

**UNIVERSITY OF MICHIGAN TENURE TRACK FACULTY  
AY2015 INDICATOR REPORT**

**Prepared by**

**UM ADVANCE Program**

**November, 2015**

## INTRODUCTION

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The National Science Foundation (NSF) undertook the ADVANCE Institutional Transformation Program in 2001 as a way to cultivate the success of women in academic science and engineering who “continue to be significantly underrepresented in some science and engineering fields and proportionately under-advanced in science and engineering in the Nation’s colleges and universities.” The University of Michigan’s ADVANCE Program was in the first cohort of institutions funded under this initiative. When that grant ended in 2007 the University continued to fully fund the program and expanded it to address necessary institutional changes to support the needs of a diverse faculty in all fields.

The University of Michigan ADVANCE Program aims to improve our campus environment for faculty in four general areas: recruitment, retention, leadership and climate. It assesses the campus climate through a series of campus-wide faculty surveys (reports from those surveys can be found on the ADVANCE Web site) as well as individualized assessments of schools and departments. The program also collects and reports on annual indicator data about the state of the faculty at UM. These data are used to assess the University’s progress in the areas of recruitment, retention and leadership.

This report examines the annual indicator data the UM ADVANCE Program has been accumulating since it began in AY2002. NSF required that each institution funded under the ADVANCE Program report annually on these indicators (tabled indicator data for AY2015 are included at the end of this report; see Appendix B)<sup>1</sup> for STEM faculty at their individual institutions and compare each current reporting year with the baseline data (AY2001 for UM) as a way to assess change over time<sup>2</sup>. When the NSF funding ended at the end of AY2007 the ADVANCE Program continued the practice of collecting and reporting on these indicators annually, comparing the current year with the baseline. Over time, several of the indicators were refined; those that were less informative and especially time consuming to collect were discontinued, and others were added. In addition, as the mission of the ADVANCE Program broadened our data collection efforts broadened; not only did we begin collecting institutional data on all UM faculty, we worked to retroactively gather the same data for all non-STEM faculty (i.e., those not originally considered when the focus of the project was limited to STEM faculty). We now have faculty appointment count data for all UM colleges and schools from AY1979 to present (as well as all indicators derived from appointment counts, e.g., sex ratios, race-ethnicity ratios, cohort outcomes). Data on additional appointments not captured in the HR system (e.g., named professorships, service on tenure/promotion committees and executive committees) were not available for non-STEM colleges and schools prior to AY2009, when ADVANCE expanded the indicator data collection to include these units.

As a result of these efforts the ADVANCE Program has amassed a large amount of demographic and descriptive data on the faculty of the University of Michigan across many years. Given this wealth of information, we have initiated a process to more thoroughly consider these data--specifically in terms of ADVANCE’s mission to improve efforts at recruitment, retention and leadership--to help policy-makers at the University and individual school levels identify areas of success as well as areas requiring future and/or continued efforts.

<sup>1</sup> There were 12 indicators identified by NSF; see Appendix A.

<sup>2</sup> The ADVANCE Program is grateful to the data liaisons in each of the academic units for their invaluable assistance over time with the data collection and verification process.

As we have expanded the focus of the ADVANCE Program, we have also expanded the scope of the annual indicator reports. In addition to reporting on many of the same indicator variables each year, we have added specific areas of focus to each year's report. Last year's indicator report focused on faculty composition. In this year's report we consider faculty **retention, leadership and recognition**. As noted above, the original focus of the program was STEM faculty, and only later was the mission broadened to include faculty campus-wide. Thus, this report examines faculty retention, leadership and recognition across time campus-wide as well as specifically for STEM faculty when data are available and meaningful. For the purposes of this report, unless otherwise noted, we define STEM faculty as those with funded tenure-track appointments in one or more of the following colleges/schools: College of Engineering; College of Literature; Science, and the Arts Division of Natural Sciences; Medical School (basic science and clinical departments); School of Nursing; and/or the six additional colleges and schools with both STEM and non-STEM faculty (Dentistry, Information, Kinesiology, Pharmacy, Natural Resources and Environment, and Public Health). Due to limited data on faculty study fields (i.e., field in which faculty earned their Ph.D.) available prior to AY2001, all faculty in the latter six units were counted as STEM faculty for this report unless otherwise noted.

When possible, data were examined separately for six groups of faculty: Asian/Asian-American men, underrepresented minority (URM) men, white men, Asian/Asian-American women, URM women, and white women to understand how the situation may vary for these different groups of faculty. However, occasionally the number of faculty was too small (especially in the case of faculty of color) to allow for such refinement.

## ANNUAL FACULTY COMPOSITION

As noted previously, the focus of this report is faculty retention, promotion and recognition. We begin, however, with a review of issues addressed in the previous indicator report. That report considered faculty composition, noting the percentage of all tenure track faculty by the six gender/race-ethnicity groups for all years from AY1979 through AY2014. Figure 1a updates that information through AY2015. As described previously, most noticeable are the across time decline in the percentage of white male faculty and the corollary increase in the percentage of white women. The percentages for faculty of color (both male and female) are small across the fifteen years. Nevertheless, we notice a slight increase beginning in the early nineties (but perhaps later for Asian/Asian-American women). Rates continued to increase over time for male Asian/Asian-American faculty, but remained fairly static for female Asian/Asian-American and both female and male URM faculty after the period of slight increase.

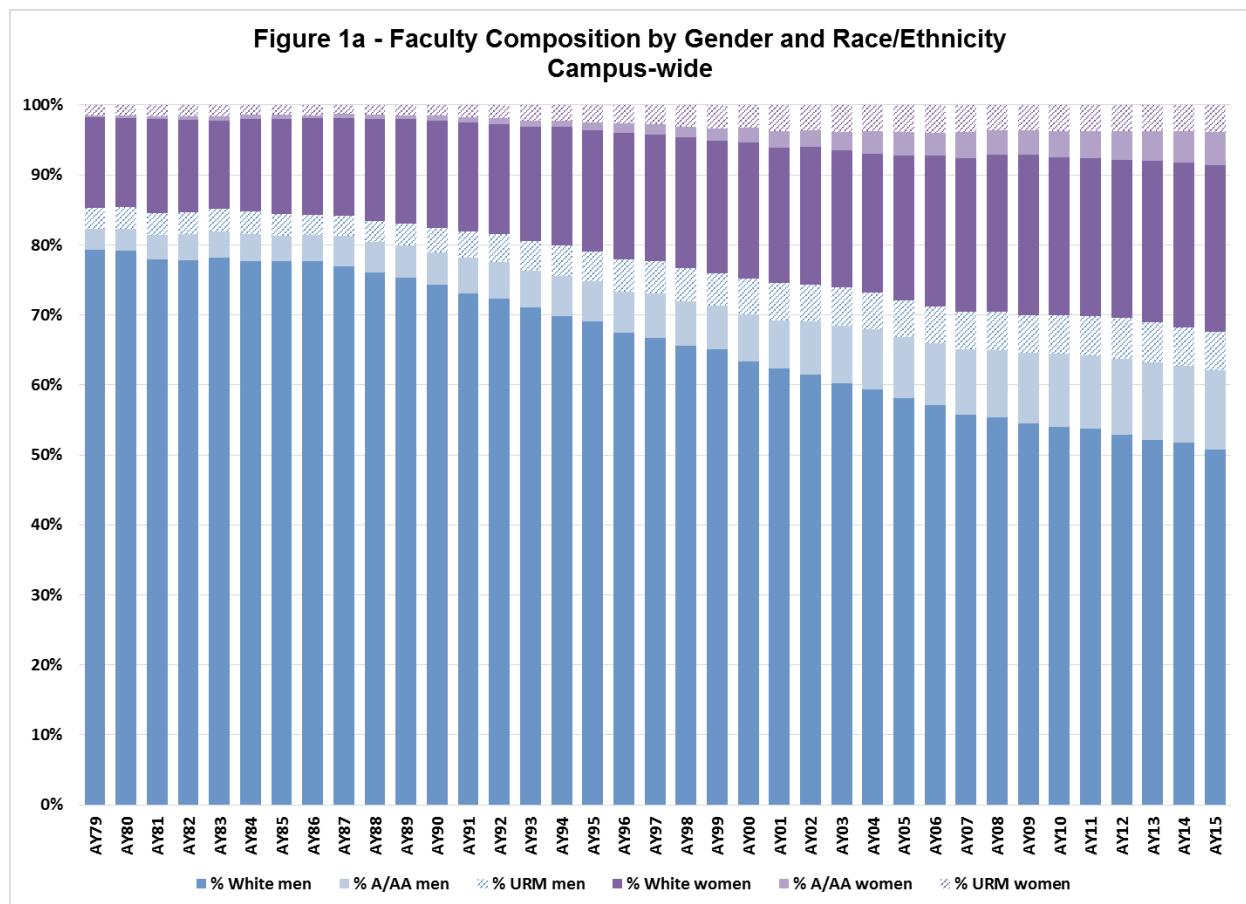
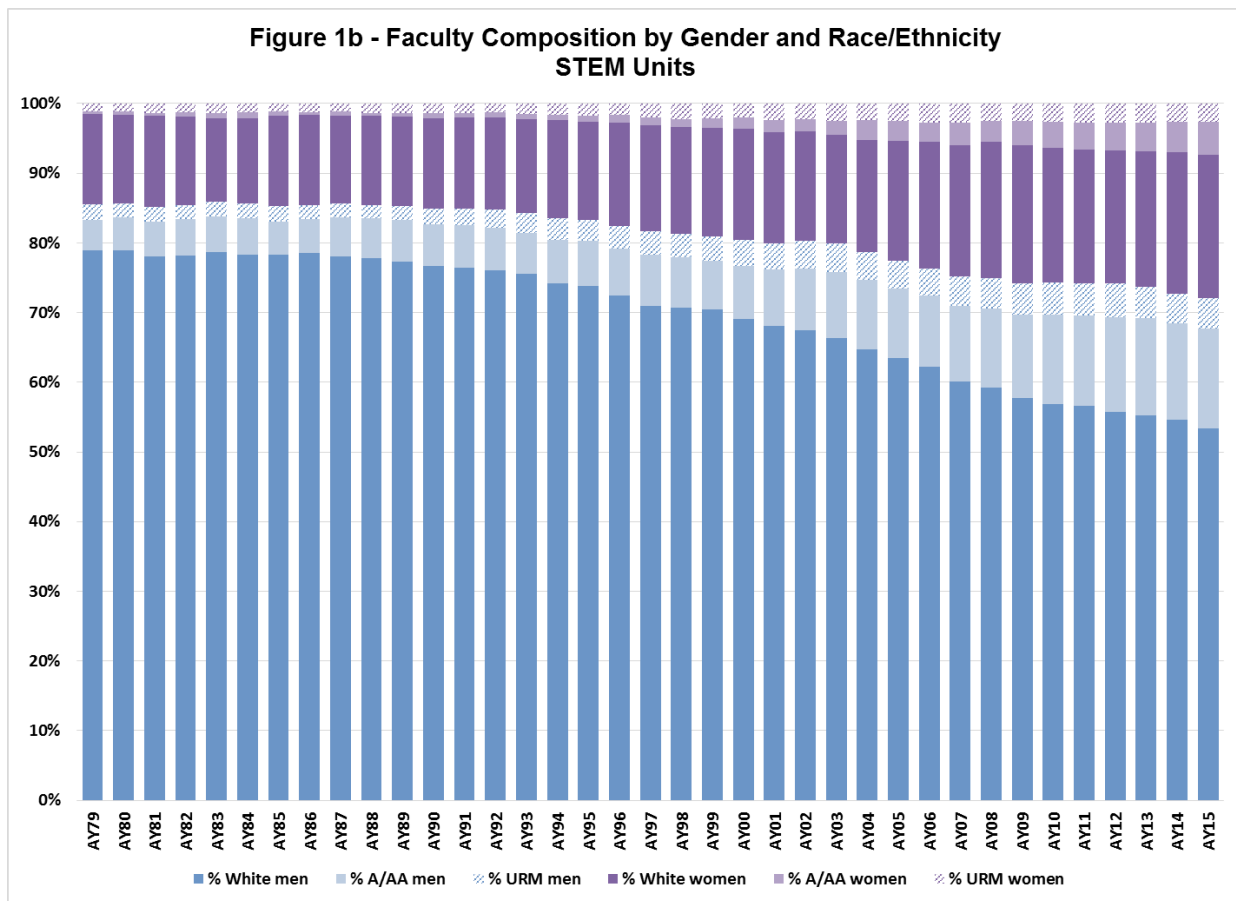


Figure 1b updates the same percentage of tenure track faculty groups for STEM faculty. The pattern here is similar to that for faculty campus wide (including a modest increase in the rate of women and faculty of color in the mid to late 90s). However, we note an even more noticeable change during the ADVANCE years, especially the increased percentage of white women (and Asian/Asian American men). In contrast, rates of underrepresented men and women faculty and Asian/Asian American women faculty were fairly constant during this period.



The data on faculty composition suggest there has been a moderate increase in faculty diversity over the period that we have examined, and there is an inflection after 1989. This increase is no doubt the result of many factors, including the higher rate at which white men are retiring from the University, and initiatives undertaken at UM throughout the 1980s and 1990s. In addition, it appears that the ADVANCE Program-related activities and initiatives directed at increasing the representation of women in STEM fields may have had a positive effect on faculty composition in STEM colleges and departments, which showed more change in the post-ADVANCE period. Please see last year's report for a more complete assessment of the data available on the ADVANCE Web site:

<http://advance.umich.edu/resources/AY2014-IndicatorReport-Michigan.pdf>

We now turn to our consideration to this year's focal theme: faculty retention, leadership and recognition.

## FACULTY RETENTION

Our focus on faculty retention includes an examination of promotion rates to associate and full professor on the tenure track. We also consider aspects of faculty life that increase job satisfaction as well as those that may cause faculty to leave UM, specifically climate, faculty demographics, and mentoring.

### Promotion

One way to assess faculty retention is to consider the rate at which faculty are successfully promoted from assistant to associate professor and from associate to full professor. Figure 2a depicts the tenure rates for assistant professors hired campus-wide between AY1990 and AY2004 looking at individual outcomes after 10 years. The average rate of promotion of women assistant professors was 55%; the rate for men was slightly higher, 59%. More women left the University after 6 or more years at UM compared to men (20% vs. 16%) indicating that they may be tenured at a lower rate. Average promotion rates for faculty of color, 57%, were quite similar to that for white faculty, 58% (when we looked at Asian/Asian American and URM faculty rates were quite similar, 58% and 55%, respectively). Compared to white faculty, slightly more faculty of color left the University after 6 or more years (19% vs. 17% for white faculty).

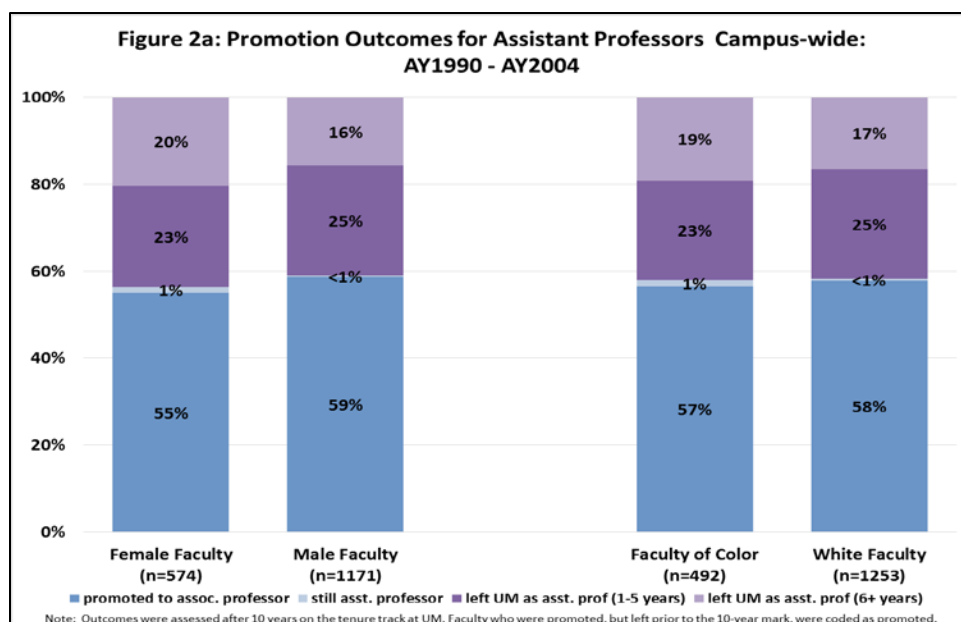


Figure 2b depicts the promotion rate for associate professors campus-wide. The pattern here is more marked than for assistant professors. Women associate professor were, on average, promoted at a lower rate than men associate professors (53% vs. 62%). After 10 years 26% of women were still at the associate level; the rate for men was 16%. Promotion rates were similar for faculty of color (60%) and white faculty (59%). However, when we examined rates for Asian/Asian American and URM faculty separately the rates diverged dramatically: 69% of Asian/Asian American faculty were promoted to full compared to 51% of URM faculty.

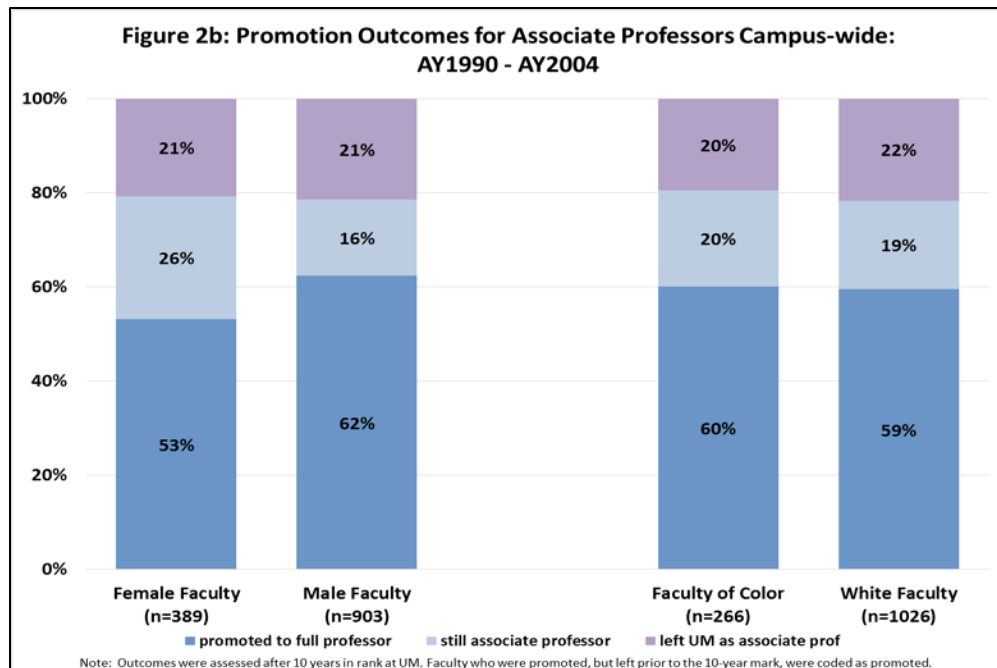
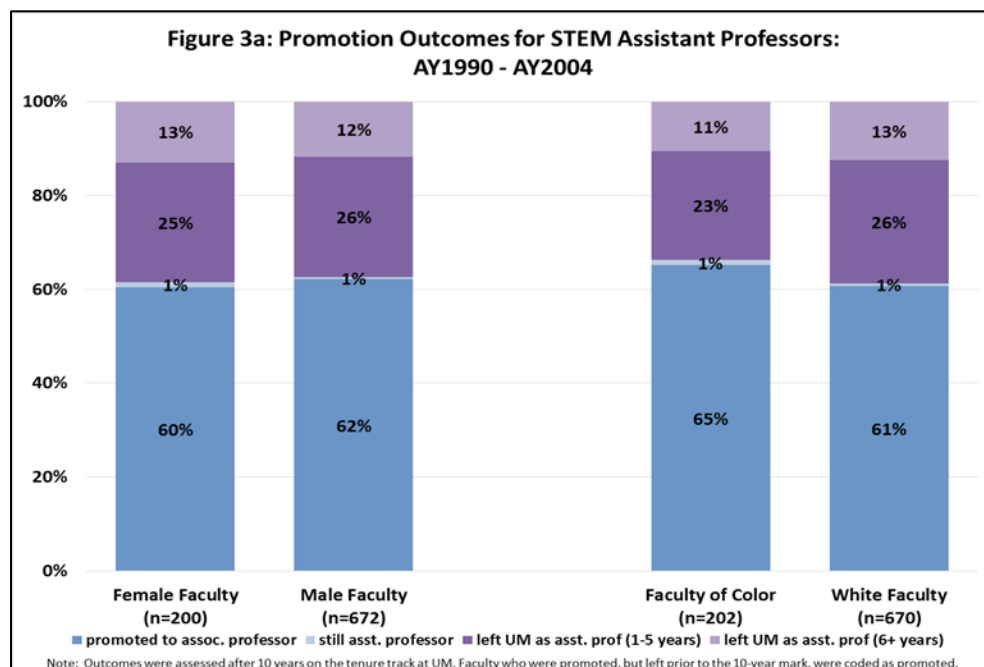
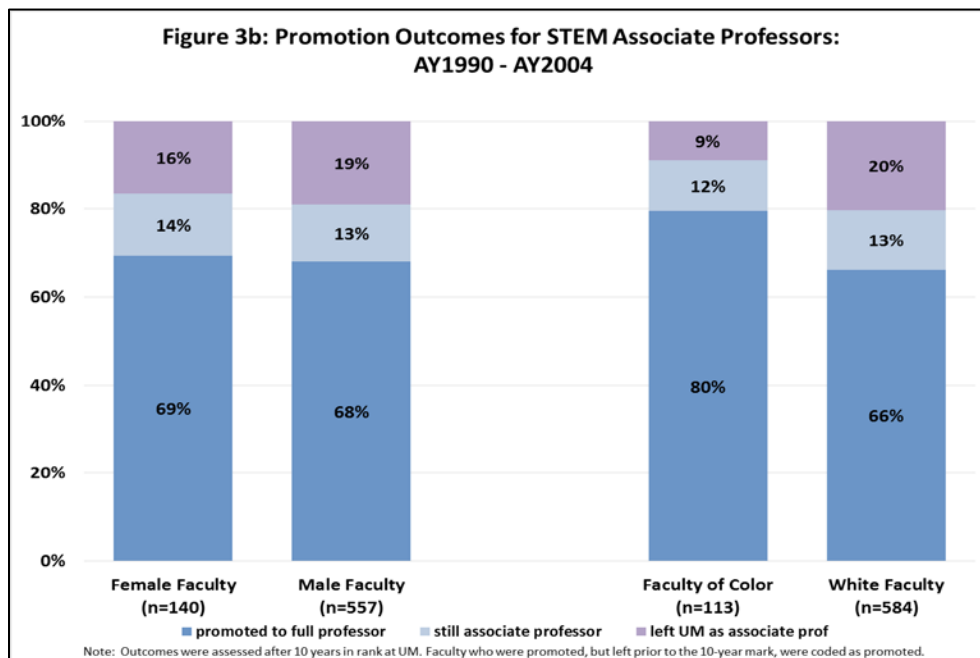


Figure 3a shows tenure outcomes for STEM assistant professors; here STEM is defined as faculty in the College of Engineering, LSA Natural Sciences Division, and the Medical School. The tenure rates by gender are fairly comparable (62% for men and 60% for women). Slightly more faculty of color (65%) were tenured compared to white faculty (61%); rates for Asian/Asian American and URM faculty were similar, 64% and 67%, respectively.



Average rates of promotion to full professor were quite similar by gender (69% for women and 68% for men; see Figure 3b). In contrast, after 10 years more faculty of color (80%) than white faculty (66%) had been promoted; specific rates for Asian/Asian American and URM faculty were 81% and 77%, respectively.



Promotion from associate to full professor is depicted differently in Figures 4a-5d. Figure 4a shows, by gender, the number of years in rank prior to promotion to full for all associate professors who started in the associate rank campus-wide during the period AY1990 to AY2005; it makes clear that men, on average, were in rank fewer years than women before being promoted to full professor. After 7 years, 37% of the women and 48% of the men were promoted. After 12 years the gap in rates narrowed somewhat but remained: 60% for women and 66% for men.

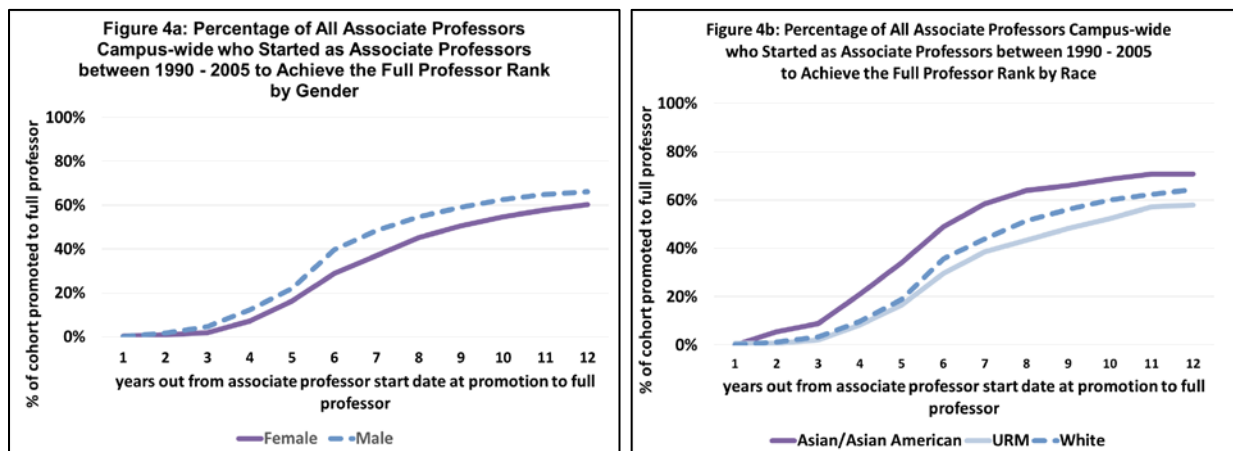


Figure 4b depicts the same data by race-ethnicity campus-wide. Here the figure shows that Asian/Asian American associate professors were, on average, promoted more quickly than URM and white faculty.

Rates were similar for white and URM faculty early on, but then diverged such that white faculty were promoted more quickly than URM faculty. After 12 years the rates were 58% for URM faculty, 64% for white faculty, and 71% for Asian/Asian American faculty.

Figure 4c-4d show campus-wide, by gender and race-ethnicity, respectively, the number of years in rank prior to promotion to full for only those associate professors who first started at UM as assistant professors and were later promoted to the associate rank during the period AY1990 to AY2005; unlike Figures 4a-4b, Figures 4c-4d do not include those faculty who were hired at the associate professor rank. The pattern of number of years in rank for the two groups is similar. Looking only at the promotion to full rates for those who came to UM as assistant professors, after 12 years, 58% of women and 66% of men, and 51% of URM, 65% of white, and 69% of Asian/Asian American faculty had been promoted to full professor.

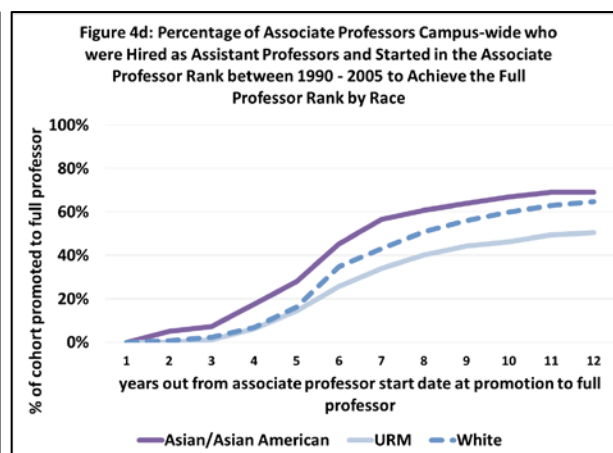
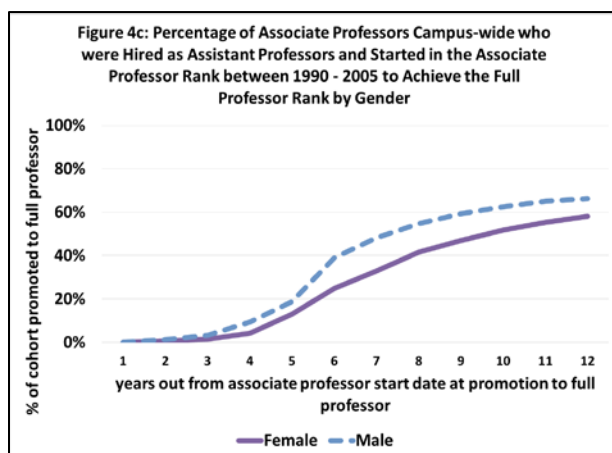
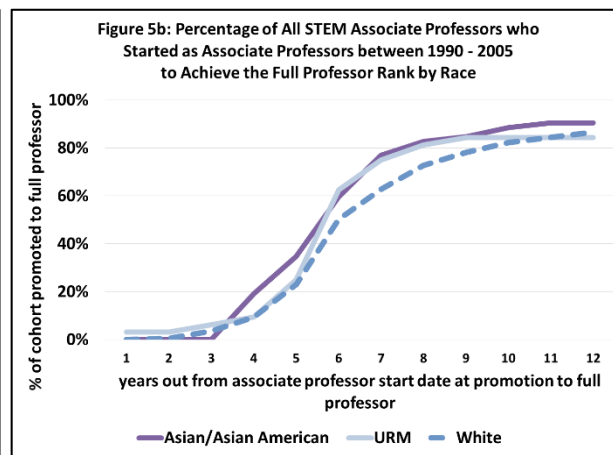
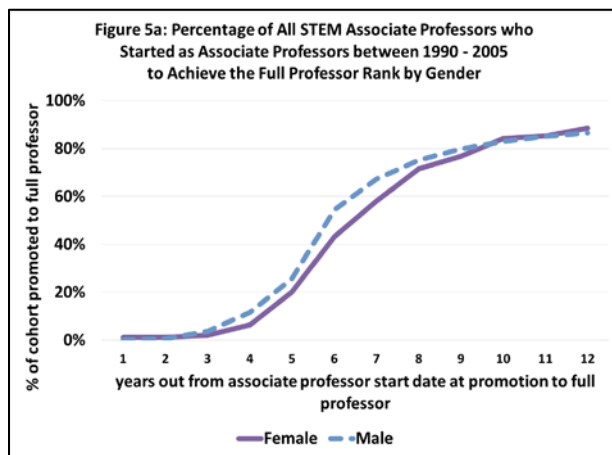
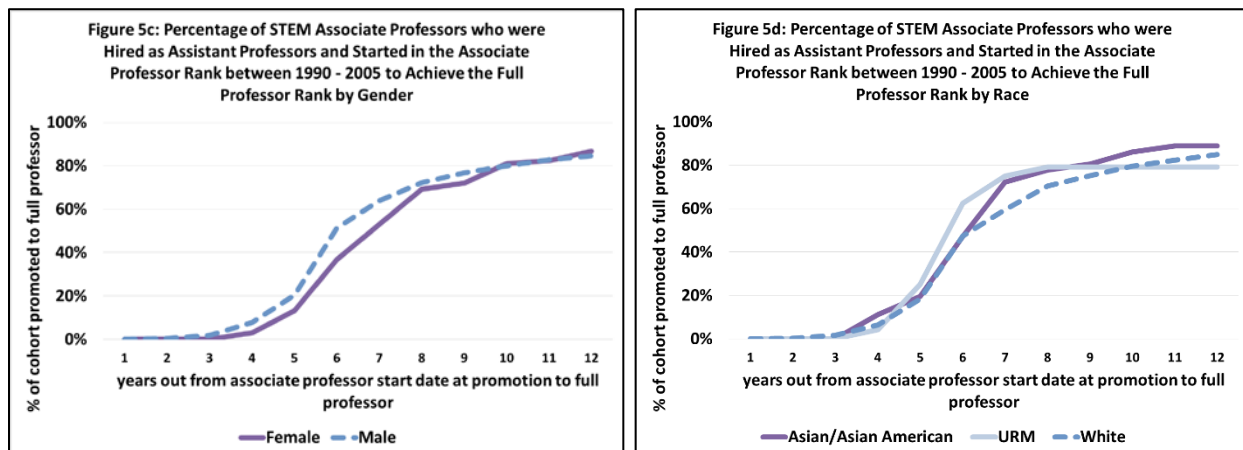


Figure 5a depicts years in associate professor rank before promotion to full professor by gender for all STEM associate professors who started between 1990 and 2005. The slope is somewhat steeper (after 12 years most men and women had been promoted to full) and by 10 years out the pattern was similar for men and women. However, during the period from 10 years after their start date as associate professors men, on average, took fewer years to be promoted; for example, at 7 years 67% of men and 58% of women had been promoted to full.



The pattern for all associate professors of color in STEM (figure 5b) is similar to that for faculty campus-wide (but with a steeper curve as with the gender analysis). On average, Asian/Asian American faculty were promoted more quickly than white faculty. The promotion rate of URM faculty looked most like that of white faculty early on (1-5 years) and later (10-12 years) and more like that of Asian/Asian American faculty in the intervening years.



Figures 5c-5d depict years in the associate professor rank by gender and race-ethnicity, respectively, only for those STEM faculty who were first hired as assistant professors. The figures show promotion rates that are nearly identical to those of all STEM associate professors regardless of their rank at the time of hire with one exception: the rate of promotion to full for URM faculty who were first hired as assistant professors was faster than those of Asian/Asian American and white faculty until 10 years in rank (when rates were similar). For example, after 6 years as associate, 63% of URM STEM associate professors had been promoted to full compared to 47% of Asian/Asian American and white faculty. After 12 years in rank, 87% of women and 85% of men, and 89% of Asian/Asian American, 85% of white, and 79% of URM STEM faculty who began at UM as assistant professors had been promoted to full professor.

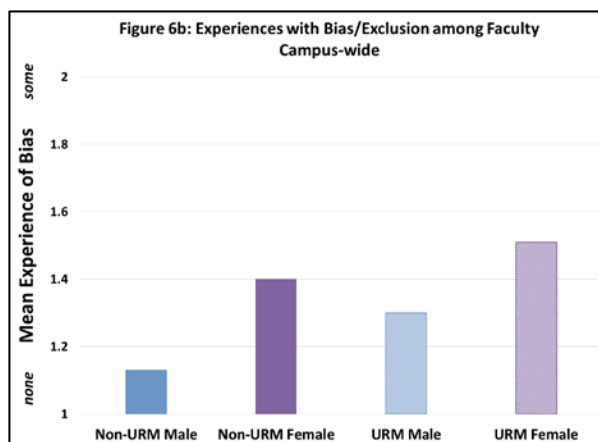
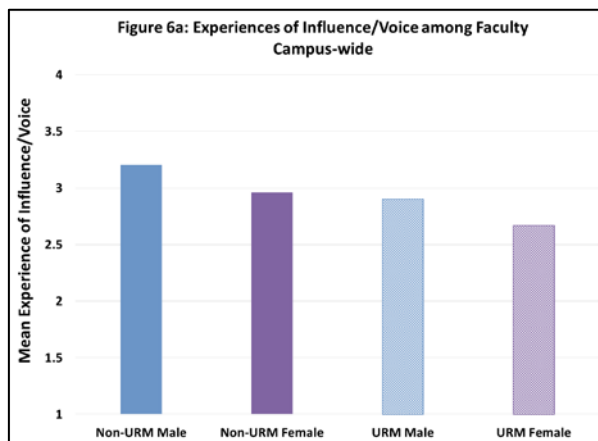
## Factors Associated with Job Satisfaction and Voluntarily Leaving UM

Faculty job satisfaction and interest in leaving are important considerations for faculty retention. UM ADVANCE regularly conducts studies that provide information about faculty experiences and the relationship between those experiences and faculty members' desires to remain at or leave the University of Michigan. This information is useful for illuminating factors associated with faculty satisfaction and factors that may contribute to their decision to leave UM, and how those experiences may differ by gender and/or race-ethnicity. Of particular focus for this report are experiences of the climate, the issue of critical mass, and mentoring.

## Climate and Faculty Job Satisfaction

Much of the data we have collected demonstrate a strong relationship between a positive work climate and faculty satisfaction. For example, the campus-wide survey of faculty conducted in 2012<sup>3</sup> revealed that faculty were more satisfied with their position at UM if they reported a positive department environment and were less satisfied if they experienced any form of gender discrimination or scholarly isolation. Moreover, faculty who reported more independence and autonomy in their work reported higher levels of job satisfaction. These findings held when controlling for other factors such as gender, race-ethnicity, tenure status and time at UM and were not different when analyzed separately for STEM faculty. There were no racial-ethnic differences on these measures; however, on average, women reported a less positive environment, less autonomy and influence and more scholarly isolation and experiences of gender discrimination.

Data from individual unit climate assessments<sup>4</sup> collected and aggregated over several years across many units, using some slightly different measures produced similar findings. Higher levels of satisfaction were associated with positive faculty relationships and interactions with department colleagues, and feelings of influence and voice in departmental matters. Lower levels of job satisfaction were related to experiences of bias and exclusion. Moreover, women and URM faculty were less likely to report having influence and voice within their departments and more likely to report experiences of bias and exclusion than their male and majority colleagues (see Figures 6a and 6b).



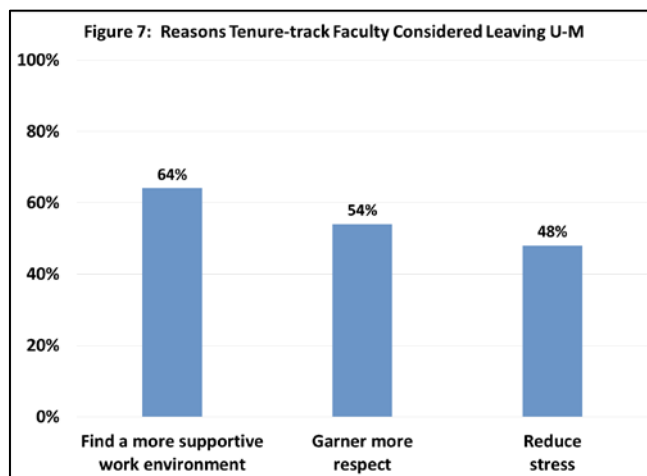
<sup>3</sup> In fall 2012 all tenure-track, research, and clinical faculty with paid appointments at the University of Michigan-Ann Arbor were surveyed by the UM ADVANCE Program. The purpose of the survey was to learn more about faculty members' experiences with department/unit climate issues, access to resources, career satisfaction, autonomy and influence, mentoring, teaching, and research. For the analyses included in the indicator report, our analyses focused on the tenure-track faculty. The full report can be found at: <http://advance.umich.edu/resources/ADVANCE-2012-R2-FullReport.pdf>

<sup>4</sup> This data set includes tenure-track faculty from departments and units that took part in ADVANCE climate assessments between 2008 and 2015. The sub-sample used in the indicator analyses ( $n = 527$ ) included: 222 in STEM units and 305 in non-STEM units; 329 men and 198 women; 459 non-URM faculty and 68 URM faculty. The climate surveys that were administered to these faculty included questions about job satisfaction, sources of stress, level of influence, and departmental/unit climate.

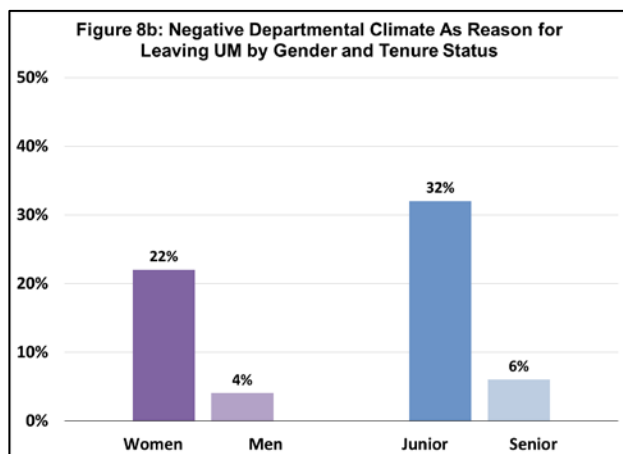
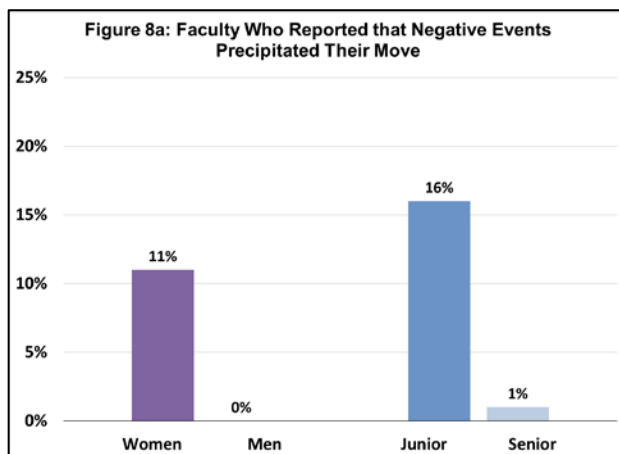
## Climate and Desire to Leave UM

Some faculty leave the University because their contracts are not renewed, they are not promoted, or they retire. Others voluntarily leave for a faculty position at other institutions or for positions outside of academia. This may be because they were drawn to an exciting new opportunity or because they were unhappy at Michigan and sought other options.

Thinking about leaving is not unusual for faculty. From our aggregated unit climate assessments we know that 72% of UM faculty have indicated that they have considered leaving the University; women faculty campus-wide, as well as those in STEM fields, are more likely than their male colleagues to report that they have thought about leaving UM. Faculty who have thought about leaving also reported on their reasons. A negative work environment is often a reason faculty cite. Nearly one-third (31%) thought about leaving “a great deal” to find a more supportive work environment (and another 33% thought about it “to some extent” for the same reason). A similar percentage identified the desire to garner more respect (22% thought about this “a great deal” and 32% considered it “to some extent”). Nearly half expressed a desire to leave UM to reduce stress (19% thought about it “a great deal” and 29% considered it “to some extent”); see Figure 7.



Thinking about leaving is, of course, not the same as actually leaving. Since AY2011 the ADVANCE Program has conducted an exit interview study of faculty who voluntarily leave UM<sup>5</sup> for another position and reports annually on the findings. We learned that many faculty came to the decision to



<sup>5</sup> The ADVANCE Program recently completed the fourth annual exit interview study with faculty who left U-M voluntarily as part of an ongoing assessment of issues that may affect faculty at the university and contribute to their decisions to leave. The aggregate findings from this study drew on interviews with faculty who voluntarily left between September 1, 2009, and May 31, 2013. The report is available on the ADVANCE Program Web site: <http://advance.umich.edu/researchreports.php>.

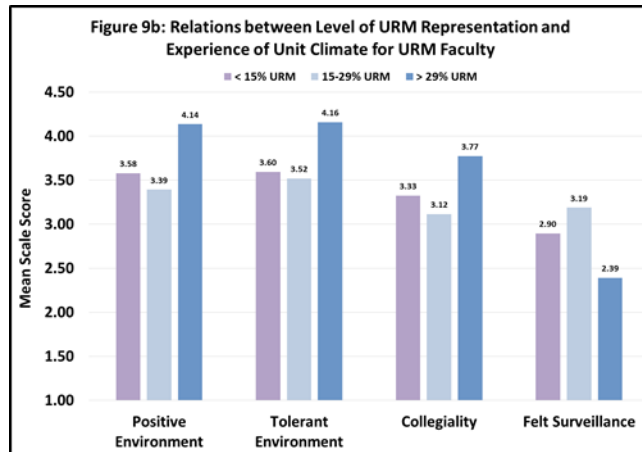
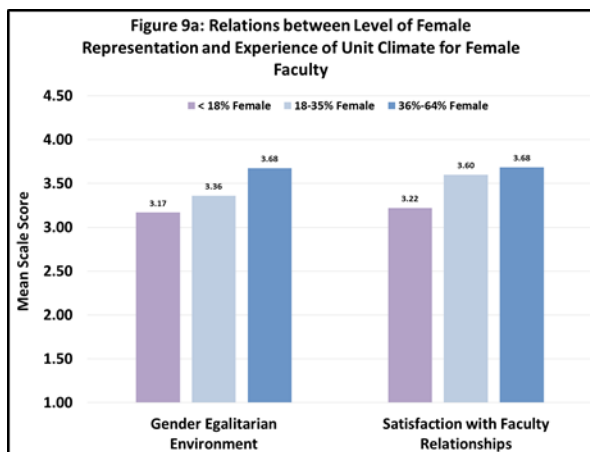
leave UM over a period of time. Some cited a negative work environment (13%) and lack of clarity and fairness about the tenure process (5%) as ultimately moving them toward a decision to leave UM. But for some faculty the decision to leave UM arose because of a specific negative event (such as experience of bias or discrimination or being passed over for a leadership position). Women and faculty at the assistant professor rank were significantly more likely than men and senior faculty to report that such adverse events precipitated their move, as well as to identify a negative climate more generally as their reason for leaving UM (see Figures 8a-b on previous page). Moreover, women were significantly more likely than men to indicate that a negative UM climate was the most important factor in their decision to leave UM.

### ***Critical Mass***

Many have maintained that it is important for underrepresented groups to move beyond token representation to what is often called critical mass (described as roughly 30%), arguing that as the percentage of an underrepresented group's membership increases, their ability to support one another, form coalitions, and affect the culture of the group also increases. One study<sup>6</sup>, for example, focused on relationships between proportions of female faculty in specific STEM disciplines (e.g., chemistry, mathematics) and their time allocations and work satisfaction. Consistent with critical mass theory, they found that as the proportion of women increased, female faculty were more satisfied with their workload and with their jobs more generally. They also found that women in STEM fields in which a critical mass had been achieved spent less time on undergraduate instruction and more time on activities linked to increased scholarly productivity (work with graduate students, work on research), compared to their female colleagues in fields where a critical mass had not been reached.

Using our own cumulative dataset of unit climate assessments (described previously), we considered the relationship between faculty composition by gender and race-ethnicity in individual departments and their faculty members' experiences of the climate. Our findings support the value of critical mass. For example, rating of gender egalitarianism and level of satisfaction with faculty relationships and interactions were more positive for women faculty in departments with higher female representation compared to women in departments with lower female representation (see Figure 9a on next page). The findings were even more striking when analyses were limited to those in STEM departments. Both men and women in sex balanced departments (generally equal number of men and women) reported higher job satisfaction, a more positive environment, a more gender egalitarian atmosphere, and higher levels of satisfaction with faculty relationships; moreover, women in STEM sex balanced departments reported less felt surveillance. Findings by race-ethnicity campus-wide were similar. URM faculty in departments with higher URM representation reported greater collegiality and a more positive and tolerant department environment and also reported feeling less scrutinized and surveilled (see Figure 9b).

<sup>6</sup> Carrigan, C., Quinn, K., & Riskin, E. A. (2011). The gendered division of labor among STEM faculty and the effects of critical mass. *Journal of Diversity in Higher Education*, 4(3), 131-146.

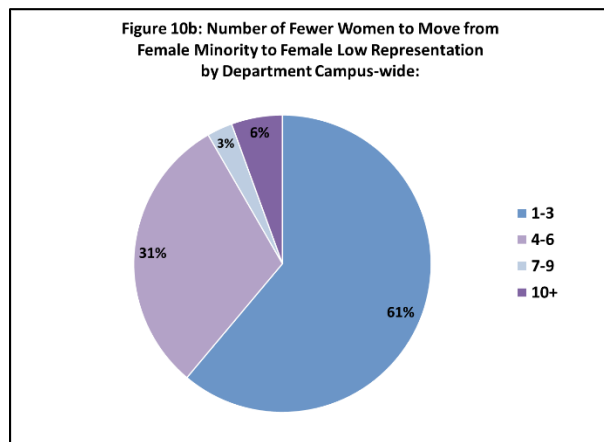
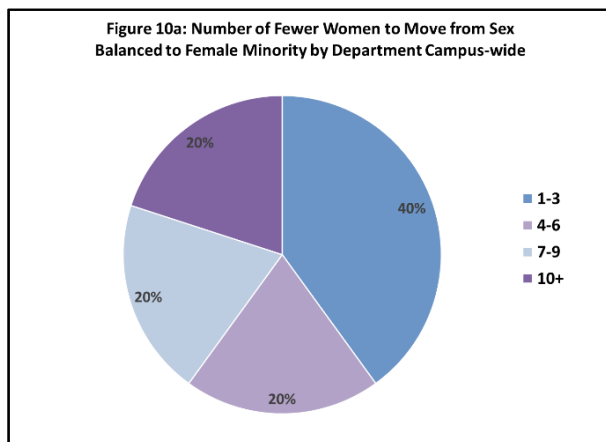


We considered these issues further by investigating the demographic makeup of individual UM departments. Following a procedure suggested by Frehill et al<sup>7</sup>, we assessed the sex ratio (percent of faculty by gender) and race/ethnicity ratio (percent of faculty by race/ethnicity) within each department in the three big schools: Engineering, LSA, and Medicine. The categories were developed to reflect the representation of these groups in the population more generally. Sex ratio categories were defined as follows: low female representation (0-17% female); female minority (18-35% female); sex balanced (36-64% female); male minority (65-82% female); and low male representation (83-100% female)<sup>8</sup>. The race-ethnicity categories were defined as: low underrepresented racial/ethnic group representation (0-14%); underrepresented racial-ethnic group minority (15-29%); and underrepresented minority group full representation (30% and over). Ideally, successful departments would include a critical mass of women and underrepresented minority faculty, falling generally in the female minority to sex balanced categories for women and full representation category for underrepresented minority faculty. In terms of gender, fewer than one-third of the departments<sup>9</sup> (29%), were sex balanced. Moreover, in 40% of these 20 departments the loss of only 1-3 women faculty would move the department to the female minority category--and potential loss of critical mass (see Figure 10a). More departments (36 or 51%) were categorized as female minority and 61% of these departments would only need to lose 1-3 female faculty members to move to the female low representation category (see Figure 10b).

<sup>7</sup> Frehill, L. M., Jeser-Cannavale, C., & Malley, J. E. (2007). Measuring outcomes: Intermediate indicators of institutional transformation. In A. J. Stewart, J. E. Malley, & D. LaVaquer-Manty (Eds.), *Transforming science and engineering: Advancing academic women* (298-317). Ann Arbor, MI: University of Michigan Press.

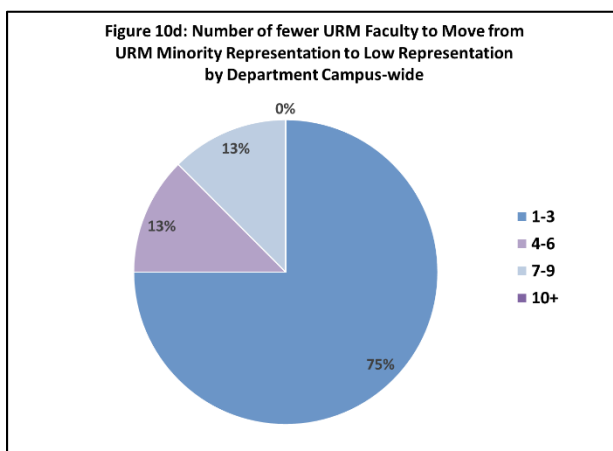
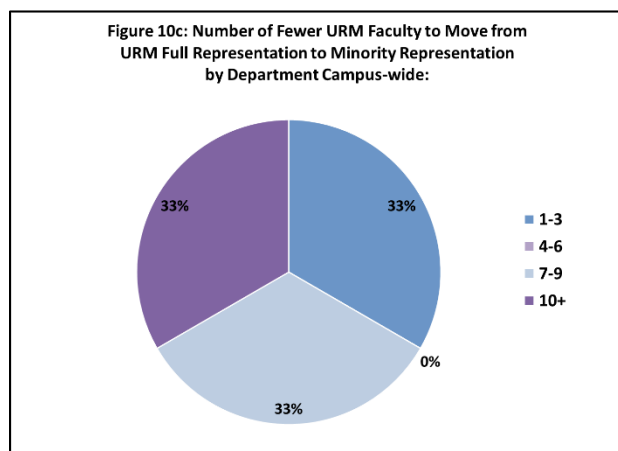
<sup>8</sup> Due to the small number of female faculty, an addition/loss of one female will result in a larger corresponding percentage change than if that addition/loss had been one male.

<sup>9</sup> Women's Studies was excluded from these analyses.

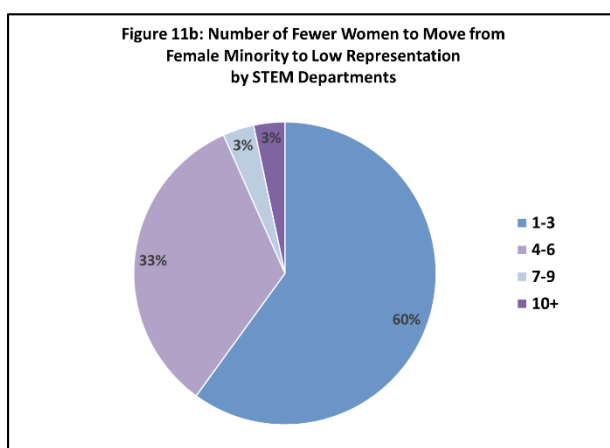
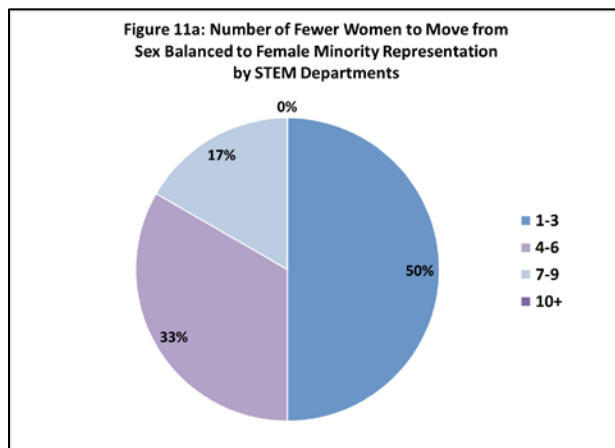


*[Note: In this series of charts the legend (e.g., 1-3) represents the number of women or URM faculty lost that would cause a department category change representing fewer faculty in that group.]*

Campus-wide only three of the departments (4%) had faculty demographics that constituted full representation (or critical mass) for URM faculty. Moreover, for one third of these departments (33%) the loss of only 1-3 URM faculty would result in a departmental change to URM minority status. Only eight departments currently have that status (11%; see Figure 10c) and 75% of these departments would only need to lose 1-3 URM faculty for their categorization to change to URM low representation (see Figure 10d).



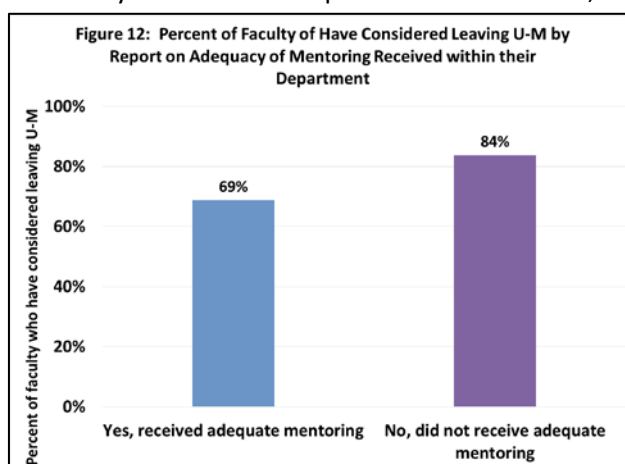
Looking just at departments in STEM fields we note that only 6 (12%) are sex balanced. Of these, half would only need to lose 1-3 women faculty to move to the female minority status (Figure 11a on next page). Of the 30 female minority departments (61% of all STEM departments) 60% would move to the female low representation category with the loss of 1-3 female faculty colleagues (Figure 11b). Moreover, all but 5 STEM departments (90%) were categorized as URM low representation (thus, did not reach critical mass); the remaining five were URM minority.



## Mentoring

Much of the data we have collected indicates that mentoring, particularly in the case of faculty at the assistant professor level, plays a key role in faculty satisfaction and success, and thus, is likely important to retention efforts. A 2010 study of tenure track assistant professors in the Medical School<sup>10</sup> who were just completing their third year review suggested that mentoring was an important contributing factor to their success. A recent study of STEM newly appointed assistant professors who participated in ADVANCE's Launch Program (a mentoring committee in the first year) provides additional evidence for the importance of mentoring. Compared to similar newly appointed STEM assistant professors, those who participated in the more intense Launch mentoring program reported that their research space was fully available more quickly (key to them being able to pursue their scholarly work), and their networks were expanded to include more access to senior UM faculty outside their departments. Moreover, women Launch participants were more likely to agree that their colleagues create a respectful work environment compared to women non-participants.

Poor or no mentoring has also been found to be related to faculty members' thoughts about leaving UM. Drawing again on the cumulative unit level climate data we found that adequacy of mentoring for faculty at all ranks was related to thoughts about leaving UM; those faculty who reported that they had not received



<sup>10</sup> The UM ADVANCE Program conducted an interview study of junior (assistant professor) tenure track faculty in the Medical School to identify those factors that allowed junior tenure track faculty to thrive and facilitated their success at the Medical School. A total of sixty-one assistant professor tenure track faculty who had been on the tenure track for three to four years, but had not been promoted to associate professor as of the summer 2010, participated in the study.

adequate mentoring in their unit were more likely to report that they had considered leaving UM (Figure 12 on previous page). Moreover, of the assistant professors who participated in the exit interview study, fully half reported that inadequate mentoring and/or professional development opportunities factored into their decision to leave UM.

## Summary of Retention Issues

The University invests a good deal in new faculty and the expectation is that they will succeed. Loss of faculty may mean a failure of the University to provide them with the resources and support they need to be successful. We considered several factors related to faculty success and promotion as well as issues that factor into decisions to leave UM, including, climate, critical mass and mentoring and, when possible, how those factors may differ for different groups.

We found that women were tenured at a slightly lower rate than men. Rates for faculty of color were, generally not different. In terms of promotion from associate to full professor we found important gender and race-ethnicity differences. On average, men were in the associate professor rank fewer years than women; this finding held for faculty campus-wide as well as for STEM faculty. Similarly, Asian/Asian American faculty were promoted to full more quickly than their white and URM colleagues looking both campus-wide and when analysis was limited to STEM faculty. Moreover, campus-wide, white faculty were at the rank of associate professor fewer years, on average than URM faculty.

However, even faculty who are successfully promoted may be dissatisfied with their position and choose to leave UM. Our data suggest a strong link between faculty experiences of the climate (e.g., incidences of bias and discrimination), and job satisfaction and, relatedly, the desire to leave UM. Experiences of a negative climate, including specific experiences of bias, are often cited as a reason faculty voluntarily choose to leave UM. Further, we again note some important differences by gender and race-ethnicity. Women and URM faculty were more likely to report experiences of bias and exclusion and were less likely to report having influence and voice within their departments. Moreover, URM faculty, in particular, reported a strong association between experiencing positive faculty relationships and job satisfaction.

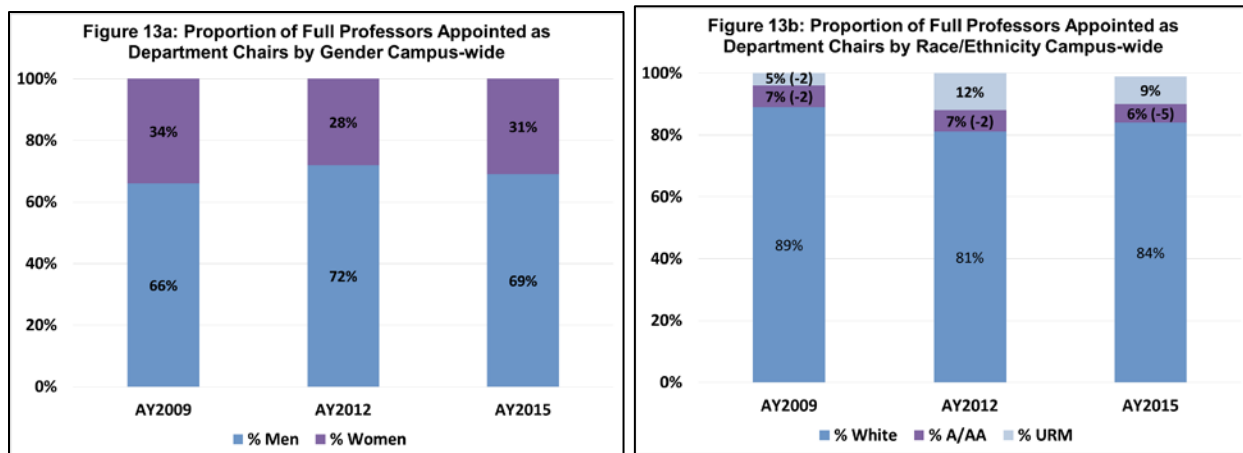
Climate is also affected by faculty demographics and obtaining some level of critical mass within the department can be instrumental in addressing climate issues for underrepresented groups. Our data show that critical mass is related to more positive experiences of the climate; unfortunately, most departments, especially in the STEM fields, do not include critical masses of women and URM faculty. Moreover, even those that do provide critical mass are vulnerable to a negative change with the loss of just a few women.

Finally, mentoring, especially at the assistant professor level, has been found to be related to faculty success and tenure. Moreover, half of all junior faculty participants in the exit interview study reported that poor mentoring was a primary motivator in the decision to leave UM.

## LEADERSHIP

Here we consider opportunities for leadership and the extent to which they are related to faculty retention. The lack of leadership prospects was cited by many faculty in the exit study as contributing to their decision to leave UM; more than half of the tenured faculty we interviewed who left UM for other positions identified having no leadership opportunities at UM as at least one factor in their decisions to leave. Moreover, as previously noted, the ability to influence decision-making was found to be positively associated with job satisfaction in our climate survey data. These and other data raise questions about differences in leadership experiences as a function of gender and race-ethnicity. Indeed, URM faculty were less likely than non-URM faculty to report having a voice in departmental decision-making and having the opportunity to serve on important departmental committees. In a study of senior faculty in the College of Engineering<sup>11</sup> many of the women faculty noted critical impediments to their taking on leadership positions, including sexist attitudes about women and a perceived lack of support for carrying out leadership roles.

We also examined the demographic makeup of faculty in leadership positions, including chairs, administrative positions and executive committee memberships. Figure 13a depicts the percentage by gender of faculty who held chair positions for AY2009, AY2012 and AY2015. The proportion of women who held chair appointments decreased over time from 34% in AY2009 to 31% in AY2015 (in AY2012 the rate was 28%). Figure 13b reports the same by race-ethnicity. Here the rate for URM faculty increased from 5% to 9% from AY2009 to AY2015 (and was 12% in AY2012). The rate for Asian/Asian American

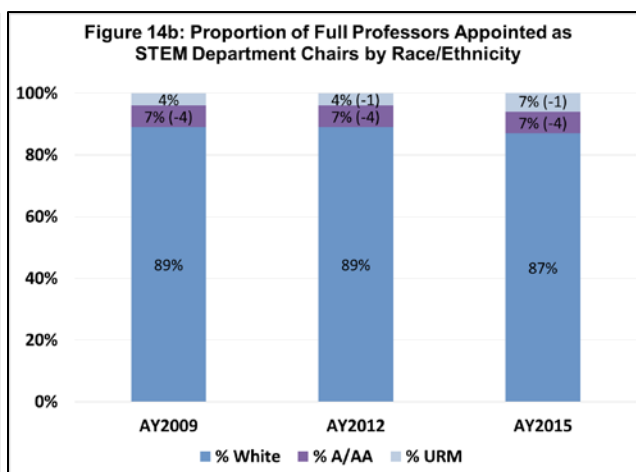
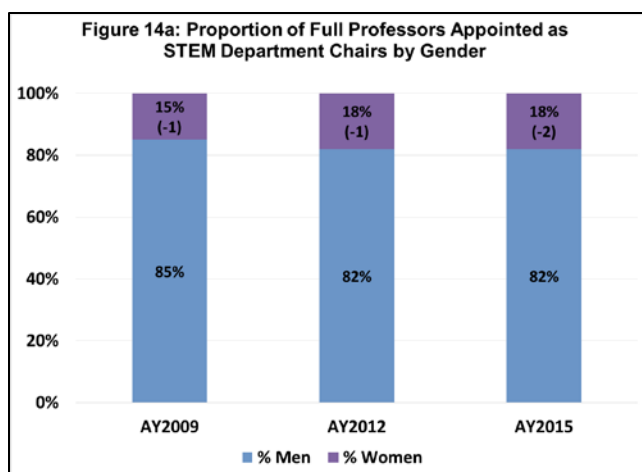


[Note: in this series of figures the negative number in parentheses indicates the number of faculty needed to obtain the same rate to that of men (in the case of gender) and white faculty (in the case of race-ethnicity).]

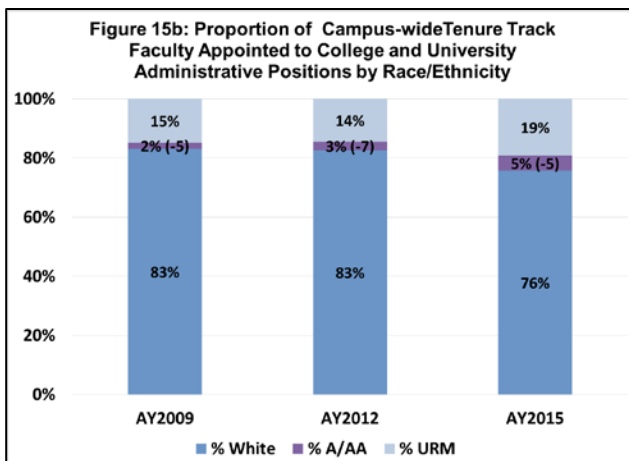
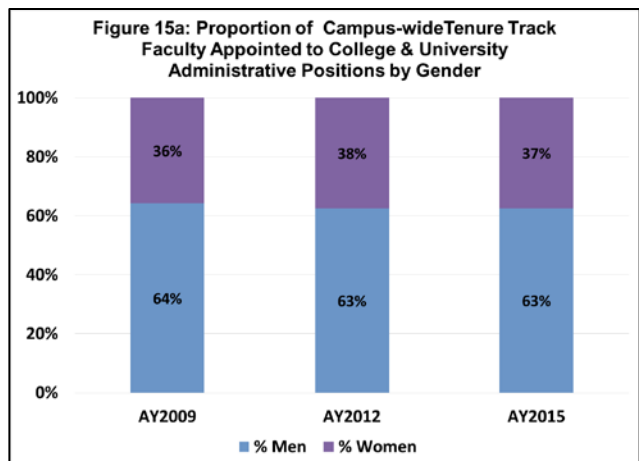
<sup>11</sup> In fall 2013 ADVANCE survey female full professors to learn their views about and experiences of leadership at the University. A summary of the findings can be found at: <http://advance.umich.edu/resources/CoE-Leadership-Report-ES-2014.pdf>

faculty remained stable (7% in AY2009 and 6% in 2015). Moreover, at each time point their rate of serving was less than that for white faculty. For example, in AY2015 five more Asian/Asian American faculty would need to have held a chair position for them to serve at the same rate as their white colleagues.

In the case of STEM faculty, even more of the chair positions were held by men (85% in AY2009 and 82% in AY2015; see Figure 14a); by AY2015 two more women would have needed to hold chair positions for women to serve at the same rate as men. Rates for faculty of color were similar (and low) to those campus-wide. Again, most chairs were white (89% in AY2009 and 87% in AY2015; see Figure 14b). At all three time points four more Asian/Asian American faculty would have needed to hold the position of chair to have served at the same rate as white faculty; for URM faculty the number in AY2012 and Y2015 was one.



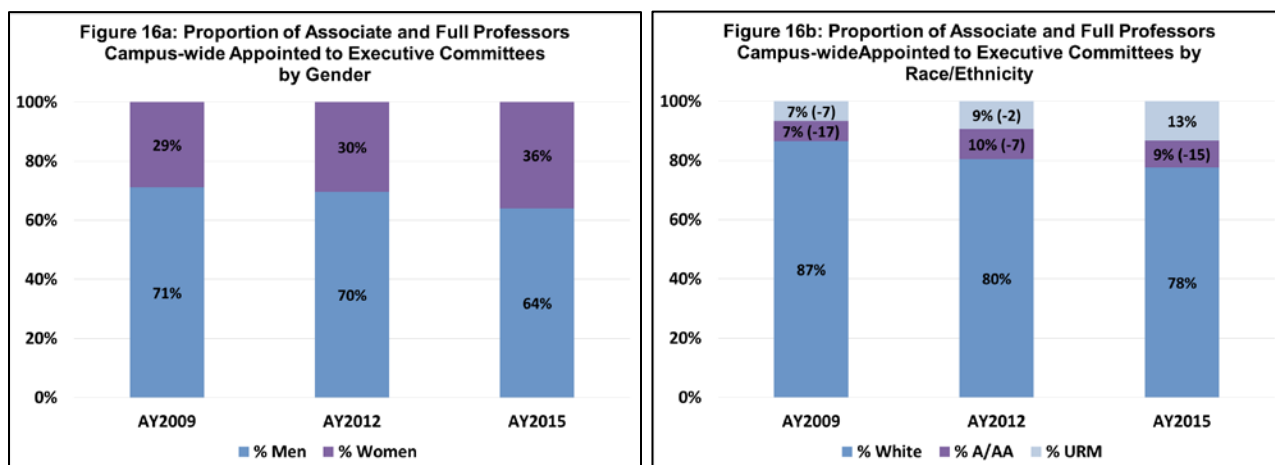
A similar analysis was conducted for higher level administrative positions at the college and University level (in this case it did not make sense to also look separately at STEM faculty). We examined faculty composition in administrative positions by gender and race-ethnicity to assess representation on these positions and to consider change over time. Opportunity for leadership was examined campus-wide by considering the demographic makeup of college and University-level administrative positions filled by full professors (e.g., dean/associate dean, provost/associate provost, president/vice president) at three points in time: AY2009, AY2012 and AY2015 by gender and race-ethnicity. Figure 15a reports the



percent male and female who held these positions at each time point and shows that the rate at which women have held high level administrative positions has been constant over the six year period (36% in AY2009 and 37% in AY2015).

Results for the same analysis by race-ethnicity depicted in Figure 15b reflect a similar but slightly more positive pattern. Rates for white faculty decreased just slightly (from 83% to 76%); the percent of faculty holding high level administrative position who were Asian/Asian American increased from 2% to 5%; rates for URM faculty increased from 15% to 19%. However, despite the increase in the case of Asian/Asian American faculty, at all three time points Asian/Asian American faculty were represented at a rate lower than white faculty given the population at the time; for example, in AY2015 five more Asian/Asian American faculty would have needed to have held high level administrative positions for them to have served at the same rate as white faculty.

We also considered faculty who were appointed to executive committees at the department or college level by gender and race-ethnicity. Campus-wide the rate at which men served on those committees declined somewhat from 71% in AY2009 to 64% in AY2015 (see Figure 16a). Similarly, the rate at which white faculty served also declined from 87% in AY2009 to 78% in AY2015 (see Figure 16b); However, at all three time points the rate for Asian/Asian American faculty was lower than what would be expected given the rate for white faculty; in AY2015 fifteen more Asian/Asian American faculty would have needed to serve on the executive committees to have served at the same rate as white faculty.



## Summary of Leadership Issues

Like climate issues, opportunities for leadership can have an important and positive effect on faculty job satisfaction; similarly, the lack of these opportunities can cause faculty to seek those options elsewhere. In our data, having a voice in departmental decision-making was associated with higher levels of job satisfaction. Moreover, lack of leadership opportunities was cited as a reason for seeking employment elsewhere for many faculty who chose to leave UM.

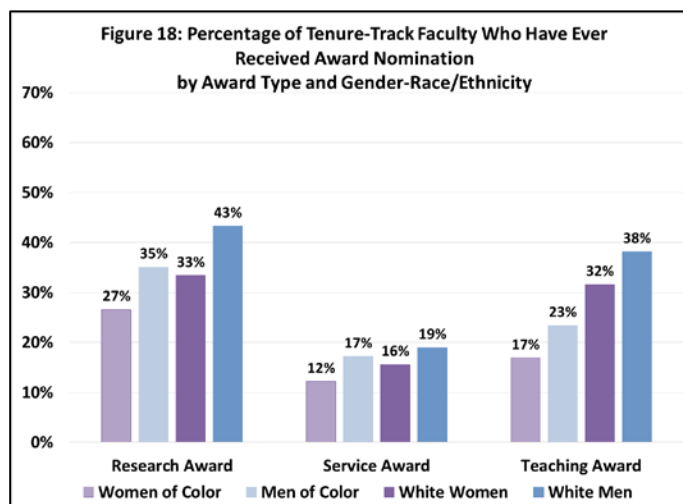
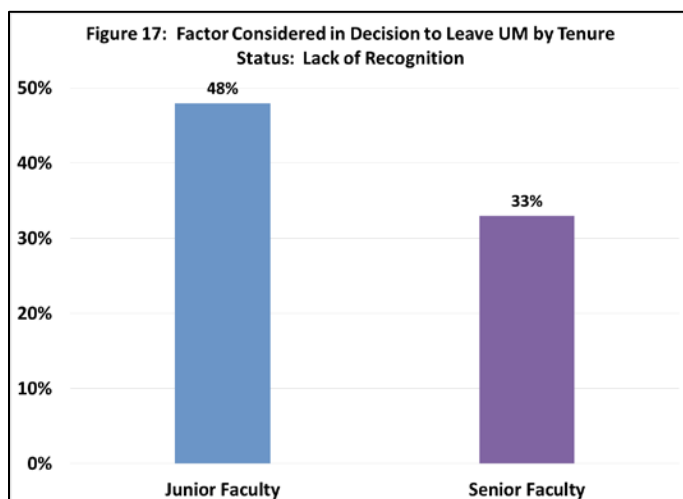
Examining the demographics of those who have held leadership positions over time revealed some important differences by gender and race-ethnicity. For example, across the years examined,

Asian/Asian American faculty served as chairs or high level administrators and served on executive committees at lower rates than white faculty. The same was true for URM faculty in the case of executive committees in AY2009 and AY2012. Moreover, women served as chairs of STEM departments at a lower rate than their male colleagues. These differences by gender and race-ethnicity are also reflected in faculty experiences within their departments. URM faculty were less likely than their majority colleagues to report having a voice in the department decision-making and having the opportunity to serve on important departmental committees. In addition, senior women in one college noted critical impediments to their taking on leadership opportunities that their male colleagues did not experience.

## RECOGNITION

Valuing a faculty member's contributions has generally been considered important for retaining faculty and our data support this view. One third of senior faculty identified the lack of recognition of their contributions by colleagues as a factor in their decision to leave UM. Half of the assistant professors interviewed for the exit study reported that a lack of recognition of their contributions from department colleagues factored into their decision to leave (Figure 17); moreover, one-third of the junior faculty identified a lack of recognition as *the most important factor* they considered. Across all faculty interviewed, half indicated that a counter offer from the University might have encouraged them to stay. Moreover, those who did not receive a counter offer were more likely to report a lack of recognition of and appreciation for their contributions to the department, as well as an unsupportive work environment, as the most important factors in their decision to leave UM. In the case of the assistant professor participants in the Medical School study, those identified by the dean as successful were more likely to report that their department colleagues valued their research.

We also note some gender and race-ethnicity differences. Data from the 2012 campus-wide climate survey revealed that men and white faculty were more likely than

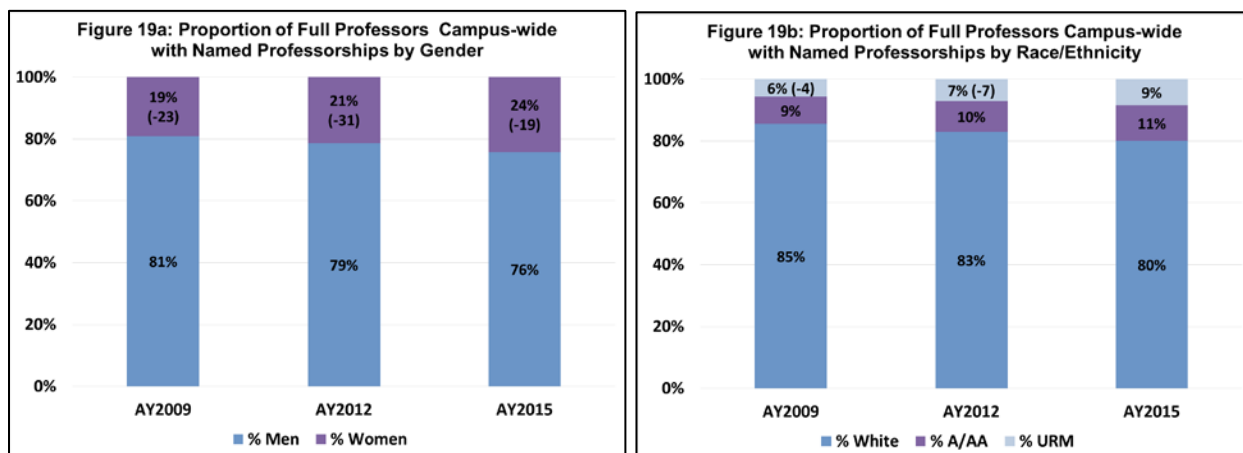


women and faculty of color to report being nominated for a research or a teaching award (Figure 18). Similarly, STEM women were less likely than male colleagues to be nominated for research and teaching awards; they were also less likely to have been nominated for a service award and were more likely to report that they had *not* been nominated for an award for which they felt qualified. STEM faculty of color were less likely to have been nominated for a teaching award.

Named professorships are a common way for faculty to be recognized and we examined this form of recognition with attention to potential gender and race-ethnicity differences. When considering named professorships, we included the following four categories of honors: Distinguished University Professor (to recognize exceptional scholarly achievement, national and international reputation, and superior teaching skills), Collegiate Professor (for outstanding scholarship, teaching, and service), Endowed Chair, and Thurnau Professor (for excellence in teaching). Since these appointments are generally limited to full professors, we only considered faculty at this rank.

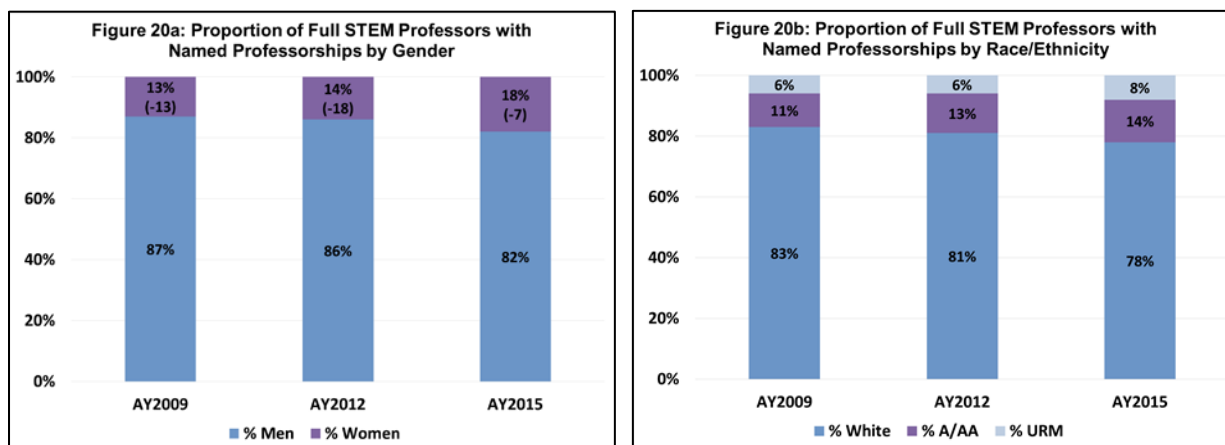
Figure 19a shows the rate by gender of full professors with named professorships at three time points: AY2009; AY2012 and AY2015 and reveals that the rate for women has increased slightly over time (from 19% in AY2009 to 24% in AY2015). Nevertheless, at no point were women represented at the same rate as their male colleagues; in AY2015 19 more women would need to have held a named professorship for there to be parity with men.

Figure 19b depicts the same data organized by race-ethnicity. In this case the rates for Asian/Asian in AY2015 and 6% in AY2009 and 9% in AY2015, respectively). However, by AY2015, rates were not lower than one would expect if faculty from these race-ethnicity groups held named professorships at the same rate as white faculty. Rates were lower for URM faculty at the two earlier data points.



*Note: in this series of figures the negative number in parentheses indicates the number of faculty needed to obtain the same rate to that of men (in the case of gender) and white faculty (in the case of race-ethnicity).]*

Looking at the situation for STEM faculty we find a similar pattern. The rate for men holding named professorships declined slightly over time but was still 82% in AY2015 and 7 more women would have needed to hold named professorships for the gender rates to be equal (see Figure 20a). Similarly, most named professorships were held by white faculty (78% in AY2015; see Figure 20b). In that same year the rate was 14% for Asian/Asian American faculty and 8% for URM faculty; they were not less than what would have been expected to have parity with white faculty.



## Summary of Recognition Issues

Our data suggest that recognition is important to faculty job satisfaction, and the lack of recognition, especially for junior faculty, can have negative implications for retention. Moreover, we found in one study of assistant professors that feeling valued for one's research by colleagues was positively associated with their tenure. However, we also note important differences in rates of recognition by gender and race-ethnicity, as seen in the skewed distribution of named professorships and award for research, service and teaching. Generally, women and URM faculty were awarded named professorships at rates lower than men and white faculty, respectively. Women and faculty of color were also less likely than men and white faculty to receive research and teaching awards.

## CONCLUSIONS

This report considers issues associated with faculty retention and satisfaction: specifically faculty success through tenure and promotion as well as factors that may compel faculty to seek employment elsewhere. Our data make clear that working conditions, including the climate, mentoring of junior faculty, leadership opportunities, and recognition, have important implications for faculty job satisfaction and retention.

We also note how these experiences may differ for different groups of faculty. We've identified several areas where women's experiences differ importantly from men's. Women are tenured at a lower rate and they are, on average, in the rank of associate professor longer than men prior to promotion to full. Women report a more negative climate than men, perhaps, in part, because they are in departments in

which women do not enjoy a critical mass. Further, women are more likely than men to identify a negative climate or a negative event (such as bias or discrimination) as a reason for leaving UM. Women faculty at UM also receive less formal recognition than men. They are less likely to be awarded named professorships and to have received awards for their research and teaching.

Similar differences are reported by race-ethnicity. Asian/Asian American and white faculty are at the associate professor rank fewer years than URM faculty. Our data also indicate that URM faculty report higher job satisfaction when they enjoy positive relationship among colleagues; however, they are also more likely to experience a negative department climate in part due to low representation of URM faculty within their departments. URM faculty are also less likely to report having a voice in departmental decision-making and serving on important departmental committees. Similarly, Asian/Asian American faculty serve as chairs, on executive committees, and in high level administrative positions at rates lower than white faculty. Moreover, like women, faculty of color in general are less likely to receive awards for their research and their teaching.

Differences are also reported by rank. Specifically, for faculty at the assistant professor level mentoring and recognition can be critical. One study revealed a positive relationship between mentoring and tenure success and another noted a similar relationship between inadequate mentoring and the decision to leave UM for junior faculty. These studies also show that assistant professors who feel their colleagues value their work are more likely to be tenured and those who do not feel valued are more likely to leave.

A fundamental goal of the University is to recruit excellent faculty; but, it is equally important to retain these faculty through their successful promotion through the ranks and by establishing a positive work environment. It is clear that addressing issues of climate, mentoring of junior faculty, recognition of faculty accomplishments, and opportunities for decision-making and leadership are important for faculty retention, especially in the case of women and faculty of color. Moreover, it is critical that these underrepresented groups move through the tenure and promotion process at the same rate as their white, male colleagues.

Particular attention should be paid to the notion of critical mass and the need for sufficient numbers of underrepresented groups within departments. Critical mass is associated with positive experiences of the department climate for women and URM faculty; however, its achievement is often tenuous and can easily be lost with even small changes in faculty make-up. Clearly, then, faculty retention is particularly important given the University's interest in a diverse campus and special consideration of these issues should be made to ensure faculty of color and women have positive and successful experiences at UM.

**Institutional Indicators Required by NSF ADVANCE**

1. n (%) of women faculty in S & E by department
2. n (%) of women in tenure-line positions by rank/department
3. tenure promotion outcomes by gender
4. years in rank by gender
5. time at institution and attrition by gender
6. n (%) of women in S & E who are in non-tenure-track positions
7. n (%) of women S & E in administrative positions
8. n of women S & E faculty in endowed/named chairs
9. n (%) of women S & E faculty on promotion and tenure committees
10. salary of S & E faculty by gender (with controls)
11. space allocation of S & E faculty by gender (with controls )
12. start-up packages of newly hired S & E faculty by gender (with controls)