

# How Technology-Based-Startups Support U.S. Economic Growth

November 28th, 2017

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# About ITIF

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- Independent, nonpartisan research and education institute focusing on intersection of technological innovation and public policy, including:
  - Innovation and competitiveness
  - IT and data
  - Telecommunications
  - Trade and globalization
  - Life sciences, agricultural biotech, and energy
- Mission to formulate and promote policy solutions that accelerate innovation and boost productivity
- Ranked by University of Pennsylvania as top science and technology think tank in United States and number two in world

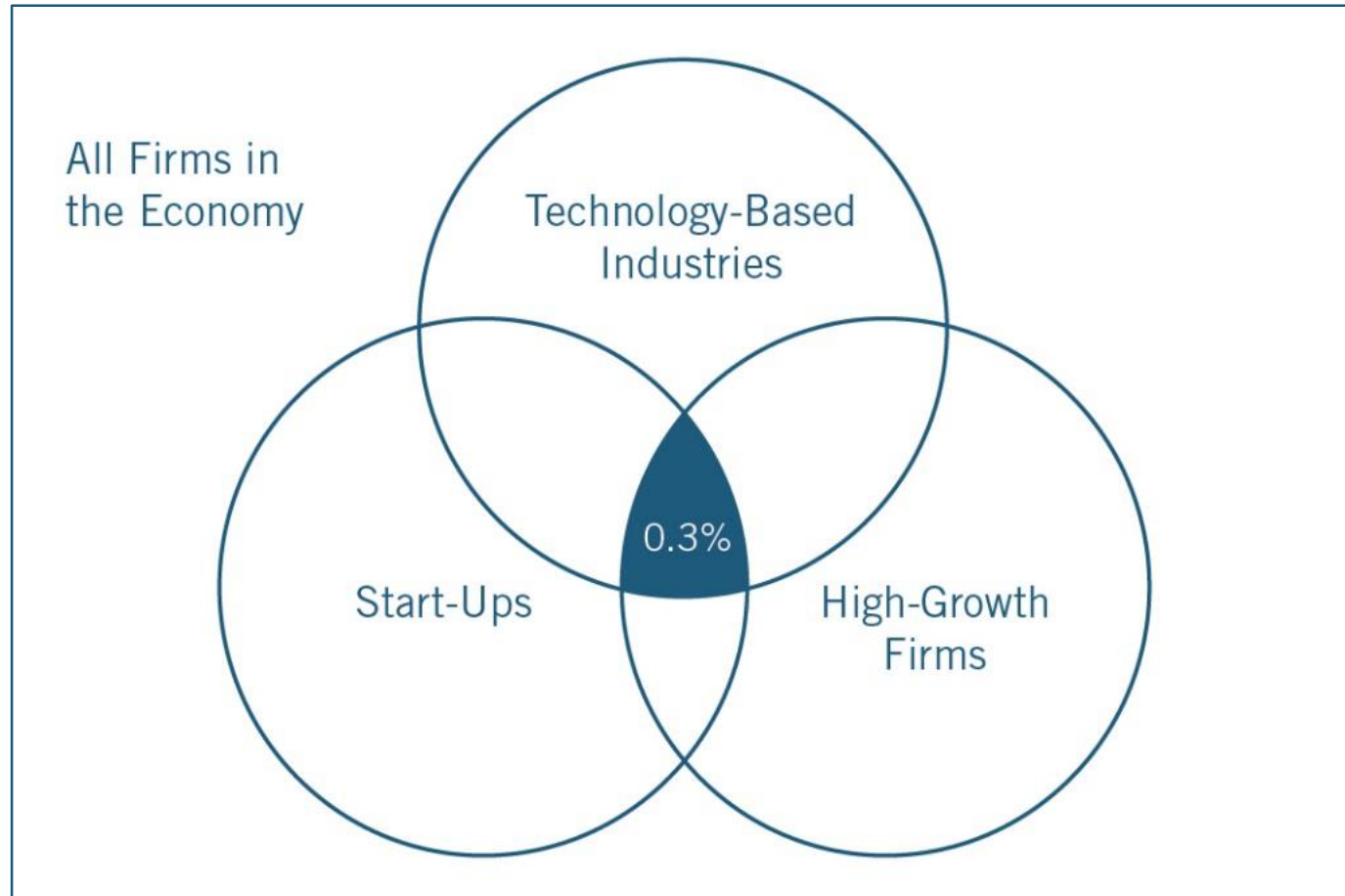
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# Most Startups Are Not High-Growth Tech-Based

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# How Do We Explain...?

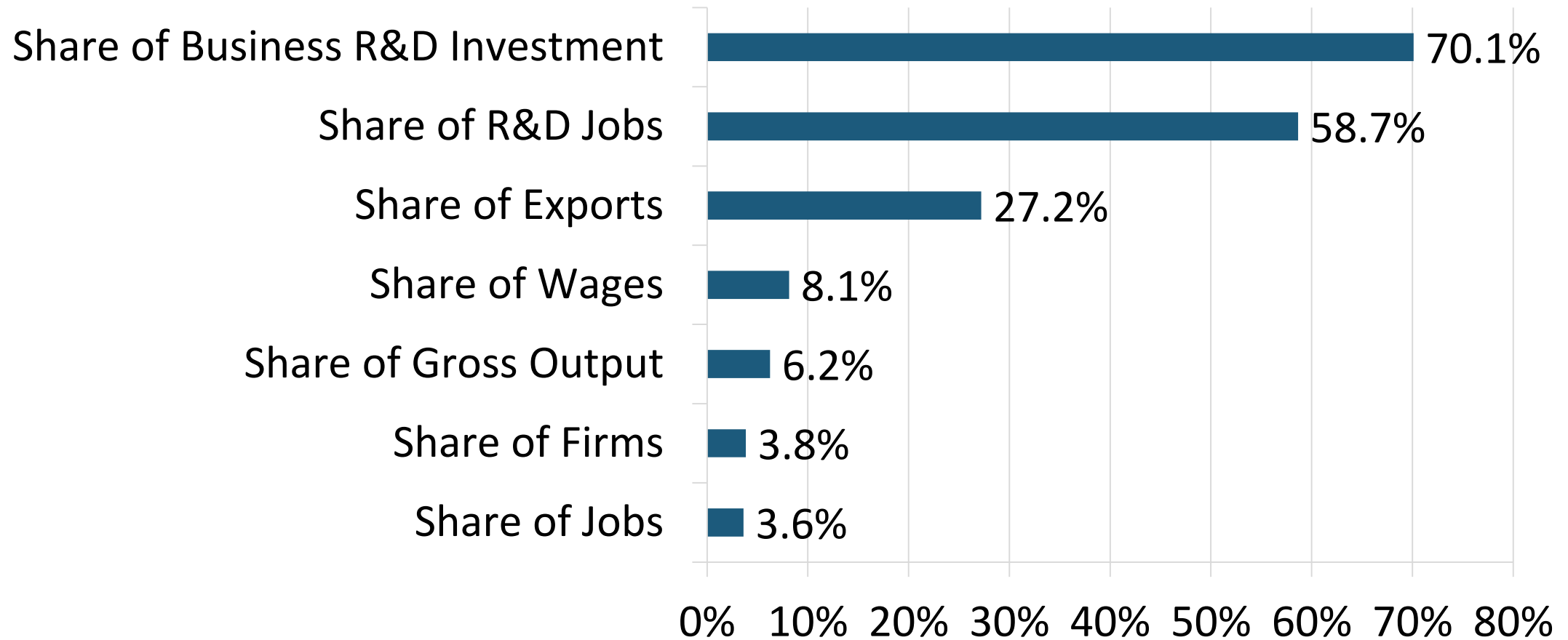
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“There’s too much entrepreneurship:  
Disruption running wild! There's too  
little entrepreneurship: Economy  
stalling out!” — Marc Andreessen



# Tech-Based Industries' Outsized Economic Contributions

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# Why Tech-Startups Matter

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Firm Characteristics	Technology-Based Startup	A Typical Startup
Examples of Businesses	Biotech, IT products or services	Restaurants, Laundromats
Growth Path	Large potential for significant employment and revenue growth	Addition of a few jobs for this first few years, and then bankruptcy
Job Creation	Tend to employ more high-skilled/semi-skilled workers	Tend to employ more semi-skilled/low-skilled workers
Wages	Pays more than twice the national median wage	Pays less than the national median wage
Job Multipliers	Creates up to five indirect jobs in other industries	Creates little to no net new jobs
R&D Investments	Invests heavily in R&D	Little to no R&D investment
Trade	Focused on trade with international markets	Sells predominately in local markets

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# Methodology

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- Identified tech-industries according to:
  - R&D intensity
  - Tech-based classifications from U.S. BLS, OECD, and Eurostat
- Firm level data from Business Dynamics Research Consortium
- Industry level data from Census Longitudinal Employer-Household Dynamics
- Venture Capital data from Pitchbook

# Ten Tech-Based Industries

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## Manufacturing

1. Aerospace Parts & Products
2. Computer and Electronics
3. Pharmaceuticals and Medicine
4. Medical Devices
5. Semiconductor Components
6. Semiconductor Machinery

## Services

7. Computer Systems and Design
8. Data Processing
9. Software Publishing
10. Scientific R&D

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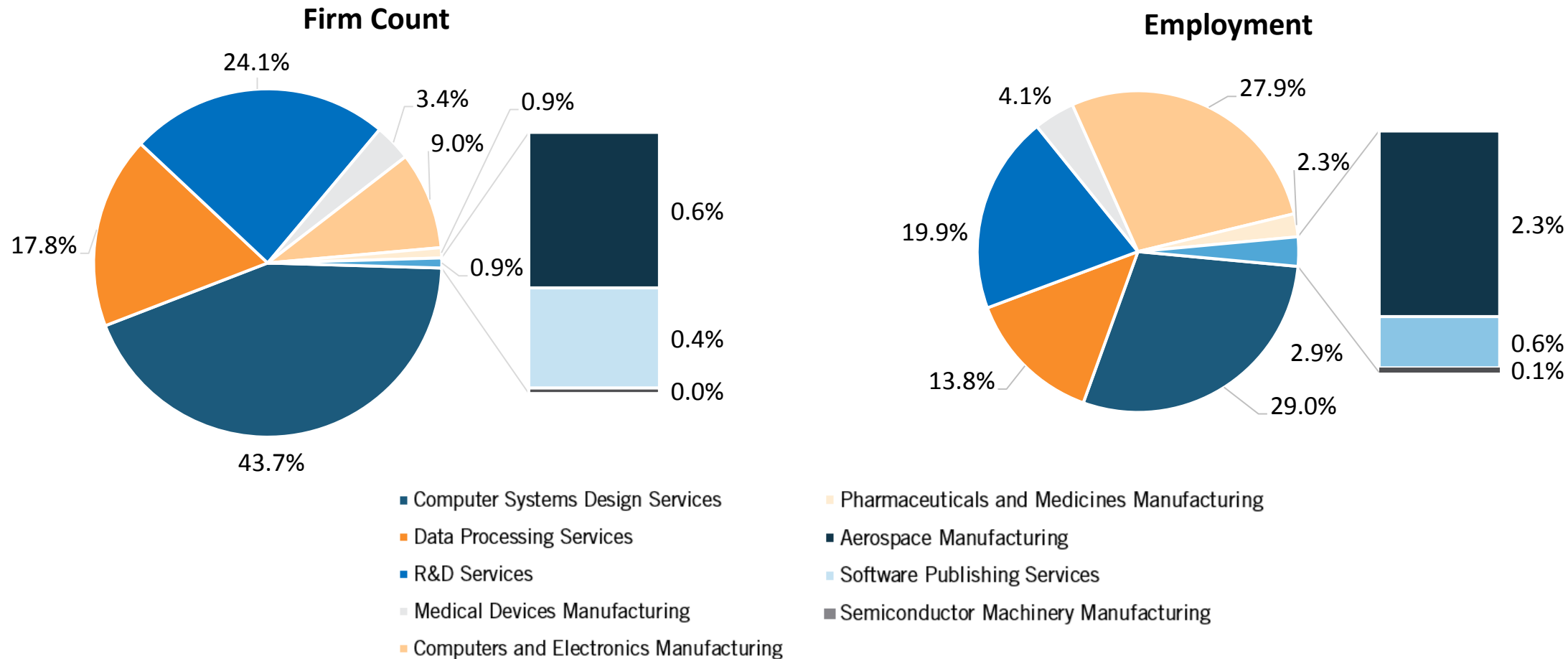
**2** Methodology

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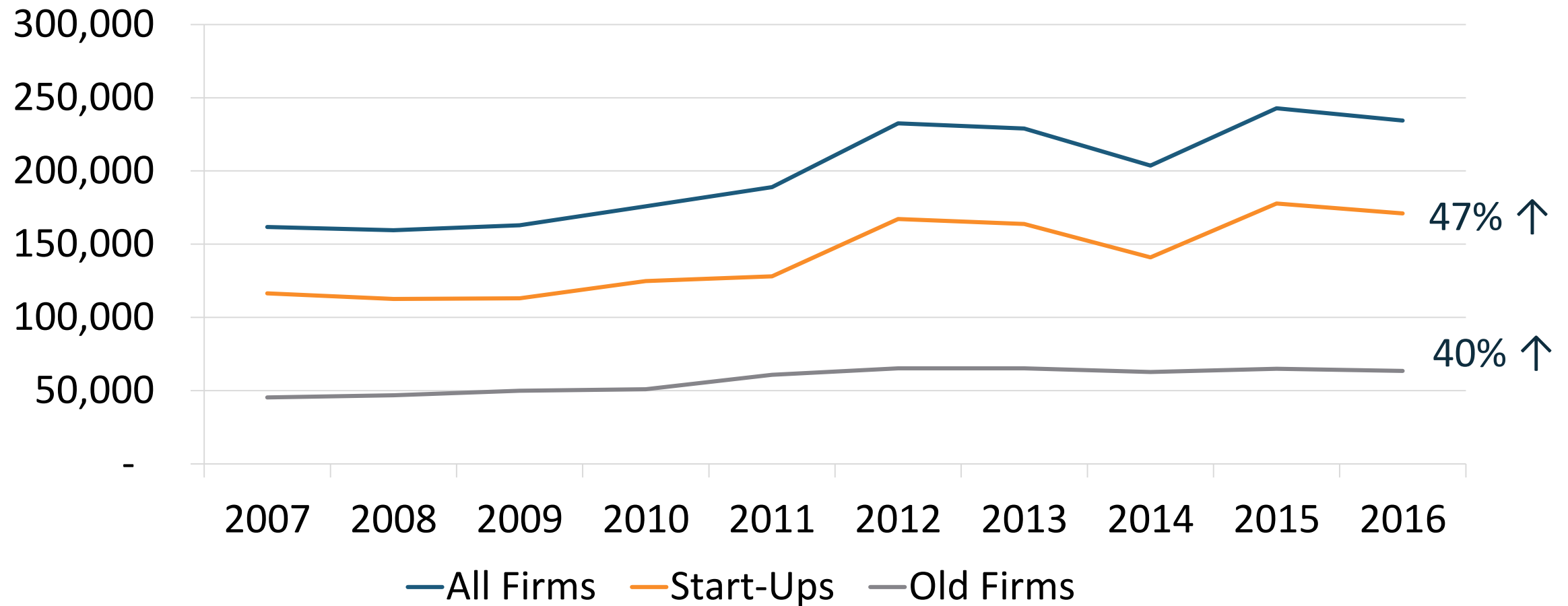
**4** State and Congressional District Findings

**5** Policy Recommendations

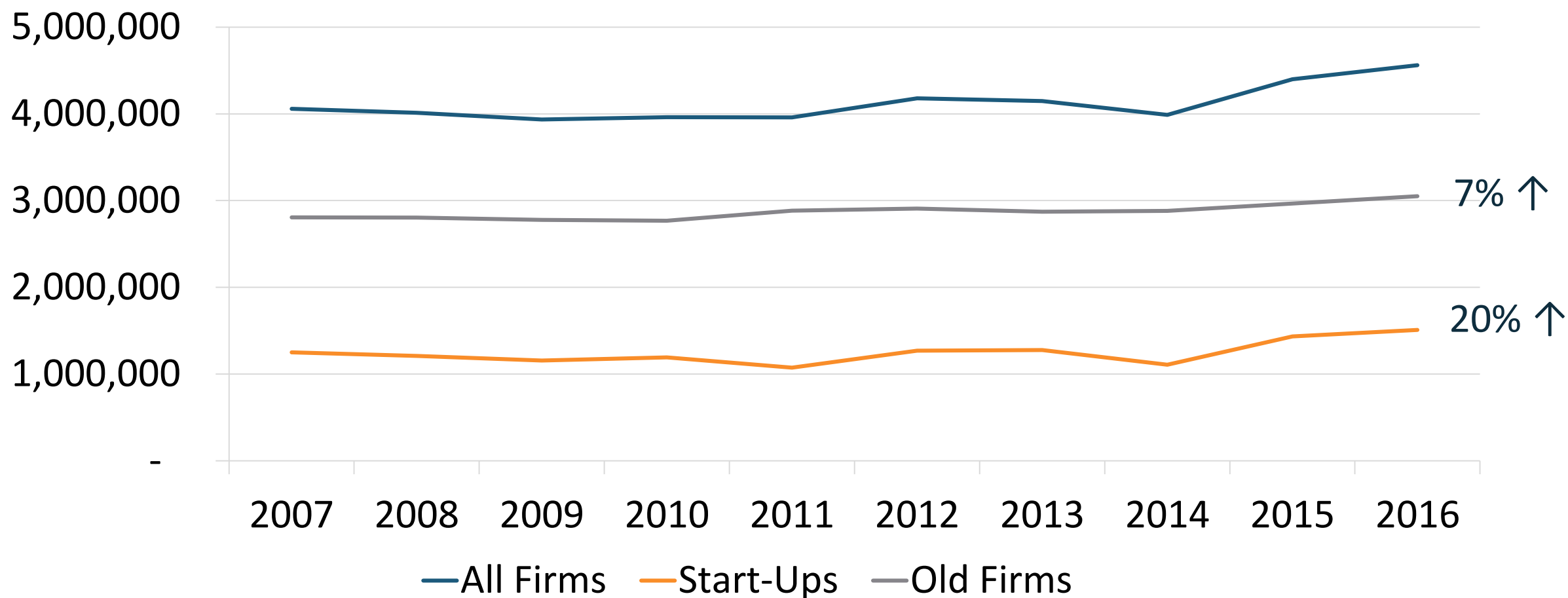
# Industry Breakdown, Tech-Startups, 2016



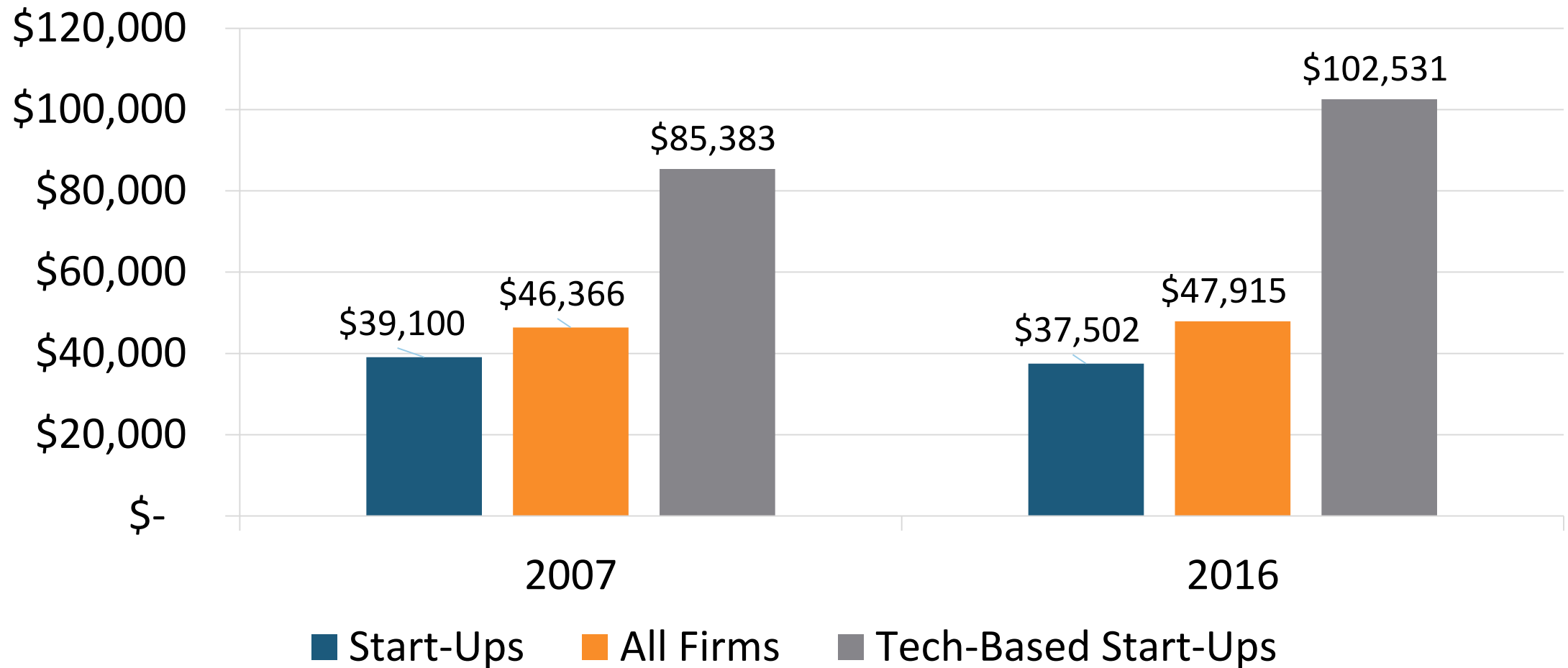
# Tech-Startups Are Up



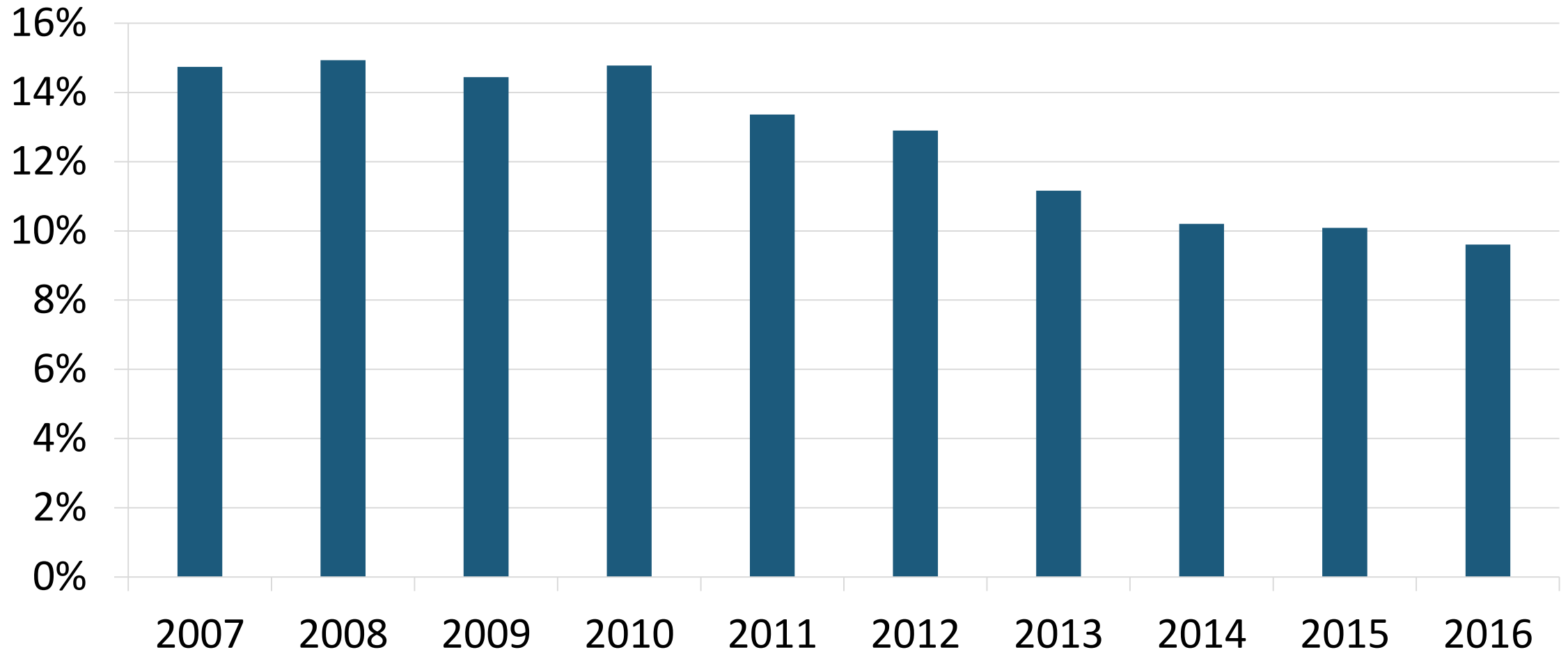
# Employment in Tech-Startups Has Grown



# Tech-Startup Wages Are High and Growing

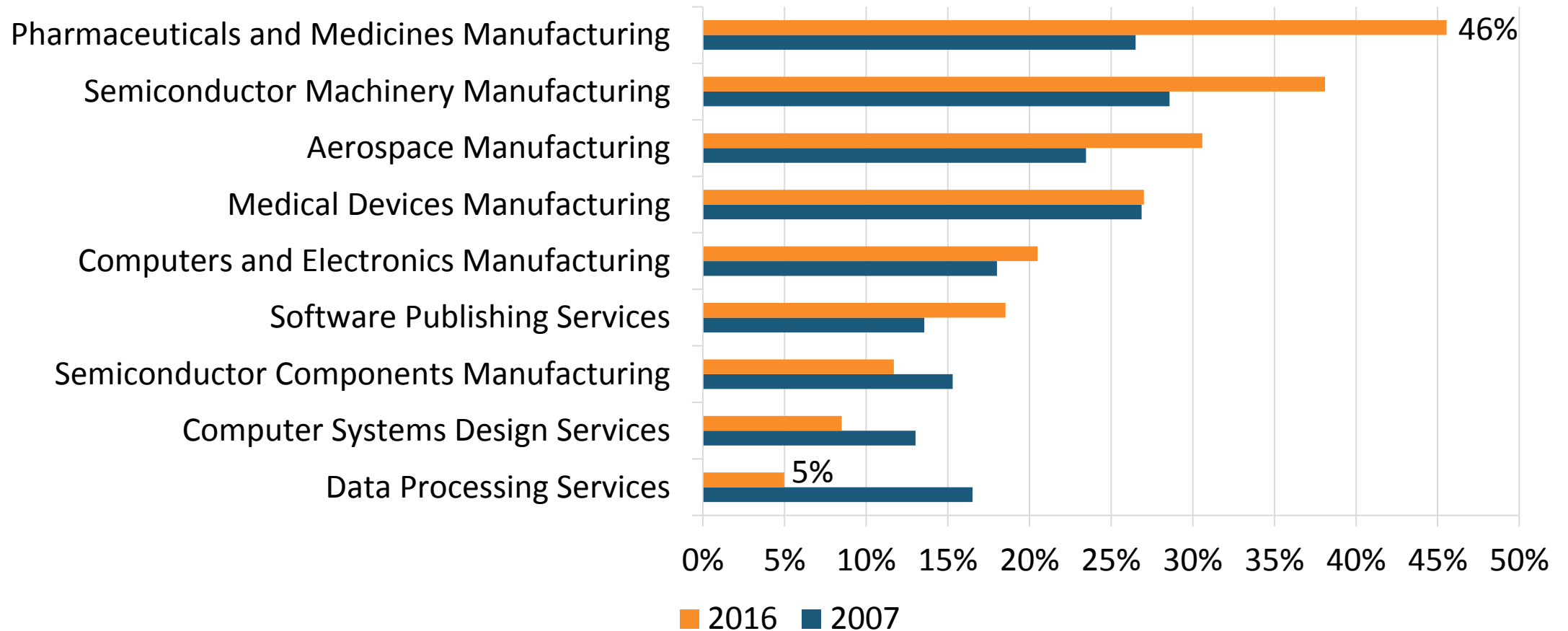


## Early-Stage Startups Are Down





# Pharma and Semiconductors Have More Early-Stage Startups



# Venture-Capital Backed Startups in 2016

	Total	Aerospace	Biotech & Pharma	Medical Devices	Information Technology
VC-Backed Startups	19,573	154	1,303	1,935	16,181
Tech-Based Startups	175,247	1,732	12,078	6,254	127,126
VC Share of Startups	11%	9%	11%	31%	13%

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# Tech-Startups State-Findings

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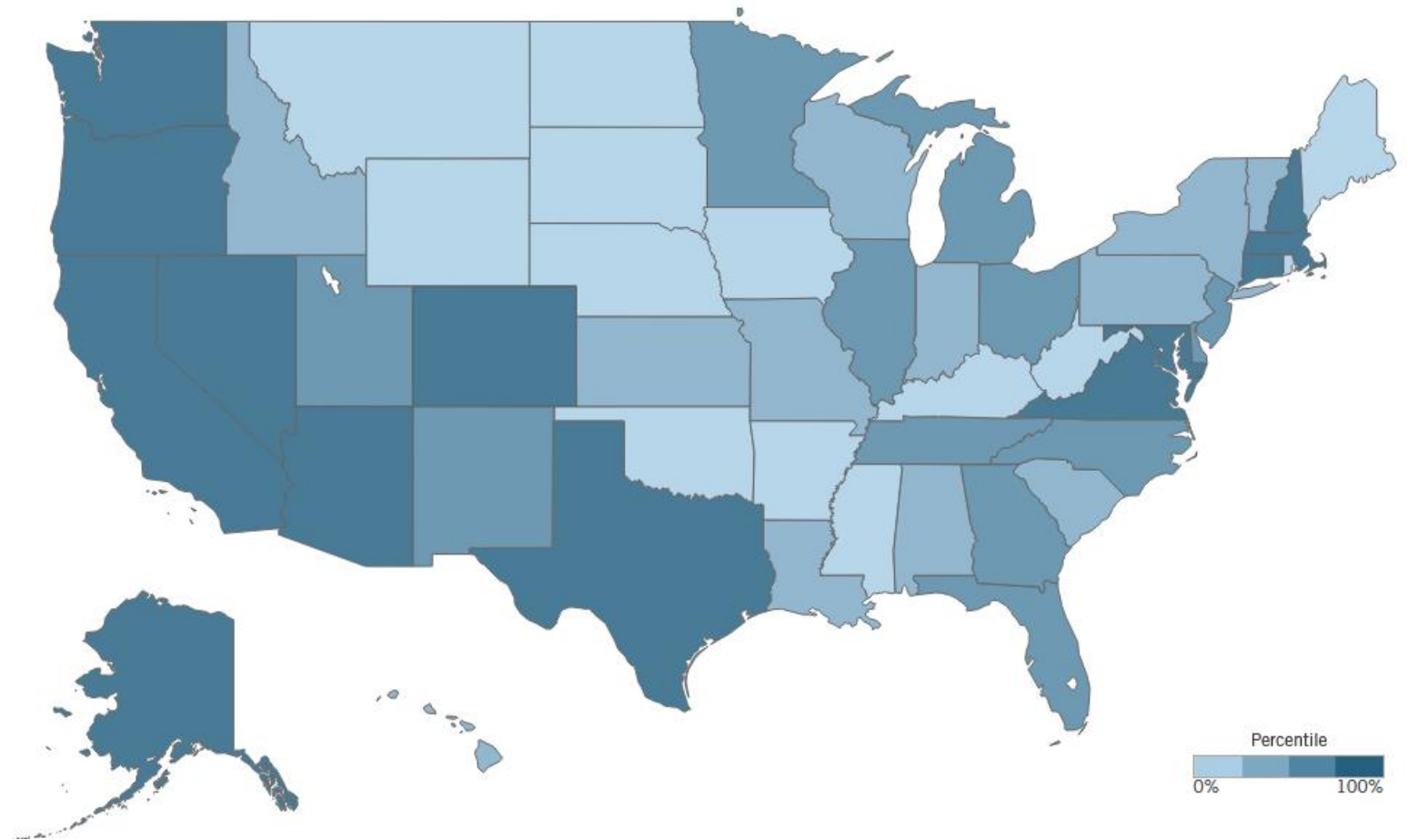
- In the median state
  - 1,800 tech-startups out of 76,000 firms
  - 17,000 jobs in tech-startups out of 1.6 million workers
- Tech-startups in the median state represents:
  - 2.4 % of all businesses
  - 0.9 % of all jobs

# Tech-Startups, 2016

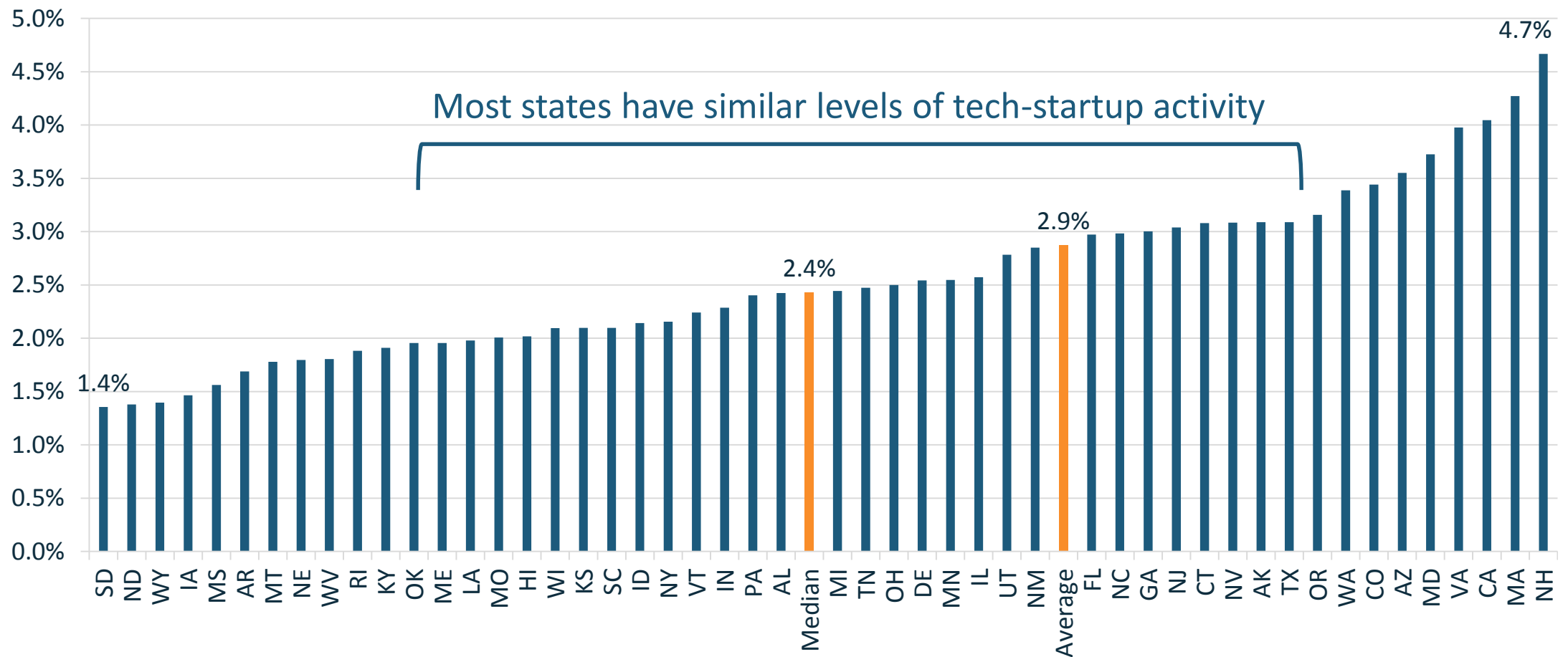
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## Top 5 States

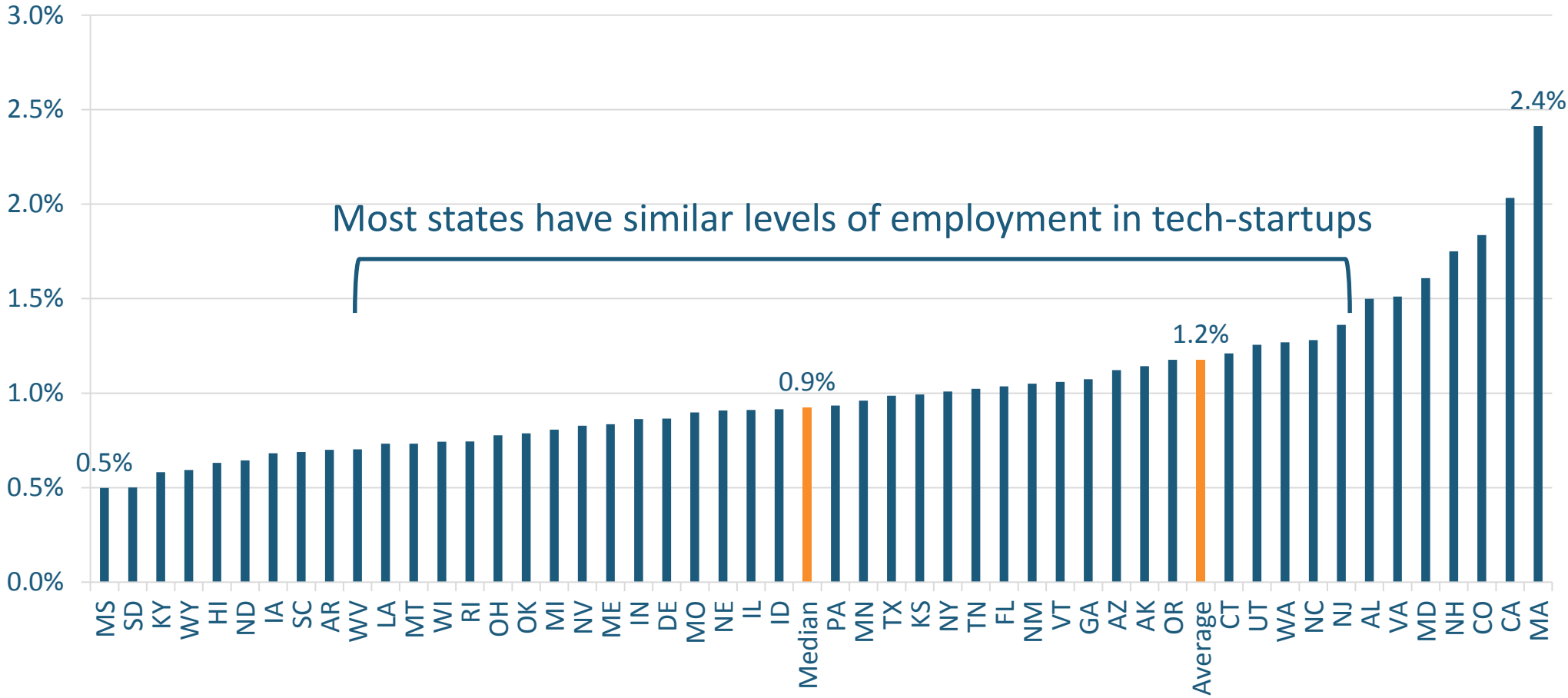
1. New Hampshire
2. Massachusetts
3. California
4. Virginia
5. Maryland



# Tech-Startup Firm Share, by State, 2016



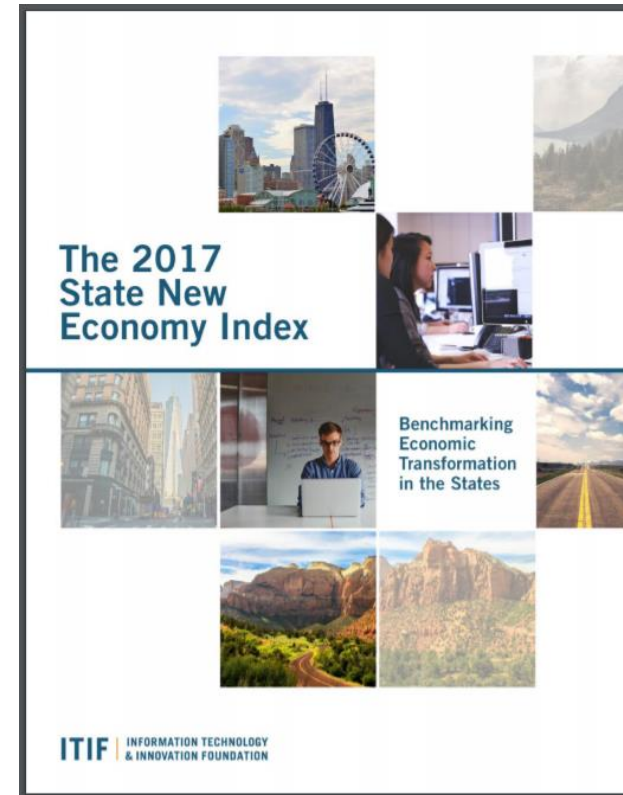
# Tech-Startup Employment Share, by State, 2016



# Why Some States Attract More Tech-Startups

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- Correlation of 0.75 between a state's level of technology-based startup activity and ITIF's 2017 *State New Economy Index* (SNEI) overall score.





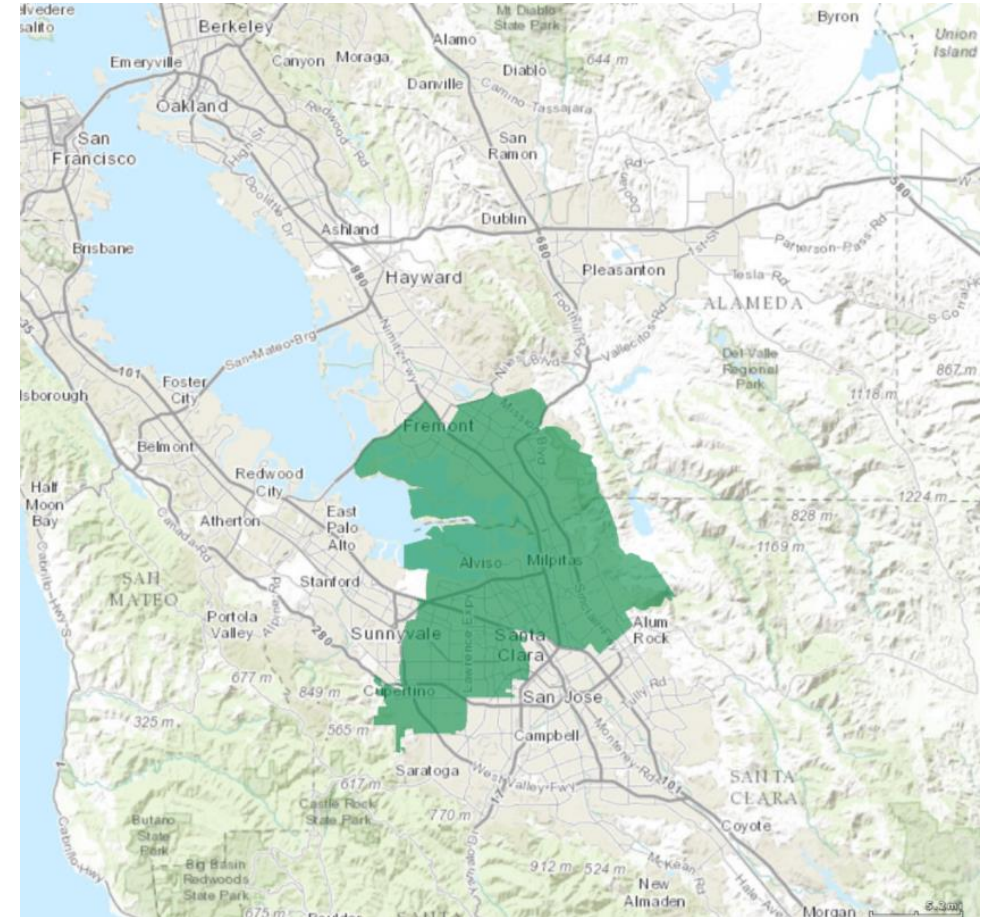
# Tech-Startups Congressional District Findings

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- In the median Congressional district
  - 300 tech-startups out of 13,000 firms
  - 2,300 jobs in tech-startups out of 250,000 workers
- Tech-startups in the median district represents:
  - 2.3 % of businesses
  - 0.9 % of jobs

# California-17 (Part of Silicon Valley)

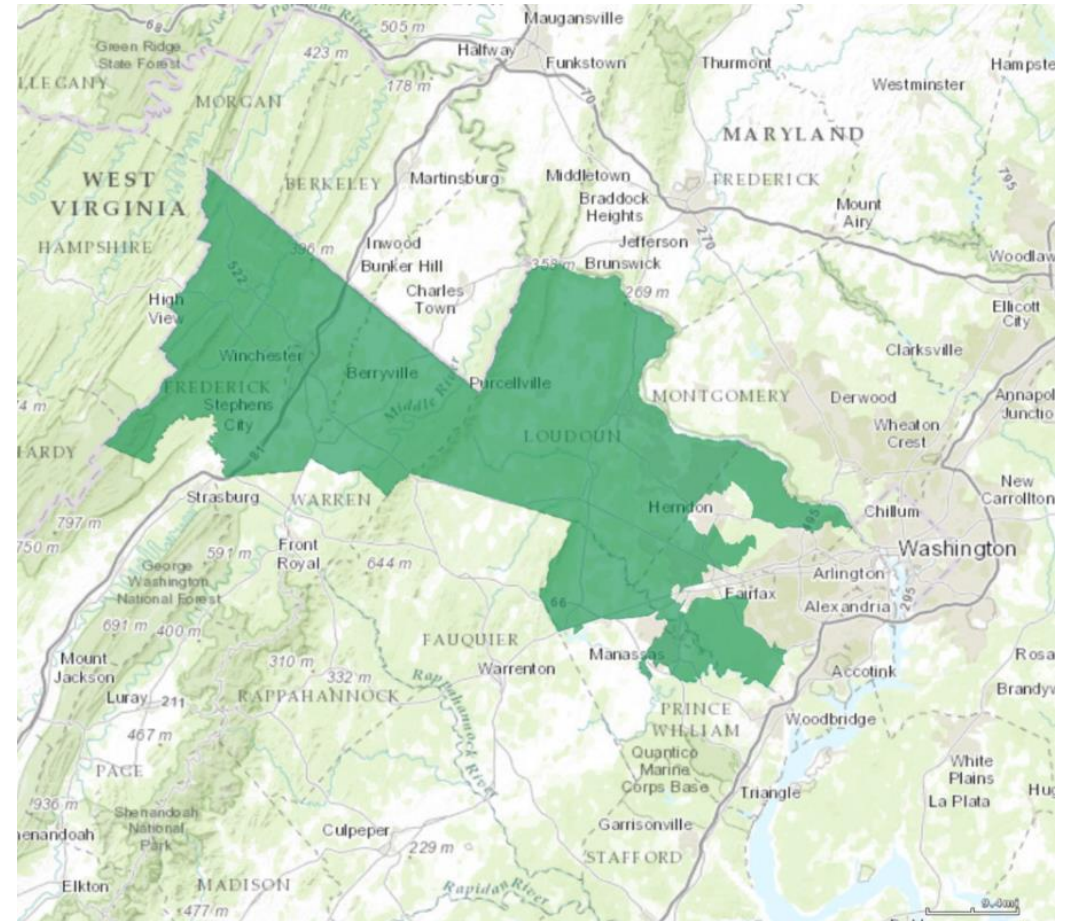
- 2,700 tech-startups that employ 35,000 workers
  - 16.1 % of businesses
  - 6.4 % of workers



Source: Wikipedia

# Virginia-10 (Just Outside DC)

- 1,900 tech-startups that employ 18,000 workers
  - 11.6% of businesses
  - 5.8% of workers

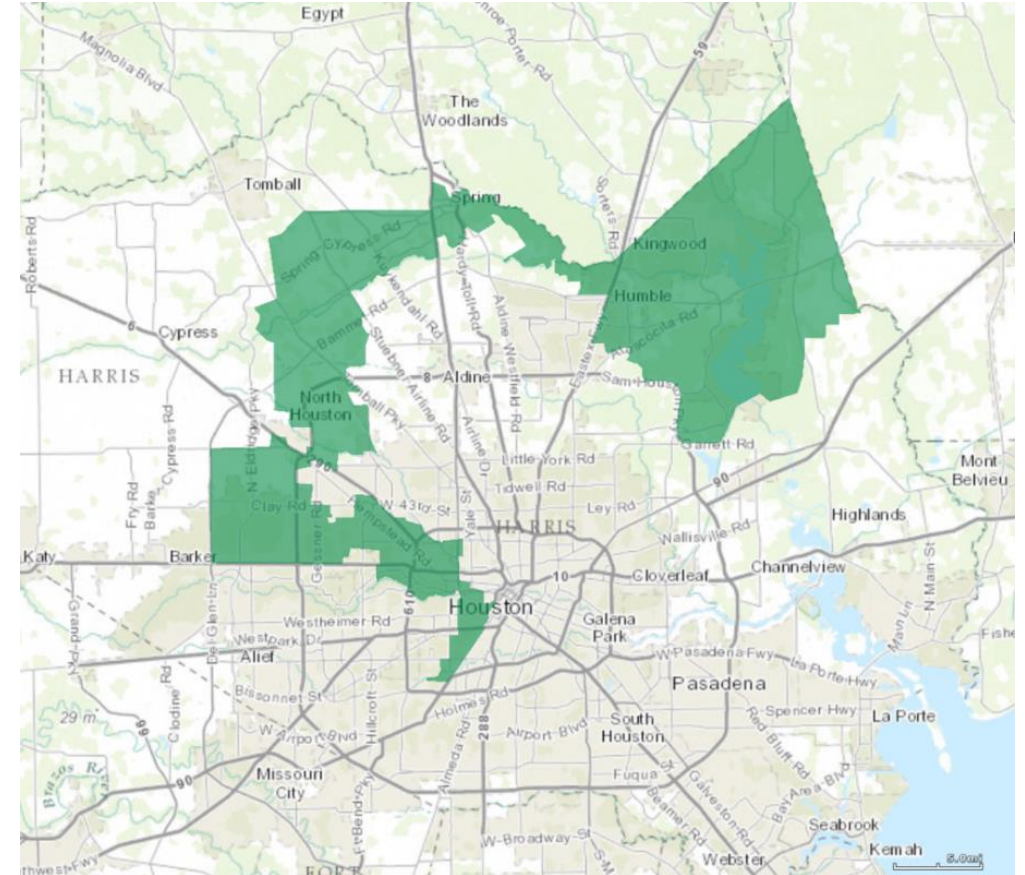


Source: Wikipedia



# Texas-2 (In-and-Around Houston)

- 1,300 tech-startups that employ 9,700 workers
- This represents
  - 8.9% of businesses
  - 2.7% of workers



Source: Wikipedia

# Washington-1 (Just Outside Seattle)

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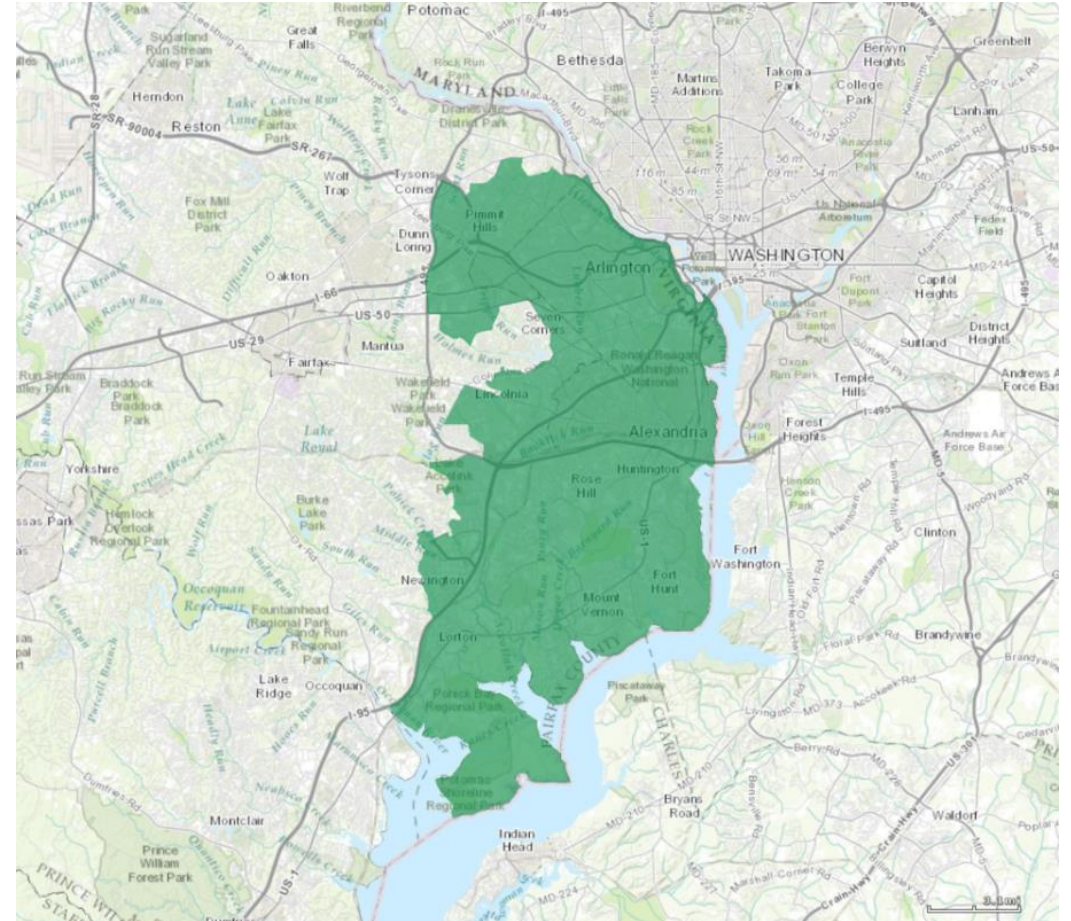
- 1,300 tech-startups that employ 9,200 workers
- This represents
  - 8.3% of businesses
  - 3.5% of workers



Source: Ballotpedia

# Virginia-8 (Alexandria and Arlington)

- 1,300 tech-startups that employ 12,000 workers
- This represents
  - 8.3% of businesses
  - 3.4% of workers



Source: Wikipedia

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## Policy Recommendations: Tax

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- Expand the rate of the Alternative Simplified Credit to at least 25 percent from 14 percent.
- Amend Section 469 of the tax code to permit passive investors to take advantage of the net operating losses and research tax credits of companies in which they invest.
- Amend Section 382 of the tax code to make it easier for small companies to carry net operating losses forward even as they continue to attract new investors.



# Policy Recommendations: Regulation

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- Create a new Office of Innovation Policy within the Office of Management and Budget.
  - The office would specifically review the impact major regulations would have on future innovation and would be empowered to force agencies to consider policies that would more effectively promote innovation.
- Charge the Office of Advocacy in the Small Business Administration with focusing solely on advocating for and reviewing federal regulations that affect new firms in technology-based industries.

# Policy Recommendations: Stem Skills

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- Establish NSF program to award prizes to universities that dramatically increase the rate at which freshmen STEM students graduate with STEM degrees.
- Establish NSF-industry Ph.D. fellows program.
- Expand STEM immigration

# Policy Recommendations: Technology Transfer

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- Establish SBIR-like set-aside program that to support technology-commercialization activities.
- Develop a “Phase Zero” SBIR award program.
- Develop metrics for universities to report entrepreneurship and commercialization information annually.

**Thank You!**