



ESSAY

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STUCK IN THE MIDDLE WITH MIZZOU:

Examining the effectiveness and efficiency
of the University of Missouri

By Michael McShane

The *New York Times* headline blared, “At University of Missouri, black students see a campus riven by race.”¹ The *Washington Post* read, “U. Missouri president, chancellor resign over handling of racial incidents.”² Not long afterward, Kansas City’s KMBC ran a story titled “Mizzou battles enrollment declines following fall protests.”³

It was difficult to watch. Looking at the national coverage, it would not be difficult for the casual observer to see Mizzou—and higher education in Missouri—in complete disarray. Pair racial tension with stories of a \$1.1-million “diversity audit”⁴ and S&P downgrading Mizzou’s credit rating,⁵ and you have even more questions about the state of the management of the University of Missouri system.

As fires renew forests and volcanic lava forms new islands, the upheaval at the university offers an opportunity for us to take a step back and look at how the university operates and how well it is achieving the goals that citizens and taxpayers of the state of Missouri have for it.

What are those goals? Mizzou is classified as a Research-1 University in the Carnegie Classification of Institutions of Higher Education, meaning that it is an institution that grants doctoral degrees and produces research at the highest level. Mizzou is one of only two universities in the state with that designation (the other is Washington University in Saint Louis). These twin missions—preparing students and conducting cutting-edge research—define the expectations that we have for Mizzou.

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The purpose of this report is to look into how well the university is meeting its goals. How well is Mizzou preparing its students? What is the quality and quantity of the research being conducted? Perhaps most importantly, how much does all of this cost, and are Missouri taxpayers getting value for their dollars?

To answer these questions, we will first put all of higher education in Missouri in a national context. What are some of the major issues in higher education today? How is Missouri's *system* faring compared to other higher education systems around the nation? Next, we will look specifically at Mizzou and compare it to its regional peers. Is Mizzou more or less efficient or effective? Finally, we will look at Mizzou within the context of the other public universities within the state. While it is the state's only public R1 University, it is not the only school educating students or conducting research. How does Mizzou stack up against those other schools?

Some key findings:

1. Mizzou is neither in crisis nor thriving. Compared to its peers both regionally and nationally, Mizzou falls in the middle of the pack according to most indicators.
2. Most students in public higher education in Missouri do not attend Mizzou. The universities that they do attend vary widely in effectiveness. Understanding where Mizzou stands in the context of the state's public higher education system is important.
3. With respect to research productivity, Mizzou is not head and shoulders above the other public universities in state (as one might expect it to be given its status as the state's sole public R-1 University). In a regional context, compared to other R-1 universities, Mizzou similarly fails to distinguish itself from the pack.

This paper is the first in a series examining ways to improve the state's higher education system, and is intended to lay out a set of common facts so that when we speak about reforms we have a common foundation on which to build.

PART I: THE NATIONAL CONTEXT

It is impossible to write cogently about the issues facing the University of Missouri without examining the national backdrop against which its efforts play out. Numerous forces are buffeting higher education today.

The first force is the increasing financial returns brought by a college degree. According to data from the New York Federal Reserve, the wage premium (the extra income earned by people with college degrees) has been rising, in fits and starts, since the 1970s. Today, the average worker with a bachelor's degree earns around \$64,000 per year, while a worker with an associate's degree earns \$50,000, and a worker with just a high school diploma earns \$41,000. Over a working lifetime, the New York Fed estimates that the total wage premium for a bachelor's degree is approximately \$1 million, and for an associate's degree it is \$325,000.⁶ Additionally, attending college can be a valuable tool to improve one's social and economic standing in society. Research from the Hamilton Project at the Brookings Institution found that among students from families in the bottom quintile of income in America, those who do not earn a college degree have a 45 percent chance of staying in the bottom quintile and only a 5 percent chance of making it to the top income quintile. However, if those students are able to earn a college degree, they are actually more likely to end up in the top income quintile (a 19 percent chance) than remain in the bottom (a 16 percent chance).⁷

But the opportunities offered by a college education come at a cost. The second force that is affecting universities is the increasing amount of debt that students are taking on and the rate at which many are defaulting on those debts. According to the Federal Reserve, the total outstanding student debt in the United States is more than \$1.2 trillion.⁸ This is more than the total credit card debt in the nation (estimated at \$733 billion) and total outstanding auto loan debt as well (estimated at \$1.06 trillion). By far the greatest source of debt in the United States is home mortgages, which still dwarf student loans at \$8.25 trillion, but student loans are gaining ground.⁹ According to the Wall Street Journal, around 7 million people with federal student loan debt are in default.¹⁰ This represents 17 percent of all borrowers. Hardly a week goes by without a feature story highlighting some poor millennial

with six-figure debt, no job, and ruined credit moving back into their parents' basement. The problem is that those students are not representative of people struggling with student debt. The average debt load of those 7 million people in default is only \$8,900.¹¹ This, as Andrew Kelly of the American Enterprise Institute forcefully points out, shows just how much our student-debt problem comes from students who take on debt to start college but subsequently drop out, thereby foregoing the wage premium that a college degree offers.¹²

A third factor that must be included in any discussion of higher education is the federal government. The federal government has played a role in higher education since the Morrill Act of 1862 that established many of the "land grant" universities (like the University of Missouri) that still operate today. Government involvement ramped up in 1965 with the passage of the Higher Education Act as part of Lyndon Johnson's Great Society plan. Since then, the support (and influence) of the federal government has grown. In the 2014–15 school year, the federal government spent \$30.9 billion in Pell Grant scholarships for 8.2 million low-income college students. As economists from the New York Federal Reserve point out, in addition to direct support, the federal government operates numerous loan-based student aid programs that, by 2012, controlled 90 percent of the \$120 billion student loan industry. As those same authors show, such federal intervention affects the cost of college, with federal direct student loans increasing the cost of college by 65 cents for every dollar loaned and Pell grants increasing the cost of college by 50 cents for every dollar granted.¹³

Given this, three caveats are in order:

1. *There is variation under averages.* There are different financial returns to different degrees, different programs, and different colleges. Taking on a great deal of debt to earn a medical degree or law degree from a top program is not the same as taking on a great deal of debt to earn a degree in a less financially remunerative field at a lower quality school. Knowing which programs work well and which ones work poorly is essential to helping students make the right choices.

2. *Quality matters.* If students drop out of school before they've earned the benefit but after paying the cost, they are much more likely to default on their loans (not to mention the years of potential earnings they forfeit while in school). Similarly, students who graduate but don't acquire the skills to succeed in the workplace also risk default and financial difficulty. Simply admitting more students into colleges and universities will not necessarily be a net positive for those students or for the state as a whole.

3. *State-level policy has its limits.* With the federal government's increasing influence—both direct and indirect—on college campuses, state policymakers are limited in what they can do to improve public universities. It is important to delineate what they can and cannot control.

So this brings us to Missouri. We know that having an excellent higher education system is important for our state and our citizens, so how do we measure up? The Urban Institute did the yeoman's work of collecting nationwide data on key issues related to higher education and publishing it in an easy-to-use report titled *Financing Higher Education: The Evolution of State Funding*.¹⁴ In that report, they track state spending on higher education, changes in tuition and fees, and changes in enrollment from 2000 to 2014–15 (the most recent data available). Tables 1-3 (see the Appendix at the end of this essay) highlight Missouri's position in the national landscape.

Since 2000, Missouri has seen one of the largest declines in state spending for public education (on a percentage basis and in inflation-adjusted dollars) in the United States. Table 1 (see Appendix) depicts this.

Missouri saw a 20.4 percent decrease in funding from 2000 to 2014, compared to a nationwide average decrease of 1.2 percent.

What has this meant for student tuition and fees? Are students picking up the slack as the states provide less funding? Table 2 (see Appendix) depicts that result. Interestingly, Missouri has seen some of the slowest growth in tuition and fees for public 4-year universities in the nation.

While tuition has risen in every state, and at a national average of 18 percent, Missouri's has only grown at 9 percent.

How has enrollment fared over this period? Here, Missouri is above average. While nationally, enrollment has grown by 29 percent from 2000 to 2014, enrollment in public universities in Missouri grew by 32 percent (Table 3 in the Appendix). Summarizing, more students are enrolling in public universities in Missouri, and that rate of increase is higher than the national average. At the same time, tuition is rising at Missouri public universities but at a rate below the national average. Finally, Missouri has decreased its state support of public higher education at one of the highest rates in the nation.

But what does this mean for student performance? Unfortunately, there are few quality indicators on how well students are performing in college. We collect data on the academic ability of incoming students with indicators like ACT and SAT scores, but we know less about how well they do after having attended college.

The best, though again an unfortunately imprecise indicator, is the system's graduation rate. As demonstrated above, there is a serious wage premium attached to a bachelor's degree and serious consequences for students who drop out of college, so graduation rate is an indicator we should care about.

Table 4 (see Appendix) shows Missouri's 6-year graduation rate (for all students at all public campuses) relative to those of other states. At 55 percent, it is right in the middle of the distribution.

The data and figures presented thus far have pertained to Missouri's public higher education system writ large, not specifically at the University of Missouri, although Mizzou is the state's flagship campus. In the next section I consider how Mizzou stacks up with the state's other public universities to see if it truly is functioning as the leader it is intended to be.

PART II: REGIONAL AND NATIONAL COMPARISONS

As stated earlier, Mizzou is one of only two Research-1 universities in Missouri, and the only public one, so comparing its performance to that of other public

universities in the state, while useful, has some limitations. In many ways, the mission of Mizzou is broader, and the types of students and faculty that might be attracted to that mission are different.

In this section I compare Missouri to what I call its "regional peers," that is, the flagship universities of the states that border Missouri. Some states have multiple major public universities (think Iowa State and the University of Iowa, and the University of Kansas and Kansas State), but most identify just one flagship, like the University of Illinois, the University of Arkansas, or the University of Nebraska. These are universities that have similar goals and similar statures within their states. Yes, some of those states are larger than others, and some cleave medical schools or law schools away to other locations, but flagships are flagships.

After looking at those regional peers, I place Mizzou in the context of all of the R1 universities in the entire nation. These 115 universities are the cream of the public and private crop, educating our top students and conducting cutting-edge research in a variety of fields. Seeing Mizzou's stature within that august group is important as well, because we would like top students and researchers to come to Missouri to study.

These analyses rely on two main data sources. The first is federal Integrated Postsecondary Education Data System (IPEDS) data. IPEDS is a dataset generated from a set of surveys administered by the National Center for Education Statistics, housed in the U.S. Department of Education. Universities that receive any form of federal support are required to participate, and over 7,500 such institutions do so. The second source of data is the U.S. Department of Education's College Scorecard. Launched in 2013, this database merges federal education data from IPEDS with other data sources, including the National Student Loan Data System (NSLDS) and tax data to get better information about the student outcomes at various universities.¹⁵

Let's begin with the regional comparisons and graduation rates.

The University of Missouri has a 70 percent 6-year graduation rate, according to the federal college scorecard (this differs slightly from the IPEDS's 71 percent rate, but makes comparison much easier). Figure 1 puts that into

the context of the flagship universities from the states that border Missouri.

Mizzou is tied with the University of Iowa for the second slot behind the University of Illinois's 84 percent 6-year graduation rate. A promising start.

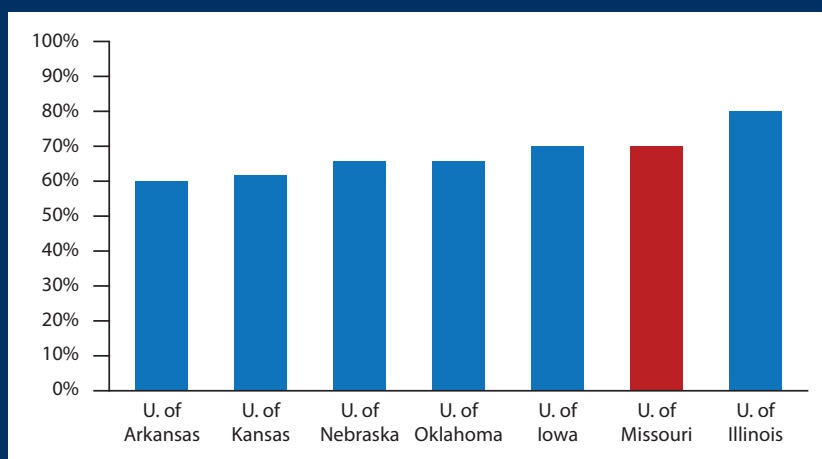
Next, using data from the federal government's college scorecard, I created a scatter plot (Figure 2) with the average annual cost on the *x*-axis and the median earnings on the *y*-axis. The college scorecard collects these data. Average cost is the net price for in-state students after aid from the school, state, or federal government, while median earnings is the median of the earnings 10 years after attending the school of students who received federal financial aid toward their education. These figures do not constitute a perfect measure of the impact of a university on every student who applies; for many reasons, students who received federal financial aid might differ from the overall population of the university. However, this is the best, most comparable source of data on outcomes we have, and according to the University, 60 percent of Mizzou students receive financial aid. Even if this is not perfectly representative, it does represent the outcomes for a large swath of Mizzou's students.

Given those caveats, ideally, universities would want to be in the upper-left corner of the scatter plot; that is, low cost and high earnings. However, the second-best place to be is the upper right corner, where even though the school is expensive, it yields high earnings

The blue dots represent all of the public universities in Missouri, the red dots are the flagship universities of the surrounding states,¹⁶ and the black dot is Mizzou. Three peer universities see higher median salaries

Figure 1:
Six-year Graduation Rate, Missouri and Regional Peers, 2014

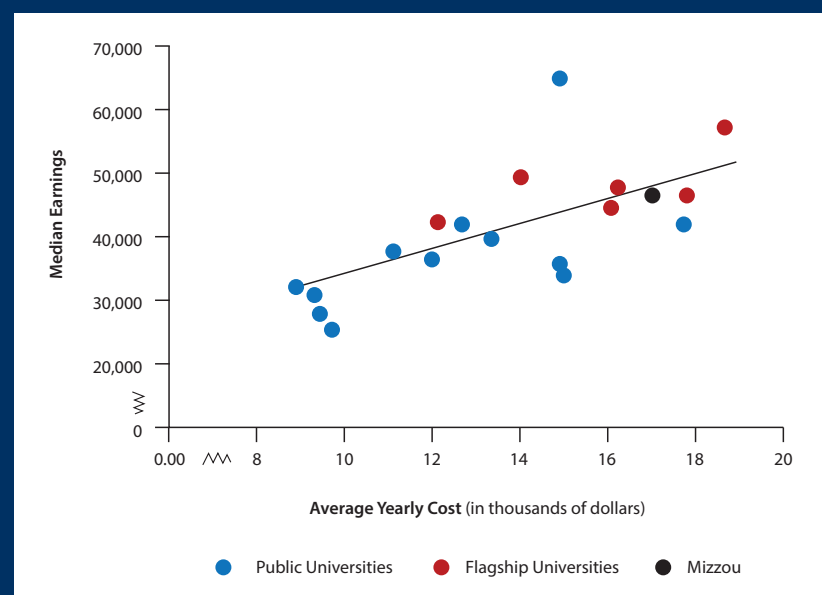
Mizzou is tied for the second-highest graduation rate in the region.



Source: College Scorecard, U.S. Department of Education.

Figure 2:
Scatterplot of Average Cost and Median Earnings of Graduates

Mizzou has one of the strongest cost/benefit ratios in the state, but is more middling compared to regional Research-1 Universities.



Source: College Scorecard, U.S. Department of Education.

for graduates (Illinois, Iowa, and Oklahoma), and two see those higher results for a lower average yearly cost (Iowa and Oklahoma). If you're interested in the two outliers at the top of the graph, the blue dot is Missouri S&T, which sees extraordinarily high median earnings for the students who attend it. This should not be entirely surprising, though, as it prepares students in historically remunerative fields in the hard sciences and engineering. The red dot is the University of Illinois, which not only sees high graduation rates, as we have previously seen, but also high median earnings for its students. Unfortunately, when we add in a regression line, indicating the average relationship between these two variables, Mizzou's data point falls below the line, showing that for how much it charges, it should expect stronger results.

Now let's put Mizzou in the context of all of the other R1 universities in the country. According to College Scorecard data, Mizzou's 70% 6-year graduation rate puts it at 71st of the 115 total R-1 Universities in the nation. Generally, the top performers are Ivy League schools where such high entrance standards nearly ensure that students will be successful. At the bottom end, we see regional public universities like the University of Wisconsin-Milwaukee and Wayne State University in Michigan.

In Figure 3, we recreate the scatterplot in Figure 6 with all R1 colleges. Mizzou is the red dot.

Again, Mizzou clusters towards the bottom of the middle of the distribution. It is on the lower end in terms of cost, which is good, but also on the lower end when it comes to earnings. When the regression line is added, we see Mizzou again appearing under the predicted earnings figure given the amount that it costs per year to attend it.

Looking at these graphs, it's hard for me not to hear the Stealers Wheel classic "Stuck in the Middle with You" ringing in my ears. Is the University of Missouri a laggard, falling behind its regional or national peers? No, it isn't. Is it a leader, either at the top of its class nationally or regionally? No, it isn't that, either. Mizzou tends to fall in the middle of most indicators when it comes to how well it prepares students and the cost of that preparation.

In the next section, I look within the state and examine how all of the public universities in Missouri perform.

Interestingly, on many indicators, even though Mizzou is the only R1 university, it is not the leader.

PART III. THE STATE CONTEXT

Mizzou is one of 13 public 4-year universities in Missouri. In total, these 13 schools educate more than 153,000 students. Four of those universities make up the University of Missouri system—University of Missouri–Kansas City (UMKC), University of Missouri–St. Louis (UMSL), Missouri University of Science and Technology (S&T), and the University of Missouri–Columbia (Mizzou). The rest tend to be defined as “comprehensive” universities, four-year public universities that are less academically rigorous and produce less research than Research-1 or university-system institutions.

Mizzou is by far the largest university in terms of student enrollment. In 2014 Mizzou enrolled over 35,000 students (Figure 4). The next closest, Missouri State, enrolls just under 22,000. It is important to note, though, that most students who attend 4-year public universities in Missouri do not attend the university of Missouri. As we discuss improving public higher education in Missouri, we should not lose sight of this fact.

How does this break down by race? Other than the state's two historically African-American institutions, Harris-Stowe and Lincoln, every public university in Missouri is majority-white (Figure 5). Mizzou is 79 percent white, 8 percent black, 3 percent Hispanic, and 2 percent Asian.¹⁷ According to Census estimates Missouri as a whole is 84 percent White, 12 percent black, 4 percent Hispanic, and 2 percent Asian.

Now that we have an idea of the number and type of students who attend the state's public universities, we can look into how these universities are funded. Comparing the schools directly (Figure 6) reveals vast differences in revenue streams.

The University of Missouri spends, by far, the most money of any university in the state. It also receives the largest state subsidies, the largest amount of federal support, and the largest number of gifts in the state. What most observers might not know is just how much tuition dominates the funding of the university. For many of the other universities in the state, there is not a particularly

pronounced difference in the amount of revenue that schools receive from the state and what they bring in in tuition, but at Mizzou almost twice as much money comes in from tuition as comes from state appropriation.

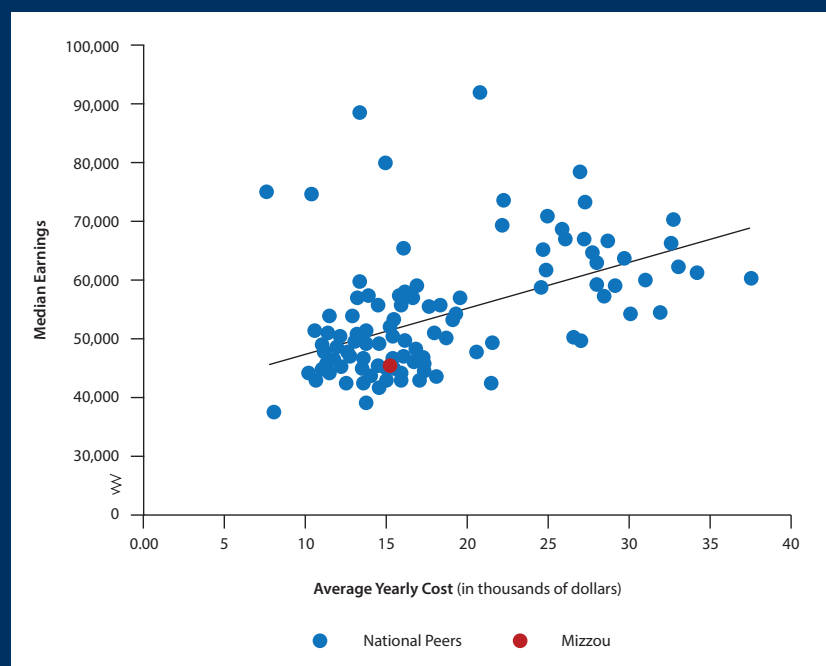
So how does this funding trickle down to the student level? In order to create the federal scorecard for colleges across the country, the government collects the “average price of attendance” for students. This is the total yearly cost of attending a postsecondary institution, including tuition and required fees, books and supplies, room, board, and other expenses. In this case, Missouri is the second most expensive public university in Missouri at \$16,940 per year (Figure 7). The gap between the most expensive, UMKC (at \$17,606 per year) and the least expensive, Missouri Southern (at \$9,437) per year, is \$8,169.

So how is money being spent? One large budget line item is faculty salaries. Figure 8 breaks down professor salaries at Missouri’s public universities by the whole school average, along with the average for professors, associate professors, assistant professors, and instructors. On average, faculty at Mizzou make \$82,305 per year—almost double the salary of the average Missouri worker of \$43,640 (denoted by the orange line in the figure). Full-rank professors average \$118,863, associate professors average \$78,480, assistant professors average \$65,583, and instructors average \$41,355. By comparison, the average salary at Truman State is only \$63,855. Truman State full professors average \$73,359, associate professors average \$60,147, assistant professors \$52,911, and instructors \$41,580.

Figure 3:

Average Cost and Earnings All R-1 Universities, 2014

When it comes to cost and benefits, Mizzou performs slightly below average for the 115 R-1 universities in the country.

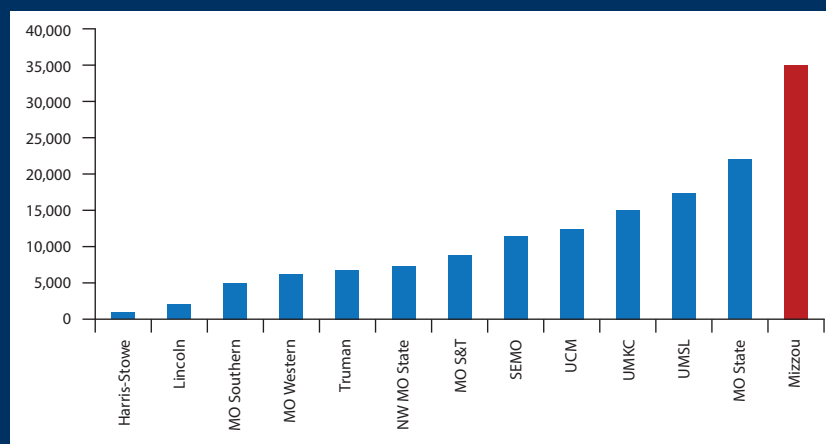


Source: College Scorecard, U.S. Department of Education.

Figure 4:

Total Enrollment, 2014

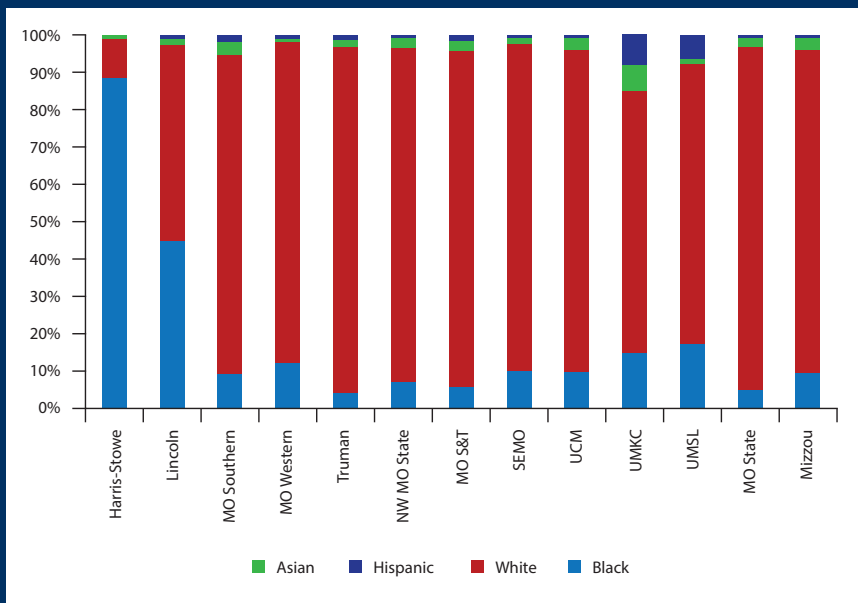
Mizzou is the largest university in the state, but most Missouri college students go somewhere else.



Source: IPEDS.

Figure 5:
Enrollment By Race, Missouri Universities, 2014

Other than the state's HBCUs, universities in Missouri are predominately attended by white students.



Source: IPEDS.

Taxpayers might also be interested in knowing the number of employees of our public universities who draw particularly high salaries. Fortunately, each year the university system releases a full report of the salaries of all employees.

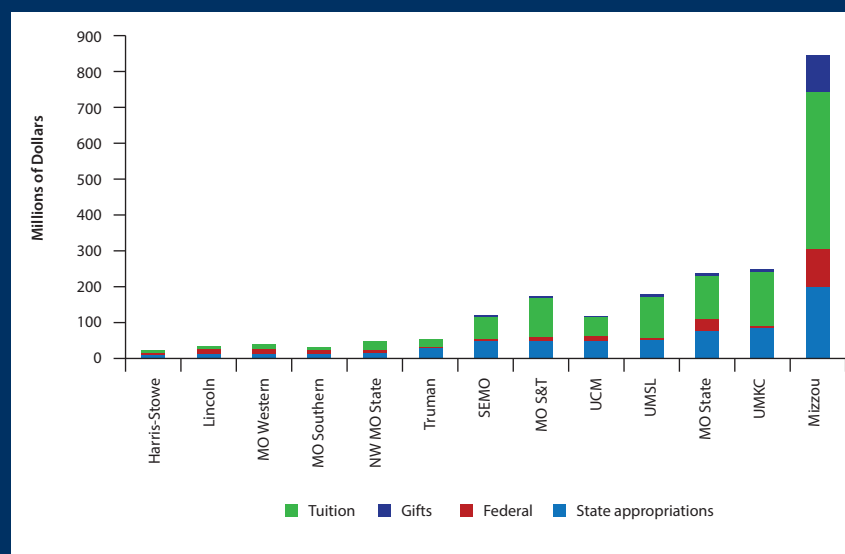
As Figure 9 depicts, the contrast is stark. Mizzou has more than four times as many employees making between \$100,000 and 200,000 than the next-highest university. It has more than twelve times the number of employees making \$200,000 or more than the next-highest university. These figures do deserve one note, and one admonition, though. The UM system's most recent publicly available salary report does not disaggregate employees of the Columbia campus from the system administration and the hospital. Therefore, some portion of the reported salaries is taken up by individuals not working directly for Mizzou, but it would be next to impossible to parse who works for whom. The university system should change this reporting and allow for quick disaggregation of the different campuses, central administration, and the hospital.

It is also true, that these universities are of different sizes, which partially accounts for the difference in the number of individuals making over \$100,000 or \$200,000. Figure 10 takes these numbers and looks at them per 1,000 students.

When institution size is taken into account, Mizzou's lead is attenuated, but does not go away. For every 1,000 students, Mizzou has 27 individuals making between \$100,000 and \$200,000 and nearly 8 making over \$200,000. For UMSL, it is only 9 making between \$100,000 and \$200,000 and less than one making more than \$200,000.

Figure 6:
Funding By Source, 2014

Mizzou's largest revenue source is tuition.



Source: IPEDS.

Given that Mizzou is the state's only public R1 University, there is a perception that the state's best and brightest students go there for college. One way of determining the academic caliber of students at the various universities in the state is to look at their ACT scores, the most common college readiness assessment that Missouri students take. In the federal governments IPEDS data set, we can see the 25th and 75th percentile score for all of the state's universities. This gives us the band of scores for the middle 50 percent of the students who attend the university. The ACT is scored out of 36 possible points, and the data in Figure 11 show the scores for all schools in the federal database.

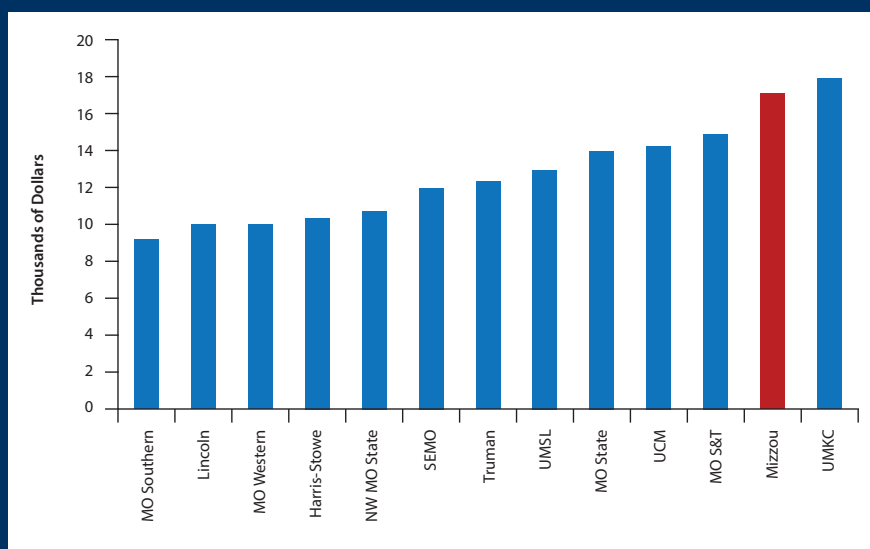
As you can see, Missouri actually comes in 3rd when it comes to scores at both the 75th and 25th percentiles. To be in the 75th percentile, that means that 74 percent of students scored below that number. At the 25th percentile, 24 percent of students scored below that number. Missouri S&T has the highest ACT scores, followed by Truman State (Figure 11).

So we have information about the inputs of the university—how much is spent, how many students enroll, and what their basic academic profile is; but what about its *output*? As stated earlier, it is difficult to understand the full impact of universities on students. We don't have a great deal of outcome data on how well graduates of our universities are performing. What's more, any outcome data could be confounded by other factors in graduates' lives. If, for example, we cared about job

Figure 7:

Tuition: Average Price of Attendance, 2014

Mizzou is the second most expensive public university in the state.

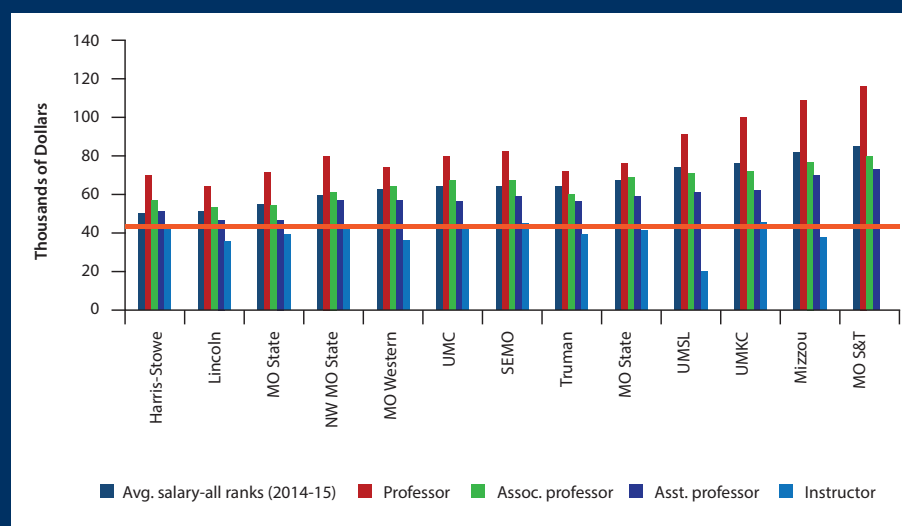


Source: IPEDS.

Figure 8:

Average Salary by Academic Rank, 2014

Mizzou has the second highest paid professors in the state.

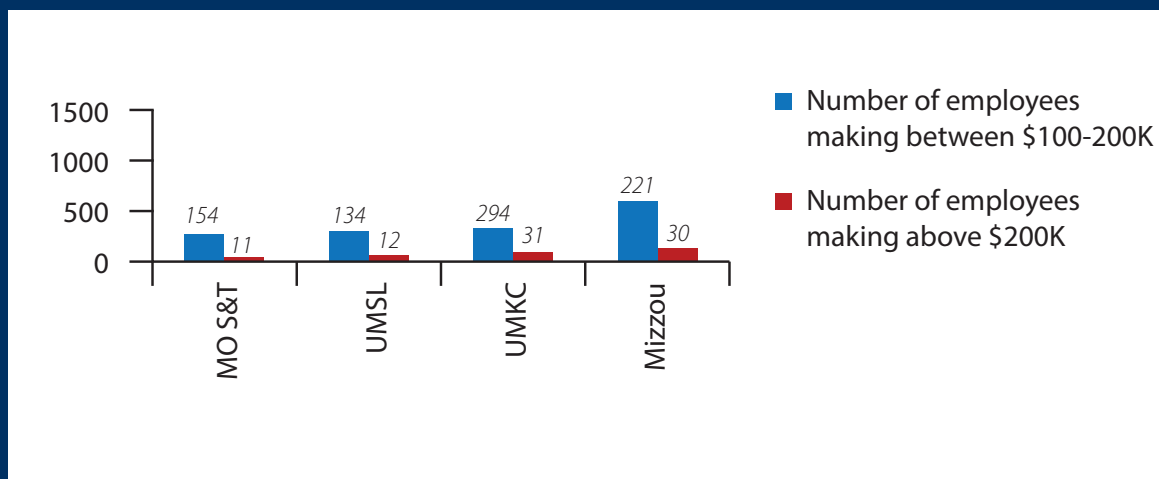


Source: IPEDS.

Figure 9:

Highly Compensated Individuals, UM-System

Mizzou has a large number of highly compensated individuals.

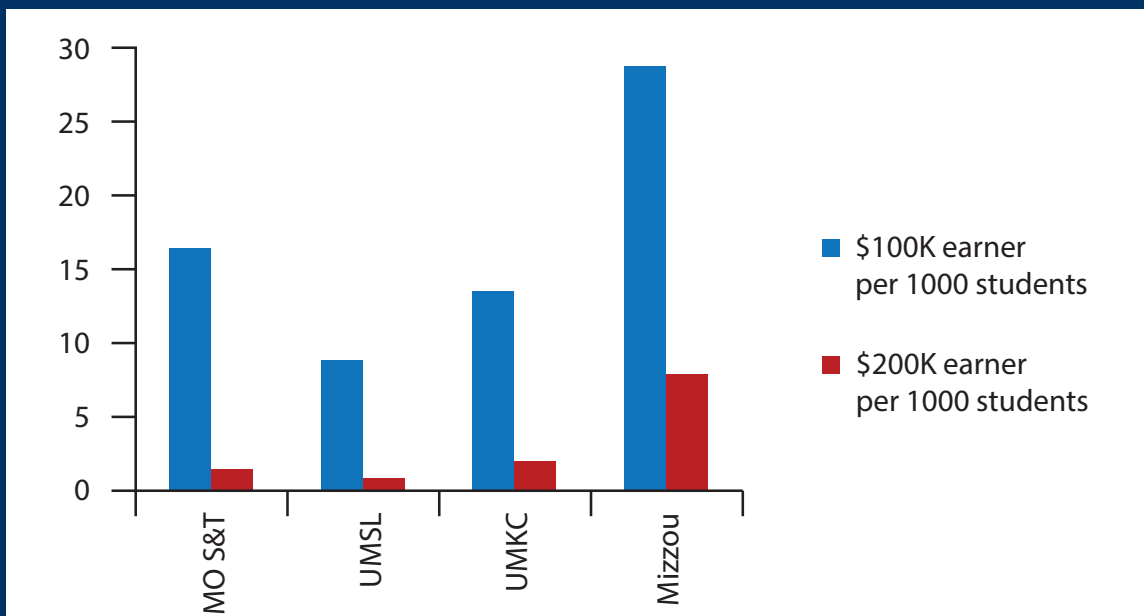


Source: University of Missouri. 2016-2017 Salary Report. Available at https://www.umsystem.edu/news/media/fa/planning/annual_salary_report.pdf.

Figure 10:

High Earners per 1,000 Students, by University

Even after adjusting for school size, Mizzou has the largest number of high earners.



Source: University of Missouri. 2016-2017 Salary Report. Available at https://www.umsystem.edu/news/media/fa/planning/annual_salary_report.pdf; IPEDs for enrollment numbers.

placement, we'd want to take the job market into account. It would take serious and careful analysis to tease out the university's effect.

One reliable statistic we do have is the 6-year graduation rate. While imperfect, it provides useful information. In light of the data we've presented about student debt and default rates, it is important that students who start college finish.

As with other indicators, Mizzou is not the top performer on graduation rate. In Missouri public higher education that distinction is awarded to Truman State University at 74 percent. Mizzou sits at 71 percent, which, to its credit, is above the state average of 55 percent (Figure 12). It is also true that students enrolling in Truman State, on average, have higher ACT scores, so it is likely that they are more academically prepared. That said, Mizzou is the flagship public university, so one would hope it would have the top graduation rate.

The federal government also collects data on the median salary of graduates. Figure 13 shows these for public universities in Missouri.

Here we see Mizzou in the second spot again, this time after Missouri S&T, whose graduates earn, at the median, \$65,500. Mizzou's earn \$46,000. At the other end of the spectrum, though, is also cause for concern. In Missouri, the median high school graduate earns \$34,300 per year, which is more than the median graduates of Harris-Stowe, Lincoln, and Missouri Western earn, and the median Missouri Southern graduate only sees \$400 more per year than the median high school graduate.

The federal government also collects data on the percentage of students who attend a particular university who go on to earn more than the average high school graduate. The numbers, depicted in Figure 14, are sobering.

While 82 percent of Missouri S&T students and 72 percent of Mizzou students earn more than the median high school graduate earns, only 38 percent of Harris-Stowe students, 45 percent of Lincoln University students, 53 percent of Missouri Western students, and 55 percent of Missouri Southern students do.

PART IV. RESEARCH PRODUCTIVITY

Thus far, this paper has looked almost exclusively at the educational part of the University of Missouri's mission. But, as the designation "Research 1" implies, research is also an essential component of the University's mission. In this final section, I examine the research productivity of professors at the University of Missouri.

In the wake of the dismissal of Communications professor Melissa Click, there was much consternation about her particular research interests. When word got out that some of her most notable work was studying *Twilight* fans, there was a fair amount of public outcry.¹⁸ Unfortunately, it can be challenging to debate the value of academic research without getting into an argument about some kinds of research being more valuable than others. At the extremes, this is obviously true. Research to cure a debilitating disease is far more important to the people of Missouri than research on some obscure work of art that only a handful of people have ever seen. But most academic research falls somewhere in between, so it can be difficult to evaluate what research is worthwhile and what research is superfluous.

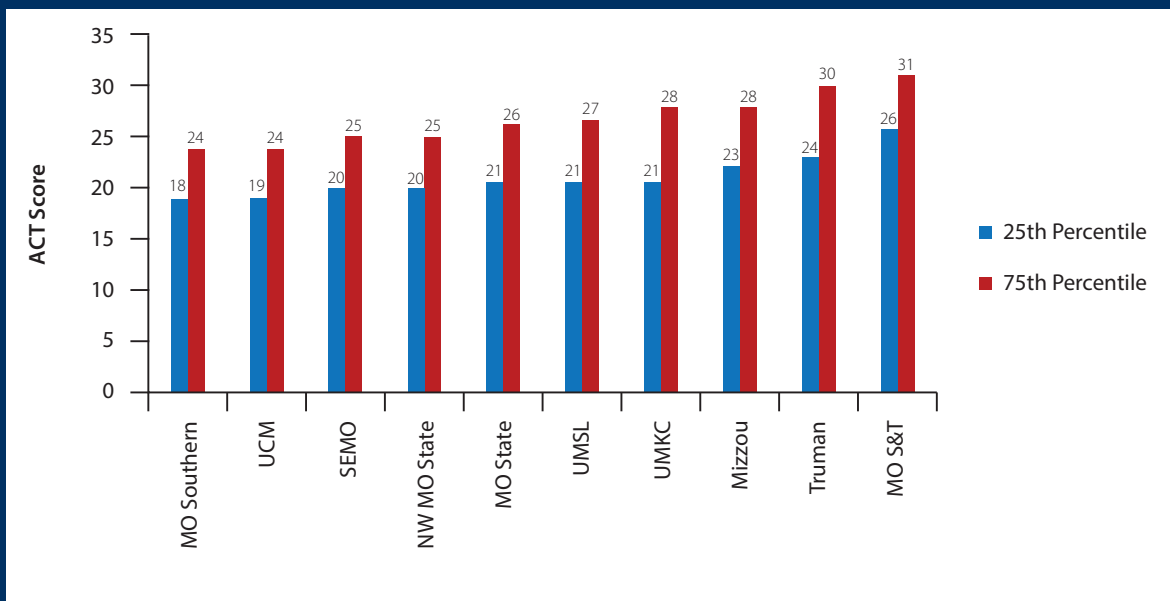
As an objective measure of evaluating the usefulness of research, I compiled statistics on how many times work by Mizzou professors had been cited by other people in their field. In addition, Google Scholar tracks citation counts and calculates an *h*-index for scholars, which is a measure of research impact. These two measures provide some indication of how much an author's work is valued by scholars in their disciplines.

Using a simple search of the University's website, I created a database of every professor in the University of Missouri—Columbia College of Arts and Sciences, organized by department. I then searched for each of their names in Google Scholar and recorded the number of citations and the *h*-index for each faculty member. Not every faculty member is searchable on Google Scholar, so I created department-wide averages of all the available faculty members. These are displayed in Figure 15, with the primary *y*-axis (the blue bars) displaying the average *h*-index and the secondary *y*-axis (the purple bars) displaying the average citation count.

Figure 11:

ACT 25th and 75th Percentiles, 2014

Looking at ACT scores, incoming Mizzou students lag behind Truman State and S&T students.

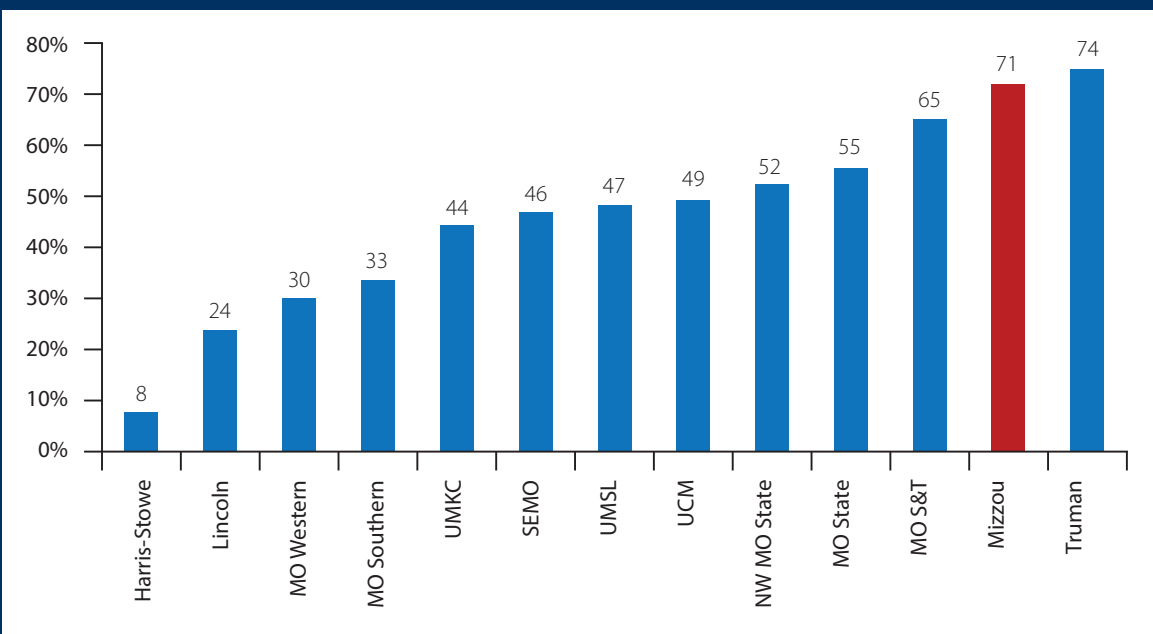


Source: IPEDS.

Figure 12:

6-Year Graduation Rate, 2014

Mizzou has the second highest 6-year graduation rate in the state.



Source: College Scorecard, U.S. Department of Education.

Figure 13:

Median Salary for Graduates, 2014

Mizzou graduates have the second highest median earnings of public university graduates in the state.

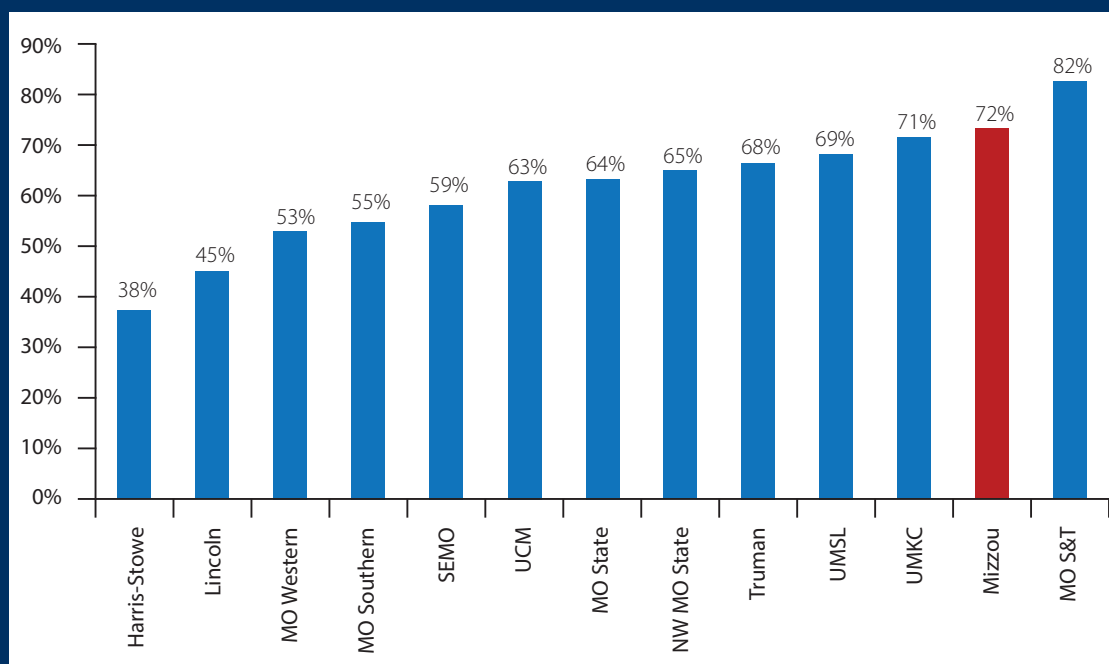


Source: College Scorecard, U.S. Department of Education.

Figure 14:

Percentage of Students Who Earn More than a High School Graduate, 2014

At several public universities in Missouri, huge numbers of students will earn less after graduation than the average high school graduate.

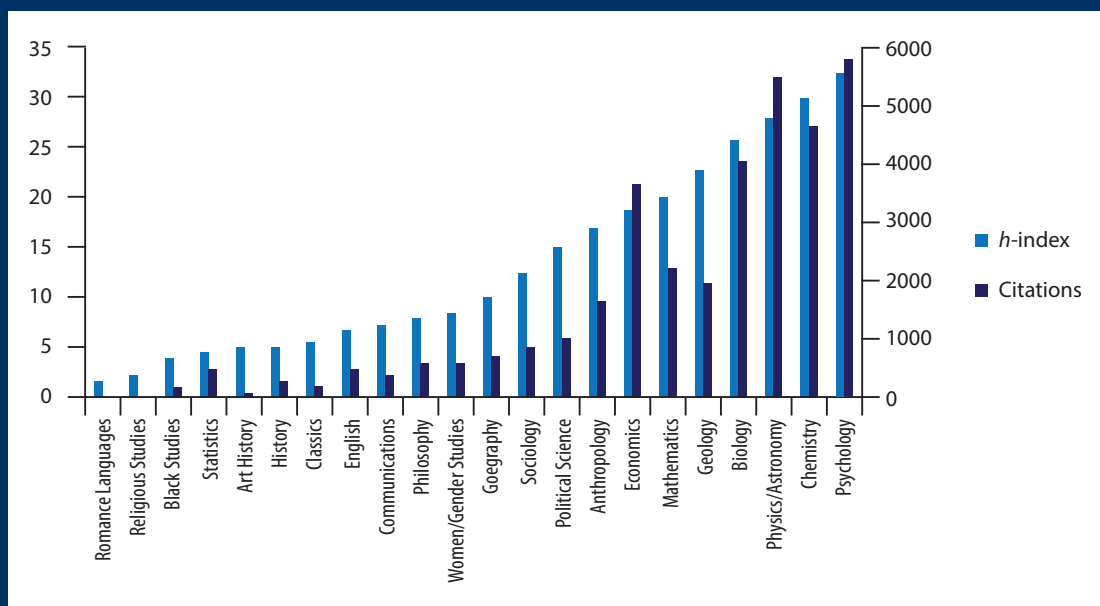


Source: College Scorecard, U.S. Department of Education.

Figure 15:

Average h -index and Citations by Department

There is wide variance in the production of cited research across departments in Mizzou's College of Arts and Sciences.

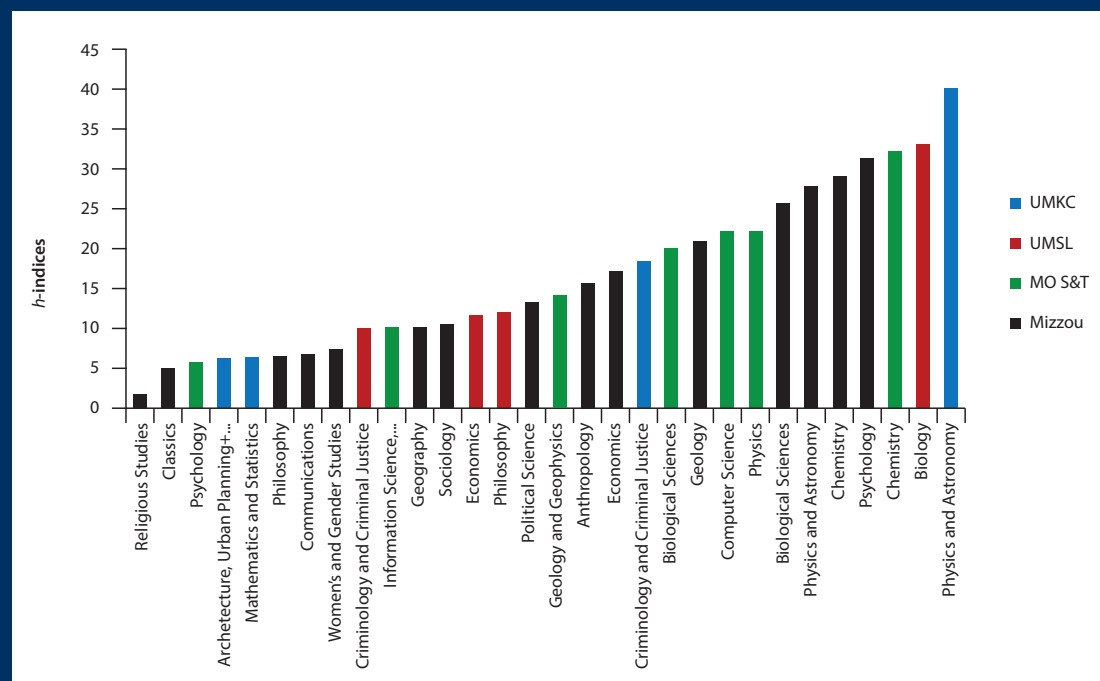


Source: Author's calculations, results from Google Scholar search.

Figure 16:

Department Comparison of h -indices, within Missouri

Mizzou is the research leader in the state, with a few notable exceptions.



Source: Author's calculations, results from Google Scholar search.

The figure shows a wide variation in the impact of research by the various departments. At the bottom end, the Romance Languages and Religious Studies departments had *h*-indices of 1.3 and 1.5, respectively, and average citation counts of 7 and 13. At the high end, the Psychology department had an average *h*-index of 32.2 and an average citation count of 5,705.4. The schoolwide average *h*-index was 19.7, and the average number of citations was 2892.4.

Unfortunately, these numbers don't tell us much in the abstract. Different disciplines value productivity differently, so it is important to norm them across other institutions. Accordingly, I created comparable databases for the Colleges of Arts and Sciences at the other University of Missouri system schools (UMKC, UMSL, and Missouri S&T) in order to make within-state comparisons. I also created a database for a set of regional comparison universities (the University of Kansas, the University of Iowa, and the University of Illinois).

Figure 16 compares the *h*-indices of all departments at intra-Missouri universities that had at least one-third of their faculty with a reported *h*-index. As you can see from the plurality of black bars, Mizzou has the largest number of departments represented. Also, many of the departments on the right side of the graph are from Mizzou, showing just how strong their research portfolios are. There are several notable exceptions though. The three highest-scoring departments all come from non-Mizzou schools. Coming in at number one is UMKC's Physics and Astronomy department; UMSL's biology department comes in second, and S&T's Chemistry department comes in third. In general, though, in any subject area where there are multiple Missouri universities represented, Mizzou is either the top or second-highest-scoring university in the sample.

Figure 17 looks at regional comparisons. To make the comparison as accurate as possible, I only included subject areas where at least 3 of the Universities (Mizzou, the University of Kansas, the University of Iowa, and the University of Illinois) had at least one-third of their faculty with *h*-indices. A pattern emerges here. The University of Illinois is consistently the top performer, while the other three universities duke it out for second place. Mizzou is not a laggard, and it is not a leader; it is right there in the middle.

One technical note: To ensure that the findings were not driven by the number of faculty that had searchable *h*-indices, I ran a Pearson's *r* correlation on departmental *h*-indices and the percentage of individuals in that department with a searchable *h*-index. I calculated a correlation coefficient of 0.027, showing that the findings are driven by actual differences in *h*-indices, not the number of faculty members with *h*-indices.

CONCLUSION

Missourians are having a much-needed conversation about our public higher education system. Given the large amount of money that taxpayers invest and the tens of thousands of students who enroll every year, this is necessary both for students' and the state's sake.

Conversations about reforming the state's universities should be based in data. Too often, individual experiences or isolated events are used to make policy. This can obfuscate the real issues facing public higher education in the state and Missouri's flagship university. When we work our way carefully through the data, trends emerge that can help point us toward effective reform.

What do those data tell us?

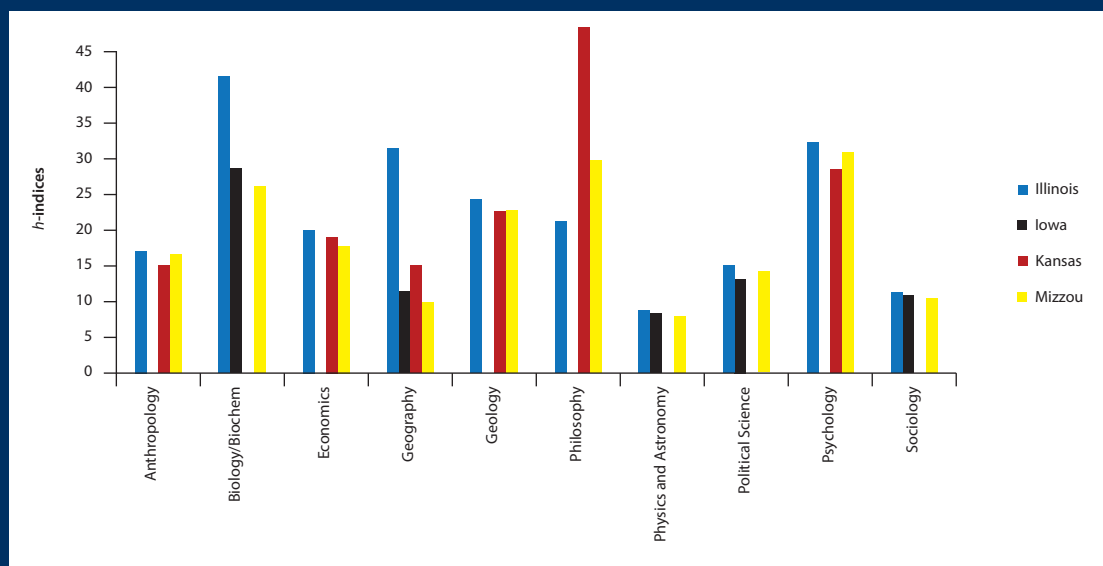
First, they tell us that Mizzou is neither a leader nor a laggard. On most indicators, Mizzou falls in the middle of the pack. This can provide some solace, but also challenges us to try and improve the university's performance and efficiency. The world does not stand still; other states and other universities are experimenting with new instructional pedagogies, new organizational structures, technology, staffing, and much more. If Missouri doesn't get better, it will be left behind.

Second, the data underscore the fact that most students in public higher education in Missouri do not attend Mizzou. The universities that they do attend vary widely in effectiveness. Some, like Missouri S&T, see high graduation rates and extremely high average salaries for their graduates. Others, like Missouri Southern, Harris-Stowe, and Lincoln, see shockingly low graduation rates and graduates making just as much (or even less) than students who never attended college at all. While Mizzou attracts a lot of our attention, there is reason to think that reforming these other institutions might do more good for the state's college students than a single-minded focus on Mizzou.

Figure 17:

Department Comparison of h -indices, Regional

Mizzou professors perform in the middle of their regional peers as measured by research citations.



Source: Author's calculations, results from Google Scholar search.

Third, with respect to research, the data show serious variation in productivity and impact among faculty. Some of this is a function of the types of research being carried out. Some fields cite more than others, and some fields produce many shorter-form works, while others produce fewer, longer-form works. However, by using citation counts and h -indices, we can evaluate scholars by the standards of their own disciplines and recognize professors who are seen by their peers as influential in their fields. Seeing such drastic variation can cause us to question if Mizzou is an institution where high-quality, influential research is consistently produced.

Mizzou and Missouri's public higher education system are important parts of the fabric of our state. When those schools thrive, the state thrives. We should therefore take frequent, hard looks at how our institutions of higher education are working, what they are doing well, and where they are coming up short. Hopefully the data collected and analyzed in this report can help facilitate and inform those conversations.

*Michael McShane is the director of education policy
at the Show-Me Institute*

NOTES

1. Eligon J; The New York Times. "At University of Missouri, Black Students See a Campus Riven by Race." Available at: <http://www.nytimes.com/2015/11/12/us/university-of-missouri-protests.html?r=0>. Accessed January 6, 2017.
2. Svrluga S; The Washington Post. "U. Missouri president, chancellor resign over handling of racial incidents." Available at: <https://www.washingtonpost.com/news/grade-point/wp/2015/11/09/missouri-student-government-calls-for-university-presidents-removal/>. Accessed January 6, 2017.
3. Flener M; KMBS 9 News. "Mizzou battles enrollment declines following fall protests." Available at: <http://www.kmbc.com/news/mizzou-battles-enrollment-declines-following-fall-protests/39578476>. Accessed January 6, 2017.
4. Blatchford T; The Missourian. "UM System begins \$1.1 million diversity audit." Available at: http://www.columbiamissourian.com/news/higher_education/um-system-begins-million-diversity-audit/article_c048486a-21d6-11e6-8ebe-e755a269f598.html. Accessed January 6, 2017.
5. Chappatta B; Bloomberg. "University of Missouri Outlook Cut by S&P After Student Protests." Available at: <http://www.bloomberg.com/news/articles/2016-01-29/university-of-missouri-outlook-cut-by-s-p-after-student-protests>. Accessed January 6, 2017.
6. Abel JR, Deitz R; Federal Reserve Bank of New York; "Do the Benefits of College Still Outweigh the Costs?" Available at: https://www.newyorkfed.org/medialibrary/media/research/current_issues/ci20-3.pdf. Accessed January 6, 2017.
7. Greenstone M, Looney A, Patashnik J, Yu M; The Hamilton Project. "Thirteen Economic Facts about Social Mobility and the Role of Education." Available at: http://www.hamiltonproject.org/papers/thirteen_economic_facts_social_mobility_education. Accessed January 6, 2017.
8. Bricker J, Brown M, Hannon S, Pence K; Board of Governors of the Federal Reserve System. "How Much Student Debt is Out There?" Available at: <https://www.federalreserve.gov/econresdata/notes/feds-notes/2015/how-much-student-debt-is-out-there-20150807.html>. Accessed January 6, 2017.
9. Issa EE; Nerdwallet. "2016 American Household Credit Card Debt Study." Available at: <https://www.nerdwallet.com/blog/credit-card-data/average-credit-card-debt-household/>. Accessed January 6, 2017.
10. Mitchell J; The Wall Street Journal. "School-Loan Reckoning: 7 Million Are in Default." Available at: <http://www.wsj.com/articles/about-7-million-americans-havent-paid-federal-student-loans-in-at-least-a-year-1440175645>. Accessed January 6, 2017.
11. Ibid.
12. Kelly A; Forbes. "Let's Clarify the 'College Is Worth It' Conversation." Available at: <http://www.forbes.com/sites/akelly/2014/05/31/lets-clarify-the-college-is-worth-it-conversation/#2b38c6639a0a>. Accessed January 6, 2017.
13. Lucca DO, Nadauld T, Shen K; Federal Reserve Bank of New York. "Credit Supply and the Rise in College Tuition: Evidence from the Expansion in Federal Student Aid Programs." Available at: https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr733.pdf. Accessed January 6, 2017.
14. Baum S, Johnson MC; Urban Institute. "Financing Public Higher Education: The Evolution of State Funding." Available at: http://www.urban.org/research/publication/financing-public-higher-education-evolution-state-funding/view/full_report. Accessed January 6, 2017.
15. U.S. Department of Education. "Using Federal Data to Measure and Improve the Performance of the U.S. Institutions of Higher Education." Available at: <https://collegescorecard.ed.gov/assets/UsingFederalDataToMeasureAndImprovePerformance.pdf>. Accessed January 6, 2017.
16. These regional flagships are The University of Illinois, the University of Iowa, The University of Nebraska, The University of Kansas, The University of Oklahoma, and the University of Arkansas.
17. Not all numbers add up to 100 as some students are classified as "unknown race."
18. Neff B; The Daily Caller. "The 9 Most Preposterous Parts of Melissa Click's Absurd Résumé." Available at: <http://dailycaller.com/2015/11/10/the-9-most-preposterous-parts-of-melissa-clicks-absurd-resume/>. Accessed January 6, 2017.

APPENDIX

Table 1: **Change In Inflation-Adjusted State Public Education Spending By State From 2000 to 2015**

State	2000–2015 % Change
Michigan	-40.6
Pennsylvania	-38.8
Ohio	-27.6
Iowa	-26.3
Wisconsin	-24.5
Arizona	-24.1
Colorado	-22.8
Oregon	-22.8
Minnesota	-20.7
Missouri	-20.4
Rhode Island	-19.6
South Carolina	-18.4
Virginia	-17.8
Kentucky	-13.5
Kansas	-13.0
Washington	-12.3
Maine	-12.0
Delaware	-9.8
Mississippi	-9.5
New Hampshire	-9.5
New Jersey	-8.0
Louisiana	-4.9
West Virginia	-3.5
California	-3.1
Indiana	-3.1
Oklahoma	-1.6
United States	-1.2
Alabama	-0.4
Vermont	0.1
Massachusetts	0.5
Idaho	0.8
Nebraska	7.7
Tennessee	11.7
Texas	11.9
Florida	13.2
North Carolina	14.9
Nevada	15.1
Arkansas	15.2
Maryland	15.5
New York	16.2
Connecticut	17.1
New Mexico	17.1
South Dakota	18.1
Utah	20.0
Hawaii	24.0
Montana	25.8
Georgia	34.0
Illinois	34.5
Alaska	47.3
North Dakota	63.3
Wyoming	82.5

Source: Urban Institute.

Table 2: **Increase In Tuition and Fees 2000 to 2015, Public 4-Year Colleges**

State	% Increase
Maine	1
Montana	5
North Dakota	6
New Hampshire	7
Minnesota	7
New Jersey	7
Rhode Island	8
Kentucky	9
Nebraska	9
Missouri	9
Vermont	9
Connecticut	10
Maryland	10
Iowa	10
Wisconsin	10
Alaska	12
Kansas	12
Massachusetts	12
Florida	13
New York	14
Delaware	14
Wyoming	15
Oregon	16
Indiana	16
Arizona	16
Utah	16
Ohio	16
Oklahoma	17
Illinois	17
United States	18
Arkansas	18
Texas	18
South Dakota	18
West Virginia	22
Tennessee	22
South Carolina	24
Michigan	24
Georgia	24
Nevada	26
Virginia	26
Washington	27
Pennsylvania	28
Mississippi	28
New Mexico	29
Colorado	34
Hawaii	35
North Carolina	35
Alabama	39
Idaho	45
California	48
Louisiana	56

Source: Urban Institute.

Table 3: Enrollment Changes 2000 to 2013

State	% Enrollment Change
Illinois	7
Louisiana	10
Tennessee	16
Rhode Island	17
Wisconsin	17
Michigan	18
Nebraska	18
Iowa	19
Kansas	19
Minnesota	20
California	21
Alabama	22
Maine	22
Montana	22
Oklahoma	22
West Virginia	22
Wyoming	22
Alaska	23
Deleware	23
South Dakota	23
Washington	23
Pennsylvania	24
North Dakota	25
Ohio	25
New Hampshire	27
Colorado	28
Mississippi	28
New York	28
United States	29
Hawaii	29
Massachusetts	30
Connecticut	31
Vermont	31
Missouri	32
Utah	34
Idaho	35
Indiana	35
Maryland	35
Virginia	36
Kentucky	38
New Jersey	38
Arizona	39
South Carolina	39
New Mexico	41
Nevada	44
North Carolina	44
Oregon	44
Texas	46
Arkansas	47
Florida	55
Georgia	56

Source: Urban Institute.

Table 4: Average 6-Year Graduation Rate By State, 2014

State	% Rate
District of Columbia	16
Alaska	31
Arkansas	40
Idaho	41
New Mexico	42
Louisiana	45
Montana	46
West Virginia	46
Nevada	46
Oklahoma	47
Utah	48
Maine	48
Tennessee	49
Kentucky	50
Alabama	50
Mississippi	50
North Dakota	51
South Dakota	52
Texas	52
Hawaii	54
Colorado	54
Wyoming	55
Georgia	55
Kansas	55
Ohio	55
Indiana	55
Missouri	55
Oregon	56
Nebraska	56
Rhode Island	58
Massachusetts	58
Arizona	58
Minnesota	59
New York	59
Wisconsin	59
South Carolina	61
Maryland	61
North Carolina	61
Illinois	62
Michigan	62
Pennsylvania	63
Connecticut	63
California	64
Florida	64
Vermont	65
New Jersey	67
Washington	68
Iowa	68
New Hampshire	70
Virginia	71
Deleware	74

Source: Chronicle of Higher Education.



5297 Washington Place | Saint Louis, MO 63108 | 314-454-0647
3645 Troost Avenue | Kansas City, MO 64109 | 816-561-1777

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