

Who Are America's Innovators and How Can We Help Them?

Join the Conversation: #WhoInnovates

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Overview

1 Why do demographics of innovation matter?

2 Methodology

3 Who innovates?

4 What institutions innovate?

5 Policy implications

The Demographics of Innovation

- There are many assumptions about who drives innovation.
- Stereotype: the young, tech-savvy, college dropout who takes the tech world by storm.



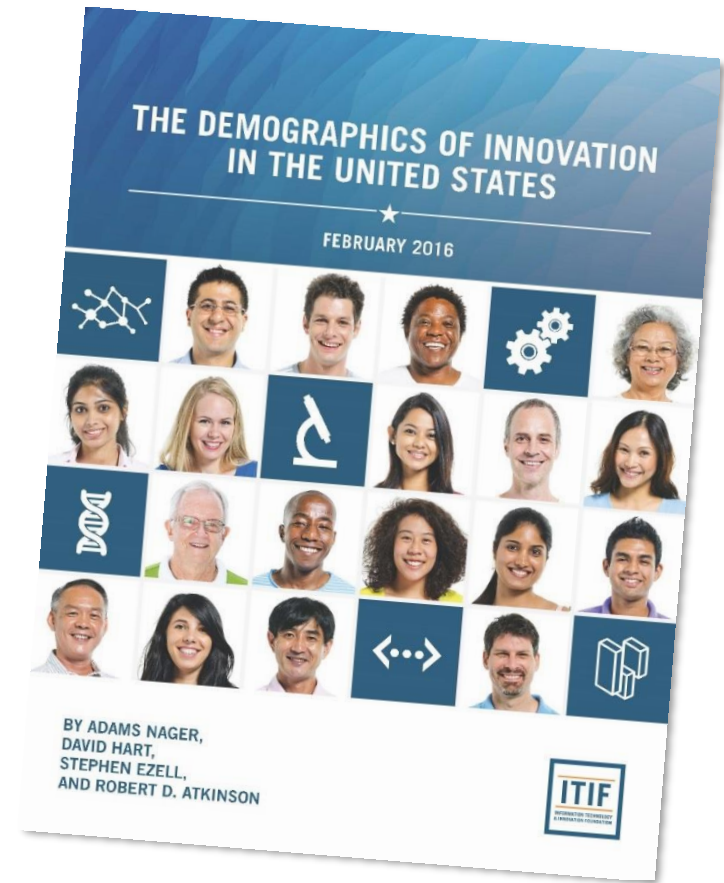
The Demographics of Innovation

Understanding traits of who really drives meaningful innovation is vital to shaping effective innovation policies:

- Quantify the value of high-skill immigration
- Better understand role of STEM education
- Better understand race, gender differences

How Is This Study Unique?

- Most studies focus on who has potential to innovate or who starts high-growth companies.
- Few focus on who actually produces important science and technology.



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Data Collection

- ✓ Identified impactful innovations
 - R&D 100 Awards
 - Life sciences triadic patents
 - Materials sciences triadic patents
 - Information technology triadic patents
 - Large advanced technology company triadic patents
- ✓ Contacted 6,418 innovators
- ✓ Collected 923 viable survey responses

The Demographics of Innovation

1 Why do demographics of innovation matter?

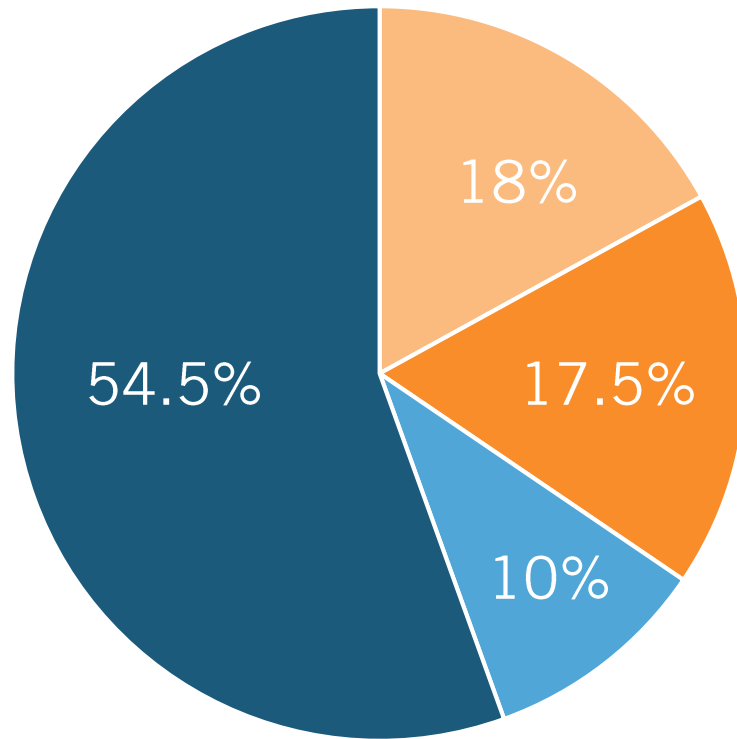
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Immigrants Play a Key Role



- Noncitizens
- Naturalized Immigrants
- Children of Immigrants
- 3rd Generation and Beyond Americans

Innovators by Immigration Status, Country of Birth, and Parents' Country of Birth

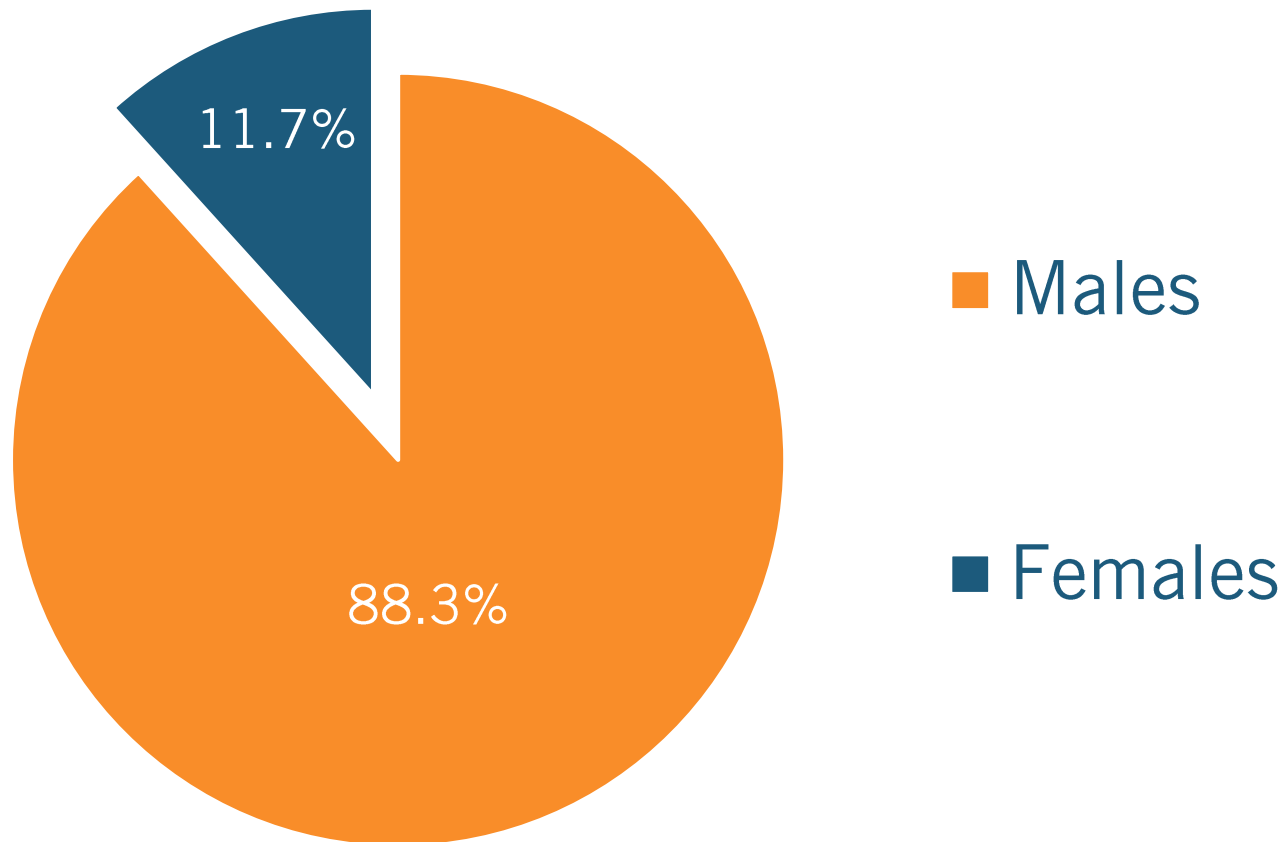
Most Common Countries of Origin

Country	Respondents	Percentage of Foreign-born Innovators
India	68	20.6%
China	54	16.4%
United Kingdom	24	7.3%
Canada	12	3.6%
Germany	12	3.6%
France	11	3.3%
Russia	11	3.3%
Taiwan	11	3.3%
Italy	9	2.7%
Ukraine	7	2.1%
South Korea	6	1.8%
Switzerland	5	1.5%

A world map illustrating the global distribution of three major malaria species. The map uses a color-coded system: dark blue for *P. falciparum*, medium blue for *P. vivax*, and light blue for *P. malariae*. *P. falciparum* is prevalent in sub-Saharan Africa, South America, and parts of Southeast Asia and the Pacific. *P. vivax* is widespread in South America, Europe, and parts of Africa and Asia. *P. malariae* is found in parts of Europe, Africa, and Asia.

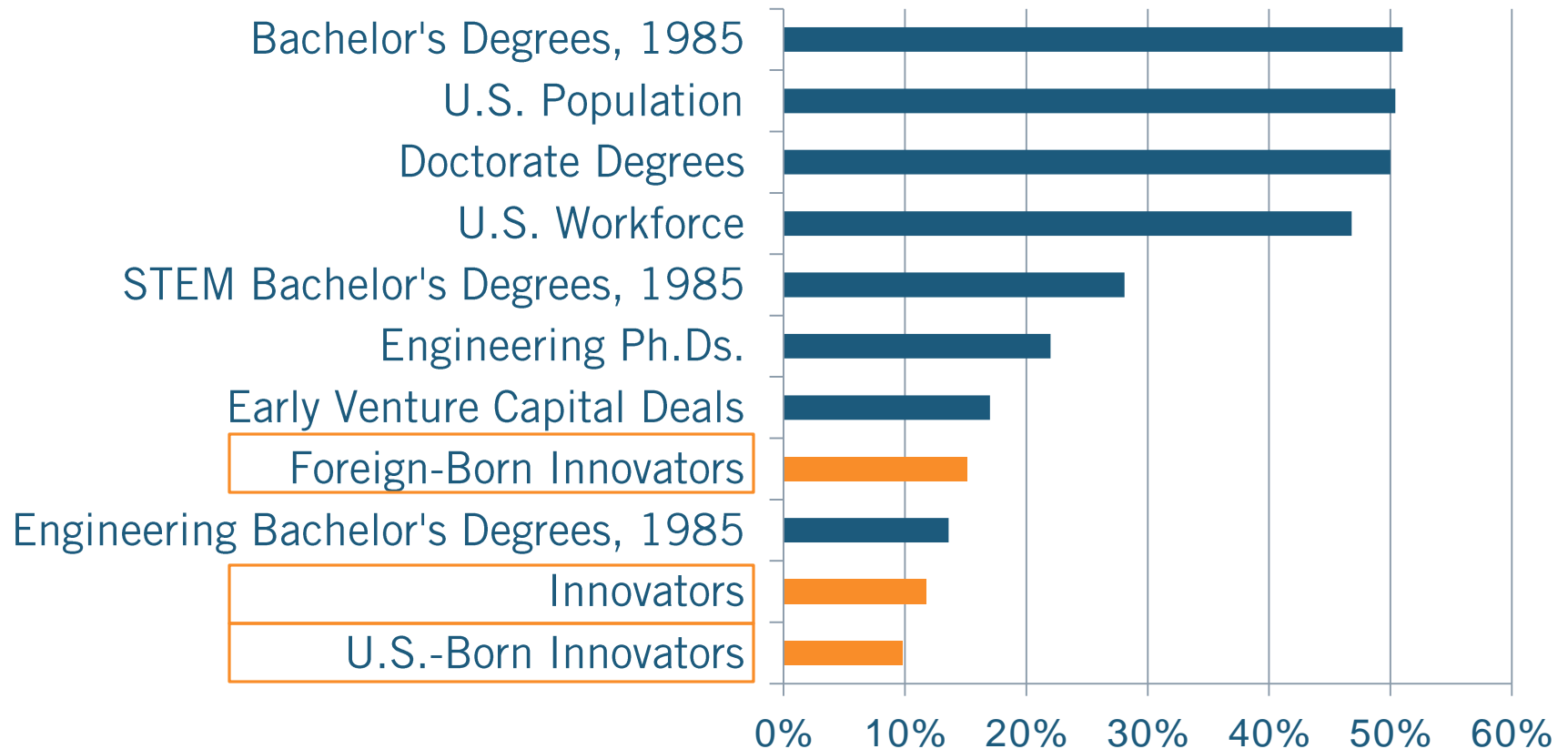
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Women are Underrepresented



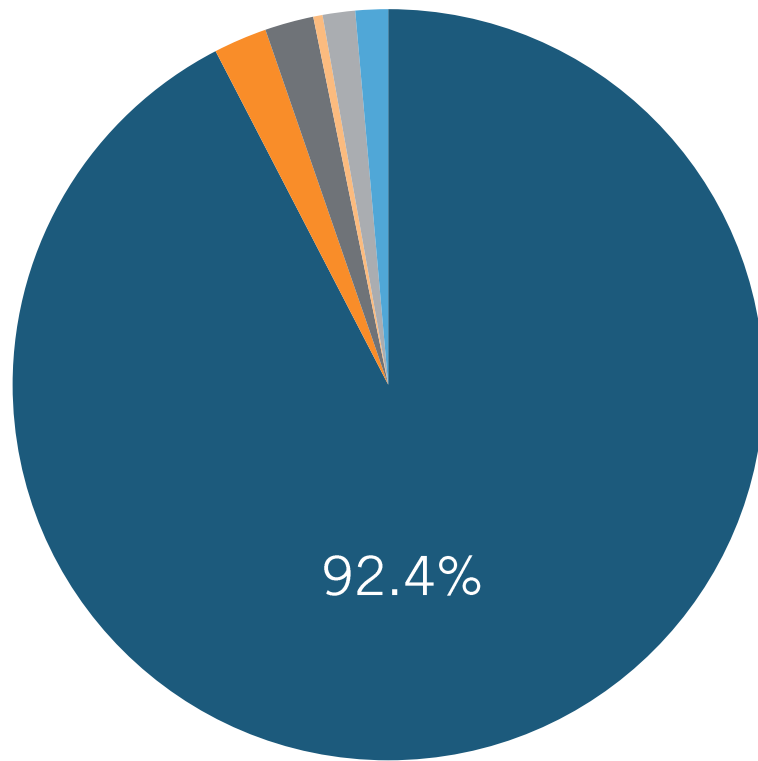
Innovators by Gender

Female Representation in Innovation



Percentage of Female Representation in Various Populations, as Percentage of U.S. Totals and Percentage of Responding Innovators (Orange Bars and Boxes)

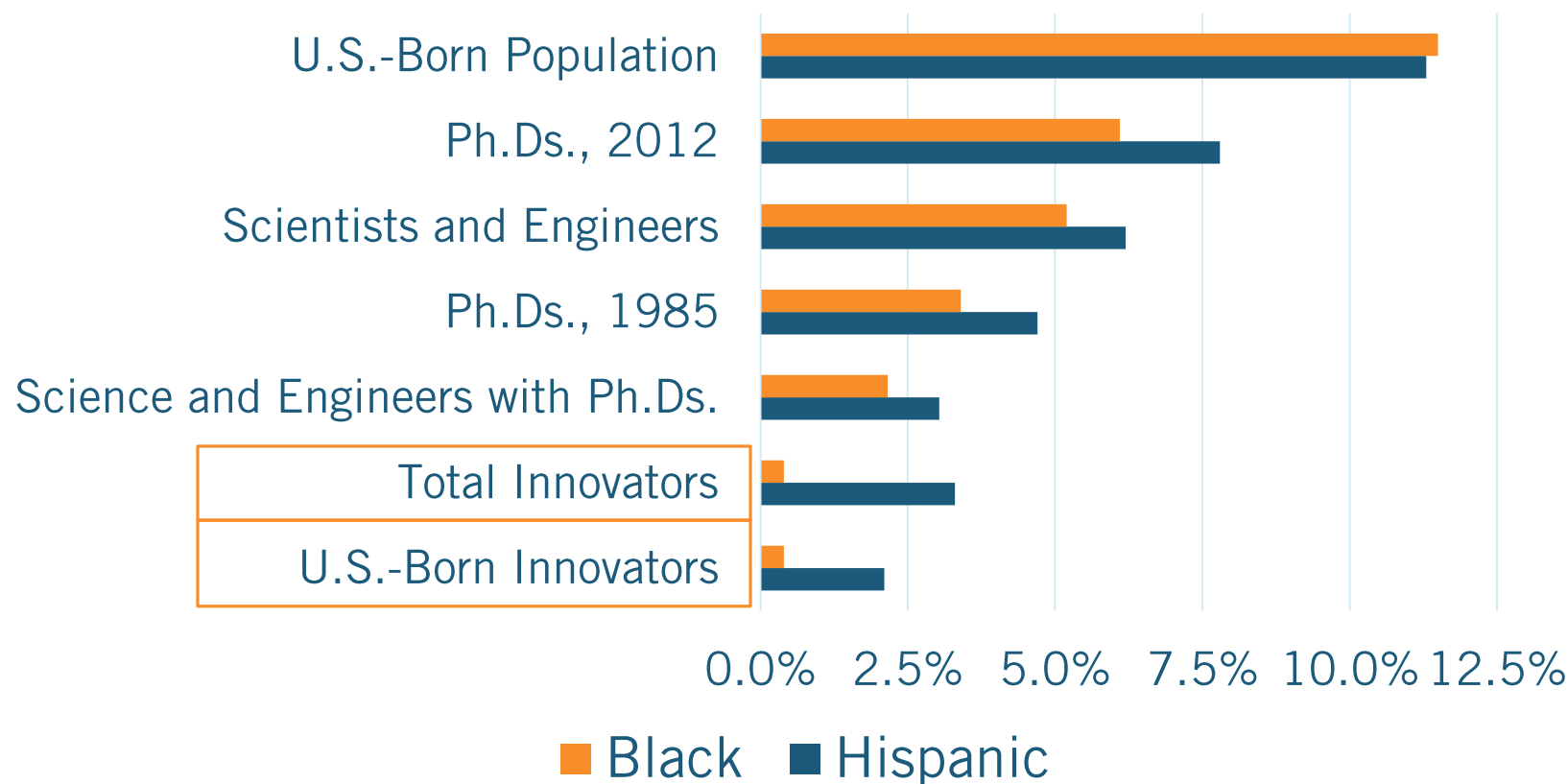
Minorities are Underrepresented



- White / Caucasian
- Asian or Pacific Islander
- Hispanic
- Black or African American
- 2 or more responses
- American Indian or Alaskan Native

Race and Ethnicity of Innovators Born in the United States

U.S.-born Blacks and Hispanics in Innovation



Percentage of Blacks and Hispanics in the total U.S. Population and Among Respondents (Orange Boxes)

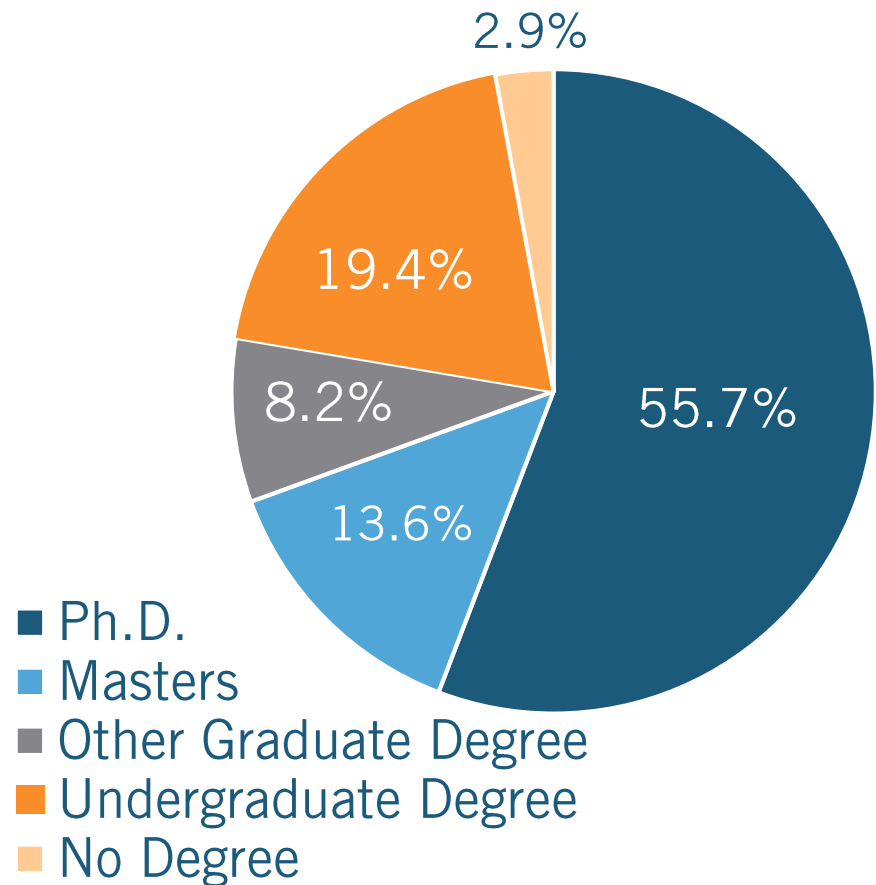
Innovators Have STEM Degrees

Over 90% majored in STEM as an undergraduate.

- Over half majored in engineering.

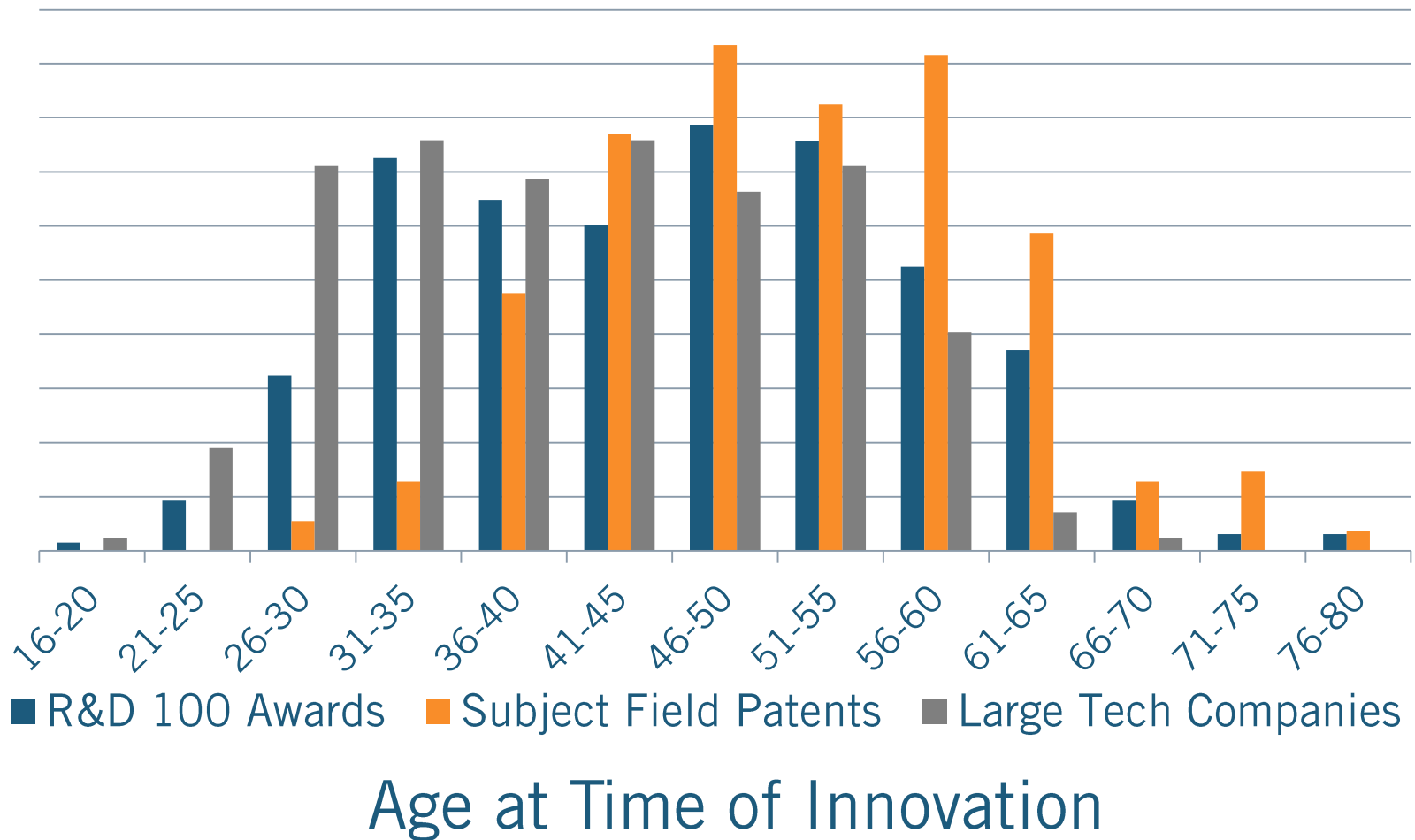
Over 55% hold a STEM Ph.D.

- Among foreign-born innovators, two-thirds hold doctorates.



Highest Level of Education for Innovators

Innovators Are *Not* Generally Young



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Innovating Institutions

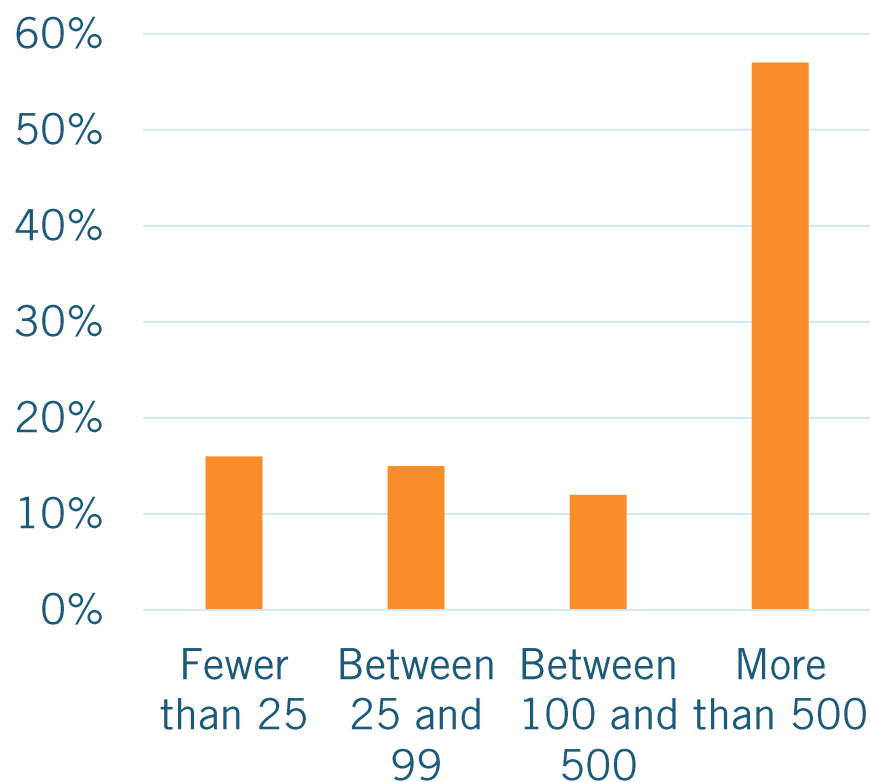
Institution	Percent of Innovations
Government Organization/ Public Research Institute	12.5%
University	7.3%
Publicly Traded Company	59.5%
Privately Owned Company	20.7%

20% of innovations were collaborations between two or more institutions.

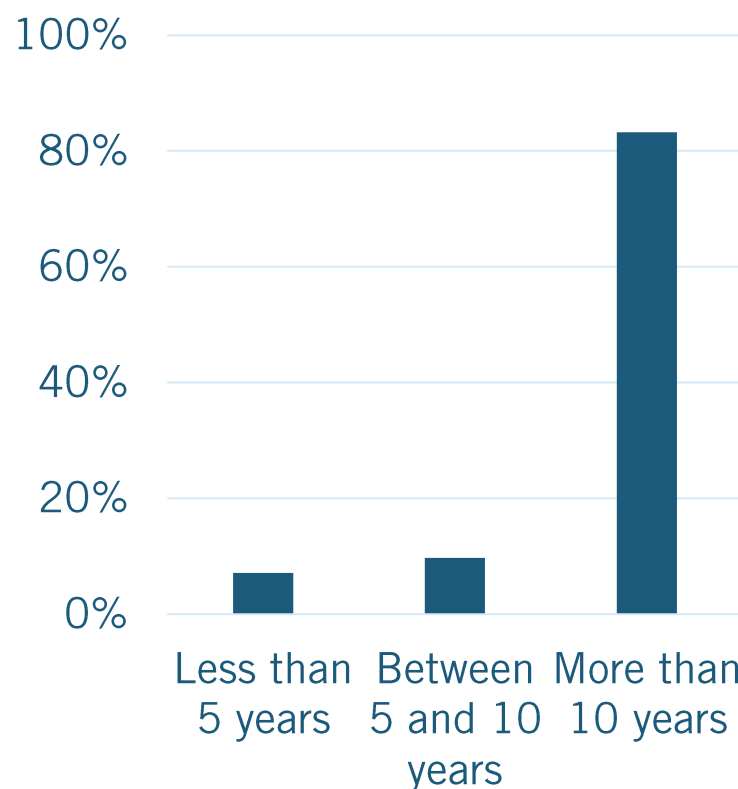
- Half of these were public-private partnerships.

Most Innovating Companies Are Big and Mature

Number of Employees



Age of Company



Barriers to Commercialization

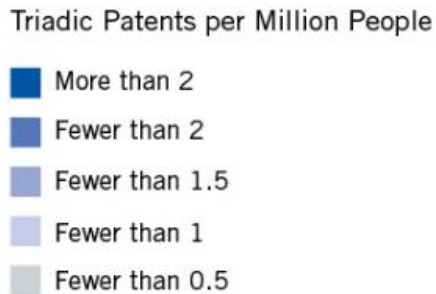
Of 28% of innovations reporting barriers to commercialization:

Barriers to Innovation	Percentage of Innovations with Listed Barriers
Lack of funding for further development	57.9%
Insufficient market demand	50.9%
Competition from other innovators	41.5%
Technical infeasibility of the innovation	39.6%
Regulatory challenges	33.3%
Company unwilling to bring to market	24.5%

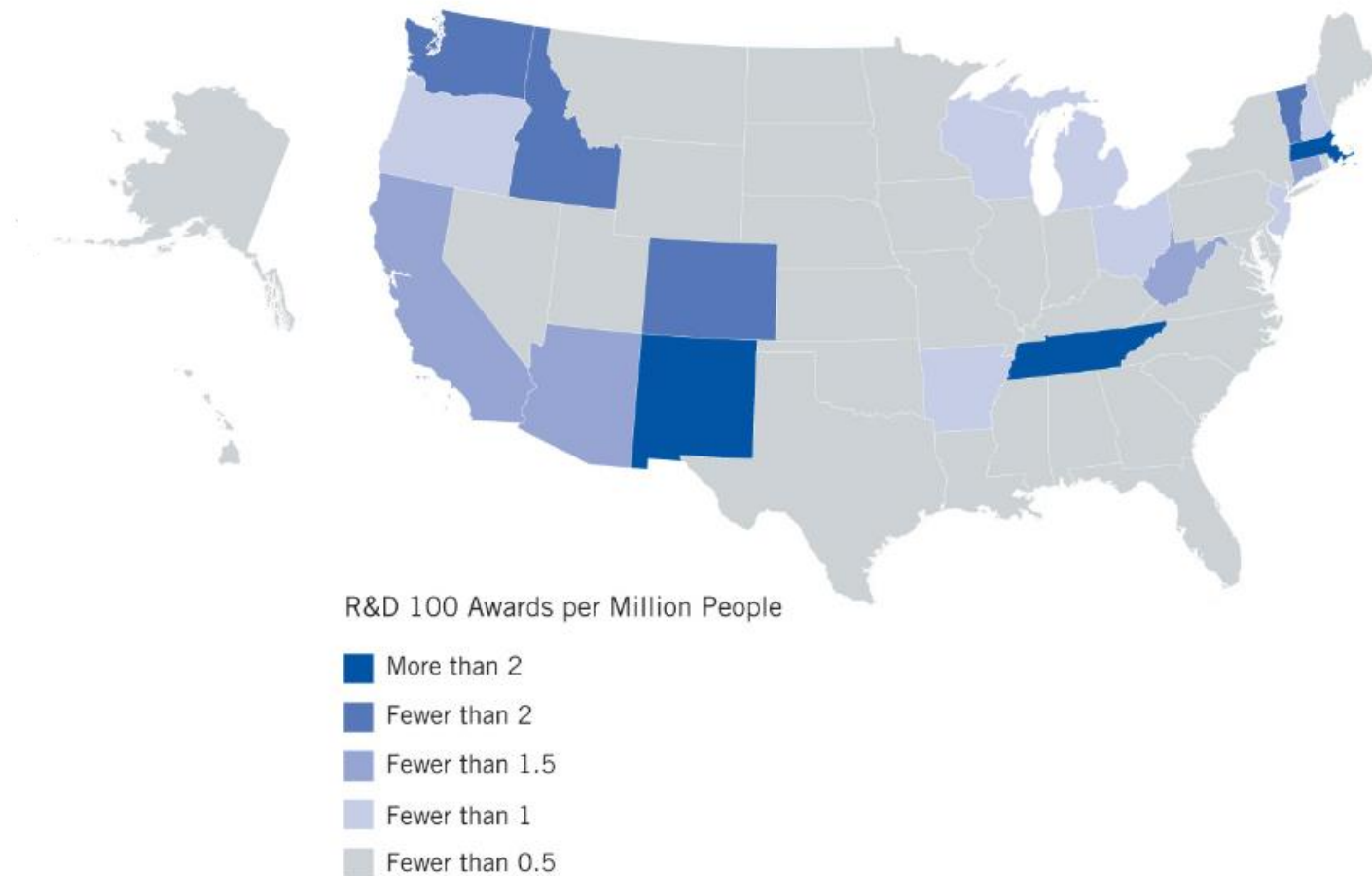
15% of All Innovations Received Public Grants

- Innovations received grants from:
 - ✓ 5.1% from Small Business Innovation Research
 - ✓ 4.7% from Department of Energy
 - ✓ 3.4% from Department of Defense
 - ✓ 1.3% from State Government
- 60% of respondents' companies that had fewer than 25 employees received public grants.
- 72% of those were through the Small Business Innovation Research program.

(Weighted by State Population)



Distribution of R&D 100 Award Winning Innovations (Weighted by State Population)



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Policy Implications

- ✓ Expand STEM immigration.
- ✓ Redouble efforts to increase the number of women and minorities in STEM fields.
- ✓ Increase the number of STEM graduates.
- ✓ Increase public support for R&D and technology commercialization.

Thank You!

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