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A Data-gathering Effort on STEM v. Non-STEM Faculty for Assessing Equity in Recruitment, Retention, and Promotion at a Large R1 Institution

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Work-in-progress: A data gathering effort on STEM versus non-STEM faculty for assessing equity in recruitment, retention, and promotion at a large R1 institution

Abstract
This work-in-progress submission is a follow-on to a work-in-progress paper presented at ASEE 2023 [1], supported under a National Science Foundation (NSF) ADVANCE Catalyst grant. Our Catalyst grant team is comprised of a multi-disciplinary group of researchers leveraging expertise in quantitative and qualitative assessment in the social sciences, engineering, policy, and academic leadership. Our comprehensive data gathering effort seeks to assess equity in recruitment, hiring, renewal, promotion, and tenure activities at a large R1 public institution for both tenure-line and term (contingent) faculty. We place an intersectional emphasis on this analysis, examining whether institutional practices yield disparate outcomes on faculty not just along lines of gender and race, but also unique combinations thereof.

The prior ASEE paper [1] focused on the data gathering effort for startup packages and defining who, specifically, constitute "STEM" faculty. In this paper, we provide an update on the holistic data gathering effort in which we sought to acquire and assimilate twelve quantitative data sets to assess institutional culture, recruitment and hiring, retention, and equity. Furthermore, the assembled quantitative data lays the framework for planned qualitative study through interviews to extend quantitative findings.

We intend to leverage that data in an effort to discern (1) if there are racial and gender disparities in recruitment, hiring, retention, and promotion of STEM faculty at our institution, (2) what institutional practices, policies, and cultural norms create and/or reinforce these disparities, and (3) what effective practices should be implemented to address identified disparities. This paper summarizes the data sets used, analysis to date, provides insight into the critical role of stakeholder engagement in acquiring and working with disparate data sources for this type of intersectional analysis, and outlines intended next steps, including qualitative interviews and development of a data-informed five-year faculty equity strategic plan.

1.0 Quantitative Data Sets

Prior to applying for the Catalyst grant, we met with the vice president for HR, the deans of the Colleges of Engineering and Computing, Science, and Humanities and Social Sciences, as well as the University Provost. All these leaders expressed support for the grant proposal and once we received the grant award, we met key data stewards to discuss how to acquire the data sets we needed. Specifically, we sought data sets from four key areas: **institutional culture** (Harvard's Collaborative on Academic Careers in Higher Education (COACHE) Faculty Satisfaction survey data, Quality of Work Life data, and Gallup Faculty and Staff Experience data); **recruitment and hiring** (HR applicant pool data and search committee data); **retention** (COACHE Faculty Retention and Exit Survey data, HR faculty separation data, COVID-19 impact data); and **equity** (faculty salary history data, startup funding data, renewal, promotion, and tenure (RPT) success data, and study leave data). These four key areas are discussed in Sections 1.1-1.4, with subsections corresponding to each data set. As this is a work-in-progress, some subsections are placeholders

in reflection of ongoing study. Furthermore, in this paper, we provide high level summaries of key conclusions from inspection of these data sets. Further data assimilation is ongoing work.

1.1 Institutional Culture

Institutional culture in higher education is a vehicle for implementing organizational and institutional change [2]. The culture of an institution of higher education is shaped by numerous factors, including demographic, economic, and political factors, as well as internal factors such as its history, and the processes that allow the institution to function [3]. Part of those processes involve things that can be assessed via survey, such as the Harvard COACHE instrument, which includes assessment of "[s]upport for teaching, research and service, shared governance, and appreciation and recognition for work" [4]. Our study evaluates several data sets that measured the institutional culture of Mason, including Harvard COACHE, Quality of Work Life, and Gallup Faculty and Staff Experience survey data sets.

1.1.1 COACHE Faculty Satisfaction

The Harvard Collaborative on Academic Careers in Higher Education (COACHE) survey provided George Mason with a Faculty Job Satisfaction Report that summarizes the quantitative results across the COACHE themes, noting strengths and concerns. The COACHE themes include the nature of work: research, teaching, and service; tenure and promotion; personal and family policies; and institutional governance, among others. George Mason has administered two iterations of the survey, one in 2019 and one in 2022. The 2019 survey had an overall response rate of 63%; women's response rate was 71%, faculty of color's was 63%, and that of underrepresented minorities ("individuals who identify as neither White, non-Hispanic nor Asian/Asian-American" [5]) was 67%. The 2022 survey had an overall response rate of 58%; women's response rate was 64%, faculty of color's was 55%, and the rate for underrepresented minorities was 56%. Mason's areas of strength and areas for growth according to the 2019 survey are listed in Table 1.

Areas of Strength	Areas for Growth
Faculty would recommend Mason	Salary and compensation
Departmental/LAU culture and leadership	Renewal, promotion, and tenure
Faculty leadership	Mentoring and mentoring support
Support for specific domains in teaching and learning	Appreciation and recognition
Visible leadership for support of diversity	Support and reward for interdisciplinary work

Table 1: General observations from 2019 COACHE survey [5]. LAU stands for "local academic unit," a department equivalent.

For the 2022 survey, the areas of strength and the areas of growth remained constant. Figure 1 shows a representation of the best and worst aspects of working at Mason. Of note is the fact that faculty found diversity and the quality and support of colleagues to be among the best aspects of working at Mason.
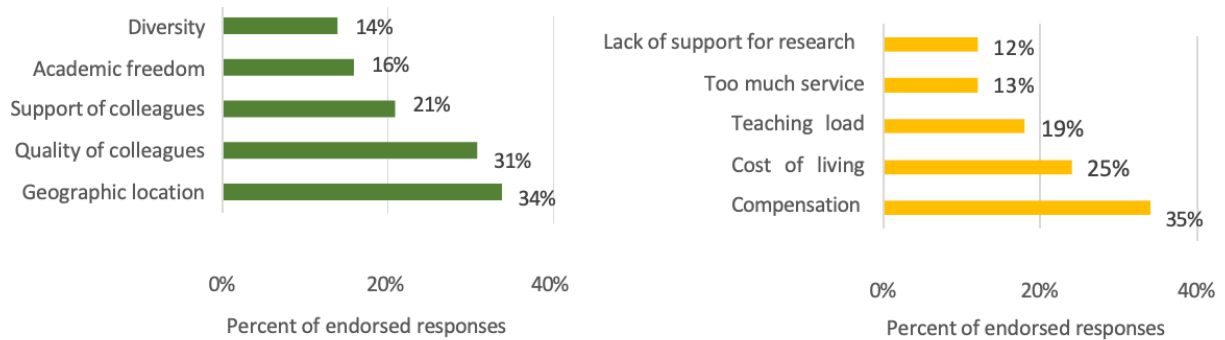
Figure 1: 2022 COACHE Survey Key Findings; Best Aspects of Working at Mason (left), Worst Aspects of Working at Mason (right) [6].

1.1.2 Quality of Work Life

An internal taskforce at Mason administered the Quality of Work Life (QWL) survey to all types of non-student employees every three years from 2000 to 2018. The survey was intended to measure employee well-being and engagement, each defined as a composite of several variables, such as "sense of belonging" or "perceived organizational support." Each of these variables was in turn composited from several Likert-scale or similar questions, such as "Mason strongly considers my goals and values."

Due to changing social, economic, and institutional conditions, as well as employee turnover, much of the older data was not considered relevant to the current research project. Analysis of the 2018 data in the context of this holistic study is ongoing.

1.1.3 Gallup Faculty and Staff Experience

The Faculty and Staff Experience Survey was developed by Gallup, Inc. in collaboration with Mason. It was administered to all employees in 2022 and had a response rate of about 43% (665 people) among the faculty population of interest. The survey was intended to measure employee engagement and well-being, employee experiences and opinions regarding diversity, equity, and inclusion (DEI) at Mason, and flexible/remote work. Each of these variables was assessed via multiple Likert-scale questions. The set of questions assessing employee engagement is a pre-existing proprietary instrument developed by Gallup, often called Q12 for short [7]. The rest of the questions in the survey were a combination of questions developed by Gallup and questions developed in collaboration with Mason.

Because response patterns were non-random, it is not feasible to speak to characteristics of the faculty population using statistical inference. Nonetheless, because the response rate was close to half the faculty population, the patterns that emerge should be understood as meaningful. Analysis of this very dense data set is ongoing. The two key findings to date are shown in the following figures, both related to engagement. Many of the Q12 questions relate implicitly or explicitly to "satisfaction" as well, though this is not a formal metric used by Gallup. The figures regarding engagement should thus also be understood as related to, if not necessarily synonymous with,

employee satisfaction. Data for categories with less than five respondents, such as non-STEM term research faculty, were suppressed by Gallup per its confidentiality policy.
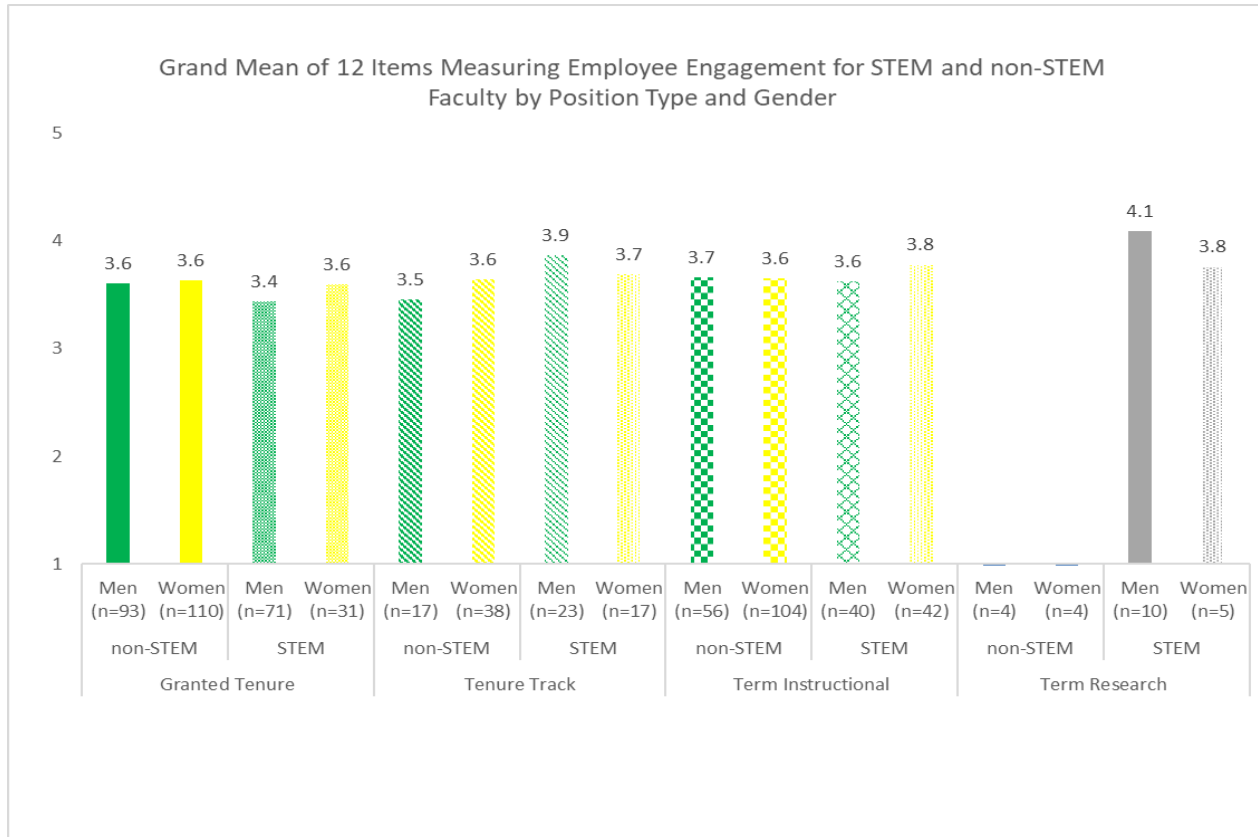

Figure 2: Analysis of Employee Engagement for STEM and non-STEM faculty by position type and gender.
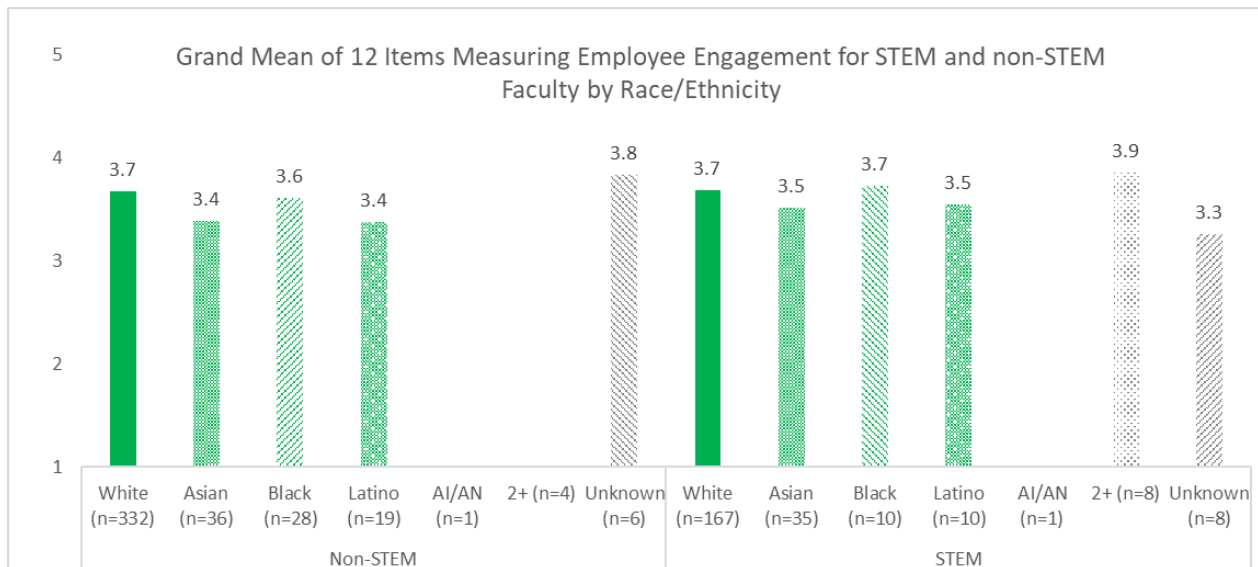

Figure 3: Analysis of Employee Engagement for STEM and non-STEM faculty by race/ethnicity. (AI/AN denotes "American Indian/Alaska Native").

Of note between these figures are the differences produced by using different analytical lenses. In the first figure, engagement is close to even between genders within position type, and varies more between position types. In contrast, an analysis along the lines of race/ethnicity shows more between-category variation, as well as lower average, maximum, and minimum scores. This suggests that race/ethnicity may have a stronger relationship to faculty engagement/satisfaction than gender or position type, though at the current stage of analysis this is not conclusive. Future analysis will examine response patterns in other survey categories and cross-tabulate race/ethnicity with gender and position type in search of interaction effects, as well as pursue more exploratory inquiries.

1.2 Recruitment and Hiring

In an effort to document the effects of implementation of best practices in hiring on equity at Mason, and in recognition of the fact that equity requires inviting candidates with a diverse range of experiences while simultaneously ensuring that search committees have a diverse range of perspectives, datasets were solicited detailing the pool of job applicants and the composition of the search committees that reviewed them.

1.2.1 HR Applicant Pool Data

In the course of job applications, Mason's human resources department (HR) collects a great deal of data on applicants. Anonymized data for all job applicants between January 2018 and July 2023 was provided to the ADVANCE Catalyst team by HR. Data consisted of applicant-level demographic and administrative variables, veteran and disability status, and applicant outcome. Each faculty position was associated with both a recruitment number and position number. Recruitment numbers had unique identifiers while position numbers did not, particularly if, (1) the search had multiple hires, or (2) the position was unfilled and left open with the same position number. Sometimes new searches (new recruitment number) also had the same position number for unfilled positions. In total, there were 43,926 applicants across 848 faculty positions, 562 of which are part of the faculty population of interest.

To put this into context, Singh [8] leverages National Science Foundation, National Center for Science and Engineering Statistics data [9] to note "As women move through the 'leaky pipeline' of higher education, they become increasingly underrepresented. While women receive 50.1% of STEM bachelor's degrees, they only receive 44.3% of master's degrees and 41% of doctorate degrees. Subsequently, they comprise 36% of postdoctoral fellows and 29% of employees" [8]. Relative to those numbers, the proportion of women both applying to and being hired into STEM faculty positions at Mason is below what might be expected.

Further analysis of this data will involve tracking the outcomes associated with various race-gender combinations at different stages of the application process, identifying patterns in the demographics of applicants by position and over time, and other exploratory inquiries.

	All Searches (n=562)		Filled Positions (n=299)		Unfilled Positions (n=263)	
	Non-STEM (n=331)	STEM (n=231)	Non-STEM (n=187)	STEM (n=112)	Non-STEM (n=144)	STEM (n=119)
Filled %	56.5%	48.5%	-	-	-	-
Average Size	57.3	65.8	74.6	71.6	34.8	60.4
Median	38	40	47	43	20	35
Min	1	1	2	3	1	1
Max	961	574	961	574	182	432
Female Mean %	46.5%	27.6%	48.1%	18.9%	44.5%	20.9%
URM Mean %	12.0%	9.5%	27.9%	11.6%	27.3%	12.3%

Table 2: Applicant pool characteristics for all filled and unfilled I/R faculty searches 2018-2023. URM refers to "underrepresented racial/ethnic minority groups." It is defined in this context as any reported race/ethnicity that is neither White nor Asian.

1.2.2 HR Search Committee Data

HR provided the ADVANCE Catalyst team data relating to demographics of search committees and frequency of faculty service on those committees. Analysis of this data is ongoing with an eye toward impact of committee diversity on hiring and impact of the so-called "service tax" (also called "cultural taxation" [10]) in which women [11] and underrepresented racial/ethnic minority faculty [10] are more often tasked with service duties such as search committee work.

	All Searches (n=562)		Filled Positions (n=299)		Unfilled Positions (n=263)	
	Non-STEM (n=331)	STEM (n=231)	Non-STEM (n=187)	STEM (n=112)	Non-STEM (n=144)	STEM (n=119)
Filled %	4.4%	48.5%				
Average Size	4.4	4.7	4.4	4.7	4.4	4.8
Median	4.0	5.0	4.0	5.0	4.0	5.0
Min	3.0	2.0	3.0	2.0	3.0	3.0
Max	9.0	14.0	9.0	11.0	8.0	14.0
Female Mean %	53.4%	38.9%	53.7%	37.7%	52.8%	40.1%
URM Mean %	15.0%	10.9%	13.5%	11.1%	16.8%	10.7%

Table 3: Search committee characteristics for all filled and unfilled I/R faculty searches 2018-2023. URM refers to "underrepresented racial/ethnic minority groups." It is defined in this context as any reported race/ethnicity that is neither White nor Asian.

1.3 Retention

Building a positive institutional culture, and proactively implementing best practices in recruitment and hiring both hinge upon the institution having effective practices toward faculty retention. With this in mind, we pursued three data sets that inform analysis of the University's effectiveness at retaining faculty; specifically, we use the COACHE Faculty Exit & Retention data

set, HR-provided faculty separation data, and COVID-19 impact data (specifically data related to use of the optional tenure clock extension, as we deliberately did not pursue any medically sensitive information).

1.3.1 COACHE Faculty Retention & Exit Survey Data

The COACHE Faculty Retention and Exit Survey collected data from AY 2018-2019 to AY 2022-2023 (3 years) with the stated intent to "help us better understand what factors influence Mason's ability to retain or not retain our talented faculty members" [12]. The survey gathered data from the following three populations:

- Faculty who left Mason
- Faculty who received job offers elsewhere but chose to stay at Mason after receiving a counter-offer
- Faculty who "without an outside offer, were offered or negotiated for themselves some change to their work or employment" [13].

COACHE refers to the third group as "pre-emptive retention" because research indicates that improvements to working conditions that occur outside the offer/counteroffer dynamic improve faculty organizational commitment, and thus retention over time [14]. COACHE sent the survey to 796 faculty and 325 responded for an overall response rate of 41%. Tables 4-6 show the size of the populations surveyed as well as the gender and race.

The COACHE Retention and Exit survey found that one of the top five reasons for leaving Mason was seeking or being offered a higher salary, while two of the top five reasons to stay were the quality of colleagues and the collegiality within the department (see Figure 4). But these reasons worked in the opposite direction as well. Some faculty cited the salary as a top five reason to stay and the quality of colleagues or the (lack of) collegiality of the department as a top reason to leave.

Population	#	%	# Respondents	% Respondents	Response Rate
Departure	120	15%	36	11%	30%
Retention	38	5%	26	8%	68%
Pre-emptive Retention	638	80%	263	81%	41%
Grand Total	796	100%	325	100%	41%

Table 4: COACHE Faculty Exit & Retention Data respondents [13].

Gender	#	%	# Respondents	% Respondents	Response Rate
Woman/Trans Woman	435	55%	193	59%	44%
Man/Trans Man	355	45%	126	39%	35%
Gender Other/Unknown	6	1%	6	2%	100%
Grand Total	796	100%	325	100%	41%

Table 5: COACHE Faculty Exit & Retention Data respondents by gender [13].

Race/Ethnicity	#	%	# Respondents	% Respondents	Response Rate
Faculty of Color & Other	224	28%	86	26 %	38%
White, Non-Hispanic	539	68%	233	72 %	43%
Race/Ethnicity Unknown	33	4%	6	2 %	18%
Grand Total	796	100%	325	100%	41%

Table 6: COACHE Faculty Exit & Retention Data respondents by race/ethnicity [13].

This survey contains extensive quantitative and qualitative data that the researchers will explore further to more comprehensively understand reasons and motivations faculty had for leaving or staying at Mason and the effectiveness of the University's retention strategies.
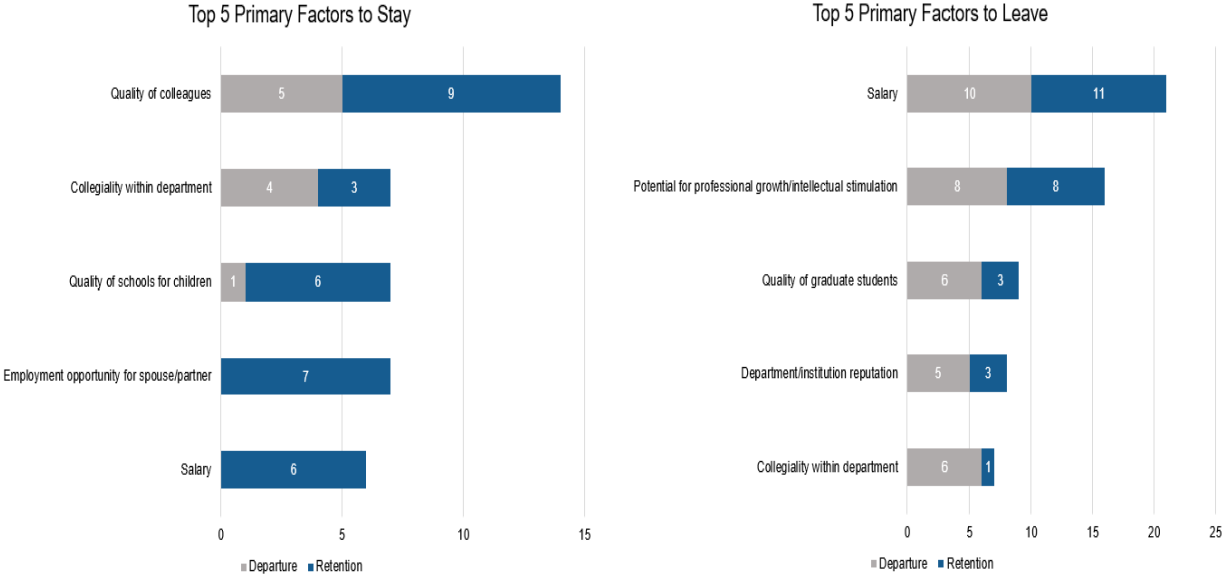

Figure 4: Top 5 Primary Factors to Stay or Leave Mason per Harvard COACHE 2022 Retention and Exit Survey [13]. Blue bars are from survey respondents who decided to stay at Mason; grey bars are from survey respondents who decided to leave Mason.

1.3.2 HR Faculty Separation Data

HR has provided the ADVANCE Catalyst team data on faculty separations from June 2017 to January 2023. Data includes demographic and administrative characteristics, as well as the high-level reason for departure, e.g., completion of appointment, death, end of contract, resign – dissatisfied, resign – home responsibilities, resign – leaving area, resign – new job, resign – no reason given, resign – school/career change, retirement, separated, transfer to new state agency, or work authorization expired. Analysis is ongoing; of note, the period includes time prior to the COVID-19 pandemic, allowing the team to examine whether patterns specific to the pandemic—

e.g. women losing jobs at a rate disproportionately higher than men [15]—were replicated at Mason.

1.3.3 COVID-19 Impact Data

The same data gathering instrument was used to collect startup funding data (reported on in Section 1.4.2) and study leave data (Section 1.4.4) in addition to COVID-19 tenure clock extensions. The instrument is described in further detail in [1]. At the time of this writing, we have received information on COVID-19 tenure clock extension usage by STEM and non-STEM faculty in the College of Humanities and Social Sciences, a summary of which is presented in Table 7.

Tenure Track Assistant Professor	N	Has taken COVID-19 Tenure Clock Extension	Has not taken COVID-19 Tenure Clock Extension	N/A or Blank
College of Humanities and Social Sciences – STEM – Female	8	4	3	1
College of Humanities and Social Sciences – STEM – Male	7	2	4	1
College of Humanities and Social Sciences – Non-STEM – Female	25	12	12	1
College of Humanities and Social Sciences – Non-STEM – Male	11	4	7	0

Table 7: Tenure track assistant professors, COVID-19 tenure clock extension use by gender.

1.4 Equity

To round out our data gathering effort, we sought four data sets related to equity for hired faculty: salary history, startup funding, renewal, promotion and tenure (RPT), and study leave data. These are described in further detail in sections 1.4.1-1.4.4.

1.4.1 Faculty Salary History Data

HR provided salary data in spring 2023. We conducted a preliminary analysis on the average salaries of faculty in STEM and non-STEM departments[1] incorporating gender and race. We start by reporting trends within the non-STEM and STEM categories separately by using percentage differences rather than putting the actual average dollar figures. For non-STEM faculty, Table 8 shows that the average salaries for men are higher than women in almost all appointment/rank categories except for term associate professors. The differences are significant for both tenure-line full professors (19%) and term full professors (18%). For STEM faculty, the average salaries for men are still generally higher than women except for tenured full and associate professors. The differences are significant for term associate professors (20%).

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[1] STEM departments include all departments within the College of Science and the College of Engineering plus the following departments: Criminology Law and Society, Economics, Psychology, Computer Game Design, Global and Community Health. Non-STEM are full-time faculty as of Spring 2023 in all other departments. There are 23 Non-STEM Departments and 32 STEM Departments.

Appointment Type	Rank	Non-STEM % diff. b/n men and women	STEM % diff. b/n men and women
Tenured/ Tenure-track	Full	19%	-5%
	Associate	9%	-5%
	Assistant	12%	7%
Term	Full	18%	12%
	Associate	-3%	20%
	Assistant	12%	0%

Table 8: Separate analysis for STEM and non-STEM average salary differences considering gender.

We then compared the average salaries of men in STEM and non-STEM fields in all appointment/rank categories and repeated the same for women faculty as shown in Table 9.

Appointment Type	Rank	Men % diff. b/n STEM and non-STEM affiliation	Women % diff. b/n STEM and non-STEM affiliation
Tenured/ Tenure-track	Full	3%	22%
	Associate	4%	16%
	Assistant	-7%	-2%
Term	Full	-5%	1%
	Associate	14%	-7%
	Assistant	-9%	3%

Table 9: Comparison across STEM and non-STEM faculty average salary differences by gender.

Considering men only, the average salary for STEM men faculty is higher than non-STEM men faculty in half of the appointment/rank categories. The difference is significant for term associate professors (14%). Regarding women only, the average salary of STEM women faculty is higher than non-STEM women faculty in four of the six appointment/rank categories. The differences are significant for women tenured full professors (22%) and tenured associate professors (16%).

We now report our preliminary findings incorporating race in the analysis. For STEM faculty, White women and/or faculty of color are classified as underrepresented minorities (URM). We recognize that the above definition of URM may be different in some non-STEM fields. However, we proceeded with the general comparison. Table 10 shows the percentage differences between non-STEM and STEM faculty average salaries considering race.

We first reviewed the non-STEM and STEM categories separately. For non-STEM faculty, the average salaries of non-URM faculty are higher than URM faculty in the tenured/tenure-track category at all ranks. However, that trend does not hold for term faculty. For STEM faculty, the average salaries of non-URM faculty are still higher than URM faculty in the tenured/tenure-track category except at the full professor rank. For term faculty, the opposite was observed where the average salaries of non-URM faculty are generally lower than URM faculty except at the assistant

professor rank. In Table 11, we compared the average salaries of non-URM faculty in STEM and non-STEM fields in all appointment/rank categories and repeated the same for URM faculty.

Appointment Type	Rank	Non-STEM % diff. b/n Non-URM and URM	STEM % diff. b/n Non-URM and URM
Tenured/ Tenure-track	Full	10%	-1%
	Associate	7%	6%
	Assistant	10%	9%
Term	Full	0%	-3%
	Associate	0%	-3%
	Assistant	-7%	1%

Table 10: Separate analysis for STEM and non-STEM average salaries considering race.

Appointment Type	Rank	Non-URM % diff. b/n STEM and non-STEM affiliation	URM % diff. b/n STEM and non-STEM affiliation
Tenured/ Tenure-track	Full	10%	22%
	Associate	10%	12%
	Assistant	-3%	-2%
Term	Full	0%	4%
	Associate	4%	7%
	Assistant	0%	-8%

Table 11: Average salaries of faculty in STEM and non-STEM fields in all appointment/rank categories by URM status.

For both non-URM and URM faculty categories, the difference in average salaries of STEM and non-STEM faculty is more pronounced for tenured/track-track faculty at the Associate and Full Professor ranks.

1.4.2 Startup Funding Data

In 2023, this project team presented a work-in-progress paper documenting our efforts to gather data related to startup packages over a five-year span in order to assess equity in recruitment and retention; much of that initial effort focused on developing and socializing a data gathering instrument and defining who, by department or discipline, constitute STEM faculty [1]. It has been noteworthy that this data ask is significant. That is to say, there is no central repository of startup funding data at our institution and therefore the data request relied on unit-level business officers allocating personnel resources (often their own time) to assemble this data. At the time of this writing, we have received data in varying degrees of completeness from three Colleges within our University, the College of Science, College of Engineering and Computing, and the College of Humanities and Social Sciences, the latter of which is the only one of the three containing a mixture of STEM and non-STEM faculty. One must note, in particular, that startup packages vary significantly by subdiscipline. For example, an experimentalist requiring high-cost laboratory

equipment will typically have a significantly larger startup package than a researcher whose work is more analytical. Often both researcher types are within the same college, even potentially within the same department. To protect confidentiality of those faculty members whose startup packages were analyzed, no analysis was done at a finer resolution than School-level, therefore, findings here are likely a reflection of subdiscipline-specific needs rather than inequity.

The College of Engineering and Computing data set contained information on 91 faculty hires, 34 within the Volgenau School of Engineering and 57 in the School of Computing, which together comprise the College of Engineering and Computing, from July 1, 2021 to December 31, 2023. The distinction between engineering and computing is critical in assessing startup package equity due to significant disparities in typical equipment needs for engineering versus computing. The College of Science data set contained information on 56 faculty hires from August 25, 2017- January 10, 2024. The College of Humanities and Social Sciences data set contained 27 STEM and 106 non-STEM faculty hired between August 25, 2017 to August 25, 2021.

To protect confidentiality, we avoid analysis of any data set that contains a population size less than five, making it challenging to produce findings at the level of intersectional identities, or above the rank of assistant professor. There is strong parity in starting salaries across gender for tenure track assistant professors in the School of Engineering, School of Computing, and College of Science, with female faculty faring slightly better than their male counterparts. Non-trivial differences were observed between male and female tenure-track assistant professors' startup packages in both engineering (men receiving more funds) and science (women receiving more funds), though follow-up discussion with the Chief Business Officers of these respective units pointed directly toward outliers with significant startup needs influencing the data. Reinforcing that hypothesis, we observed relative parity in startup funding for tenure track assistant professors in the School of Computing, where presumably infrastructure needs are more consistent across subdisciplines.

Amongst STEM faculty in the College of Humanities and Social Sciences, we observe male tenure track assistant professors averaging higher starting salaries, but with smaller startup packages than those of their female colleagues. Non-STEM faculty in the College of Humanities and Social Sciences have greater salary parity, though female tenure track assistant professor startup packages are significantly less than those of the male faculty. Again, it is important to reiterate that sample sizes are sufficiently small that single outliers can significantly sway these findings. Further analysis at the sub-discipline level for this data set, which might shed light on some of these discipline-specific influences, would reduce sample sizes below our N≥5 target. That said, our aim in delving into this data set is not to draw conclusions regarding specific issues, but rather to point to viable ways to continually track data to ensure equitable offers are being made. Further analysis of this data in concert with the other data sets described in this paper, may help identify which specific hiring practices and policies are best supporting equity in the hiring process.

1.4.3 Renewal, Promotion, & Tenure (RPT) Success Data

Data was provided by HR for all demographic characteristics, administrative characteristics, and changes in employment status, of all benefitted employees between 2017 and 2023. Analysis of this data set is still preliminary. The most significant contribution drawn from it to date is the

ability to cross-reference the internal variables "job class," "faculty appointment type," and "faculty rank," which all characterize each faculty employee. The three are loosely correlated but by no means synonymous. Examining how these three categories have been used for the past five years has taught the team how to very precisely define the faculty population of interest in the language of Mason's administrative databases and systems.

Future analysis will focus on patterns of renewal, promotion, and tenure-granting along lines of gender, race/ethnicity, position type, STEM status, and so on, as well as multivariable interactions thereof. This analysis is expected to be productive because of the size and richness of the data set. However, it will not be able to speak to patterns in *unsuccessful* promotion applications, because those do not result in a change in employment status and are, thus, not reflected in this data set.

1.4.4 Study Leave Data

In recognition that the same data stewards at our institution have access to both startup and study leave data, data gathering for study leave was requested in parallel to the startup funding data request described in Section 1.4.2. Tenure track faculty at Mason are guaranteed, per the Faculty Handbook, one semester of pre-tenure study leave to help build their research program. Recognizing that use of that leave may be reliant upon mentoring from senior faculty and administrators, we found it of value to assess usage of this pre-tenure leave. As of the time of this paper, we only have study leave data for the College of Humanities and Social Sciences, which is summarized in Table 12. As a variety of factors weigh into this, not the least of which is faculty member eligibility, no noteworthy differences are found between genders or STEM versus non-STEM faculty in pre-tenure leave use in the College of Humanities and Social Sciences.

Tenure Track Assistant Professor	N	Has taken pre-tenure leave	Has not taken pre-tenure leave	N/A
College of Humanities and Social Sciences – STEM – Female	8	5	3	0
College of Humanities and Social Sciences – STEM – Male	7	5	1	1
College of Humanities and Social Sciences – Non-STEM – Female	25	22	2	1
College of Humanities and Social Sciences – Non-STEM – Male	11	9	2	0

Table 12: Tenure Track Assistant Professors, Pre-Tenure Leave Use by Gender

2.0 Path Forward

As noted above, analysis is ongoing for many of the data sets discussed. Furthermore, the culminating product of the quantitative analysis is the use of these twelve data sets to better understand the strengths and areas for improvement in the University's efforts to support its tenure-line and term faculty. The quantitative data described in Section 1 are being used to inform a qualitative study and support development of a five-year faculty equity strategic plan.

2.1 Qualitative Interviews

Based on the preliminary findings of the quantitative data, the team has begun to work on scheduling qualitative interviews with underrepresented faculty in STEM—women, faculty from underrepresented minority groups, and those identifying as LGBTQ+. These participants were selected through a process that was initiated beginning with a list of all faculty who participated in search committees between 2018 and 2023. We then removed all faculty who identified as White, and further removed faculty from colleges and departments that were not designated as STEM. Once we reduced the list from over 2,000 individuals to approximately 200, we chose a random starting point and then selected every tenth person on the list. We ended with a list of 28 individuals of whom we will reach out to conduct interviews. Given the unique opportunity to interview these faculty, we have chosen to explore two areas (1) their own experience interviewing, being hired, and renewed/promoted/tenured at Mason as well as the support they have received at the institution, and (2) their experience in the search committees they served on and how these committees dealt with issues related to diversity, equity and inclusion.

2.2 Five-Year Faculty Equity Strategic Plan

We plan to share our findings with the Mason community, fielding reactions and feedback from deans and department chairs. We will also identify best practices from other institutions that have obtained NSF ADVANCE funding. Additionally, we will highlight best practices within our own university with recommendations for how to replicate or modify both external and internal best practices as appropriate.

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