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The Ohio Innovation Economy: Challenges and Opportunities

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Overview

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- **Long-term regional growth process**
- **Ohio in the State Technology and Science Index**
  - **Research and development**
  - **Risk capital and entrepreneurial infrastructure**
  - **Human capital investment**
  - **Technology and science workforce**
  - **Technology concentration and dynamism**

Long-term regional growth process

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- Large regional differences in growth
- Few barriers to flow of economic activity
- Export-intensive activity is critical
- Manufacturing is an export sector
- Healthcare services can be an export

Factors affecting disparity in regional growth

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- **Existing industrial structure**
- **Cost of doing business:**
  - **Tax rates, capital costs, wage rates, space costs, energy costs, health care costs, etc.**
- **Labor force skills, access to markets and capital**
- **Research, development and innovation capacities**
- **Quality of place issues**

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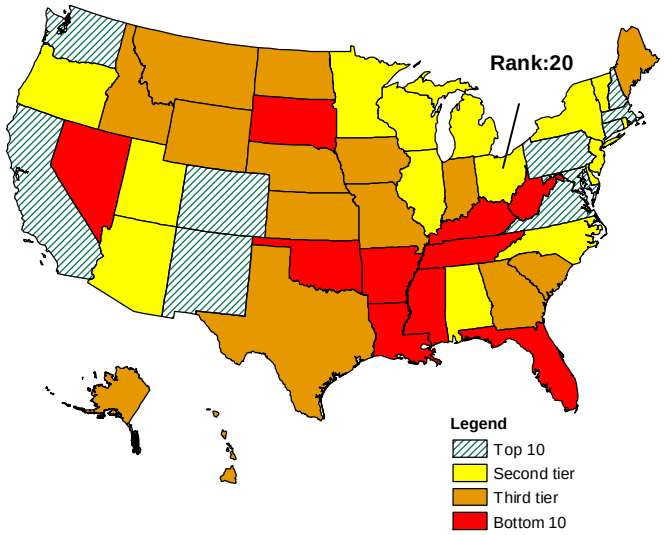
Research and development composite

2010



Source: Milken Institute

Research and development composite

Ohio, 2010

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	Indicators	2010 rankings
1	Federal R&D	22
2	Industry R&D	19
3	Academic R&D	21
4	National Science Foundation funding	44
5	National Science Foundation research funding	39
6	R&D expenditures on engineering	10
7	R&D expenditures on physical sciences	25
8	R&D expenditures on environmental sciences	45
9	R&D expenditures on math and computer science	22
10	R&D expenditures on life sciences	19

Source: Milken Institute

Research and development composite

Ohio, 2010 (cont.)

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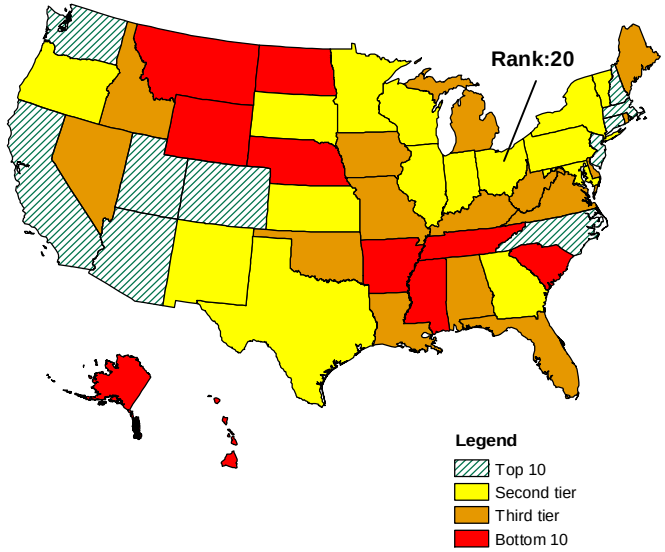
	Indicators	2010 rankings
11	R&D expenditures on agricultural sciences	45
12	R&D expenditures on biomedical sciences	14
13	STTR awards per 10,000 businesses	13
14	STTR award dollars per $ millions fo GSP	18
15	SBIR awards per 100,000 people	14
16	Phase 1 SBIR awards per 10,000 business establishments	9
17	Phase 2 SBIR awards per 10,000 business establishments	10
18	Competitive NSF funding rate	36
	Research and Development Inputs Composite	20

Source: Milken Institute

Risk capital and entrepreneurial infrastructure composite

Ohio, 2010



Source: Milken Institute

Risk capital and entrepreneurial infrastructure composite

Ohio, 2010

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1	Total venture capital investment growth	11
2	Companies receiving venture capital	24
3	Growth in # companies receiving venture capital	11
4	Venture capital investment as percent of GSP	30
5	Avg. annual SBIC funds disbursed per $1,000 of GSP	34
6	# of business incubators per 10,000 establishments	17
7	Patents per 100,000 people	24
8	Net business starts per 100,000 people	15
9	IPO proceeds as percent of GSP	n.a.
10	Venture capital in nanotechnology per $1,000 of GSP	21
11	Venture capital in clean technology per $1,000 of GSP	16
12	Sum of equity invested in green tech per $100,000 of G	21
	Risk Capital and Entrepreneurial Investment Composite	20

Source: Milken Institute

Human capital investment composite

2010

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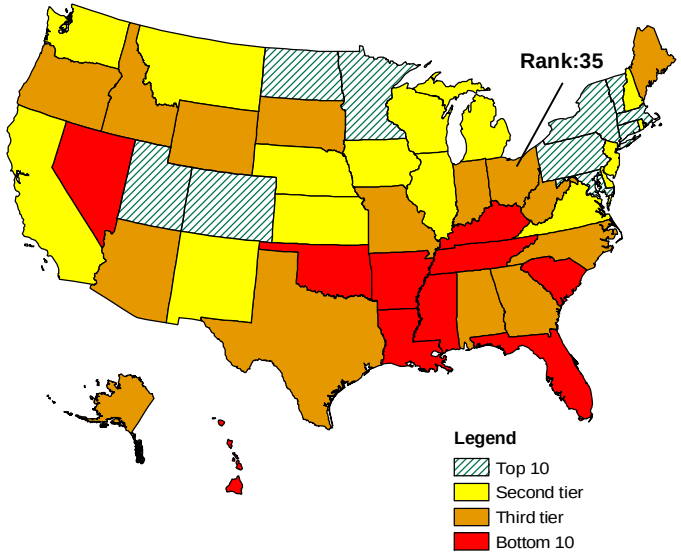

Source: Milken Institute

Human capital investment composite

Ohio, 2010

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	Indicators	2010 rankings
1	Bachelor's degrees (percent of population 25 and older)	37
2	Advanced degrees (percent of population 25 and older)	29
3	Ph.D. degrees (percent of population 25 and older)	40
4	Science, engineering, health students (25-34)	17
5	State spending on student aid, per capita	26
6	Average verbal SAT scores	24
7	Average math SAT scores	21
8	Average ACT scores	25
9	State appropriations for higher education	40
10	Percent change in state appropriations for higher education	49

Source: Milken Institute

Human capital investment composite

Ohio, 2010 (cont.)

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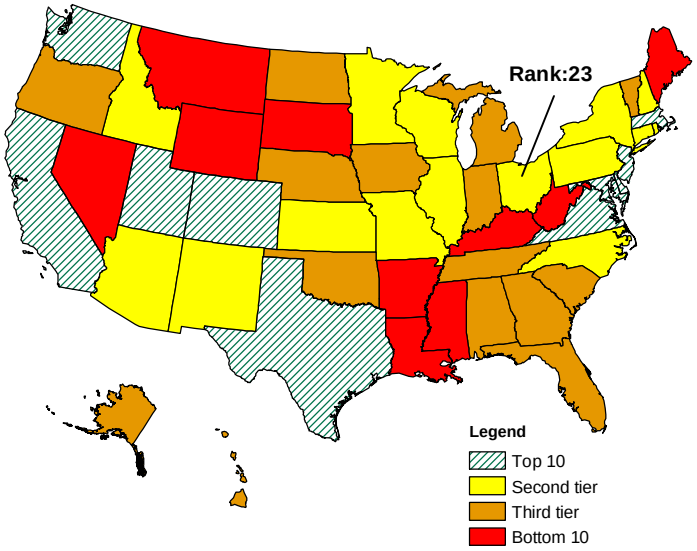
	Indicators	2010 rankings
11	Number of doctoral scientists per 100,000 people	27
12	Number of doctoral engineers per 100,000 people	22
13	Number of science, engineering Ph.D.s awarded per 100,000	19
14	Number of science, engineering, health postdoctorates awarded per 100,000	31
15	Percent of bachelor's degrees granted in science and engineering	40
16	Recent bachelor's degrees in science and engineering	31
17	Recent master's degrees in science and engineering: percent of civilian work force	29
18	Recent Ph.D.'s in science and engineering: percent of civilian work force	28
19	Percent of households with computers	39
20	Percent of households with Internet access	34
	Human Capital Investment Composite	35

Source: Milken Institute.

Technology and science workforce composite

2010



Source: Milken Institute

Technology and science workforce composite

Ohio, 2010

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	Indicators	2010 rankings
1	Intensity: computer and information science experts	20
2	Intensity: computer programmers	26
3	Intensity: software engineers, systems software	30
4	Intensity: computer support specialists	24
5	Intensity: computer system analysts	27
6	Intensity: database and network administrators	13
7	Intensity: agricultural and food scientists	20
8	Intensity: biochemists and biophysicists	9
9	Intensity: microbiologists	32
10	Intensity: medical scientists	23

Source: Milken Institute

Technology and science workforce composite

Ohio, 2010 (cont.)

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	Indicators	2010 rankings
11	Intensity: physicists	7
12	Intensity: other life and physical science occupations	7
13	Intensity: electronic engineers	33
14	Intensity: electrical engineers	32
15	Intensity: computer hardware engineers	37
16	Intensity: biomedical engineers	18
17	Intensity: agricultural engineers	15
18	Intensity: other engineers	9
	Technology and Science Work Force Composite	23

Source: Milken Institute

Technology concentration and dynamism composite

2010

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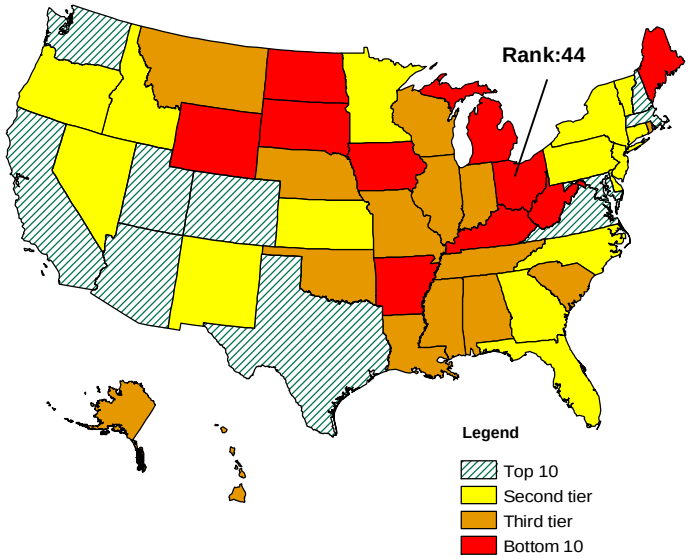

Source: Milken Institute

Technology concentration and dynamism composite

Ohio, 2010

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	Indicators	2010 rankings
1	Percent of establishments in high-tech NAICS codes	30
2	Percent of employment in high-tech NAICS codes	33
3	Percent of payroll in high-tech NAICS codes	31
4	Percent of establishment births in high-tech sector	25
5	Net formation of high-tech establishments	42
6	Number of Technology Fast 500 companies	30
7	Average yearly growth of high-tech industries	43
8	Number of high-tech industries with faster growth than the U.S. avg	42
9	Number of high-tech industries with location quotient greater than 1.0	45
10	Number of Inc. 500 companies per 10,000 establishments	19
	Technology Concentration and Dynamism Composite	44

Source: Milken Institute

State Technology and Science Index

2010

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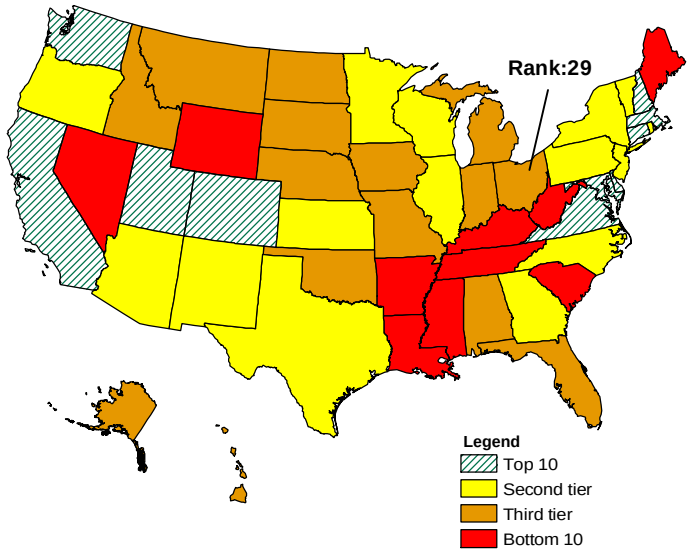

Source: Milken Institute

Ohio's position in STSI

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	2010 State Technology and Science Index	Rankings
1	Research and Development Inputs Composite	20
2	Risk Capital and Entrepreneurial Investment Composite	20
3	Human Capital Investment Composite	35
4	Technology and Science Work Force Composite	23
5	Technology Concentration and Dynamism Composite	44
	State Technology and Science Index	29

Source: Milken Institute

Per capita income & Tech and Science Index

Income relative to working age population, 2007

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