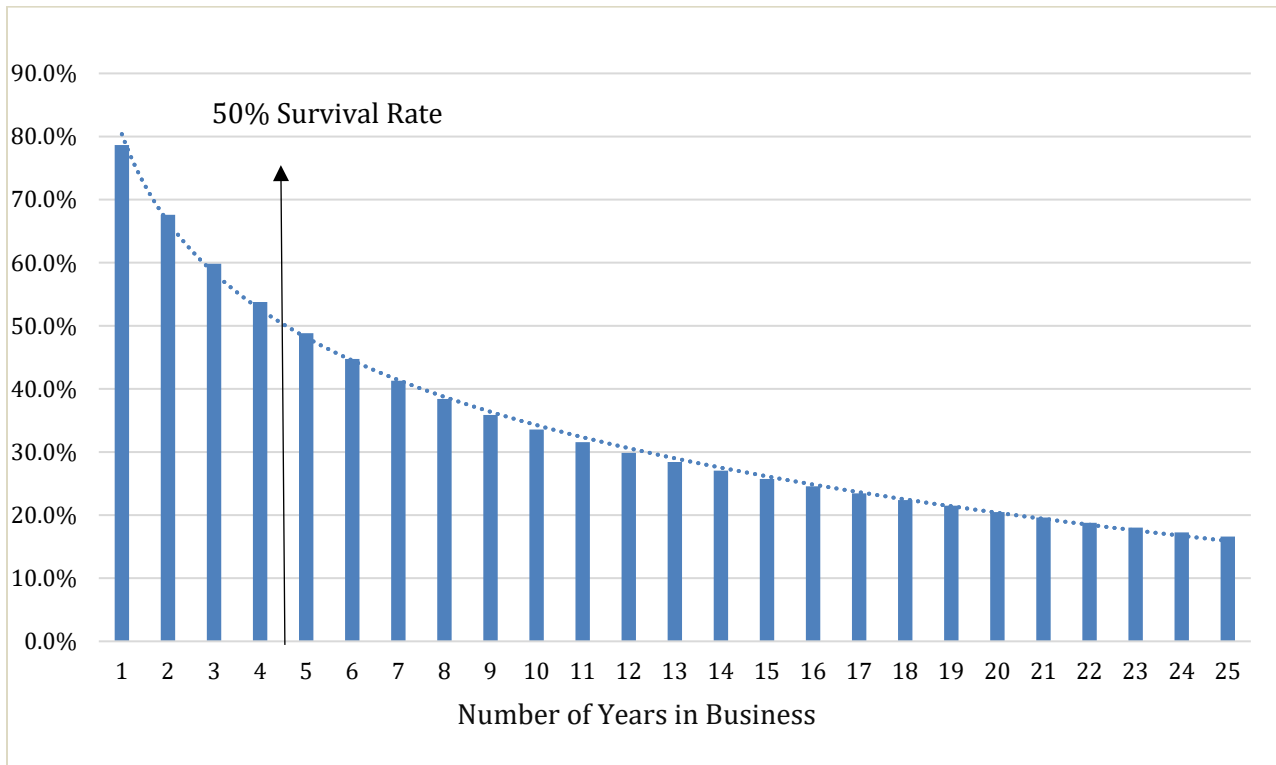
Figure 11. Average Survival Rate of Hawaii Establishments by Number of Years in Business from 1994-2018



Source: Bureau of Labor Statistics, Establishment Age and Survival Rates 2019

U.S. average survival rates follows a similar trend as Hawaii's survival rates with an inverse relationship between number of years in business and survival rate. However, while Hawaii businesses survive to the middle of the fifth year, U.S. businesses survive to about just past half of the fourth year. Also, by 25 years in business, more Hawaiian firms survive (21.7 percent) than do U.S. firms (16.6 percent).

Figure 12. Average Survival Rate of U.S. Establishments by Number of Years in Business from 1994-2018



Source: Bureau of Labor Statistics, Establishment Age and Survival Rates 2019

Survival Rates for Establishments Born in 2008

In order to illustrate the impact of survival rates, we can look at a ten-year cohort of startup establishments from 2008 and examine the survival rates through 2018. In 2008, there were 2,189 new business establishments in Hawaii and by 2018 this number had declined to 839, a 38.3 percent survival rate (Table 8). However, the survival rate for establishments does not tell the whole story. While the number of establishments that survive declines, the average number of jobs per surviving establishment increases. Of the establishments started in 2008, the number of jobs per surviving establishment doubled, from 5.6 in 2008 to 11.2 in 2018.

Table 8. Hawaii Surviving Establishments Born in 2008

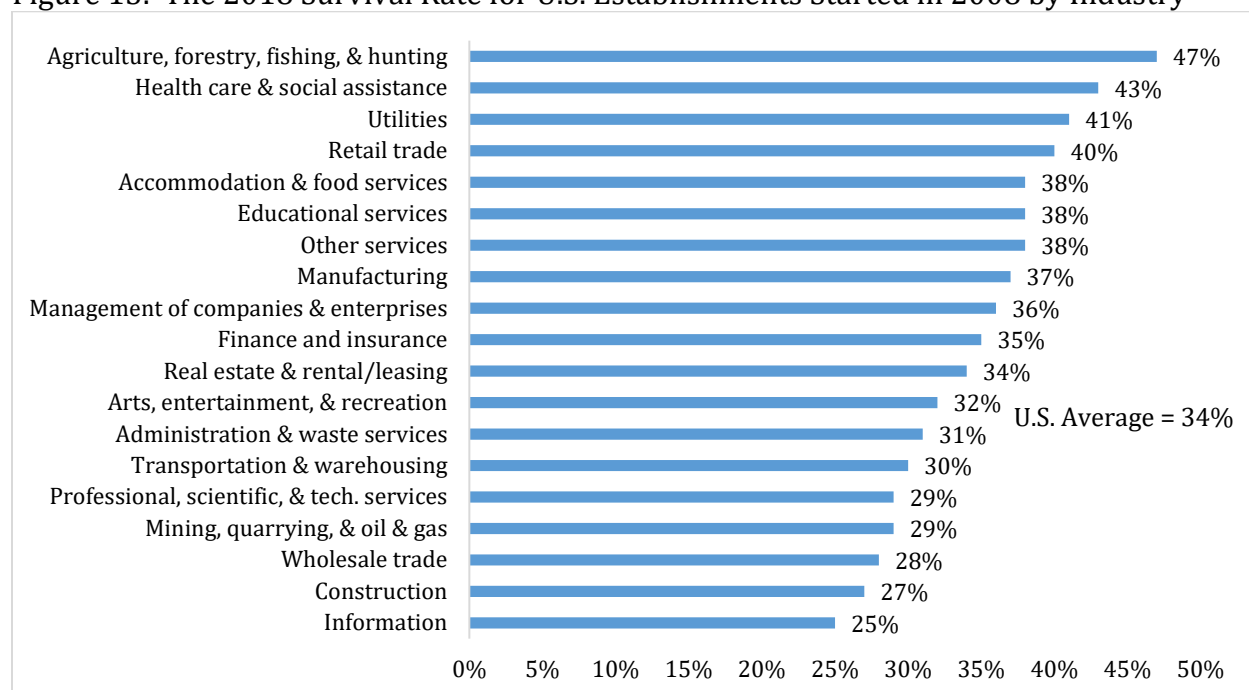
Year	Number of Surviving Establishments	% of Surviving Establishments	Jobs of Surviving Establishments	% of Jobs from Starting Year	Average Jobs per Establishment
2008	2,189	100.0%	12,223	100.0%	5.6
2009	1,668	76.2%	11,222	91.8%	6.7
2010	1,468	67.1%	10,477	85.7%	7.1
2011	1,287	58.8%	10,024	82.0%	7.8
2012	1,232	56.3%	9,826	80.4%	8
2013	1,150	52.5%	9,652	79.0%	8.4
2014	1,055	48.2%	9,724	79.6%	9.2
2015	1,004	45.9%	9,818	80.3%	9.8
2016	945	43.2%	10,232	83.7%	10.8
2017	886	40.5%	9,485	77.6%	10.7
2018	839	38.3%	9,381	76.7%	11.2

Source: Bureau of Labor Statistics, Establishment Age and Survival Rates 2019, annual data calculated from March to March

Another factor that impacts survival rates is the industry distribution of the establishments. While data are not available for Hawaii, the figure below shows survival rates in 2018 for U.S. establishments started in 2008 by industry (Figure 13). The industries with the highest survival rates were agriculture/forestry/fishing/hunting, health care/social assistance, and utilities. These results were consistent for the all years analyzed after the 2008 start date.

The industries with the lowest survival rates for establishments started in 2008 were information, construction, and wholesale trade. However, these results tend to vary with the business cycle. For example, the survival rate for the construction industry was actually higher than industries overall in the years leading up to the recession. However, after 2013, the survival rate for the construction industry fell below that of the overall economy and remained there through 2018.

Figure 13. The 2018 Survival Rate for U.S. Establishments Started in 2008 by Industry



Source: Bureau of Labor Statistics, Establishment Age and Survival Rates 2019, annual data calculated from March to March

In looking at the 2018 jobs of establishments started in 2008, the top three industries were retail trade, accommodation and food service, and health care and social assistance (Figure 14). On the bottom of the jobs scale were utilities, mining/quarrying/oil and gas, and agriculture/forestry/fishing/hunting.

Figure 14. 2018 Jobs for U.S. Establishments Started in 2008 by Industry



Source: Bureau of Labor Statistics, Establishment Age and Survival Rates 2019, annual data calculated from March to March

While the BLS does not compile survival rates by industry for individual states, they do compile the number of state establishments by industry. In looking at the number of establishments by industry, Hawaii's high establishment survival rate can partially be explained by the industry composition. As listed in Table 9, three of Hawaii's top five industries had above average establishment survival rates. These three industries, professional/scientific/technological services, retail trade, and accommodation and food services, comprised 34.5 percent of Hawaii's total establishments in 2018 (Table 9). Establishments in these industries, not only survive longer, but retain jobs at a higher rate than other industries.

Table 9. Number and Growth of Establishments by Industry Category

	2018 Number of HI Establishments	% of HI Total	Average Annual Growth 08-18	
			Hawaii	U.S.
Professional/scientific/tech. services	4,811	12.3%	1.8%	2.1%
Retail trade	4,587	11.7%	-0.1%	-0.1%
Accommodation and food services	4,098	10.5%	1.6%	1.6%
Health care & social assistance	4,087	10.5%	1.6%	7.6%
Other services	4,017	10.3%	0.7%	-3.3%
Construction	3,786	9.7%	0.6%	-0.8%
Administration & waste services	2,728	7.0%	1.7%	1.7%
Real estate & rental/leasing	2,057	5.3%	0.2%	0.8%
Wholesale trade	2,053	5.3%	-0.4%	-0.2%
Finance and insurance	1,646	4.2%	-0.4%	0.0%
Transportation & warehousing	1,042	2.7%	0.1%	1.2%
Manufacturing	1,013	2.6%	-0.4%	-0.2%
Educational services	773	2.0%	2.3%	3.3%
Information	722	1.8%	0.5%	1.7%
Arts, entertainment, & recreation	679	1.7%	2.1%	1.7%
Management of companies/enterprises	489	1.3%	0.9%	-0.2%
Agriculture/forestry/fishing/hunting	488	1.2%	0.8%	1.1%
Mining, Gas	12	0.0%	0.0%	0.6%
Total	39,088	100.0%	0.8%	1.1%

Source: Bureau of Labor Statistics Database, QCEW, 2018

The total number of Hawaii establishments grew at an average annual rate of 0.8 percent during the 2008-2018 period, which was less than the overall U.S. economy's average annual growth rate of 1.1 percent. The industries with the highest establishment annual growth rates in Hawaii were educational services, arts/entertainment/recreation, professional/scientific/technical services, construction, administrative/waste services, health care and social assistance, and accommodation/food services, all of which had annual growth rates of 1.0 percent or higher during the 2008-2018 period. The growth of these industries tended to reflect trends in the overall U.S. economy rather than Hawaii specific

factors, as these industries showed strong growth at the national level also. On the other hand, there were four industries that showed negative growth including manufacturing, finance and insurance, wholesale trade, and, retail trade. The retail trade decline matched that of the overall U.S., however, the decline in manufacturing, finance and insurance, and wholesale trade, were larger than the overall U.S.

In summary, there is an inverse relationship between the number of years in business and the establishment survival rate. In Hawaii, the data showed that 50 percent of establishments remain after 5.5 years in business. The U.S. had 50 percent of establishments remain after 4.6 years in business. However, the survival rate varies depending the industry group of the establishment. The growth rate for establishments also varies by industry.

SOLE PROPIETORS AND OTHER NONEMPLOYER FIRMS

The previous section focused on business births, deaths, and survival rates of establishments. However, one problem with the BLS data is that it does not include business owners who are proprietors and do not have employees. This group of small businesses with no employees is called “nonemployer firms,” and the data are compiled by the U.S. Census Bureau from tax returns. Nonemployer firms are a significant portion of Hawaii’s economy and include individual proprietors, partnerships, and corporations that do not have employees. As shown in Table 10, individual proprietors are the majority of nonemployer firms with 89.5 percent of the firms and 70.1 percent of the revenue.

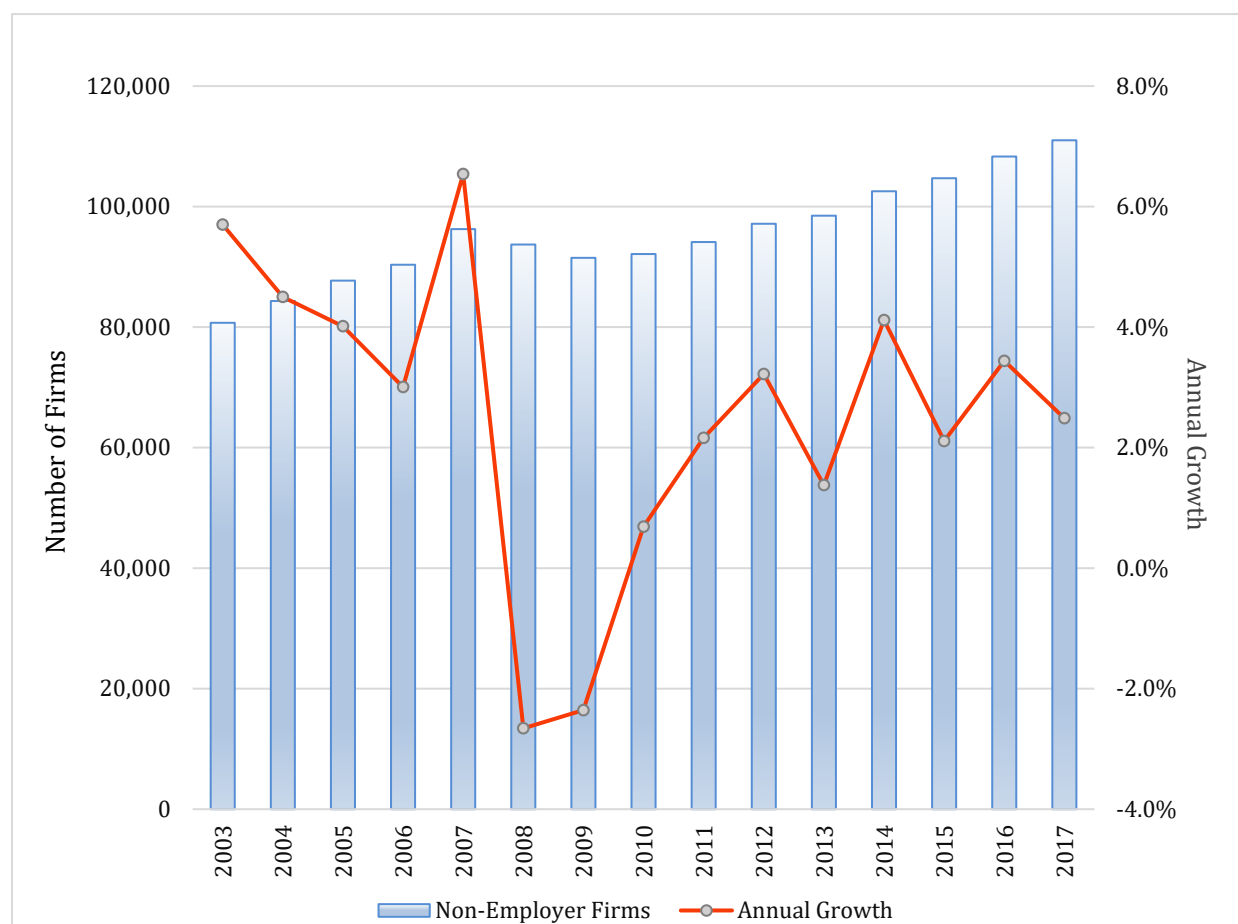
Table 10. Hawaii Nonemployer Firms by Business Structure in 2017

Type of Business Structure	Firms (%)	Gross Revenue (\$ Thousands (%))
Individual Proprietorships	99,390 (89.5%)	3,826,594 (70.1%)
Partnerships	6,502 (5.9%)	942,869 (17.3%)
Corporations	5,111 (4.6%)	689,193 (12.6%)
Total	111,003 (100%)	5,458,656 (100%)

Source: U.S. Census Bureau, Nonemployers Statistics, 2017

Nonemployer firms generally had strong growth in the past decade, with the exception of the recession period (Figure 15). After annual growth increased to 6.5 percent in 2007, nonemployer firms decreased by 2.7 percent in 2008. The decline continued in 2009 and then levelled off in 2010. However, growth returned in 2011 and 2012, with the number of nonemployer firms increasing 2.2 percent and 3.2 percent respectively. Over the previous year, annual growth slowed in 2013 to 1.4 percent and then increased to 4.1 percent in 2014. Annual growth fluctuated after 2014 and was 2.5 percent in 2017.

Figure 15. Hawaii Number of Nonemployer Firms and Annual Growth



Source: U.S. Census Bureau, Nonemployers Statistics, 2017

In 2017, there were 111,003 nonemployer firms that contributed \$5.5 billion in gross receipts to the state's economy. The top five industries for gross receipts of nonemployer firms were real estate/leasing, professional/scientific/technical services, construction, other services, and retail trade (Table 11).

Table 11. Gross Receipts of Nonemployer Firms in Hawaii, 2017

Industry	Firms	Gross Receipts (\$000)	Gross Receipts per Firm (\$)
Real estate and rental and leasing	12,829	1,269,034	98,919
Professional, scientific, and technical services	15,633	696,527	44,555
Construction	8,052	565,629	70,247
Other services (except public administration)	16,563	554,394	33,472
Retail trade	10,924	468,578	42,894
Health care and social assistance	7,969	431,720	54,175
Admin/support/waste management/remediation services	9,324	276,681	29,674
Arts, entertainment, and recreation	6,727	203,974	30,322
Finance and insurance	2,876	199,023	69,201
Wholesale trade	2,470	185,110	74,943
Transportation and warehousing	6,862	162,116	23,625
Accommodation and food services	2,402	154,141	64,172
Manufacturing	2,098	92,155	43,925
Agriculture, forestry, fishing and hunting	1,904	82,515	43,338
Educational services	2,952	56,334	19,083
Information	1,210	43,520	35,967
Utilities	190	15,233	80,174
Mining, quarrying, and oil and gas extraction	18	1,972	109,556
Total for all sectors	111,003	5,458,656	49,176

Source: U.S. Census Bureau, Nonemployers Statistics

CONCLUSIONS

This paper examined Hawaii's business dynamics using data from the U.S. Bureau of Labor Statistics and U.S. Census Bureau. Hawaii has a higher reliance on small business employment than the overall U.S. economy and, therefore, it is important to understand the rate at which establishments are adding to the small business foundation.

In looking at establishment births, the data showed that the number of establishment births have recovered to pre-recession levels (2009) for Hawaii, while the overall U.S. economy remains slightly below pre-recession levels. However, the jobs created from establishment births declined dramatically for both the U.S. and Hawaii. This was caused by a sharp decline in the number of jobs per establishment birth, as startups require fewer workers. In 1994, the average number of jobs created per establishment birth was 6.0 for the U.S. and 6.8 for Hawaii and, by 2018, these numbers had decreased to 3.4 and 3.3 respectively. The decline in jobs per establishment birth can partially be attributed to the fact that technology has reduced dependence on labor. This highlights the paradox of productivity gains, as companies become more efficient, they require fewer employees. The data also showed the net number of establishments and net jobs created from births and deaths were correlated with Hawaii's real GDP growth rate. This suggests that the growth and decline of establishment births and deaths are closely related to the business cycle.

Another finding was that Hawaii generally trails the overall U.S. economy in the establishment birth rate for 1994-2018 period. This also holds true for the job creation rate for the 1994-2018 period. Hawaii generally trailed the U.S. for a majority of this period in job creation rate with gaps becoming narrower in recent years. On the other hand, Hawaii's establishment survival rate was higher than that of the overall U.S. during this period. In other words, Hawaii had lower birth rates but longer life spans for business establishments, when compared with the overall U.S.

The U.S. data was segmented by industry and showed that survival rates vary widely by industry. In looking at establishments started in 2008, the industries with the highest survival rates in 2018 were agriculture/forestry/fishing/hunting, health care/social assistance, and utilities. Hawaii's higher survival rate could partially be explained by the fact that Hawaii had a higher percentage of establishments in industries with higher survival rates. The analysis also showed that approximately fifty percent of Hawaii establishments survive to 5.5 years in business. While the U.S. had approximately fifty percent of establishments survive to 4.6 years in business.

While the survival rate by industry was only available at the national level, the number of establishments by industry was available at the state level. For Hawaii, the total number of establishments increased from 36,034 in 2008 to 39,088 in 2018, a 0.8 percent

average annual increase. The industries with the highest establishment percent during this period were professional, scientific and technical services (12.3 percent), retail trade (11.7 percent), and accommodation and food services (10.5 percent). The high percent of these industries could be attributed to their high percent at the national level, rather than Hawaii specific factors. It is important to note that, although the number of Hawaii's establishments grew at 0.8 percent rate during the 2008 to 2018 period, this was still below the national annual growth rate of 1.1 percent.

Overall, it benefits the economy to have a steady pipeline of quality new establishments to replenish those that disappear. The importance of increasing the birth rate for new establishments is even more important in today's economy because fewer jobs are being created per establishment. Growing the birth rate of quality establishments today will create a solid foundation for the economy of tomorrow.

APPENDIX 1: U.S. BUREAU OF LABOR STATISTICS, BUSINESS EMPLOYMENT DYNAMICS DEFINITIONS

Gross job gains. This is the sum of all jobs from opening and expanding establishments.

Closings. These are establishments with positive third-month employment in the previous quarter and with either zero third-month employment reported in the current quarter or an inactive status in the current quarter.

Gross job losses. This is the sum of all jobs from closing and contracting establishments.

Births. These are establishments with positive third-month employment for the first time in the current quarter and with no links to the previous quarter, or units with positive third-month employment in the current quarter and zero employment in the third month of the previous four quarters. Births are a subset of openings and do not include reopening of seasonal businesses.

Deaths. These are establishments with no employment, or zero employment reported in the third-month of four consecutive quarters following the last quarter with positive employment. Deaths are a subset of closings and do not include temporary shutdowns of seasonal businesses. An establishment that closes during the quarter may be a death, but the BED program waits three quarters to determine whether the closing is permanent or is just a temporary shutdown. Therefore, there is a lag of three quarters between a permanent closing and its publication as an establishment death.

APPENDIX 2: U.S. BUREAU OF LABOR STATISTICS, BUSINESS EMPLOYMENT DYNAMICS FURTHER INFORMATION AND TECHNICAL NOTE

For updates of the Business Employment Dynamics series, refer to the BLS Web site at <http://www.bls.gov>. For more information, please see the Technical Note of this release or the Business Employment Dynamics Web page at the BLS Web site <http://www.bls.gov/bdm/>. Additional information about the Business Employment Dynamics data may be obtained by e-mailing BDMinfo@bls.gov.

Comparing Business Employment Dynamics Data with Current Employment Statistics and Quarterly Census of Employment and Wages Data

The net change in employment from Business Employment Dynamics (BED) data series will not match the net change in employment from the monthly Current Employment Statistics (CES) survey. The CES estimates are based on monthly surveys from a sample of establishments, while gross job gains and gross job losses are based on a quarterly census of administrative records. In addition, the CES has a different coverage, excluding the agriculture sector but including establishments not covered by the unemployment insurance program. The net over-the-quarter changes derived by aggregating component series in the BED data may be different from the net employment change estimated from the CES seasonally adjusted total employment series. The intended use of the BED statistics is to show the dynamic labor market flows that underlie the net changes in aggregate employment levels; data users who want to track net changes in aggregate employment levels over time should refer to CES data. BED data have a more limited scope than the Quarterly Census of Employment and Wages (QCEW) data. The data in this release, in contrast to the QCEW data, exclude government employees, private households (NAICS 814110), and establishments with zero employment. See the Technical Note for further information.

Technical Note

The Business Employment Dynamics (BED) data are a product of a federal-state cooperative program known as Quarterly Census of Employment and Wages (QCEW), or the ES-202 program. The BED data are compiled by the U.S. Bureau of Labor Statistics (BLS) from existing quarterly state unemployment insurance (UI) records. Most employers in the U.S. are required to file quarterly reports on the employment and wages of workers covered by UI laws, and to pay quarterly UI taxes. The quarterly UI reports are sent by the State Workforce Agencies (SWAs) to BLS and form the basis of the BLS establishment universe

sampling frame. These reports also are used to produce the quarterly QCEW data on total employment and wages and the longitudinal BED data on gross job gains and losses. Other important BLS uses of the UI reports are in the Current Employment Statistics (CES) program. (See table below for differences between QCEW, CES, and BED.)

In the BED program, the quarterly UI records are linked across quarters to provide a longitudinal history for each establishment. The linkage process allows the tracking of net employment changes at the establishment level, which in turn allows the estimation of jobs gained at opening and expanding establishments and jobs lost at closing and contracting establishments.

Differences between QCEW, BED, and CES employment measures

The BLS publishes three different establishment-based employment measures for any given quarter. Each of these measures--QCEW, BED, and CES--makes use of the quarterly UI employment reports in producing data; however, each measure has a somewhat different universe coverage, estimation procedure, and publication product.

Differences in coverage and estimation methods can result in somewhat different measures of over-the-quarter employment change. It is important to understand program differences and the intended uses of the program products. (See table below.) Additional information on each program can be obtained from the program Web sites shown in the table.

U.S. Bureau of Labor Statistics, Summary of Major Differences between QCEW, BED, and CES Employment Measures

	QCEW	BED	CES
Source	<ul style="list-style-type: none"> Count of UI administrative records submitted by 10.0 million establishments in first quarter of 2018 	<ul style="list-style-type: none"> Count of longitudinally-linked UI administrative records submitted by 8.0 million private-sector establishments 	<ul style="list-style-type: none"> Sample survey: 651,000 establishments
Coverage	<ul style="list-style-type: none"> UI and UCFE coverage, including all employers subject to state and federal UI Laws 	<ul style="list-style-type: none"> UI Coverage, excluding government, private households, and establishments with zero employment 	Nonfarm wage and salary jobs: <ul style="list-style-type: none"> UI Coverage, excluding agriculture, private households, and self-employed workers Other employment, including railroads, religious organizations, and other non-UI-covered jobs
Publication frequency	<ul style="list-style-type: none"> Quarterly - 6 months after the end of each quarter 	<ul style="list-style-type: none"> Quarterly - 7 months after the end of each quarter 	<ul style="list-style-type: none"> Monthly - Usually the 3rd Friday after the end of the week including the 12th of the month
Use of UI file	<ul style="list-style-type: none"> Directly summarizes and publishes each new quarter of UI data 	<ul style="list-style-type: none"> Links each new UI quarter to longitudinal database and directly summarizes gross job gains and losses 	<ul style="list-style-type: none"> Uses UI file as a sampling frame and to annually realign sample-based estimates to population counts (benchmarking)
Principal products	<ul style="list-style-type: none"> Provides a quarterly and annual universe count of establishments, employment, and wages at the county, metropolitan statistical area (MSA), state, and national levels by detailed industry 	<ul style="list-style-type: none"> Provides quarterly employer dynamics data on establishment openings, closings, expansions, and contractions at the national level by NAICS super-sectors, 3-digit NAICS, and by size of firm, and at the state private-sector total level Future expansions will include data with greater industry detail and data at the county and MSA level 	<ul style="list-style-type: none"> Provides current monthly estimates of employment, hours, and earnings at the MSA, state, and national level by industry
Principal uses	<ul style="list-style-type: none"> Major uses include: <ul style="list-style-type: none"> Detailed locality data Periodic universe counts for benchmarking sample survey estimates SAMPLE frame for BLS establishment surveys 	<ul style="list-style-type: none"> Major uses include: <ul style="list-style-type: none"> Business cycle analysis Analysis of employer dynamics underlying economic expansions and contractions Analysis of employment expansion and contraction by size of firm 	<ul style="list-style-type: none"> Major uses include: <ul style="list-style-type: none"> Principal federal economic indicator Official time series for employment change measures Input into other major economic indicators
Program Web sites	<ul style="list-style-type: none"> www.bls.gov/cew 	<ul style="list-style-type: none"> www.bls.gov/bdm 	<ul style="list-style-type: none"> www.bls.gov/ces

APPENDIX 3: U.S. BUREAU OF LABOR STATISTICS, STATE OF HAWAII BUSINESS EMPLOYMENT DYNAMICS

Below are links to view Hawaii's historical and current data on Business Employment Dynamics from BLS:

- [Chart 1. Private sector gross job gains and gross job losses, seasonally adjusted](#)
- [Chart 2. Components of private sector gross job gains and gross job losses, seasonally adjusted](#)
- [Chart 3. Private sector gross job gains and gross job losses as a percent of total employment, seasonally adjusted](#)
- [Chart 4. Employment from private sector births and deaths, seasonally adjusted](#)
- [Chart 5. Percent of employment from private sector births and deaths, seasonally adjusted](#)
- [Chart 6. Employment from private sector openings, closings, births and deaths, seasonally adjusted](#)
- [Table 1. Private sector gross job gains and job losses, seasonally adjusted](#)
- [Table 2. Private sector gross job gains and job losses, not seasonally adjusted](#)
- [Table 3. Private sector gross job gains and losses as a percent of total employment, seasonally adjusted](#)
- [Table 4. Private sector gross job gains and losses as a percent of total employment, not seasonally adjusted](#)
- [Table 5. Number of private sector establishments by direction of employment change, seasonally adjusted](#)
- [Table 6. Number of private sector establishments by direction of employment change, not seasonally adjusted](#)
- [Table 7. Private sector establishments by direction of employment change as a percent of total establishments, seasonally adjusted](#)
- [Table 8. Private sector establishments by direction of employment change as a percent of total establishments, not seasonally adjusted](#)
- [Table 9. Private sector establishment births and deaths, seasonally adjusted](#)
- [Table 10. Rates of private sector establishment births and deaths, seasonally adjusted](#)
- [Table 11. Private sector establishment births and deaths, not seasonally adjusted](#)
- [Table 12. Rates of private sector establishment births and deaths, not seasonally adjusted](#)

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