URC

UNIVERSITY RESEARCH CORRIDOR

URC BENCHMARK FINDINGS: 2020

February 24, 2022

MICHIGAN STATE UNIVERSITY

UNIVERSITY OF MICHIGAN

WAYNE STATE UNIVERSITY

Talent Development

The URC ranked first in enrollment (154,786 students) in 2020. This is a slight decrease from 2019 by a little over 1,000 students.

The URC ranked third in degrees granted (37,466 degrees) in 2020, an increase of nearly 1,500 degrees granted in 2019.

- **High-Tech Degrees:** The URC granted 4.7 percent more high-tech degrees (12,815 degrees) in 2020 than 2019.
- **High-Demand Degrees:** The URC ranked third among peer clusters in granting 13,544 high-demand degrees (business, computer science and engineering) in 2020 – an increase of 5.7 percent from 2019.
- **Medical Degrees:** The URC ranked first (again) in awarding medical degrees (2,529 degrees) in 2020 – far surpassing the second rank cluster, North Carolina's Research Triangle, which conferred 1,539 medical degrees.

Research & Development

Ranking fifth among its peer clusters, the URC conducted $2.64 billion in total R&D in 2020, a slight decrease from 2019 by $15.6 million, but an increase of $76 million from 2018.

The URC increased its total R&D conducted by 69 percent since 2007.

- The URC accounts for 92 percent of all academic R&D in Michigan in 2020.
- The URC ranks fourth in science & engineering R&D expenditures ($2,406 million) among its peers in 2021.

Technology Transfer

The URC ranks second in licensing and options of technology (283 total licenses and options) among its peers in 2020.

The URC ranked fifth in patents awarded (234 patents) among its peers in 2020.

Since 2000, the URC has created 348 startup companies, and 129 startups were created in the last five years

Innovation Power Ranking

The URC debuted in the rankings at second place for FY 2012, fell to third place in FY 2016, where it remained. But instead of holding steady at third place, the URC fell to fourth place in FY 2019 behind North Carolina, and is now tied for fourth with Massachusetts in FY 2020.

Each year the URC has conducted a benchmark analysis comparing our universities with seven of the nation's top university innovation clusters along key metrics in talent development, research and development (R&D) and technology transfer. Prior to this year, the benchmark analysis has been completed by Anderson Economic Group (AEG). This year the URC has conducted the analysis using the same metrics and methodology as established by AEG.

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Last year's benchmark report used FY 2018 data, which was the most recently available data at the time of AEG's analysis. This year, we have access to FY 2019 and FY 2020 data. Therefore, we have conducted two years of analysis. Below are the findings from the 2020 analysis for Talent, Research & Development, Technology Transfer and the Innovation Power Index. References to our 2019 analysis and AEG's 2018 analysis are provided in some sections for comparative purposes.

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Figure 1. University Innovation Centers

NORTH CA

Northern California
- University of California, San Francisco
- University of California, Berkeley
- Stanford University

SOUTH CA

Southern California
- University of California, Los Angeles
- University of California, San Diego
- University of Southern California

NC

North Carolina
- Duke University
- University of North Carolina, Chapel Hill
- North Carolina State University

IL

Illinois
- University of Chicago
- University of Illinois at Urbana-Champaign
- Northwestern University

MA

Massachusetts
- Harvard University
- Massachusetts Institute of Technology
- Boston University

PA

Pennsylvania
- Pennsylvania State University
  (all campuses except Penn State World Campus)
- University of Pittsburgh (all campuses)
- Carnegie Mellon University

TX

Texas
- University of Texas, Austin
- Texas A&M Univeristy
  (College Station and Commerce Campuses)
- Rice University

The URC has been benchmarking to these seven other clusters since 2007. These clusters represent the strongest three-institution groups across the country.

Talent

Talent metrics comparing the URC and its peer clusters include enrollment, total degrees awarded, high tech degrees and high demand degrees. We also track medical degrees and degrees in medicine and biological sciences – both strong areas for the URC.

Total URC Enrollment, 2020: 154,786 URC Rank: 1

The URC continues to lead the clusters in total enrollment.

Table 1. Total Enrollment, 2020

	Total		Undergraduate		Graduate	
	Number	Rank	Number	Rank	Number	Rank
URC	154,786	1	109,042	3	45,744	4
NCAL	70,095	8	41,672	8	28,423	8
SCAL	139,870	4	87,650	4	52,220	2
ILL	103,607	5	54,308	6	49,299	3
MA	95,266	6	41,687	7	53,579	1
NC	90,552	7	56,362	5	34,190	6
PA*	141,268	3	111,945	2	29,323	7
TX	151,073	2	113,163	1	37,910	5

Source: URC analysis of 12 months enrollment data from the National Center for Educational Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS), 2020

Note: *PSU has has reporting changes for 2020 enrollment date whereby all campuses, including World Campus are not reported in aggregrate. To maintain consistency with past analyses, which have not included the PSU World Campus, researchers estimated enrollment of the PSU World Campus, researchers estimated enrollment of the PSU World Campus from the past two years and deducted from the aggregated total for PSU.

For comparison purposes, data from 2019 are provided below.

Table 2. Total Enrollment, 2019

	Total		Undergraduate		Graduate	
	Number	Rank	Number	Rank	Number	Rank
URC	155,842	1	109,137	2	46,705	4
NCAL	69,361	8	40,990	8	28,371	8
SCAL	140,100	3	87,452	4	52,648	2
ILL	100,258	5	53,463	6	46,795	3
MA	96,435	6	41,389	7	54,596	1
NC	90,327	7	55,442	5	34,885	6
PA	137,246	4	108,329	3	28,917	7
TX	150,555	2	113,097	1	37,458	5

Source: URC analysis of 12 months enrollment data from the National Center for Educational Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS), 2020

Total URC Degrees, 2020: 37,466 URC Rank: 3

This year the URC moved down from second overall in total degrees to third. This is on trend with national demographics and the increases in degrees awarded in California and Texas.

Table 3. Total Degrees, 2020

	Total		BA		ADV	
	Number	Rank	Number	Rank	Number	Rank
URC	37,466	**3**	23,450	**3**	14,016	**4**
NCAL	19,624	**8**	10,793	**7**	8,831	**8**
SCAL	41,689	**1**	22,599	**4**	19,090	**1**
ILL	26,998	**5**	12,173	**6**	14,825	**3**
MA	23,303	**7**	7,455	**8**	15,848	**2**
NC	23,891	**6**	12,740	**5**	11,151	**7**
PA	36,269	**4**	24,710	**2**	11,559	**6**
TX	38,248	**2**	26,444	**1**	11,804	**5**

Source: URC analysis of IPEDS Completion data, 2020

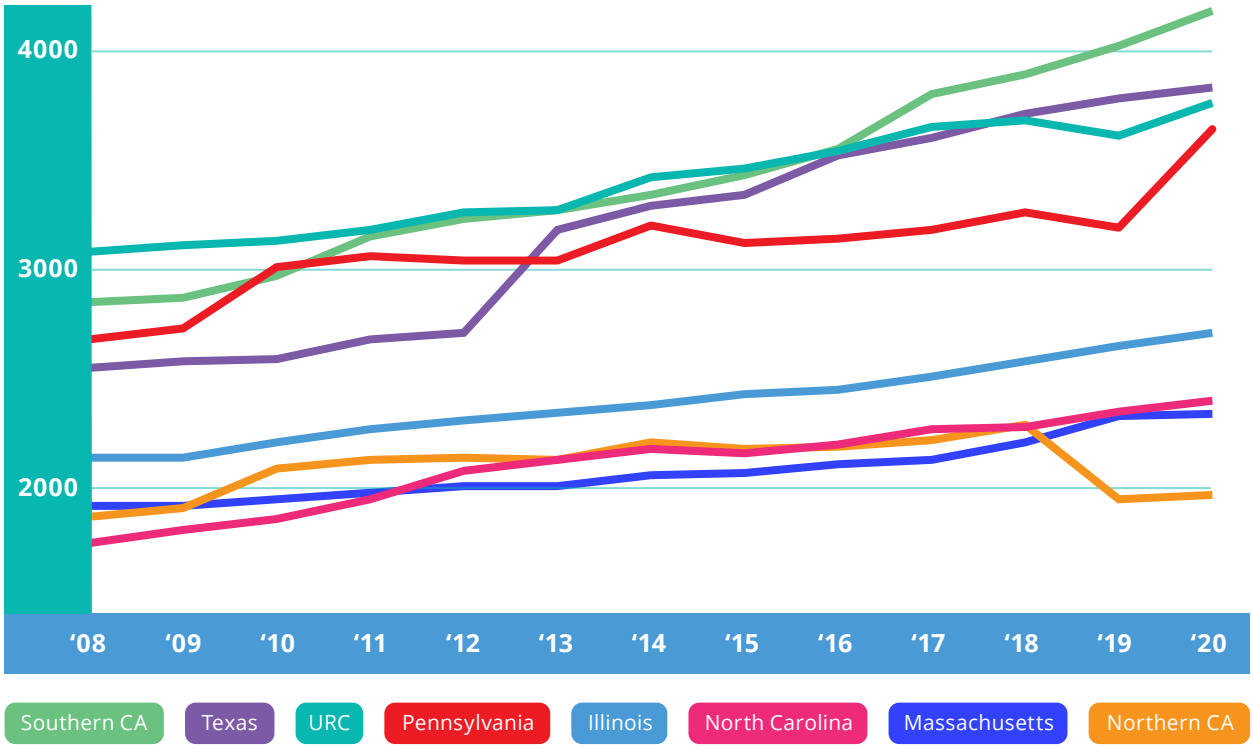
Note: Pennsylvania includes PSU World Campus. Disaggregation is not possible starting 2020.

We have been tracking the increases in degrees awarded each year by the Southern California and Texas clusters. In 2008, the URC conferred 30,702 degrees compared to Southern California and Texas clusters' 28,392 and 25,378 degrees, respectively. In 2013, the URC remained first in degrees awarded, but Southern California was very close, within 11 degrees. In 2016, the Southern California cluster surpassed the URC with just 127 degrees and Texas rose to within fewer than 200 degrees of the URC. The URC continued to rank second to Southern California until 2018, when Texas surpassed the URC by nearly 300 degrees. In 2020, the Southern California and Texas clusters continue to rank above the URC, and the Pennsylvania cluster is increasing its total degrees awarded to within nearly 1,200 degrees.

The percent change in degrees awarded from 2008-2020 indicates that the URC increased degrees awarded by 22 percent while Southern California and Texas increased by a greater percent at 47 percent and 51 percent, respectively. Pennsylvania increased its degrees awarded by 36 percent.

The below graph shows total degrees awarded by cluster going back to 2008.

Figure 2. Total Degrees, (2008–2020)



As you will see in the innovation power index section, the shift in rankings for total degrees has impacted the URC's position in the overall index, moving from second to third in 2016, third to fourth in 2019, and tied for fourth in 2020.

Total URC High Demand Degrees, 2020: 13,544 URC Rank: 3

The URC continues to be in the top three for high demand degrees (i.e., business, engineering and computer science) in 2020, a position the URC has held in 2019 and 2018.

Table 4. Total High Demand Degrees, 2020

	High Demand Degrees (Business, Engineering & Computer Sciences)					
	Total		BA		ADV	
	Number	Rank	Number	Rank	Number	Rank
URC	13,544	3	8,404	3	5,140	6
NCAL	7,003	8	3,052	7	3,951	8
SCAL	12,060	4	4,515	4	7,545	1
ILL	10,826	5	3,660	6	7,166	2
MA	8,534	7	2,452	8	6,082	3
NC	8,773	6	4,097	5	4,676	7
PA	16,242	1	10,392	1	5,850	4
TX	14,130	2	8,695	2	5,435	5

Source: URC analysis of IPEDS Completion data, 2020

Note: Pennsylvania includes PSU World Campus. Disaggregation is not possible starting 2020.

For reference, high demand degrees by cluster for 2019 are provided below.

Table 5. Total High Demand Degrees, 2019

	High Demand Degrees (Business, Engineering & Computer Sciences)					
	Total		BA		ADV	
	Number	Rank	Number	Rank	Number	Rank
URC	12,815	3	7,666	3	5,149	5
NCAL	6,679	8	2,769	7	3,910	8
SCAL	11,699	4	4,654	4	7,045	1
ILL	10,571	5	3,897	6	6,674	2
MA	8,059	7	2,505	8	5,554	3
NC	8,810	6	4,100	5	4,710	6
PA	14,189	1	9,497	1	4,692	7
TX	14,037	2	8,535	2	5,502	4

Source: URC analysis of IPEDS Completion data, 2019.

Total URC High Tech Degrees, 2020: 12,448 URC Rank: 4

The URC continues to be ranked fourth overall for high tech degrees, as it did in 2019 and 2018. Using the definition AEG set for high-tech degrees in previous URC benchmark reports, the following degree fields are included: agriculture, agriculture operations, and related science; architecture and related services; biological and biomedical science; communications technologies/technicians and support services; computer and information sciences and support services; engineering technologies/technicians; engineering; mathematics and statistics; and physical sciences.

This year the URC ranks fourth in undergraduate high tech degrees, which is consistent with 2019 and 2018, and fifth in advanced high tech degrees, which is down from third in 2019 and second in 2018.

The high tech degrees data for 2020 and 2019 are provided in the tables below.

Table 6. Total High Tech Degrees, 2020

	High Tech Degrees					
	Total		BA		ADV	
	Number	Rank	Number	Rank	Number	Rank
URC	12,448	4	8,084	4	4,364	5
NCAL	8,881	6	4,794	7	4,087	7
SCAL	15,072	1	8,535	3	6,537	1
ILL	9,840	5	5,145	6	4,695	3
MA	7,691	8	3,078	8	4,613	4
NC	8,870	7	5,355	5	3,515	8
PA	14,961	2	9,929	2	5,032	2
TX	14,126	3	9,974	1	4,152	6

Source: URC analysis of IPEDS Completion data, 2020

Note: Pennsylvania includes PSU World Campus. Disaggregation is not possible starting 2020.

Table 7. Total High Tech Degrees, 2019

	High Tech Degrees					
	Total		BA		ADV	
	Number	Rank	Number	Rank	Number	Rank
URC	11,889	4	7,458	4	4,431	3
NCAL	8,601	6	4,552	7	4,049	7
SCAL	14,489	1	8,053	3	6,436	1
ILL	9,421	5	5,271	5	4,150	5
MA	7,626	8	2,953	8	4,673	2
NC	8,576	7	5,260	6	3,316	8
PA	13,281	3	8,986	2	4,295	4
TX	13,816	2	9,798	1	4,108	6

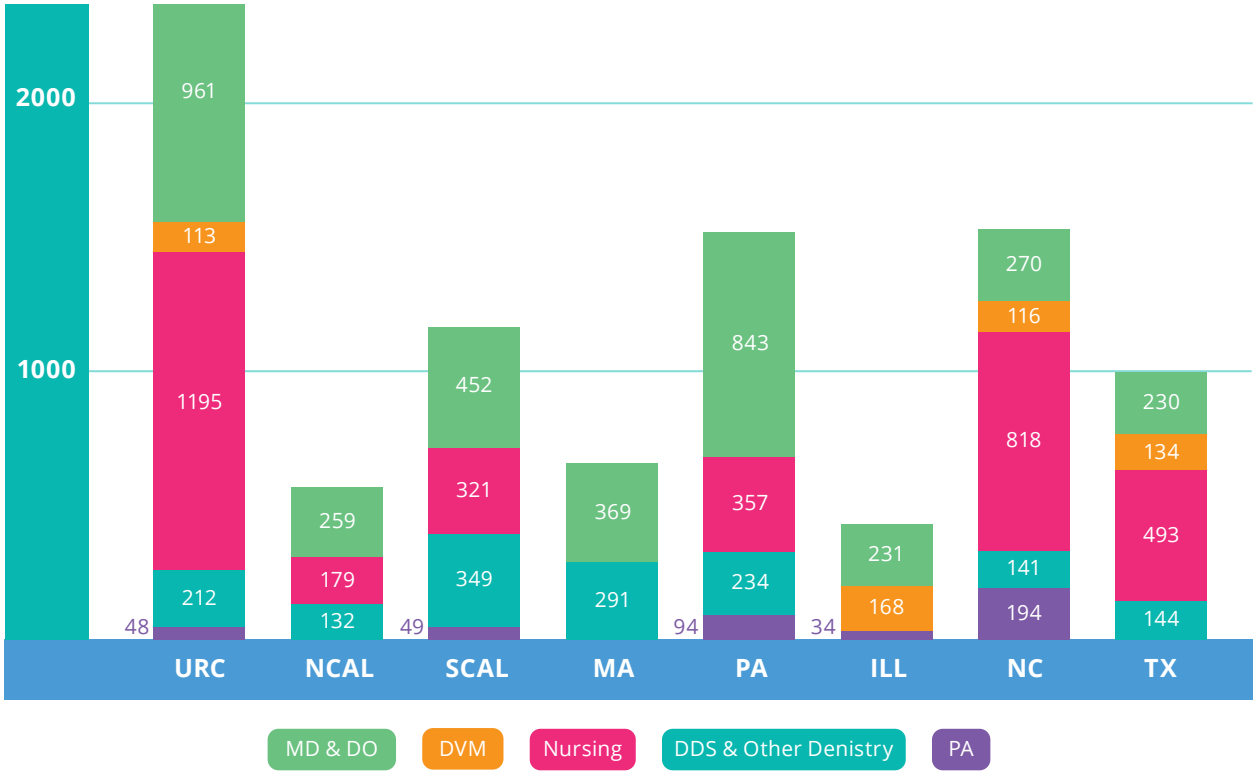
Source: URC analysis of IPEDS Completion data, 2019

Total URC Medical Degrees, 2020: 2,529 URC Rank: 1

The URC continues to lead the nation in medical education, and by a large margin. This is a particularly bright note for our benchmark efforts and is consistent with the assets our cluster possesses in having medical schools at all three member universities.

Graduating medical talent is an area the URC has continued to promote, particularly during the covid pandemic. We anticipate it will continue to be of importance moving forward, especially as the URC universities continue to expand their efforts to provide valuable medical education ready to serve in a host of health care settings.

Figure 3. Medical Graduates, 2020



Total URC Graduate Degrees in Medicine & Biology Science, 2020: 3,600
URC Rank: 1

The URC also continues to lead the nation's top clusters in producing advanced medicine and biological degrees. The URC ranks second for total degrees in medicine and biological sciences.

Table 8. Total Degrees (Medicine and Biological Sciences), 2020

	Medical & Biological Science					
	Total		BA		ADV	
	Number	Rank	Number	Rank	Number	Rank
URC	8,865	2	5,265	2	3,600	1
NCAL	3,147	8	1,499	7	1,648	6
SCAL	8,957	1	5,386	1	3,571	2
ILL	3,420	7	1,965	6	1,455	8
MA	4,368	6	1,430	8	2,938	3
NC	5,186	5	2,575	5	2,611	4
PA	6,981	3	4,974	3	2,007	5
TX	6,162	4	4,657	4	1,505	7

Source: URC analysis of IPEDS Completion data, 2020

Note: Pennsylvania includes PSU World Campus. Disaggregation is not possible starting 2020.

Although R&D activity has consistently risen each year, total R&D for the state of Michigan and the URC slightly dipped in 2020 from 2019 by 0.8 percent and 0.6 percent, respectively. This modest decline is possibly due to the impacts on R&D capabilities during the early months of the global pandemic. A few states experienced R&D total declines from 2019, including one of our peer states – North Carolina. But most states experienced increases. The total for all 50 states and the District of Columbia increased by 3.3 percent.

Table 9. Top 10 States for R&D, 2020

Rank	State (# of R1s)	Dollars (thousands)
1	California (11)	10,915,094
2	New York (10)	7,165,482
3	Texas (11)	6,626,222
4	Pennsylvania (6)	4,838,331
5	Maryland (2)	4,747,323
6	Massachusetts (7)	4,366,083
7	North Carolina (3)	3,386,079
8	Michigan (3)	2,869,739
9	Georgia (4)	2,785,640
10	Illinois (4)	2,768,246
States with three or more R1s not in Top Ten		
11	Florida (6)	2,727,590
12	Ohio (4)	2,522,363
13	Virginia (5)	1,926,709
16	Indiana (3)	1,739,619
17	Colorado (4)	1,667,572
21	Tennessee (3)	1,400,529
23	Alabama (3)	1,188,315
28	Louisiana (3)	800,750
35	Mississippi (3)	508,133

Source: URC analysis of National Center for Science and Engineering Statistics, Higher Education Research and Development Survey, 2020 and Carnegie Classification of Doctoral Universities: Very High Research Activity, or R1s

Comparing FY 2020 data across the nation, Michigan continues to rank in the top 10 states for total academic R&D, largely due to the strength of the URC's R&D expenditures, which account for 92 percent of Michigan's total academic R&D and 93 percent of total R&D funded by the federal government.

Most states in the top 10 for R&D have more R1s than Michigan, ranging from 11 (California and Texas) to four (Georgia and Illinois). Exceptions include North Carolina with three R1s and Maryland with just two R1s, of which Johns Hopkins, the nation's top university for R&D, is one.

Having at least three R1 institutions is not common among states and having three or more R1s is no guarantee of a state breaking into the top 10 for R&D. Michigan is one of 18 states in the nation to have three or more R1 institutions, and one of only nine in the top 10. There are nine additional states with three or more R1s that are ranked below the top 10 states ranging from three to six. This suggests what we already know – it is not enough to have research intensive universities in a state. These universities need to be highly competitive and productive in R&D. For example, Mississippi has three R1s (i.e., Mississippi State University, University of Mississippi and University of Southern Mississippi) but ranks 35th overall for R&D in the nation.

A deeper dive of state rankings going back to the year 2000 shows that Michigan has consistently been in the top 10 states except for a period of years from 2004 to 2009, when the state was ranked 11th. During this time, Florida and Ohio moved into the top 10 states, and while they have not broken back into the top ranks since 2009, they remain strong R&D states. These two states and Georgia, which has just moved into the top 10 states for R&D, are worth monitoring for comparison purposes.

URC Total R&D (2020): $2.64 billion **Cluster Rank: 5**
Total S&E R&D (2020): $2.486 billion **Cluster Rank: 5**

Table 10. R&D Expenditures and in S&E Fields, 2020

	Total R&D $ (in thousands)	Rank	R&D in S&E Fields $ (in thousands)	Rank
URC	2,640,342	5	2,485,963	5
NCAL	3,695,023	2	3,607,185	2
SCAL	3,737,874	1	3,633,562	1
ILL	2,022,738	8	1,954,644	8
MA	2,811,218	4	2,596,481	4
NC	2,902,653	3	2,824,074	3
PA	2,489,296	6	2,441,079	6
TX	2,130,849	7	2,011,616	7
Clusters to Watch				
OHIO	1,938,176		1,863,176	
GA	2,340,566		2,218,157	

Source: National Center for Science and Engineering Statistics, Higher Education Research and Development Survey.
OHIO = OSU, UCinc., CWRU
GA = GTU, UGA, Emory

Comparing peer clusters, the URC continues its consistent performance in R&D, ranking fifth for total R&D and in science and engineering (S&E) fields. Given the state rankings above, clusters associated with Ohio and Georgia have been added as a reference. Ohio and Georgia have four R1 institutions. For comparison purposes, we have aggregated the top three in each state: Ohio – Case Western Reserve University, Ohio State University and the University of Cincinnati; and Georgia – Emory University, Georgia Tech and the University of Georgia. Note: We are not suggesting the addition of new clusters, but rather tracking these for greater awareness of any potential changes in the competitiveness of all eight clusters.

After several years of static rankings, several clusters moved positions this year. Texas has moved from eighth to seventh, pushing Illinois down to the bottom. And Northern California traded its top position with Southern California for both R&D total and in S&E fields. This has an impact on the overall innovation power ranking, particularly because R&D, like talent, accounts for 40 percent of the total score.

Looking at the percent change over time, the URC increased its total R&D by 69 percent since 2008. This is higher than Northern California (68 percent), Southern California (63.2 percent) and Pennsylvania (62.9 percent) but lower than North Carolina (74 percent) and Texas (73 percent). The Massachusetts cluster had the greatest percent change increase at 95 percent while the Illinois cluster had the lowest at 45 percent.

Table 11. R&D Expenditures and in S&E Fields, 2019 and 2018

	2019 Total R&D $ (in thousands)	Rank	2019 R&D in S&E Fields $ (in thousands)	Rank	2018 Total R&D $ (in thousands)	Rank	2018 R&D in S&E Fields $ (in thousands)	Rank
URC	2,655,991	5	2,497,036	5	2,564,349	5	2,405,907	4
NCAL	3,602,145	1	3,505,371	1	3,549,834	1	3,449,736	1
SCAL	3,569,822	2	3,462,862	2	3,474,931	2	3,353,463	2
ILL	1,993,763	7	1,916,750	7	1,882,374	7	1,799,233	7
MA	2,783,407	4	2,578,050	4	2,621,912	4	2,395,984	5
NC	2,921,390	3	2,849,706	3	2,813,610	3	2,745,861	3
PA	2,398,440	6	2,346,369	6	2,253,788	6	2,206,213	6
TX	1,834,234	8	1,710,858	8	1,767,221	8	1,659,668	8
Clusters to Watch								
OHIO	1,898,040 (ahead of 8 TX)		1,825,651 (ahead of 8 TX)		1,713,550 (ahead of 8 TX)		1,713,096 (ahead of 8 TX)	
GA	2,232,631 (ahead of 7 ILL)		2,119,828 (ahead of 7 ILL)		2,057,394 (ahead of 7 ILL)		1,942,954 (ahead of 7 ILL)	

Source: National Center for Science and Engineering Statistics, Higher Education Research and Development Survey.
OHIO = OSU, UCinc., CWRU
GA = GTU, UGA, Emory

Technology Transfer

There are five basic technology transfer metrics used for benchmarking the URC and its peer clusters, all sourced from the AUTM STATT dataset where available and direct outreach to university technology transfer offices when needed. These metrics include licensing revenue, total licenses and options, total patents issued, total disclosures and total startups created.

These metrics are not necessarily the best indicators of university success in commercializing innovation, particularly because they are void of context related to the entrepreneurial and industrial ecosystems in which each university cluster operates. These ecosystems exert significant influence on commercialization efforts through elements such as availability of local capital, entrepreneurial talent and industry support. Barring better metrics that are comparable across clusters, these are the five we use. Furthermore, we use five-year averages because these metrics are highly variable year-over-year.

Below are the metrics for FY 2020.

Table 12. Five-Year Averages of Technology Transfer Metrics, 2016–2020

	Options & Licenses		Licensing Revenue		Start-up Companies		Patents		Invention Disclosures	
	Number	Rank	Millions ($)	Rank	Number	Rank	Number	Rank	Number	Rank
URC	283	**2**	19	**8**	26	**7**	234	**5**	701	**6**
NCAL	218	**5**	107	**3**	51	**1**	388	**2**	943	**3**
SCAL	176	**6**	52	**5**	51	**2**	294	**3**	1,005	**2**
ILL	134	**8**	234	**1**	29	**6**	264	**4**	540	**7**
MA	261	**3**	111	**2**	46	**3**	539	**1**	1,378	**1**
NC	339	**1**	61	**4**	38	**4**	204	**7**	799	**5**
PA	244	**4**	25	**6**	31	**5**	217	**6**	808	**4**
TX	176	**6**	22	**7**	25	**8**	158	**8**	518	**8**

Source: URC analysis of technology transfer data from AUTM's annual STATT survey, university reports and direct information from offices, 2020

The URC continues to rank second among its peer clusters for options and licenses of innovation, fifth in patents awarded and sixth in invention disclosures. The URC moved from a last place ranking in startups to seventh in 2020, but moved from ranking sixth to eighth in licensing revenue. Note: With respect to licensing revenue, the URC had a particularly robust year in 2015. Using five-year averages to smooth out the short-term variability enabled this robust year to boost the average each subsequent year until 2020.

Therefore, the change in licensing revenue should not be viewed as a one-year downturn.

For purposes of comparison to this year's 2016-2020 five-year averages, we provide the five-year averages for the past two years below (five-year averages for 2015-2019 and 2014-2018):

Table 13. Five-Year Averages of Technology Transfer Metrics, 2015–2019

	Options & Licenses		Licensing Revenue		Start-up Companies		Patents		Invention Disclosures	
	Number	Rank	Millions ($)	Rank	Number	Rank	Number	Rank	Number	Rank
URC	264	**2**	33	**6**	23	**8**	229	**5**	678	**6**
NCAL	217	**5**	107	**2**	53	**1**	363	**2**	920	**3**
SCAL	171	**7**	65	**4**	52	**2**	293	**3**	995	**2**
ILL	117	**8**	226	**1**	28	**6**	229	**4**	523	**7**
MA	248	**3**	92	**3**	45	**3**	498	**1**	1,366	**1**
NC	351	**1**	56	**5**	36	**4**	190	**7**	760	**5**
PA	238	**4**	24	**8**	33	**5**	197	**6**	803	**4**
TX	183	**6**	25	**7**	24	**7**	155	**8**	510	**8**

Source: URC analysis of technology transfer data from AUTM's annual STATT survey, university reports and direct information from offices, 2020

Table 14. Five-Year Averages of Technology Transfer Metrics, 2014–2018

	Options & Licenses		Licensing Revenue		Start-up Companies		Patents		Invention Disclosures	
	Number	Rank	Millions ($)	Rank	Number	Rank	Number	Rank	Number	Rank
URC	253	**2**	33	**6**	21	**7**	213	**4**	656	**6**
NCAL	212	**5**	117	**2**	51	**2**	343	**2**	897	**3**
SCAL	161	**7**	71	**4**	51	**1**	288	**3**	985	**2**
ILL	107	**8**	246	**1**	28	**6**	204	**5**	533	**7**
MA	236	**4**	83	**3**	44	**3**	464	**1**	1,361	**1**
NC	341	**1**	52	**5**	32	**4**	174	**7**	710	**5**
PA	239	**3**	28	**8**	32	**5**	187	**6**	765	**4**
TX	168	**6**	28	**7**	20	**8**	148	**8**	526	**8**

Source: URC analysis of technology transfer data from AUTM's annual STATT survey, university reports and direct information from offices in 2019 and confirmed by URC analysis in 2020.

In the interest of comparison, we have also provided the technology transfer metrics and rankings based on a single year – 2020. This is in response to a request from URC colleagues who were interested in seeing how our cluster stacks up for the most recent year available.

Table 15. One-Year Technology Transfer Metrics, 2020

	Options & Licenses		Licensing Revenue		Start-up Companies		Patents		Invention Disclosures	
	Number	Rank	Number	Rank	Number	Rank	Number	Rank	Number	Rank
URC	325	**1**	19.69	**8**	36	**5**	249	**6**	755	**6**
NCAL	194	**5**	149.20	**1**	44	**3**	460	**2**	1,001	**3**
SCAL	190	**6**	34.99	**5**	52	**1**	297	**4**	1,084	**2**
ILL	186	**7**	118.24	**3**	30	**6**	350	**3**	595	**7**
MA	279	**3**	147.16	**2**	49	**2**	664	**1**	1425	**1**
NC	308	**2**	75.21	**4**	38	**4**	217	**7**	851	**5**
PA	231	**4**	20.53	**6**	23	**8**	252	**5**	949	**4**
TX	174	**8**	19.69	**7**	24	**7**	156	**8**	591	**8**

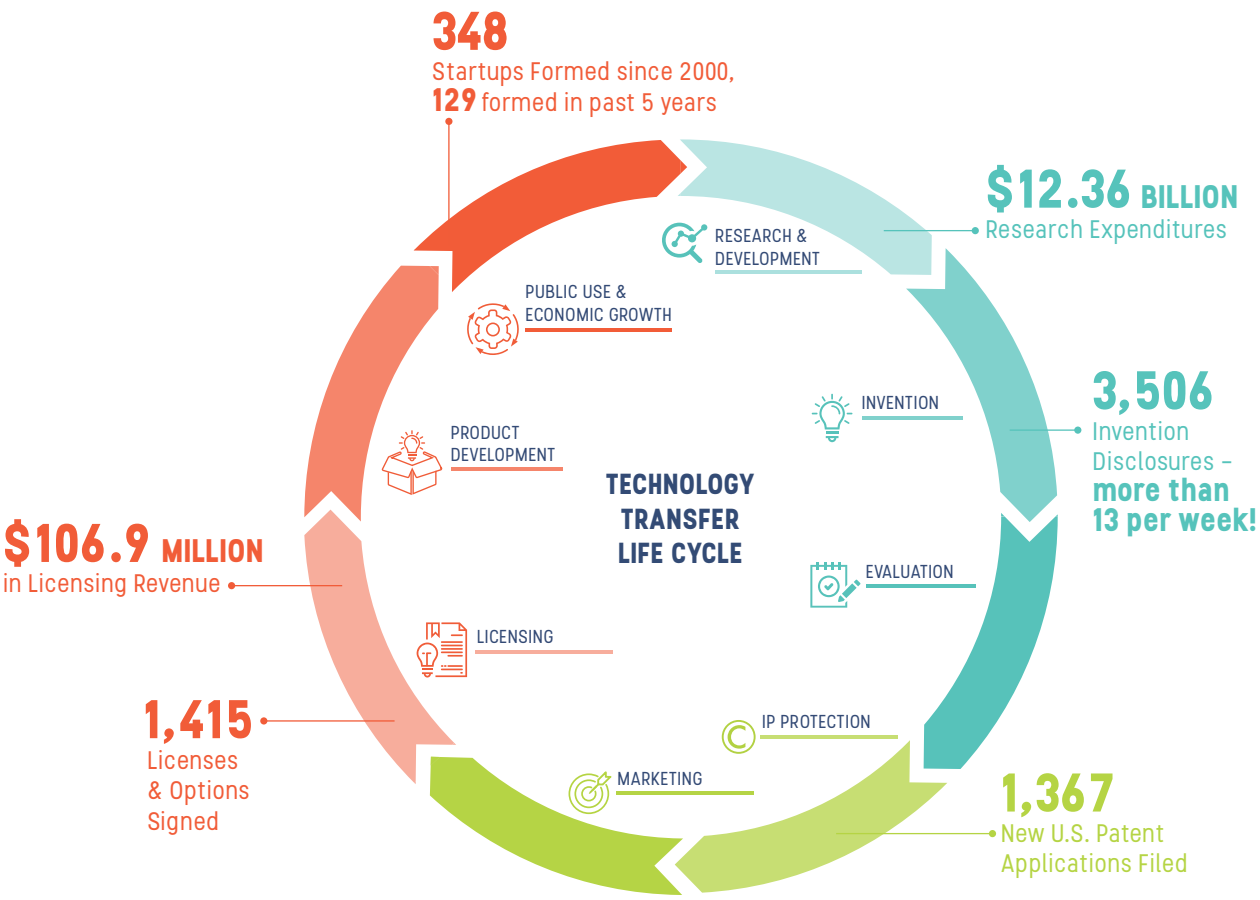
Source: URC analysis of technology transfer data from AUTM's annual STATT survey, university reports and direct information from offices, 2020.

Instead of ranking second in Licences/Options Issued for the five-year average, the URC ranks first. Our ranking also went up in Startups, from seventh to fifth place when looking at a single year. Our ranking for patents, however, went down to sixth from fifth while the other rankings remained the same. Looking at the rankings for just 2020, the URC would rank sixth overall rather than seventh, as it does when comparing five-year averages. While comparisons using 2020 as a single year of data as opposed to five-year averages, does elevate the URC's overall position in technology transfer, we will continue to report five-year averages to be consistent with the previous 15 years of benchmarking data. However, we will continue to analyze single year metrics internally going forward or until a time we make an official change to how we choose to analyze clusters on these metrics.

As has been reported in past benchmark reports, the nature of the commercialization lifecycle suggests universities may excel in some areas but not necessarily all areas at the same time. For example, decisions made about how an innovation will be commercialized – through licensure or as the foundation for a startup company – will inversely affect two metrics – the number of options and licenses and the number of startups. The URC universities excel in licensing technology to existing companies, including many in the state of Michigan. Past reports have included how many in-state companies have licensed URC university technologies, a metric that may be useful in future reports.

The figure below illustrates how the URC has performed across the lifecycle of technology transfer. Adapted from AUTM's Technology Transfer Lifecycle graphic, the figure includes updated data on the five-year cumulative totals for key tech transfer metrics (not averages):

Figure 4. URC Technology Transfer Lifecycle, Totals 2016–2020



Innovation Power Index

The Innovation Power Index is a composite score of rankings among the peer clusters in talent (40 percent), R&D (40 percent) and technology transfer (20 percent) metrics.

The index was last calculated by AEG using FY 2018 data in last year's report. At this point in time, we have access to both FY 2019 and FY 2020 data; therefore, we have calculated the index rankings for both years to provide a clearer picture of the URC's position among the clusters.

See tables below for FYs 2020, 2019 and 2018 innovation power index analyses.

Table 16. Innovation Power Index, 2020

	Research Spending Rank (40%)	Talent Rank (40%)	Technology Transfer Rank (20%)	Weighted Average Rank	Composite Rank
URC	5	3	7	4.600	4
NCAL	2	8	2	4.400	2
SCAL	1	1	3	1.400	1
ILL	8	5	5	6.200	8
MA	4	7	1	4.600	4
NC	3	6	4	4.400	2
PA	6	4	6	5.200	6
TX	7	2	8	5.200	6

Source: URC analysis using index model developed by the Anderson Economic Group.

Table 17. Innovation Power Index, 2019

	Research Spending Rank (40%)	Talent Rank (40%)	Technology Transfer Rank (20%)	Weighted Average Rank	Composite Rank
URC	5	3	7	4.600	4
NCAL	1	8	2	4.000	2
SCAL	2	1	3	1.800	1
ILL	7	5	5	5.800	8
MA	4	7	1	4.600	4
NC	3	6	4	4.400	3
PA	6	4	6	5.200	6
TX	8	2	8	5.600	7

Source: URC analysis using index model developed by the Anderson Economic Group.

Table 18. Innovation Power Index, 2018

	Research Spending Rank (40%)	Talent Rank (40%)	Technology Transfer Rank (20%)	Weighted Average Rank	Composite Rank
URC	5	2	7	4.200	3
NCAL	1	8	2	4.000	2
SCAL	2	1	3	1.800	1
ILL	7	5	5	5.800	7
MA	4	7	1	4.600	4
NC	3	6	4	4.800	5
PA	6	4	6	5.800	5
TX	8	3	8	6.000	8

Source: URC analysis using index model developed by the Anderson Economic Group.

The URC debuted in the rankings at second place for FY 2012, fell to third place in FY 2016, where it remained. But instead of holding steady at third place, the URC fell to fourth place in FY 2019 behind North Carolina, and tied for fourth with Massachusetts in FY 2020.

The primary driver for this downward trend in our ranking – both in 2016 and this year – is due to a change in our talent ranking. We once ranked first ahead of Southern California and Texas. But as both have increased the number of total degrees and high-tech degrees,

the URC has found itself moving from first to second, and now third. The talent ranking is 40 percent of the total index, which means any downward movement is significant for our overall index position. We anticipated the potential for this shift in our ranking because of the upward trend in degrees conferred by the Southern California and Texas clusters, which is on trend with national demographic shifts, but we did not expect it to be as big as we are seeing given the preliminary data.

A secondary driver for this shift is in technology transfer rankings where North Carolina has moved from sixth to fourth over the past few years. While tech transfer only makes up 20 percent of the overall index, North Carolina's upward momentum was enough to move it ahead of the URC in the overall rankings.

Conclusion

This index was created to be a quick snapshot of how we and our peer clusters stacked up to each other in key areas for research universities. And for many years, it served as validation of the URC's competitiveness. But today we are seeing the impacts of changing talent production trends that mirror the nation's demographic shifts over the past decade along with the likely impacts of decades of disinvestment from the State of Michigan. For a time, the URC institutions were able to put up competitive metrics relative to the best clusters in the nation. The shifts evident in this index could be reflecting a point of diminishing returns: our top universities can no longer do more with less.

But what should not be dismissed is that, despite the shifts in rankings, Michigan's URC institutions are competitive overall with the best of the best university innovation clusters in the country. And we lead in key areas, such as medical education and enrollment, suggesting we make Michigan a valuable and competitive place for the development of specialized talent.