Impacts of Governmental Policy Actions on University Faculty and Students in Wisconsin

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Abstract

During the biennial budget creation process in 2015, the governor and state legislature of Wisconsin instituted many fundamental changes to the state statutes involving the University of Wisconsin System. These changes included altering the role of faculty governance at the campus level and the removal of faculty tenure protections from state law. The Board of Regents of the University of Wisconsin reacted to the state statute changes by modifying Regent policies to maintain some stability. These actions did involve some fundamental changes for faculty. For example, the Regents placed tenure protection into Regent policy, but also added into Regent policy an avenue for removing tenured faculty through a post-tenure review process. Such changes in tenure were seen by many faculty as weakening the protections to which faculty had grown accustomed. Furthermore, the changes in the faculty role in governance opened the possibility for significant reductions in the control faculty had over the mission and operations of the individual campuses.

At the same time, the legislature enacted a $100 million a year reduction in the base budget of the UW System, an included an additional $25 million lapse for the first year of the 2015-17 budget. This budget cut was accompanied by the continuation of a state resident student tuition freeze which began in 2013 and continues today. This budget cut and the tuition freeze resulted in most of the UW campuses needing to undertake significant cost savings measures which have impacted programs, faculty and students.

In this paper, the impacts of these policy actions on UW System faculty is explored. Data from 2010-2019 is examined to determine the change in faculty size across the UW System. The paper discusses the changes in the number of engineering faculty at the three campuses that have had sizeable engineering programs over the last decade: UW-Madison, UW-Milwaukee, and UW-Platteville. Finally, the impact on engineering class sizes will be analyzed, as reductions in the number of courses offered has been one of the impacts of reduced budgets. From this data, it is concluded that the policy actions have led to decreased numbers of faculty in the UW System, with delayed reductions in faculty in engineering programs. Engineering class sizes at at least one institution have increased, potentially to the detriment of the students’ educations.

Introduction

Public universities are often directly impacted by public policy decisions made by state governmental bodies. Such decisions include determining the amount of public funding that will be made available to the universities as well as policy decisions that affect how the university operates. In the past decade, the University of Wisconsin (UW) System has been significantly impacted by decisions made in the state government. These policy decisions have affected both the finances of the UW System and the governance of the individual campuses.

In this paper, the impact of these decisions is explored through examining changes in the tenured and tenure-track faculty sizes and through a consideration of engineering course size changes.
over the last decade. The number of faculty is studied at the level of the entire UW System and then more specifically at three UW campuses that have well-established, extensive, engineering programs (UW-Madison, UW-Milwaukee, and UW-Platteville). A detailed examination of the course section sizes in selected engineering and computer science courses at UW-Milwaukee will be discussed to provide insight on how the budgetary decisions may have impacted engineering students.

**Description of the University of Wisconsin System**

The University of Wisconsin consists of 13 institutions granting bachelor’s degrees, an extension service, and at the beginning of the decade had an additional UW-Colleges section which consisted of 13 2-year campuses offering associate degrees. During the past several years, the UW-Colleges were converted into branches of some of the 13 4+ -year institutions, such that the UW-Colleges no longer exist as a separate entity. The locations and much of the course offerings remain, but now are “joined” to the bachelor’s degree-granting schools. It should be noted that when the faculty data on UW-Milwaukee and UW-Platteville are discussed later, the faculty on the branch campuses are not included. Such inclusion would significantly complicate any analysis of faculty size at the 4-year institutions over the past decade.

The University of Wisconsin System is governed by the UW Board of Regents. In turn, the Wisconsin state legislature determines state budgetary allocations to support the operations of the UW System institutions. Authority for the UW System rests in state law, and such laws can be modified by the Wisconsin state legislature. The Board of Regents creates governing policies for the UW System based on the state law. Therefore, while the state legislature does not directly control the UW System, it can strongly influence the operations of the System both through changes in the fundamental laws overseeing the UW System and through the budgetary allocation process.

In the UW System, three campuses have had extensive engineering programs with multiple departments for decades: UW-Madison, UW-Milwaukee, and UW-Platteville. UW-Madison, the UW System’s flagship school, is a major doctoral institution that draws a large portion of its students from both nationwide and worldwide locales. The College of Engineering at UW-Madison has 9 departments, offering 13 undergraduate majors [1]. For consistency with the other two campuses, the data from the Computer Science Department at UW-Madison will be included in this analysis; while the Computer Science Department is not part of the College of Engineering at UW-Madison, it is grouped with engineering at UW-Milwaukee and UW-Platteville. UW-Milwaukee is a doctoral institution that draws most of its undergraduate students from Wisconsin with a notable fraction coming from neighboring states. The UW-Milwaukee College of Engineering and Applied Science consists of six departments and offers 9 undergraduate majors [2]. UW-Platteville is a primarily undergraduate institution drawing most of its students from Wisconsin and neighboring states. It has seven ABET accredited engineering programs in addition to computer science [3]. Other UW System institutions have much smaller engineering programs; e.g., UW-Stevens Point has programs in Paper Engineering and Chemical Engineering. Due to the much smaller engineering footprints at the other UW institutions, they were not included in the analysis of the number of engineering faculty.
Recent Legislative Policy Actions Impacting the UW System

In the past decade, the state of Wisconsin government has made several policy decisions that have directly impacted the UW System. Most of the policy actions were made as part of the 2015-17 state biennial budget. These included a large budget cut (~$200 million), as well as changes in the language in state law that impacted the operations of the UW institutions. These changes included removing faculty tenure protections from state law and making faculty roles in governance advisory rather than dominant. More complete descriptions of the changes made in the 2015-17 biennial budget creation process can be found elsewhere [4], [5].

An additional legislative action that has impacted the UW System was the imposition of an in-state student tuition freeze in 2013 [6]. This tuition freeze has been extended for each year since 2013 [7]. Importantly from a financial perspective, the state legislature has not increased state financial support of the UW System to offset the tuition freeze. As a result, UW institutions have had to account for inflation in their budgets without seeing a corresponding increase in revenue from tuition payments from in-state students or state funding.

The combination of the large cuts to the UW System in the 2015-17 budget coupled with the extended period of the in-state student tuition freeze has greatly strained the budgets of the individual UW institutions. Faculty were directly impacted financially by years or small or no pay increases, which came about due to a combination of the state budget allocations for pay raises and the strained university budgets already described. Faculty also experienced concerns over their job security as a result of the changes in policies impacting governance and tenure.

The questions to be explored in the rest of this paper are what the impacts of these actions were on the number of faculty in the UW System and specifically in engineering programs, and what types of impacts did these changes have on engineering class sizes. It should be noted that this paper will be considering the data in terms of number of faculty; it will not be attempting to determine if individual faculty departed the UW System due to financial reasons or concerns over changes in their job environment or due to normal retirement. People may choose to leave their job for multiple reasons. So, this paper seeks to examine what impact the complete set of legislative policy actions had on the number of faculty, rather than trying to attribute faculty departures from the UW System to each separate legislative action. Finally, to shed light on the impact of these changes on students, the paper looks at how specific engineering course section enrollments have changed at UW-Milwaukee.

Results and Discussion

Figures 1 and 2 provide information on the number of tenured and tenure-track faculty throughout the entire University of Wisconsin System (UW-System). Figure 1 provides the total number of such faculty as of the listed year’s October payroll data. Figure 2 provides the percentage change in the number of faculty throughout the entire UW System as compared to the previous year [8]. Please note that there was a change in the way that the UW System reported faculty numbers starting with the Fall 2018 data. This might cause the change from 2017 to 2018 to be slightly larger than it would have been without the change.
Figure 1: The total number of tenured and tenure-track faculty in the University of Wisconsin System from 2010-2019. The data are for the Fall semester of the given year [8].

Figure 2: The annual percentage change in the total number of tenured/tenure-track faculty in the UW System from 2011 to 2019, based on Fall data [8].

The data indicate that the number of faculty in the UW System was relatively constant from 2010-2015, with the number each year within a range of 6,321-6,485. The fluctuations seen can be considered normal changes for a system of such size. The October 2015 data does show a decrease in faculty size from 2014. This could be interpreted as the beginning of a steady decline, but it is not obvious that it represents such a beginning as the number of faculty still fall within the range from the previous 5 years and the changes in the state budget and university
policies would have had little time to impact faculty size. There may have been some individual
decisions regarding departing the university or not filling an open position based on anticipated
changes from the 2015 state budget discussions, and such decisions may have lowered the
faculty size, but it is not a large enough change to be able to be determined to have been
definitively influenced by the budget and policy changes. However, from 2016-2018, there is a
clear downward trend in faculty size, with annual decreases exceeding 2% for each year. In
2018, by which time institutions had been working with reduced budgets for several years, the
annual decrease in faculty size reached nearly 4.5% - which is from an already reduced number
in 2017. The decrease in 2019 was not as large, but still part of a significant trend. Based on this
data, it is reasonable to conclude that the reduced budgets and/or the change in university
policies has led to an overall reduction in the number of UW System-wide tenured and tenure-
track faculty numbers.

The data from the three campuses that have extensive engineering programs can also be
examined. The data for the number of tenured and tenure-track faculty for both the entire
institution and for the engineering and computer science programs can be found in Figures 3-8.
[8] Figure 3 contains the number of each group of faculty at UW-Madison. Figure 4 contains
the change in the total faculty size and the size of the engineering and computer science faculty
for UW-Madison. Figures 5 and 6 contain similar plots for UW-Milwaukee. Figures 7 and 8
contain the similar data for UW-Platteville. Data for the total number of faculty are only
presented through 2018, as the UW System had joined some of its 2-year colleges to Milwaukee
and Platteville and began to include the faculty from these other campuses with the main campus
faculty numbers in the 2019 data. Therefore, in 2019, the data for these campuses show an
increase in faculty numbers, but the increase is due to faculty at the branch campuses which were
added to the total number of faculty rather than solely at the main campus as represented in the
data from the other years. Data for engineering and computer science faculty are from ASEE
summaries of the institutions [9].

These are different types of institutions, and so we may expect to see some differences in the
results concerning faculty size. One similarity between the total faculty size of the three
institutions concerns the 2010-2014 time frame. Despite some annual variation in total faculty
size, the total faculty number at each school was relatively constant from 2010-2014. Then,
beginning in 2015, at each institution we see the total number of faculty begin to decline each
year. Like the UW System as a whole, the annual decrease was not particularly noticeable in
2015, but does begin a downward trend that continues through at least 2018. It appears that the
percentage decreases are somewhat higher at UW-Milwaukee than at UW-Madison and to a
lesser extent than at UW-Platteville. The budget environments at the three campuses are
different, with UW-Madison in particular being able to enjoy flexibilities that enables it to
weather decreases in state funding more easily. As the flagship institution, UW-Madison is more
selective in its admissions decisions. This leaves it with a large number of students who are not
typically accepted, giving it the ability to increase student enrollment by adjusting admissions
standards. For example, between 2015 and 2019, UW-Madison increased its student size by
nearly 2000 students [10]. Therefore, while UW-Madison can still be impacted by state budget
cuts, UW-Madison has more flexibility in generating new tuition revenue to offset these cuts
than either Platteville or Milwaukee. However, this would not influence the impact of state
policy changes on faculty attitudes towards working at UW-Madison.
Figure 3: Number of tenured/tenure-track faculty at the University of Wisconsin-Madison for 2010-2018. Data shown are for the fall semester, and are for the entire university and for the College of Engineering. Computer Science faculty are included in the College of Engineering [8], [9].

Figure 4: The annual percentage change in the total number of tenured/tenure-track faculty in the whole university and in the College of Engineering at the University of Wisconsin-Madison for 2011-2018, based on Fall data [8], [9]. Computer Science faculty are included in the College of Engineering.
**Figure 5:** Number of tenured/tenure-track faculty at the University of Wisconsin-Milwaukee for 2010-2019, with Engineering/Computer Science data from 2020. Data shown are for the fall semester, and are for the whole university and for the College of Engineering and Applied Science [2], [8], [9].

**Figure 6:** The annual percentage change in the total number of tenured/tenure-track faculty in the whole university and in the College of Engineering and Applied Science at the University of Wisconsin-Milwaukee for 2011-2019, with the Engineering/Computer Science data from 2020. Data shown are from the Fall semesters [2], [8], [9].
Figure 7: Number of tenured/tenure-track faculty at the University of Wisconsin-Platteville for 2010-2018, with Engineering/Computer Science data from 2020. Data shown are for the fall semester, and are for the whole university and for the engineering and computer science programs [3], [8], [9].

Figure 8: The annual percentage change in the total number of tenured/tenure-track faculty in the whole university and in the engineering and computer science programs at the University of Wisconsin-Platteville for 2011-2018. Data shown are from the Fall semesters [3], [8], [9].
If we consider only the engineering and computer science faculty numbers, we see some interesting trends. Like the faculty as a whole, the number of engineering and computer science faculty were relatively constant from 2010-2014, with each school experiencing one year of large growth. UW-Milwaukee did see more annual variability, but only went from 76 faculty in 2011 to 74 in 2015. But, unlike the overall faculty numbers in the UW-System and the overall faculty numbers on each campus, the number of engineering and computer science faculty at the three schools did not experience a particularly large decrease in number during the 2015-2017 period. UW-Platteville did have a large loss in 2016, but at that point still had more faculty than it had in 2013. These data suggest that the institutions were making faculty reductions in other areas (through non-replacement of those who left the institution) but seeking to maintain faculty numbers in engineering and computer science. The institutions appear to have been making strategic decisions on where to best place their diminishing resources, and at least initially chose to continue to support the engineering programs despite the reduced budgets.

However, the most recent data suggest that that approach may either not be being used or may no longer be feasible due to continued pressures on the budgets from declining enrollments. Counts of faculty on the UW-Milwaukee and UW-Platteville websites for the Fall 2020 semester indicate that there are 67 engineering and computer science faculty at UW-Milwaukee and 57 at UW-Platteville [2], [11]. In 2015, these numbers were 74 and 70 respectively. This suggests that there is an accelerated loss of engineering and computer science faculty at these schools, which does not bode well for future faculty number growth as budgets continue to be pressured by COVID-19 cuts and expenses and continuing enrollment declines. A similar comparison at UW-Madison was not deemed feasible, due to the large number of joint appointments at UW-Madison which made the calculation of faculty size from website data inconsistent with the published data from ASEE.

The decrease in faculty size is not due to faculty being laid off. Rather, the reduction is due to positions being vacated by faculty and then not being filled with new hires. Because of this, the decrease in the number of faculty in the UW System can be attributed to revenue reductions caused by the decrease in state funding coupled with the in-state student tuition freeze mandated by the state government. Some institutions have also seen enrollment declines (which would reduce tuition revenue), although that is not universal. Faculty have departed due to retirements, not receiving tenure, and finding other positions. While some of the decisions for faculty to leave may have been influenced by the changes in university policies with regards to tenure and faculty governance, it is unknown how many faculty chose to leave specifically for those reasons. It can be noted that if one compares the number of faculty who have been leaving the UW System for the last few years to the number who left prior to the 2015 state actions, it does not appear that there has been a dramatic increase in departures that could be attributed in part to the changes in governance policies [8].

Figures 9 and 10 contain enrollment data from a sample of engineering and computer science courses at UW-Milwaukee [12]. The data presented is the average section size for the course listed in the Fall semester from 2010-2019. All of the courses, except ME 402, are required courses, while ME 402 is an elective course taken by a significant fraction of Mechanical Engineering seniors. These courses were chosen due to their regularity of offering and
Figure 9: Fall semester section enrollment data for selected courses in the College of Engineering and Applied Science at the University of Wisconsin-Milwaukee, from 2010-2019. Only one section of these courses was offered in each semester shown [12].

Figure 10: Fall semester section enrollment data for selected courses in the College of Engineering and Applied Science at the University of Wisconsin-Milwaukee, from 2010-2019. The courses shown experienced a decrease in the number of sections offered in a semester over the decade [12].

because they generally maintained consistency as being required by the same majors throughout the time period. The courses were also not affected by significant changes in pedagogical approaches, course outcomes, or program changes during the time under consideration. (Some
of the courses are required by multiple programs, while others are only required by their offering department.) Figure 9 includes data from courses for which the number of sections offered each semester remained constant over the 10 years considered; this was one section for each course except MAT 201 which had 2 sections each Fall semester. Figure 10 includes data from courses for which the number of sections was reduced in the time frame under consideration. It should be noted that in the early years shown, ME 321 and ME 366 varied between having one and two sections offered in the Fall semesters.

Considering the data in Figure 9, most of the courses shown demonstrated an increased enrollment as time advanced. This is due to an increase in student enrollment at UW-Milwaukee in engineering and computer science. The undergraduate enrollment grew from 1632 students in 2012 to 1915 students in 2018, before falling to 1804 in 2019 [13]. To accommodate the increased enrollment, some programs chose to increase the capacity of their courses rather than open additional sections, particularly in the most recent years.

The data in Figure 10 illustrates how section enrollments change when the number of sections offered is reduced. While more obvious for some courses (such as EE 301 and CIV 201), there is generally a step function increase in section enrollment when the number of sections is reduced. While the result is more dramatic for CIV 201 (Statics) and EE 301 (Electrical Circuits I) as these large enrollment courses declined from 2 sections to 1 section, the impact on students may be greater in a smaller class such as ME 438 (Mechanical Engineering Experimentation) which dropped from 4 sections a semester in the early part of the decade to 2 sections a semester in the later part. The student experience in a hands-on laboratory course is likely to be impacted more by larger class sizes than lecture courses.

Overall, from Figures 9 and 10 we can get a sense of what impact budget cuts in the second half of the decade had on student class sizes. Decisions made to save money by reducing the number of sections offered in various courses led to much larger class sizes. However, the increased enrollment seen in many of the engineering and computer science majors also caused section sizes in required and elective courses to increase, rather than being addressed by offering more sections to maintain smaller class sizes. (ME 321 and ME 366 in the first part of the decade in vary between one and two sections offered in a semester to try to maintain smaller class sizes when there were enough students wishing to take a course to justify opening an additional section. By the second part of the decade, the larger enrollments were simply addressed through the use of a larger single section.) Therefore, two actions consistent with trying to reduce expenses (reducing the number of sections offered for multi-section courses and increasing the size of the course sections rather than opening up more sections as enrollments grow) have led to larger class sizes for engineering and computer science students at UW-Milwaukee. There is debate as to how important class size is for student learning, particularly in college courses. However, it has been found that students prefer smaller class sizes, particularly for courses in their major [14]. So, even if smaller class sizes don’t directly improve learning, they would seem to improve the student experience. From this, one can conclude that the budget pressures imposed on UW-Milwaukee that flowed from legislative policy decisions were detrimental to the student experience (and possibly the student learning) in engineering and computer science.
Conclusions

From the data on the number of UW System faculty, it is clear that a significant decrease in faculty began in at least Fall 2016, and possibly as early as Fall 2015. This time frame matches up very well with when the impacts of the Wisconsin legislative decisions on budget (the in-state tuition freeze that began in 2013 and then the additional large cut in state support in 2015) would have begun to be felt. Indications of faculty departures due to the change in law on UW System governance would likely not have begun until Fall 2016. There have not been faculty lay-offs due to the budget strain, so the decrease is due to the lack of hiring replacements of faculty who left UW System institutions. What can be inferred from this is that while it is not known for certain why any individual faculty member left the UW System, the budget reductions led to many of these faculty not being replaced; budget savings were achieved through faculty departures.

A comparison of the faculty numbers at the three institutions with large engineering programs show that while engineering and computer science faculty numbers have been declining, the decline was delayed in comparison to overall faculty numbers at those institutions. That suggests that the administrations at these institutions chose to use the limited resources available in the difficult budget environment to try to maintain faculty sizes in engineering and computer science. However, recent data suggests that at least at UW-Milwaukee and UW-Platteville, the budget situations may no longer be allowing as much targeted investment in these fields.

Consideration of course section size data from UW-Milwaukee indicates that engineering and computer class sizes grew over the past decade. This was caused by increased enrollment, reduction in the number of sections offered for courses with multiple sections, and a decision to increase class enrollment capacities rather than maintaining smaller class sizes by opening additional sections. This conclusion is made based on there being no other significant changes to course pedagogy or program requirements that would explain the increased class sizes. Considering that increased enrollment brings in additional tuition revenue, the decisions to reduce the number of sections and to increase class capacities could be considered surprising. However, in light of the overall budget pressures facing the UW System, it is rather indicative of the severity of the budget strain.

From this analysis, it can be concluded that the policy decisions made in the past decade by the Wisconsin state government has led to a reduced number of faculty in the UW System, and likely contributed to the need to increase class sizes in engineering and computer science courses. As smaller class sizes are often seen as beneficial to the student experience, it can be concluded that increasing class sizes would have a negative impact on the students’ educational experiences. Therefore, the policy decisions have likely had a negative effect on the students in the UW System.
References


