

Analysis of the GSA 2020 Vital Signs Survey

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May 20, 2020

The report below outlines all analysis undertaken for the GSA 2020 Vital Signs Survey. Note that specific response counts for each question in aggregate and split by both faculty and department are available in the included text files to address any simple questions about the data. They are ordered such that the questions which appear first are those which show the strongest relationship with the conditioning variable. So, for example, the faculty summaries display first those questions which differed the most in their response patterns between faculties. This makes these files serve both the purpose of informing the reader of what questions are most strongly related to the conditioning variable and also allowing the reader to look up the questions they are most interested in viewing. The methodology is described in Section 4.1. The analysis undertaken here is more narrative and exploratory than these summaries.

Executive summary

A more detailed, and itemized, summary can be found in the appendix. Such a report was produced for the GSA council and has been reproduced there. The 2020 Vital Signs Survey collected 185 data points for 1269 participants over several dozen questions using the SurveyHero platform, of whom 1094 respondents completed the entire survey (18% of the UW graduate student body based on official headcounts [here](#)). This rate was not uniform across faculties: Applied Health Science and Mathematics had lower response rates than the other faculties (see Figure 7).

Figures 9 and 1 indicate that respondents typically took less than 30 minutes to complete the survey and one in seven dropped out. The importance of emails in eliciting responses, shown in Figure 8, and the differing response rates by faculty suggest our sample is biased. A number of answers, such as the main method of reading GSA news (unsurprisingly “Email” in a survey driven by mass emails), display this bias.

A majority of respondents are involved in some sort of research, and are master’s students. Consequently, first and second year students dominate (see Figure 13). As a key focus of this survey was the measurement of trends over the last three years at UW, this presents an obvious deficiency in our ability to answer questions on trends with precision.

Respondents tended to rank all aspects of their overall experience as better than average, though the social aspect lags behind the others. The current TA rate was rated appropriate or high, and funding was found to be fair, timely, and equitable. Funding is clearly a nuanced issue, as can be seen in the differences in funding profiles in Figures 27 and 25. A large majority of respondents were either neutral or positive about the clarity of work expectations, clarity of working roles, manageability of workload, adequacy of work training, and respect for their rights as workers. Respondents found that some overtime is required in their work at UW. Despite this general contentment, a majority of respondents indicated a belief that unionization will improve the working conditions of graduate students at UW, though in all faculties the number of unsure respondents was comparable to or greater than those which believe in this improvement (Figure 39).

Typical ratings of work and study space quality were heavily dependent on faculty and department (see Figure 3). A majority of respondents indicated that they feel safe and rated the safety of work and study spaces higher than the quality. The quality of courses was universally praised by respondents, a majority rated all aspects of courses as “Good” or “Very good”.

Most respondents indicated they live in shared off-campus housing, with a majority spending between \$500 and \$900 per month on rent and commuting for less than 40 minutes to get to their campus (predominantly main campus). Primary methods of transit were GRT busses, walking, driving, and the GRT

Ion. Respondents were split on affordability, but a plurality of respondents found off-campus housing to be unaffordable.

Most respondents reported moderate familiarity with UW policy, though knowledge of intellectual property and TA employment were relatively lacking. A large majority of respondents supported making UW campus smoke-free. This focus on health is reflected in service use, the two most commonly used services were health services and athletics. The use of other services varied greatly, but a majority of users found them to be “Good” or “Very good”. The highest rated service was the Centre for Teaching Excellence, while the lowest were the Human Rights Office and the Equity Office. Athletics users reported using the service once a week or more often, while users of Counselling Services, the Student Success Office, and the Grad House typically only use the service once a month.

Respondents dominantly rated their workload as heavy, shown in 38. Academics and finances were similar sources of stress, and less stress was attributed to a lack of available resources. The most common outlets for stress were athletics and Grad House. Most respondents have attended Grad House, but have found a lack of disposable income to be a barrier to regularly attending. Atmosphere and other aspects of Grad House were not considered barriers.

Community at UW seems to be local. Both academically and socially, respondents felt more communal in their programs and departments than campus-wide. Furthermore, the importance respondents placed on community matches this pattern. There was an appreciable proportion of respondents that did not feel a part of any community.

Respondents were split on knowledge of the GSA, as seen in Figure 40. Despite this, and the lack of regular contact a majority of respondents reported with their councillor, there was a generally positive view of GSA representation, communication, and engagement. Respondents were least satisfied with the Grad House and dental fees administered by the GSA. The GRT pass was considered both the most satisfying cost and highest quality service. Grad House was the second highest quality service, while the tax and legal aid services were rated as the poorest quality. Respondents typically received their GSA news by email.

Respondents were neutral about trends. For most trends, a majority of students felt little change. Only affordability shows a narrow majority in one direction: just over half of respondents feel that Costs Are Becoming Less Affordable. Considering only those respondents at UW for three years or longer found...

Recommendations for the GSA

Unfortunately, this survey does not provide any clear points of advocacy for the GSA, though it does tell us something about the students that constitute it. The general positivity of responses across all questions does not, ultimately, point to any fundamental failures that must be addressed by the GSA. Clearly, finances are a source of stress for most respondents, but when asked about specific aspects of funding, such as fairness and adequacy, students were typically neutral or positive. They also tend to rate their working conditions positively, despite the need to work overtime to complete their work.

The GSA, despite administering some fees that students are displeased with, also appears to be in good standing with students. The general responses were positive. Perhaps outreach to math and AHS is in order, as these groups responded much less vigorously to the survey, but given the voluntary method of survey distribution, this could simply be a result of these faculties and their character, and nothing more. One clear fact given by the GSA political positions question is that respondents do not have strong opinions about internal GSA decisions such as that one. Email is the most effective way to reach the respondents in this survey.

That said, the summaries provided which detail the responses question by question are a better place to start for strategy, and I cannot know what information provided therein is of most interest to the reader, so I encourage them to explore for themselves.

Recommendations for future surveys

A number of actions might be taken to improve the features of future surveys. Rather than attempting to reach every student on every topic, a more targeted and statistical approach might be taken. The exact approach differs in the information available before the survey, but the key concepts are the same: guaranteed incentives and shorter, targeted surveying. We must remember that the point of a survey is *measurement* rather than *feedback*, and the more precisely we know what we want to measure, the more accurate our measurements will be.

A part of this targeted surveying involves a more ruthless vetting and creation of questions. Questions should be simple, complete, and concrete. At no point in the middle of the survey should comment boxes be provided to students to specify their own answers. Rather, careful thought should be put into what possible answers there might be and which ones would be of interest. The inclusion of an “Other” category without the option to fill in a box does not indicate a poorly made question so long as its inclusion is deliberate: that the point of the question is not impeded by its inclusion. Indeed, differences in expression for questions where respondents are allowed to specify another response than those indicated means that such amalgamation of other answers will occur anyways.

Questions must also be made more neutral. For example, the question on unionization was worded “Do you believe that the unionization of graduate Teaching Assistants, Research Assistants, and/or sessional instructors would improve working conditions for graduate student employees at the University of Waterloo?” Anchoring, in which the suggestion of an answer to a question affects responses, may be strongly at play in the results of this question. The question used positive wording, suggesting that unionization would be an improvement. Given that many respondents were still unsure with this positive wording, we cannot be certain what proportion have been impacted by this suggestion. In order to ensure that the results of the survey are clear to everyone, neutral wording should be used uniformly.

Another area where vetting should be applied is on chained Likert scale questions with related topics. For example, this survey had questions in which respondents had to rank the quality of work space chairs, desks, lighting, atmosphere, and safety individually on the same five-point Likert scales. Anchoring is once again affecting these results: respondents will start looking at the next question’s scale at the same point as the previous question’s answer. A direct consequence of this which can be seen in Vital Signs 2020 is that the most frequent answers for these chained questions rate every aspect equal or nearly equal. It is clear that a granular approach attempting to separating all possible aspects of a topic of interest does not give much additional information. Instead, an overall question should be asked. Key questions with a broad scope, such as those asking students to rank overall experience by social, academic, and program-specific aspects, can be exempt from this rule.

The ideal case: pre-stratification

A key point of interest for both the GSA council and GSA executive appears to be the differences in experiences between faculties and citizenship groups, and as a consequence our ideal sampling plan is only possible if complete or partial lists of student emails by citizenship and faculty are available. If they are, the plan would be as follows:

- Design survey questions keeping the length and above considerations in mind
- Consider the key questions for which precise answers are absolutely necessary, for each determine the sample size required to achieve the desired precision
- Choosing the largest required sample size, determine the necessary sample sizes from each faculty and citizenship group to match this sample size so that the proportions of each group in the sample reflect that of the student headcounts
- Randomly select the corresponding number of students from each group, send these students emails inviting their participation for a guaranteed incentive
- Follow up with un-responsive students two times before giving up on their response. Record the number of emails required to elicit a response from each participant

The above procedure will almost certainly result in a smaller sample size than that collected using the mass voluntary email method. That said, this smaller sample will have better statistical properties, and we can more confidently assert that it represents the student population at UW. Statistical inference on the student population, which is inappropriate under the voluntary sample design performed for Vital Signs 2020.

Less ideal: post-stratification

If the emails of students cannot be classified by faculty and citizenship, the above method can still be performed, with a random sample with guaranteed incentives performed for the university population as a whole using the entire email list. After the sample, the responses can be weighted so that the sum of weights in each faculty and citizenship combination is proportional to the student headcounts. This is a common practice in many surveys and is referred to as *post-stratified simple random sampling*, but requires that the initial sample be random to be valid.

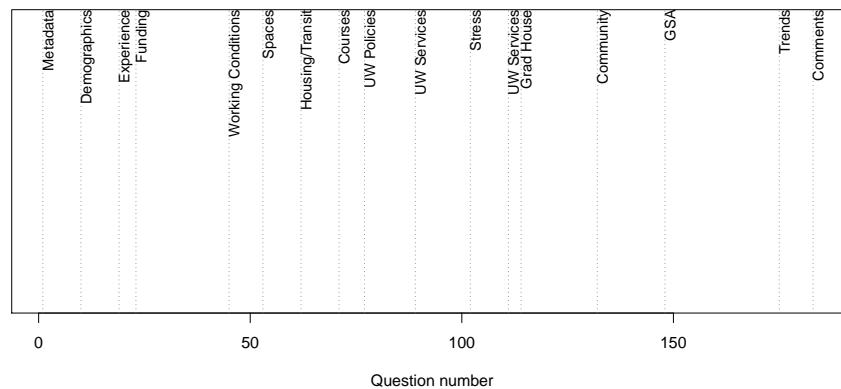
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1 An investigative map

As an itemized report has been included in the appendix, the following analysis of the GSA Vital Signs Survey 2020 is primarily exploratory. Indeed, as the aim of this survey was to inform the mission of the GSA over the next several years, one might ask whether performing detailed statistical inference is appropriate, most of the students surveyed will be gone before the next Vital Signs! In such an exploratory analysis, it is often very useful to take a broad view of the structure of the data to motivate further investigation. In other words, creating a map. Just as in geographical exploration, this is not a trivial choice, as progress can be greatly aided, or hindered, by the choice of map. Additionally, no map can possibly convey all of the information present in its domain simultaneously, such a map would simply be a page black with ink.

A number of maps will be applied to the Vital Signs Survey, but all follow a similar theme, based around the organization of the survey itself. The survey was loosely broken up into sections meant to address different aspects of the Waterloo graduate student experience, which can serve as anchors to our analysis and visualization. Consequently, all of our maps are drawn on the following template:



On its own, this template provides a great deal of information about the survey. The rough length, number of topics, and general topic groups can be discerned simply by the structure of the template. Nonetheless, we can augment it greatly by using it to plot additional information. Take, for example, the rate of non-response, as in Figure 1.

Just as a topographical map is meant to display the lay of the land to a stranger that may not know it, I ask the reader not to focus too hard on what is displayed just yet. That said, some small amount of explanation is in order. Survey respondents were required to answer every question to proceed in the survey, but there is, of course, not way to prevent them from losing interest and navigating away from the survey never to return. Figure 1 shows that the rate of flight is appreciable at the start of the survey, but steadies eventually. By the end, roughly one in seven participants have left the survey, with values much larger for some faculties, and much smaller for others.

This map is not the only such map which can be displayed on this template, however. Though it is inappropriate given our response variable types, a simple view of the data can be obtained by displaying the mean response for each question. As a bonus, we can break the data apart by some variable of interest, say the citizenship of the respondents. Once again, I entreat the reader to take these details for granted at the moment, and note broadly the resulting features of Figure 2.

While there are certainly some differences present between these groups, they ultimately follow a similar path through the data. The lines jump in near unison through the questions of the survey and carve a distinct overall pattern. But of course, many of the topics seem to be ones which ought not depend on nationality. After all, it would seem strange if knowledge of University of Waterloo (UW) policy strongly depended on one's country of birth. But faculty would impact everything from the professors a student sees to the spaces they use on on a regular basis. Perhaps our map will be more interesting if we us this to group mean responses? Figure 3 provides an answer, albeit a subjective one.

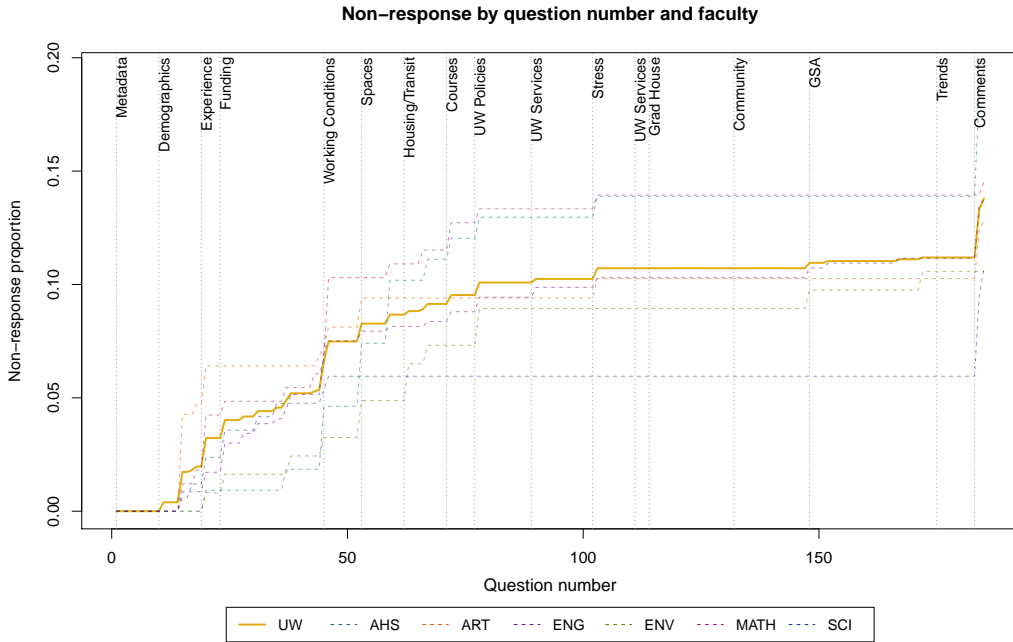


Figure 1: The non-response rate by faculty and question number, with labelled vertical lines indicating topic groupings.

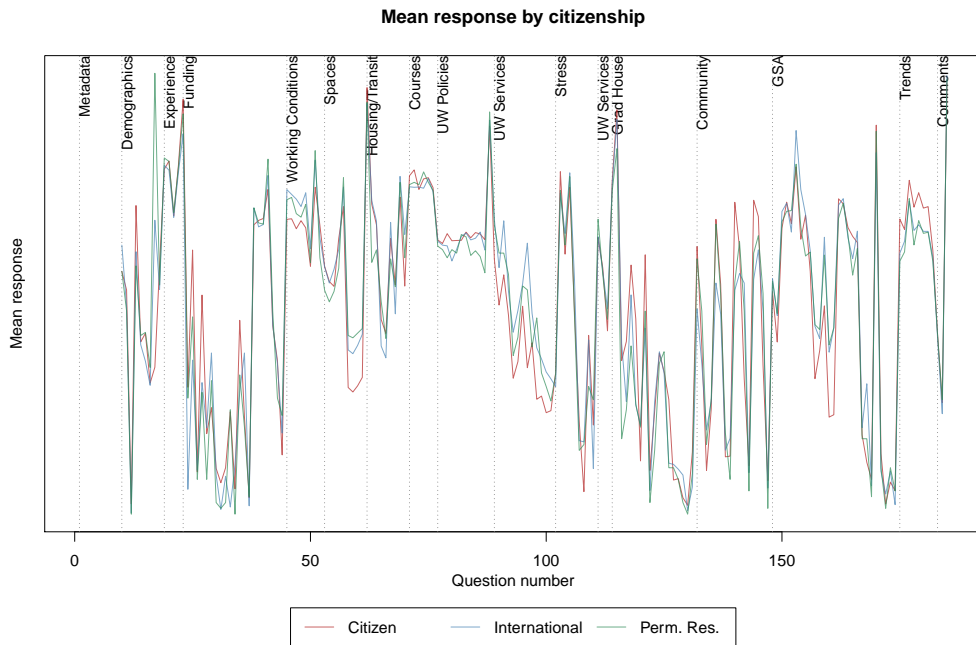


Figure 2: The mean question response by citizenship status, with labelled vertical lines indicating topic groupings.

Here, the map begins to reveal a new aspect, that of the noise and variation present in the data, despite the clear dominant patterns. The pattern of these responses is, of course, similar to the earlier display by

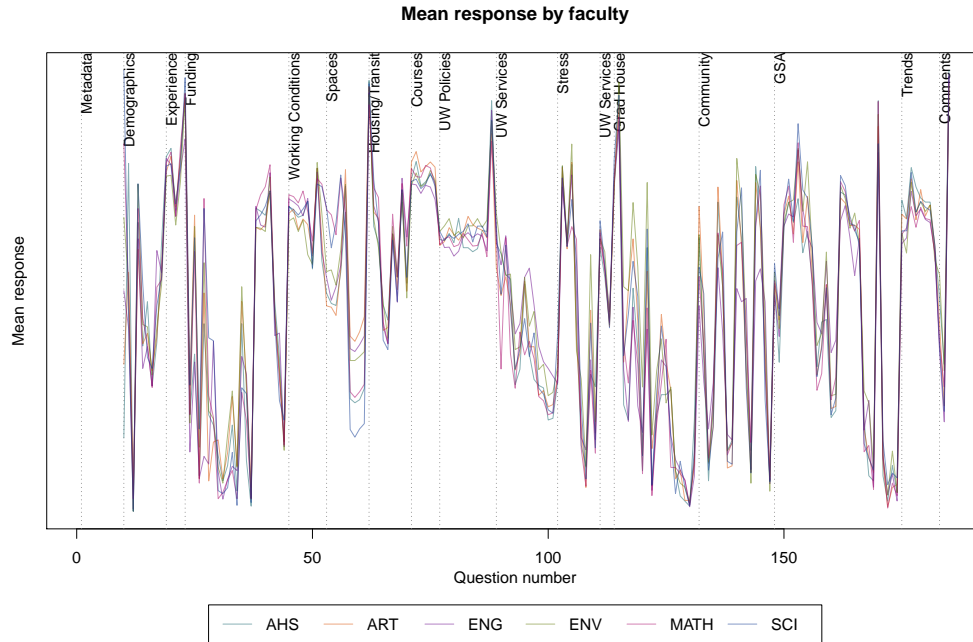


Figure 3: The mean question response by faculty, with labelled vertical lines indicating topic groupings. Colours are courtesy of the [UW brand guidelines](#).

citizenship. The responses seem to move mostly in lockstep regardless of the faculty. This is somewhat encouraging, perhaps students are united in their opinions? Unfortunately, we are not so lucky, and one more map will make that clear. We have a final demographic variable that might make a meaningful map, that of the department to which a respondent belongs. We can gain some additional insight by colouring these departments by the faculty they belong to, giving Figure 4.

What was initially a set of a clear, crisp, and orderly lines has given way to a rather cacophonous smear. What is worse, we have the unenviable task of trying to summarize this and extract meaningful information! We must therefore be cautious as we proceed, and recognize that we cannot encapsulate all of the information into one plot or numeric summary. Every plot leaves something out, just like every map.

2 The 2020 Vital Signs Survey

Of course, the discussion of any survey must start with the survey implementation. Before we can even use the maps from section 1, we must understand how they have been generated and what they mean to measure. Context, as usual, is key.

In mid-February, the Graduate Student Association (GSA) of the University of Waterloo (UW) released a survey meant to assess the condition of graduate students at UW and the reputation of the GSA: the 2020 Vital Signs Survey. The survey was hosted on the online platform SurveyHero from the 14th of February until the 9th of March. Response was voluntary, but was incentivised by the offer of cash prizes and vouchers. In total, 1269 students responded over this three week period, of whom 1094, or 86%, completed the survey in its entirety.

Now, the goal of Vital Signs 2020 was to measure aspects the target population, that is all graduate students enrolled at UW during the time of the survey. We might therefore ask if we have any established knowledge of this population independent of this survey. In fact, quite a bit of information is available. [Student headcounts](#) are publicly provided by UW, and so a picture of limited demographics of the population is readily available. Figure 5 displays these headcounts for faculty and citizenship combinations.

A number of features are readily apparent in this plot. Primary among these is the dominance of en-

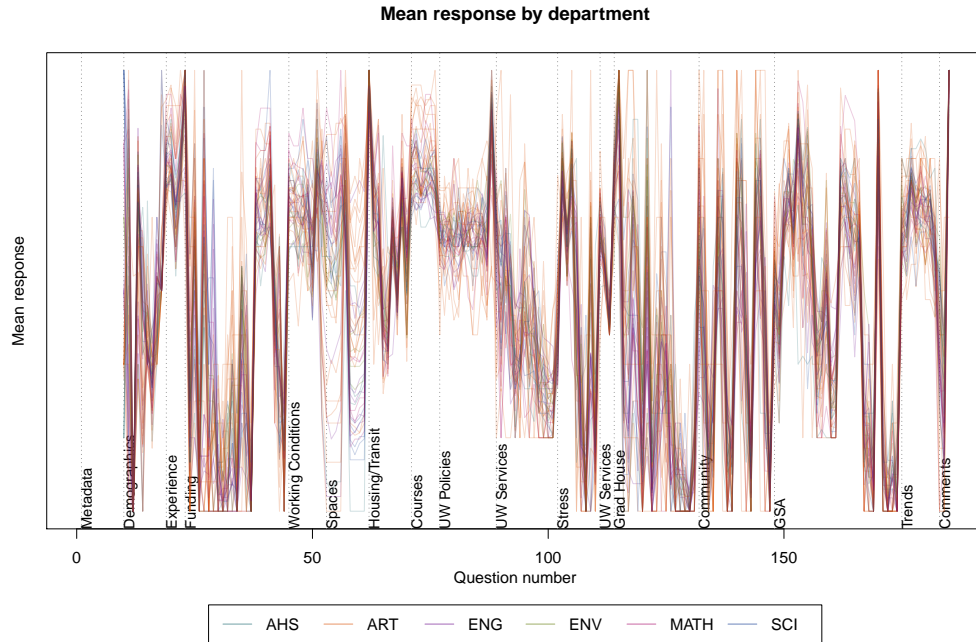


Figure 4: The mean question response by department coloured by faculty, with labelled vertical lines indicating topic groupings.

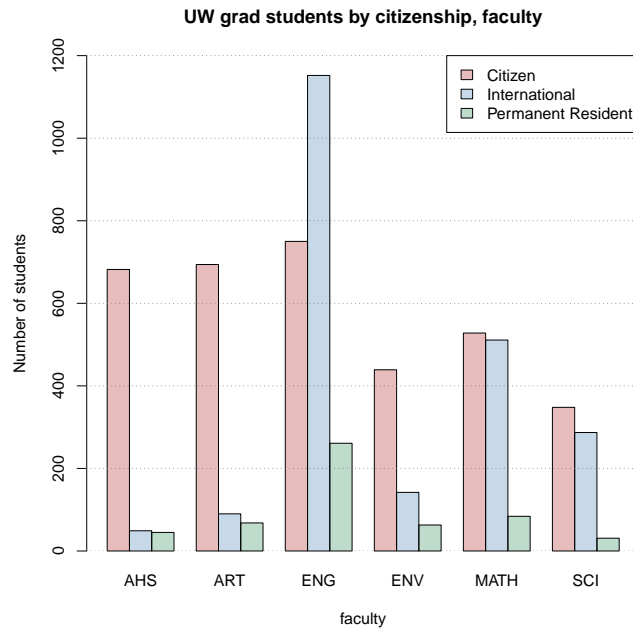


Figure 5: The graduate student population of the University of Waterloo by faculty and citizenship.

engineering in the graduate student population. Not only are engineers the largest faculty overall, they also represent the largest group for each citizenship status. Additionally, engineering is the only faculty which is composed of primarily international students. Science and math bear some similarity, citizens are a minority

in both of these faculties, while the arts, applied health science, and environment faculties all display similar distributions: dominantly citizens with a small minority of international students and permanent residents.

One could easily spend a great deal of time discussing the possible implications of Figure 5 to faculty culture, funding, and renown, but these topics are, unfortunately, not of interest to Vital Signs 2020. In an effort to limit the temptation of the reader and the author to go on such tangential musings, diagonally-lined rectangles can be added to Figure 5 to display corresponding survey response counts for each faculty and citizenship combination, giving Figure 6.

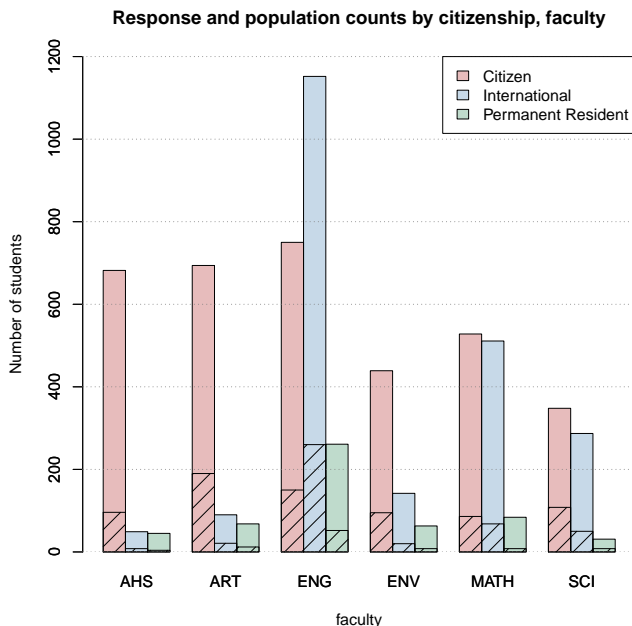


Figure 6: The graduate student population of the University of Waterloo by faculty and citizenship, with responses indicated by diagonally-lined rectangles.

Many of these rectangles are hardly noticeable, with some daunting implications. Most graduate students did not respond to our survey, and those that did do not seem to have responded in a way which is independent of faculty and citizenship. Of course, the above plot is not ideal for discerning those patterns, and so we can gain considerable power in our insight by displaying this in a more intuitive and precise way. Instead of plotting counts in both the UW and sample populations, we could try looking at the response rates for these faculty and citizenship combinations. Figure 7 gives the result.

Here, the differences in response rates by faculty are quite evident. The response rates seem to vary from roughly 9% to 31%, with the Faculty of Science achieving the greatest engagement. Additionally, certain faculties and citizenship groups appear to have differing response rates. This spread is most dramatic for citizens and international students in the science faculty, which differ in response rates by almost 15%.

This is a problematic finding for us, as we would ultimately like to gain some insight about the conditions of the different faculties and citizenship groups. To this end, the Vital Signs Survey 2020 is a measurement device, like a ruler. What we have demonstrated, however, is that our measurement device is not independent of the thing we want to measure. To stretch the ruler metaphor, we have a ruler which changes its markings when we rotate it. We could use such a variable ruler to measure the width of a table and the length of its leg, but these measurements may not be comparable, and may not reflect an underlying truth.

All of this is to say that these early plots indicate that the results of all of the analysis undertaken of this data must be taken with a grain of salt. It is unclear whether we can extend what we see inside of the survey to the entirety of the student body. It is not hard to imagine that attitudes about the GSA or UW might motivate students to respond to this survey, and so our sample is probably biased. This is not the

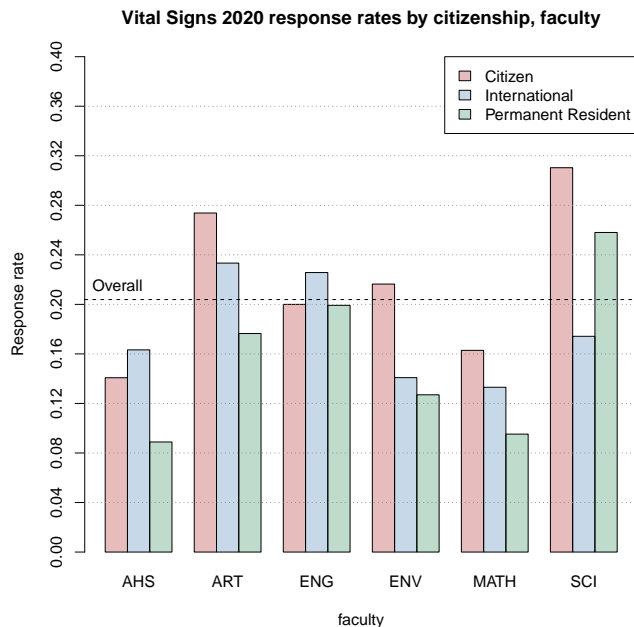


Figure 7: Vital Signs 2020 response rates by faculty and citizenship.

only question we might have about the survey, however. There are additional questions we must consider if we wish to design a better survey in the future.

2.1 When did people respond?

One of these questions might be primarily concerned with deployment, that is how we contact students about the survey. During the duration of Vital Signs 2020, much of the GSA social media communication was devoted to encouraging students to participate. Additionally, two simple emails (see the Appendix for an example) were sent by the official GSA account and councilors were encouraged to share the survey with their students. While I'm not sure about the timeline of all of these disparate communication trends, I am aware of my own email time, and I received both of the official GSA emails, and so the impact of these actions might be of interest, and can be investigated.

A natural plot to elucidate the impact of these emails is a simple time series of responses received for each hour of the survey collection period. Marking this time series at the times of each of the emails can provide some suggestion of the effect of these emails on response rates. Figure 8 provides exactly this figure in quite a stunning fashion.

It is clear that the main driving factor behind responses was the official GSA emails, which featured a prominent link and little text. Additionally, a number of daily and weekly patterns are apparent. Students tended not to respond on the weekends and the evenings, and the lift provided by the GSA emails only lasts for the day they are sent. That is, there is no apparent increase in responses the day after the official GSA emails. This has obvious implications to GSA strategy for communication about surveys such as this. Primarily, it suggests that the main strategy for survey engagement must include a denser schedule of official GSA emails than that observed here. This must be balanced with considerations of student fatigue to emails. Obviously, students do not want to receive emails every single day.

2.2 Was Vital Signs 2020 too long?

Another concern which occupied a great deal of time in and outside of council was the length and complexity of the Vital Signs survey. While Figure 1 is the best guide for complexity, the question of length is not

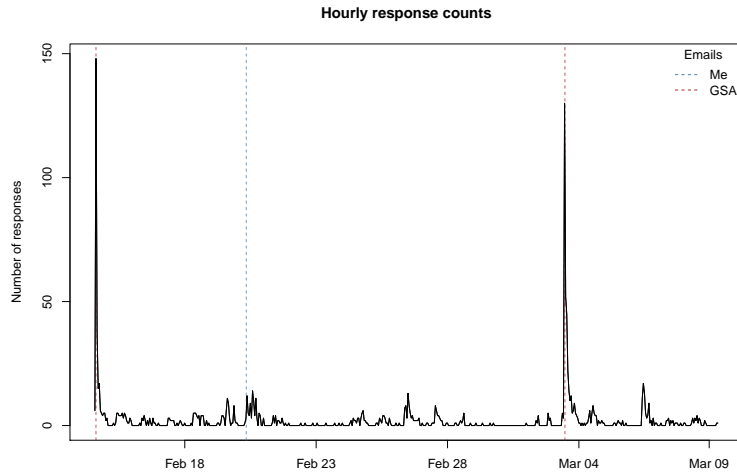


Figure 8: Response counts in one-hour increments with known email communication times marked.

well addressed. After all, we cannot see how long respondents spent on the survey in Figure 1. This does not mean we are entirely at a loss. If we are willing to assume that patience is the reason for respondent drop out, rather than a difference in time taken to answer questions, we can use students that drop out to estimate the time taken to complete each part of the survey. The SurveyHero site records both the start time of a response, and the final edit time. Taking the difference between these for each response and plotting it against the drop out point in a scatterplot produces Figure 9.

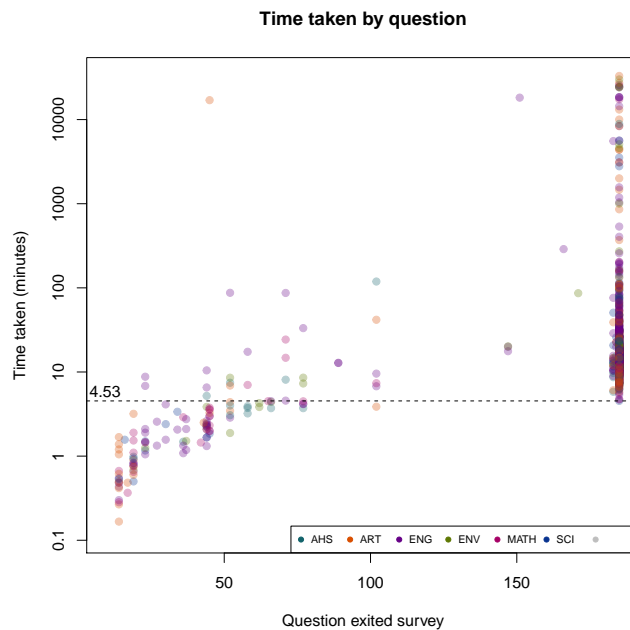


Figure 9: Time taken to complete the survey by survey exit/drop out point. The horizontal line indicates the minimum time taken to complete the entire survey.

If we trust our assumption and really do believe that students dropping out early from the survey do not differ in the time they take to complete survey questions, the above plot is phenomenally useful for future survey design. It provides a display which allows us to estimate the time a survey of a particular length might take for graduate students to complete. Now, our sample bias concerns from before mean we should not trust this display absolutely, especially as the graduate student population at UW undergoes constant turnover and so will be very different by the time of the next Vital Signs survey. Nonetheless, it provides some guidance to the question “is this survey too long?”, which is otherwise difficult to discern before deploying the survey.

Fortunately, we can evaluate the validity of this hypothesis. Shortly after the Vital Signs survey, the COVID19 pandemic motivated the distribution of a second survey to canvas students on the impact of the pandemic on their quality of life. This survey, which was designed with Figure 9 in mind, was constructed using SurveyHero, and so the exact same procedure to determine the drop out point can be applied. Plotting the two together could either bolster or diminish our confidence in the observed pattern. Figure 10 displays this plot. It is immediately obvious that the COVID19 Impact Survey times are completely consistent with the Vital Signs times. A robust linear model suggests respondents take roughly 6 seconds per question.

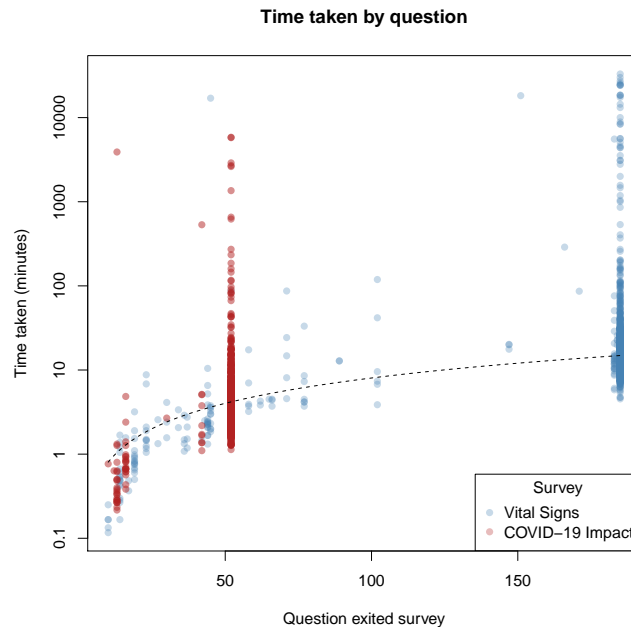


Figure 10: Time taken to complete the survey by survey exit/drop out point, the dotted line provides a robust linear fit to the data.

Unfortunately, the relatively low drop out rate of 15% overall obscures the vertical pattern on the far right of this figure. This vertical line is of equal importance to Figure 9, as it provides the times taken for all respondents which completed the entire survey. While Figure 9 provides insight as to whether a future survey might be too long, viewing these complete response times is more appropriate to answer the question of whether Vital Signs 2020 was too long. I’m personally pretty biased towards quantile plots for visualizing univariate data like this, so I’ve used such a plot in Figure 11 to display this data.

For those of you familiar with quantile plots, this plot will reveal a great deal about the distribution of response times for complete responses. The heavy right tail and strong mode are particularly noticeable. For those readers who are uninitiated, the main fact to take away from this plot is that 72% of respondents completed the survey in less than 20 minutes. Whether something is “too long” is obviously a subjective call, but I’d say this is pretty strong evidence that our efforts to simplify and shorten the survey were not in vain, as this is not an onerous amount of time to spend on a survey.

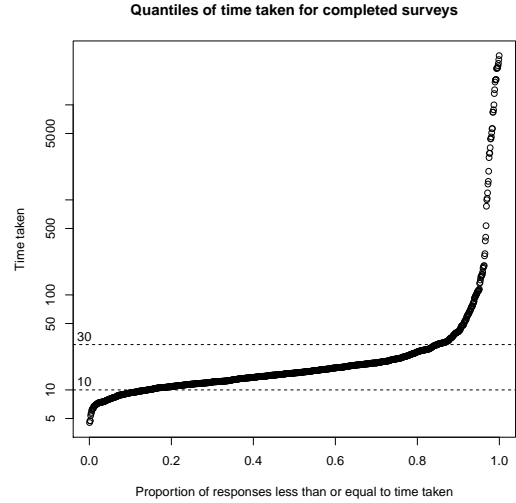
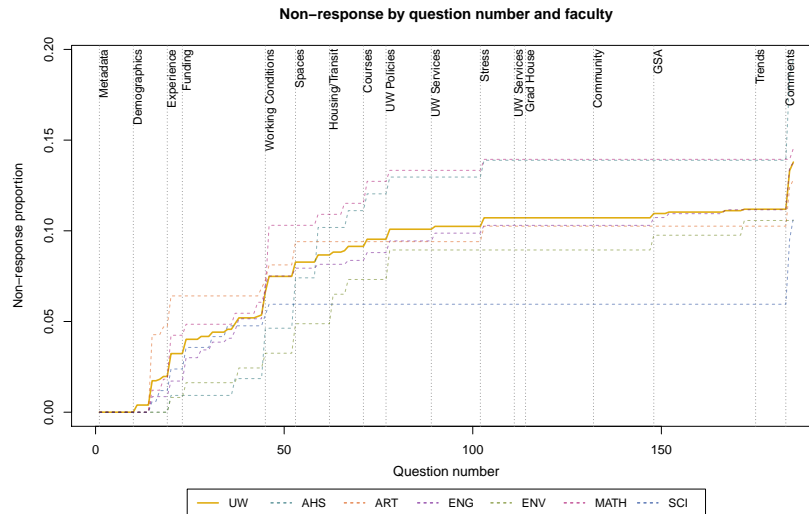


Figure 11: Quantile plot of completion times for completed surveys. The horizontal lines at 30 and 10 correspond to the 85th and 15th percentiles, respectively, implying 70% of participants that completed the survey took between 10 and 30 minutes to do so.

2.3 Looking at (one) map



We might finally wish to look again at Figure 1, to see what this plot tells us about the survey response. First, we should note that the faculty drop-out patterns differ greatly. Science had the most diligent survey respondents, with the lowest non-response rate, while math and applied health science had the highest rate of non-response. Perhaps intriguingly, this pattern corresponds with the overall response rate, where citizens in science had the highest response rate, and math and applied health science had the lowest.

In any case, this suggests that the measured population differs over the course of this survey, that is that the respondents at the beginning may differ in meaningful ways from those that stayed for the entire survey. Note that the non-response rate is typically flat during questions on the same topic, and tends to jump when topics change. We might also note that the biggest jump comes after the section of the survey meant to probe graduate student funding. While it is difficult to discern why this might be the case, the dry nature of

these questions may have inspired a great many respondents to think about other things they would rather have been doing.

2.4 Future improvements

We might try to improve on this in the future by using guaranteed participation incentives for a smaller group of students chosen at random. If we have faculty and citizenship designations associated with students in advance, we might even try to randomly sample using a stratified plan on these variables. Alternatively, post-stratifying a random sample of students selected from the GSA mailing list and offering guaranteed incentives for participation and survey completion would help to provide greater insurance than was present with the voluntary sample completion. If such a design is not feasible, emails are clearly an important driver of responses. A coordinated and regular schedule of official GSA emails must be part of any future survey if we wish to capture as many students as possible. Note that this can never resolve the above bias issues.

Additionally, as students that dropped out of the survey tended to drop out during topic changes, we might attempt to design future surveys with cohesivity front-of-mind. If all of the questions feel like they are based on the same structure or topic, it may be easier for respondents to complete the survey and drop-out would be less of an issue. Guaranteed incentives for completion may also affect this. That said, Vital Signs 2020 does not appear to have been too long for the majority of students, and given that most students completed the survey in less than 20 minutes, it appears to be a reasonable length from a more objective standpoint as well.

3 Demographics

There is a small quirk in this section of the survey seen in Figure 1: the overall non-response rate jumps despite no corresponding jumps in the faculties. These non-respondents correspond to individuals which started the survey but left before stating their faculty, and so have no demographic information recorded. Next, viewing the horizontal axis we can see that the survey recorded 18 demographic variables. It should be noted, however, that the first 9 variables were automatically recorded by SurveyHero, and included information like the time started and last time edited. Consequently, there are 10 actual responses of interest. Note that for the analysis that follows, all responses with a frequency of less than five have been amalgamated into a category of “Other”.

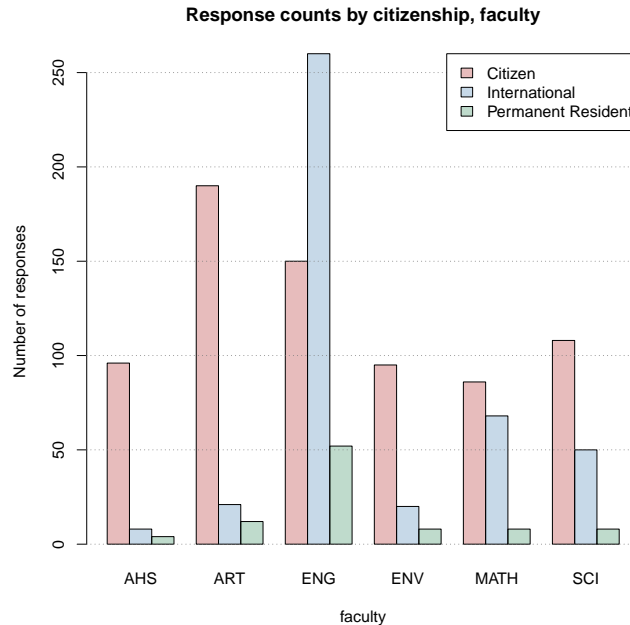


Figure 12: Response counts by faculty and citizenship.

Looking again at the responses by faculty and citizenship in Figure 12, we can see that engineering and citizen responses dominate our survey, and that for these important demographic sub-groups we tend to have rather small sample sizes. This compounds the non-random nature of our sampling plan, and limits heavily the inference we might draw about the population of all graduate students at the University of Waterloo. For this reason, this report will not be producing any confidence intervals, nor will statistical significance be evaluated. These are useful tools to establish inference, but they would likely be misleading for this data, and would overstate the ability of our survey to answer the important questions we have about the graduate student population. Not all is lost, however. The results of this survey can still be suggestive of patterns that are present for the graduate student population, and motivate GSA action in the future. They simply must not be taken as proper measures of the populations of interest, and so only accepted with a grain of salt.

Next, we might be curious about the distributions of masters and PhD students, as well as full time and part time students. Of the 1247 students that responded to the question of enrolment, 1123 were full time students, 114 were part time students, and 10 were inactive. Full-time students are highly dominant in our sample, but if one inspect the student headcounts produced by UW, it is clear this is not true generally. UW reports, in Winter 2020, that there were 4849 full-time students and 1288 part-time students. It is clear our sample is heavily biased towards full-time students, and that GSA outreach does not garner the same response from full-time and part-time students.

A similarly unbalanced picture is present of the campus counts. Among respondents, 1125 indicated that

they study at the main campus, while only 119 respondents are from satellite campuses or online. While the public headcounts data does not seem to indicate these totals, it should be clear that our sample primarily reflects the opinions of main campus students, and aggregate summaries will be less reflective of the experience of students at satellite campus locations and online.

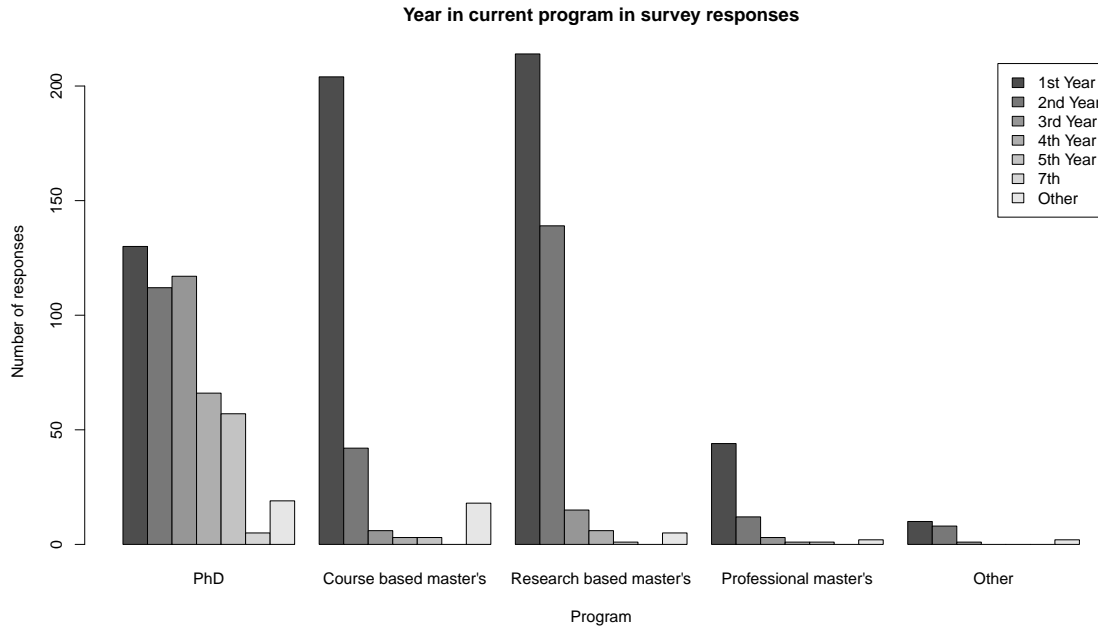


Figure 13: The years into program by program for survey respondents.

In our survey, there are 728 master’s students, of whom 280 are course-based, 66 are in professional programs, and 382 are in research-based programs; and 514 PhD students. The UW headcounts suggest that in Winter 2020 there were 2195 PhD students and 3908 master’s students, so our sample is not greatly biased in this regard, though PhD students are slightly over-represented in our sample.

Finally, we can view the year of our respondents into their respective programs in Figure 13. Each of the programs has a different, but unsurprising, set of responses for years into program. PhD responses are rather evenly distributed between one and three years, while all master’s responses are predominantly first years or second year students. This is consistent with knowledge of the typical length of these programs, but is nonetheless interesting to see in the data.

4 Experience

With the stage set by viewing the demographics, some analysis of the experience section is worthwhile. While this was a relatively short survey section which focused on one particular question in four parts, it is a key question in the survey, as overall student satisfaction is ultimately what the GSA attempts to improve. Pursuing that goal, the survey asked students to rate their experience at UW overall, socially, academically, and in their program each on a five-point Likert scale. The overall responses are summarized in Figure 14, and broken down for each faculty in Figure 15.

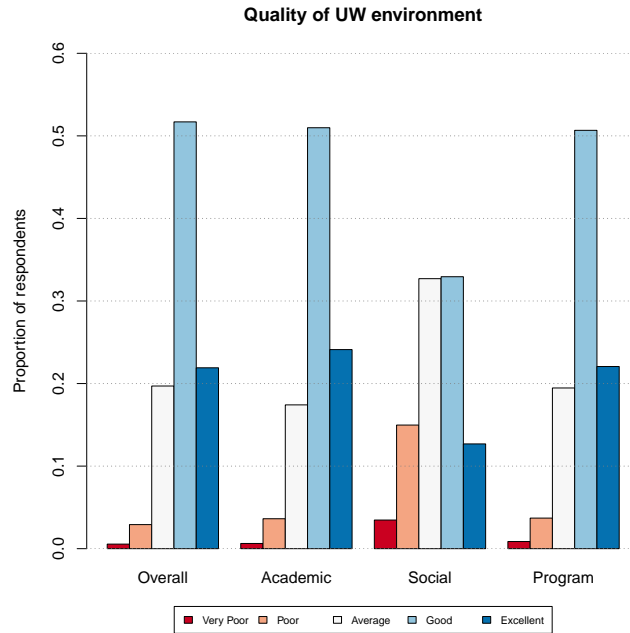


Figure 14: Distribution of student responses to the question of their experience at UW.

The first aspect of these plots to note is that the social aspects of UW are rated poorer than other aspect across all faculties. Far more people consider the social environment provided by the school to be “Average” or worse than the other aspects. Still, the overall message is positive, across all faculties most students are rating all aspects positively. Now, the faculty of students is perhaps only loosely related to their overall opinion of UW, so a more important question, and more relevant question for future planning, might be that of what aspects of this survey are more strongly related to this overall experience. These associations cannot be taken as gospel, but may provide guidance in future decision making.

4.1 Associations with experience

In order to evaluate the associations present in this survey, there are two key tools. The first is the χ^2 test of independence applied to contingency tables, and the second is the use of the permutation tests to allow this test to be flexibly performed for even small sample sizes. Combining these two, we can simulate the generation of any pair, or indeed and arbitrary combination of variables, in order to see how exceptional the observed pattern of responses would be if there truly were no relationship. This gives a p-value which we must be careful to interpret correctly. Unlike typical p-values, which suggest the probability of a hypothesis in the wider population, this p-value is a simple measure of dependence, like a correlation. Unlike the correlation, smaller values indicate a stronger relationship.

While this tool is powerful, we must still be judicious in its application. This data set has 185 different points of data for each respondent, giving roughly 17,000 possible pairwise combinations. Sorting through all of these accurately is not a simple task. While we could use some adjustment for multiple testing, a safer

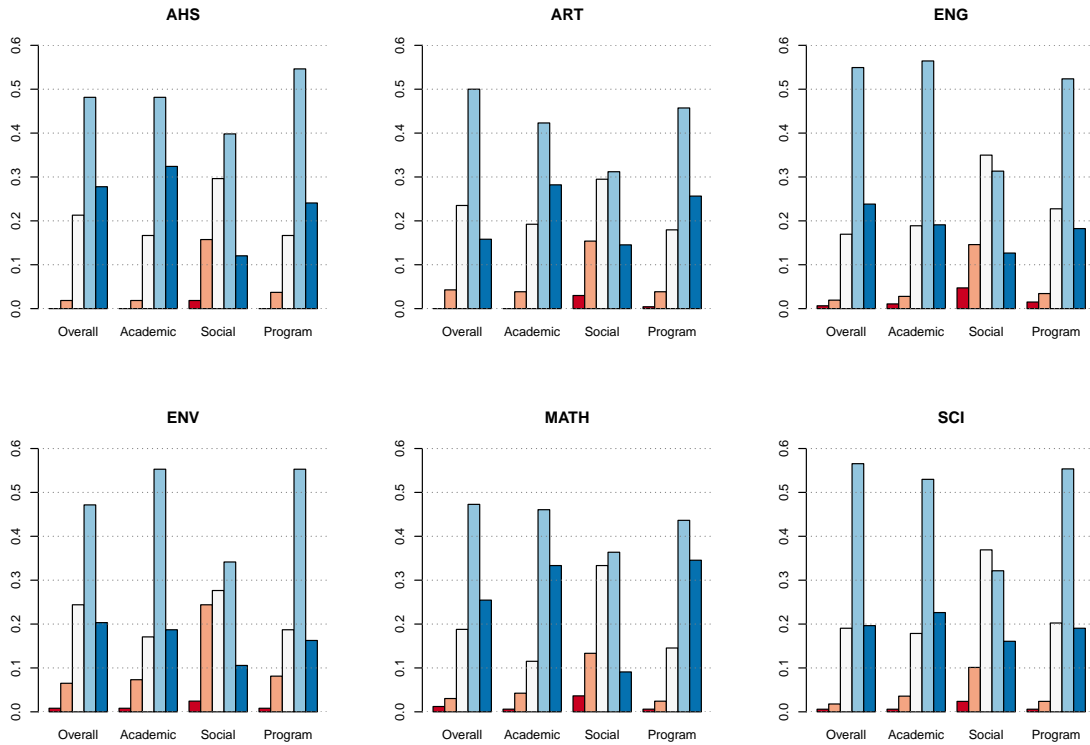


Figure 15: Distribution of student responses to the question of their experience at UW, divided by faculty and coloured as in Figure 14.

approach is to use the above method only when there is an obvious actionable insight that could be gained by its application. Knowing that the opinion of the quality of chairs is associated with knowledge of the UW smoking policy, for example, does suggest give any obvious actions by the GSA. With that in mind, simulated χ^2 tests were applied to all variables to compare them to the overall experience features. A quick scan of the associations over the data can help inform further searches:

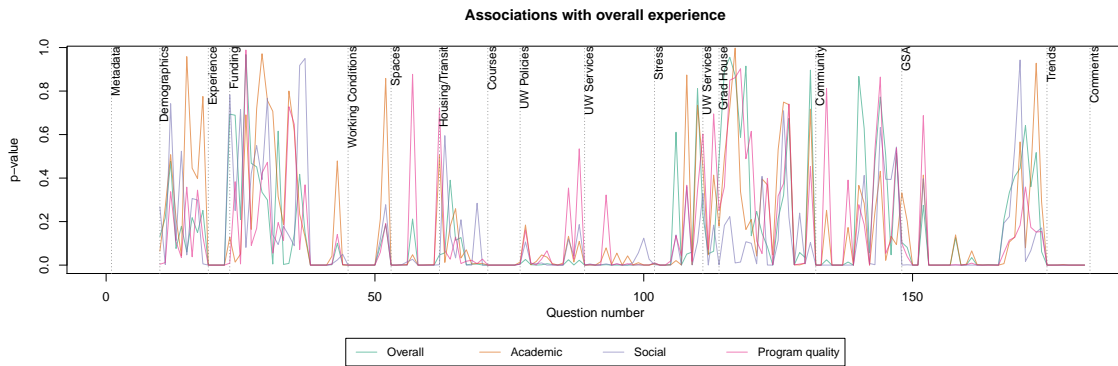


Figure 16: Associations with overall experience.

The anchoring effect of the chained Likert scale can be seen clearly here, as all overall experience variables are strongly associated with one another. Clearly, however, the result of this analysis is not the clear-cut

answer we would like. Rather than narrowing down our search significantly, a large number of variables seem to have significant relationships with each and every overall experience variable. Some of these associations emphasize our inability to determine causation from this data. What we would really like to know is what variables cause students to enjoy their time at UW more, but measuring association can never tell us this. The strong associations present between knowledge of UW policies and all experience variables, for example, defy an obvious causal interpretation. This demonstrates how mining the data for associations can easily mislead us or provide us with useless information. If that is so, what are we to do?

Well, we must simply set our sights lower and investigate a few key questions that are obvious from the early analysis. The two main questions explored are that of the impact of students who have spent less time at UW on the observed trends, the differences between the respondents that submitted shortly after official GSA emails and those who responded at other times, and the sizable minority of students that feel no community at UW. Additionally, at the request of the executive, some summary of topics appearing in student comments will be addressed.

5 Particular investigations

The included summaries and itemized council report should answer any direct questions about the data and responses to each question. Consequently, a handful of specific questions were investigated.

5.1 Email communication bias

The first of these questions involves Figure 8 and the typical method of communication students use to get GSA news. As roughly 50% of respondents seemed to respond within half a day of one of the official GSA emails, the main method, that of emails, is somewhat questionable. Perhaps the prevalence of this method of communication was simply a result of the survey collection method, as respondents to the survey seem to have largely been driven by emails. As a consequence, we can consider splitting the data into two sections, those responses from the 12 hours following an official GSA email, and those responses not. Figure 17 demonstrates this split, with red bands indicating these half-day windows.

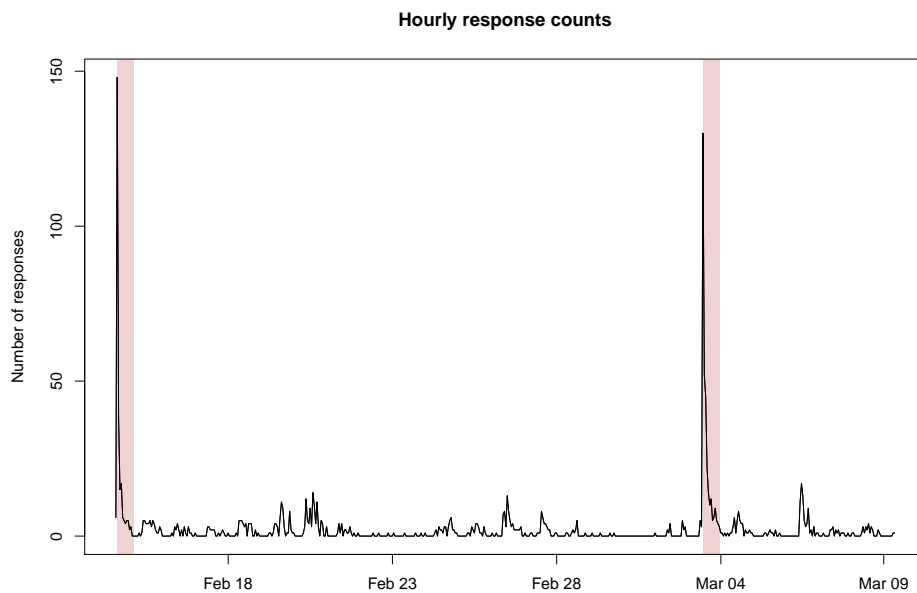


Figure 17: Response counts by hour, with the twelve hour periods following GSA emails marked in red.

These bands include 483 responses, or 44%. The immediate question that is posed by this split is that of the impact on how these respondents get news from the GSA, in particular email news. Table 5.1 displays the counts of these groups for email communication.

	Half day after GSA emails	All other responses
Get news by email	423	518
Do not get news by email	60	93

Table 1: Counts of respondents getting GSA news through email by time of response relative to GSA email.

A quick inspection suggests that there is no meaningful difference here, and margin-controlled simulated sampling of this table with the chi-squared statistic indicates that there is little difference between these two groups of respondents. This is somewhat welcome news, as it suggests that the responses to this question do not reflect the sampling method, but must still be accepted only cautiously. I do not know the email

patterns of all councillors, and so it is totally possible this bias as a result of collection is still present, but simply hidden.

Still, a number of hypotheses readily spring to mind about these groups. Perhaps the early respondents are more engaged socially or academically, and hold the GSA in higher esteem. To address such nagging questions, simulated chi-squared tests were performed for these groups with every other question in the survey. This broad testing found no great differences between them. It seems that this split is somewhat arbitrary and does not reflect an aspect of the respondents faithfully.

5.2 Trends

Another, perhaps more interesting, point of bias presents itself in the trends section of the Vital Signs survey. In this section, the dominant responses across all faculties were primarily neutral. That is, most respondents choose options corresponding to no change across most questions of the trends perceived in student life.

This could be taken purely as an indication that nothing has changed, but the time frame of these questions was three years. If we recall from the exploration of demographics, this time frame is longer than the time a majority of respondents have spent at UW. There can be little doubt these respondents may therefore answer this question in a neutral fashion, as they would not know how the university has changed over a time period they haven't seen. Consequently, another split might be introduced which separates the respondents by their year into their program. The responses in the trends section can then be investigated to gain a more accurate reflection of the perception of change among students with the requisite experience. This comes at a cost of sample size, however: in total, only 284 respondents, or 26%, have been at UW for three years or more.

Several trend questions showed large response differences between these groups. Using the simulated chi-squared test procedure, a p-value was generated for each trend questions compared to the number of years spent at UW. Tables 5.2 - 5.2 display the trend questions in which the groups had significantly different answers. For all other questions, the aggregate response is a good reflection of both group's response to the question. Notice that the respondents with more time spent at UW tend to take more negative positions about affordability, overall, and student health trends. This is most marked in affordability, where the persistent preference for neutral responses is gone for the more experienced group and most of them state that affordability is getting worse. More experienced students are also more likely to rate the trend in GSA representation positively.

	Three years or more	Less than three years
Improving	18	62
Somewhat improving	69	217
Staying the same	134	423
Somewhat worsening	42	85
Worsening	21	23

Table 2: Counts of respondent overall trend responses by time spent at UW. While the neutral option still dominates, the students with more UW experience tend to be slightly more negative than their less experienced peers.

	Three years or more	Less than three years
Improving	4	20
Somewhat improving	16	77
Staying the same	86	342
Somewhat worsening	88	226
Worsening	90	145

Table 3: Counts of respondent affordability trend responses by time spent at UW. Negative trends dominate the experienced UW students, with a majority indicating that affordability is worsening.

	Three years or more	Less than three years
Improving	13	44
Somewhat improving	76	165
Staying the same	156	517
Somewhat worsening	21	63
Worsening	18	21

Table 4: Counts of respondent GSA representation trend responses by time spent at UW. Neutral responses again dominate both groups, but the students with three years of time or more seem to be slightly more positive.

	Three years or more	Less than three years
Improving	11	37
Somewhat improving	46	176
Staying the same	124	381
Somewhat worsening	67	142
Worsening	36	74

Table 5: Counts of respondent affordability student health responses by time spent at UW. Neutral responses dominate both groups, but students that have spent three years or more at UW tend to be slightly more negative.

5.3 Respondents without social community

A final question of interest comes directly from the social community question. While most students feel a part of some community, typically within their program or department. Alarming, however, 269 respondents, or about 25%, indicated that they feel no sense of community at UW whatsoever. Even if this number is over-represented in our sample, this suggests several hundred students have no social community on campus. Perhaps this group will display serious differences compared to the rest of the respondents?

Once again, simulated chi-squared tests were used to compare the responses to every question in the survey for respondents that feel no sense of community and those that feel some. Perhaps unsurprisingly, the students that feel no sense of community tended to be much more negative than their peers in a community. This negativity did not just affect social questions, but was true for questions on course experience, funding aspects, and academic aspects of UW life. Additionally, these students were not only isolated socially, but academically, indicating that they were much less likely to feel a part of an academic community at UW. These respondents are less likely to attend Grad House or use any UW or GSA service to handle their stress, and were much more likely than their socially connected peers to indicate that aspect of graduate student life are worsening in the trends section.

This suggests that these students feel a lack of community largely due to a lack of engagement with social activities and spaces. Whether their overall negative outlook is a cause or a result of this cannot be said with any confidence. Clearly, these students engage less with social spaces and find UW to be a less pleasant environment, but both of these facts may be the result of some other, unmeasured, aspect of these students. It is not clear whether they prefer to avoid these social settings or if they are just uneasy to do so. Their answers to the Grad House barriers did not differ from socially connected respondents, and so finances may be a factor in their decision making.

6 Comments

The final part of the Vital Signs survey provided students with two open-ended comment questions, the first asking respondents about the major factors affecting student life, and the second for general final comments. Analysis of these comments is provided below.

6.1 Major factors

In order to get a broad sense of what factors were mentioned most commonly by respondents, the comments were split by space characters and punctuation and “stop words” (uninformative words such as prepositions and articles) were removed. The number of comments which mentioned each of these individual words could then be counted to give a rough sense of the most frequent factors mentioned. Figure 18 displays the most frequent words in a bar plot.

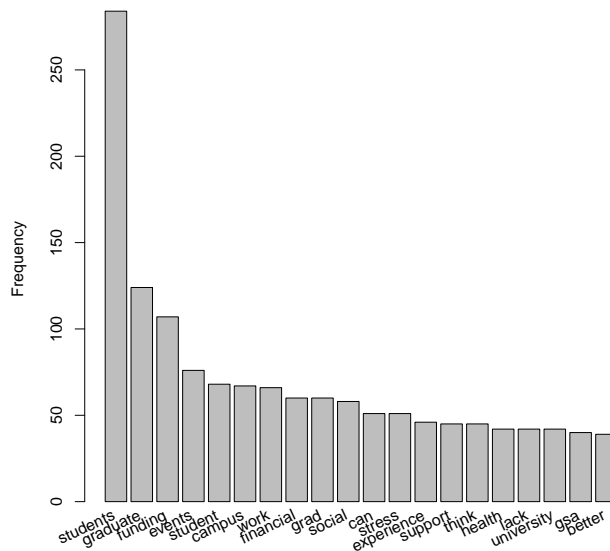


Figure 18: The most frequently used words in the major factors section.

This is suggestive of a few patterns, but a great deal of information has been lost. For example, “health” and “funding” appear in these top terms, but the context of these terms is missing. “Mental health” is its own concept separate from physical health, and without greater context, these two cannot be separated. Consequently, a ‘shingled’ pair of words approach was taken. This approach records every pair of words that occurs in a comment, with each word recorded separately both by what word it follows and precedes. This leads these pairs to overlap adjacent pairs by one word, like overlapping shingles on a roof. Figure 19 shows a bar plot of these shingles.

The greater context provided by these pairs is quite enlightening, and suggests that finances, social activities, and mental health are the main factors of student satisfaction. A more intuitive way this can be visualized is a word cloud:

More sophisticated topic methods, such as principal component analysis, were attempted on the data, but failed to produce meaningful outputs. The variation present in the relatively small number of comments with a relatively varied vocabulary meant that comments were too varied to be effectively summarized by these means.

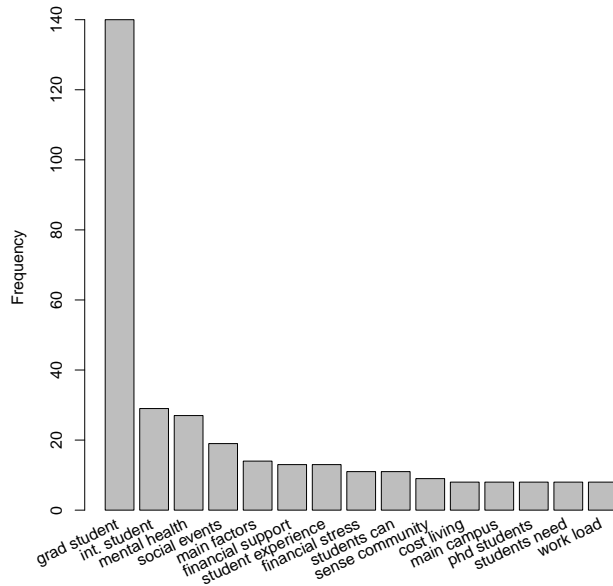


Figure 19: The most frequent paired word shingles in the main factors section. Note that int. stands for international and common variants of “graduate student” have all been replaced with “grad student” for simplicity.



Figure 20: Word cloud for paired word shingles in the main factors question with “grad student” removed to make other words more visible.

6.1.1 For socially disconnected students

Two main themes emerged from reading these comments: funding and social activities. Many students commented that they feel the GSA should support more social events, particularly at a local level within departments and programs. They found, unsurprisingly, that their lack of social life was a major factor in their quality of life, and wanted to see more opportunities provided to address that. Funding was mentioned as a source of stress for students specifically in this section, and many of the socially disconnected students echoed this thought in their main factor comments.

6.2 Final comments

Addressing the topics presented in the final comments, an identical approach to the main factors was taken. The plots that resulted are displayed below.

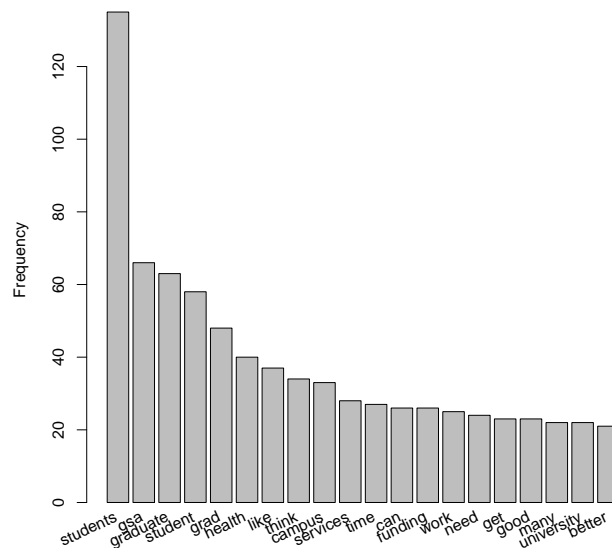


Figure 21: The most frequently used words in the final comments section.

Now, unlike the major factors section, the lack of a context around these comments means that even the word pairs are not clear. While “mental health” and “grad house” have been mentioned by many students, it is imperative that we know what students said about these aspects of their UW experience. To that end, comments containing these pairs were identified and viewed to get a sense of student feedback on these services.

On Grad House, students were split. Roughly half of commenters were positive about Grad House, and another half suggested the menu and food need improvement. A third common theme was the accessibility of Grad House, with several students mentioning they find it inconvenient to go to Grad House due to its location on main campus, while they are studying on a satellite campus.

Mental health services had a very common theme. Students are dissatisfied with the limits on the number of appointments they might take and a sense that the counselling services are underfunded or overworked. Respondents identified a focus on undergraduate mental health as a key aspect, as the graduate experience is very different and tailoring services to serve undergrads can lead to graduate students being underserved. It should be noted that mental health, health services, and counselling services were all mentioned in this context in roughly the same way.

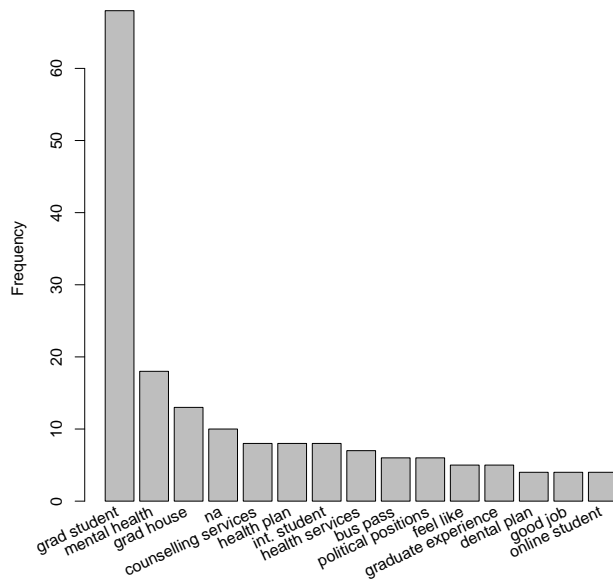


Figure 22: The most frequent paired word shingles in the final comments section. Note that int. stands for international and common variants of “graduate student” have all been replaced with “grad student” for simplicity.

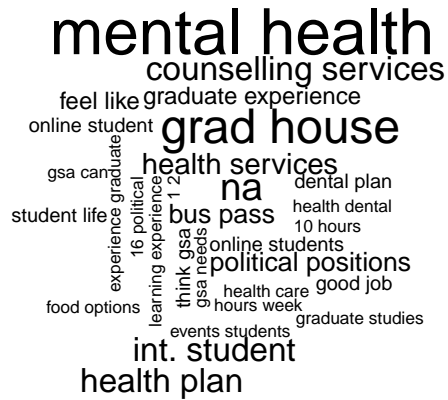


Figure 23: Word cloud for paired word shingles in the final comments with “grad student” removed to make other words more visible.

6.2.1 For socially disconnected students

In order to gain some greater insight into the socially disconnected students identified in 5, the comments were split and the socially disconnected comments were read. The first feature to note is that these students were much more likely to place a response in the final comment section than students that feel some level of connectedness. A number of aspects became clear in these comments. The first of these was that many of these individuals are part of small minorities at the university, whether by race, campus, or program. That said, the demographic variables recorded do not differ severely between the socially disconnected respondents and others, with the exception of the department. This is consistent with these comments.

Additionally, international student woes and a lack of GSA engagement appeared in these comments quite frequently. This should not be taken too seriously, however, as this group was not, on average, exceptionally different from the socially connected students on these aspects. That said, the knowledge gained on the importance of email to contacting graduate students should be taken to heart to at least attempt to address this concern. While we must be careful not to base all policy on a handful of vocal discontents, following good overall policy does not hurt. What is clear is that many of these students had negative opinions of this survey itself, as the comments frequently took time to chastise the GSA for creating a bad survey which they felt gave them few options to express themselves.

Appendix

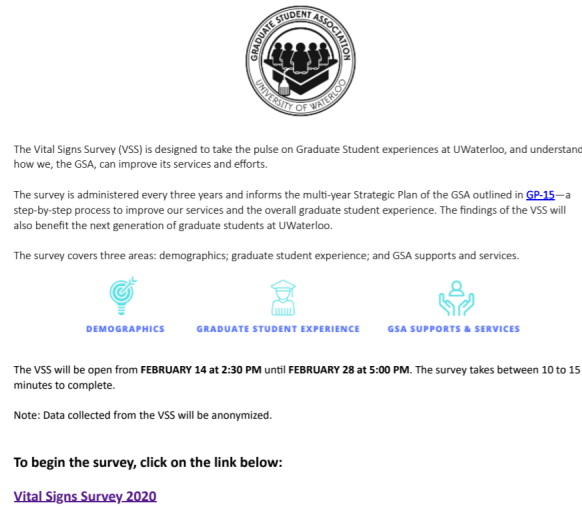


Figure 24: The content of the GSA emails about the Vital Signs Survey.

Report Provided to Council

The summary below presents of my main initial findings in the analysis of the GSA 2020 Vital Signs Survey. A number of avenues of investigation, such as the trends responses among more appropriate subsets and the comparison of email-driven respondents and other respondents, have not been pursued. Should there be GSA council interest in these or other analyses, a final report which incorporates this councillor feedback could be provided by May 13th, 2020. This would provide some time to perform the analysis that councillors are most curious about, as well as to address comments about the analysis already performed.

Summary

The 2020 Vital Signs Survey collected 185 data points for 1269 participants over several dozen questions using the SurveyHero platform. Of these 1269 participants, a total of 1094 completed the entire survey while 175 exited the survey at some point. This is a derived number; SurveyHero has a different completion criteria which reports those responses that did not provide an email or comments as incomplete, despite the problems with that convention. Regardless, 1269 and 1094 represent roughly 20% and 18% of the UW graduate student body (official headcounts can be found [here](#)). This was not uniform across faculties, however, and Applied Health Science and Mathematics had markedly lower response rates than the other faculties (see Figure 7). For clarity, all percentages reported are for the response on that particular question unless otherwise indicated.

First, there are a few things to note about the survey construction and deployment, Figures 9 and 1 indicate that respondents typically took less than 30 minutes to complete the survey and only one in seven dropped out part way through. These two numbers suggest that efforts to streamline and simplify the survey undertaken during construction were worthwhile. As for deployment, there are fewer positives to report. The importance of emails in eliciting responses, shown in Figure 8, and the differing response rates by faculty suggest our sample is biased. As we did not perform a statistical sampling plan, we cannot be certain how, but a number of answers, such as the main method of reading GSA news (unsurprisingly “Email” in a survey driven by mass emails), display this bias.

A majority of respondents are involved in some sort of research, and are master’s students. This has implications for the year into the program of respondents, as master’s programs tend to be shorter, and so

first and second year students dominate (see Figure 13). As a key focus of this survey was the measurement of trends over the last three years at UW, this presents an obvious deficiency in our coverage and ability to answer questions on trends with precision. Indeed, this bias is obvious in the tendency of all respondents to indicate that there have been no trends in student life at UW, as seen in Figure 35. Whether this is a consequence of the lack of experience of respondents or their honest opinion cannot be discerned without further investigation.

That said, not all hope is lost. The results here still provide some suggestions of the opinions of students, and there are a number of positive signs. For example, respondents tended to rank all aspects of their overall experience as better than average (though the social aspect lags behind the others), found the current TA rate to be appropriate or high, and found their funding to be fair, timely, and equitable. Note that funding is clearly a nuanced issue, as can be seen in the differences in funding profiles in Figures 27 and 25.

Working conditions were also viewed favourably. A large majority of respondents were either neutral or positive about the clarity of expectations, clarity of roles, manageability of workload, adequacy of training, and respect for their rights as workers. The only front on which respondents were predominantly negative is that of overtime, where a majority found that some overtime is required in their work at UW. It is perhaps interesting, given this general contentment, that a majority of respondents indicated a belief that unionization will improve the working conditions of graduate students at UW, though in all faculties the number of unsure respondents was comparable to or greater than those which believe in this improvement, as seen in Figure 39.

The work and study spaces proved to be the most variable part of this survey, with the typical ratings of quality heavily dependent on faculty and department (see Figure 3). A majority of respondents indicated that they do not feel safety is an issue, and tended to consistently rate the safety of work and study spaces as higher than the quality. The quality of courses was more universally praised by respondents, a majority rated all aspects of courses as “Good” or “Very good”.

A similar unity is found in housing, where most respondents indicated they live in some form of shared off-campus housing, with a majority spending between \$500 and \$900 per month and commuting for less than 40 minutes to get to their campus, which was predominantly main campus. The primary methods of transit were the GRT busses, walking, driving, and the GRT Ion. Respondents were once again split on affordability, but a plurality of respondents found off-campus housing to be unaffordable.

On UW policy, most respondents reported moderate familiarity, though knowledge of intellectual property and TA employment were relatively lacking. Additionally, a large majority of respondents supported making UW campus smoke-free. This focus on health is reflected in respondent service use, where the two most commonly used services were health services and athletics. The use of other services varied greatly, but a majority of students that used services found them to be “Good” or “Very good”. The highest rated service among users was the Centre for Teaching Excellence, while the lowest were the Human Rights Office and the Equity Office. Athletics users reported using the service once a week or more often, while users of Counselling Services, the Student Success Office, and the Grad House typically only use the service once a month.

Perhaps this is because they are too busy, as respondents dominantly rated their workload as heavy, shown in 38. They found academics and finances to be similar sources of stress, and indicated less stress due to available resources. The most common outlets indicated for this stress were athletics and Grad House. Most respondents have attended Grad House, but have found a lack of disposable income to be a large barrier to regularly attending. It seems we have a small catch-22 in this survey: students are stressed by their finances, and so want to go to Grad House to relax, but this only further stresses their finances. Atmosphere and other aspects of Grad House were not considered major barriers to going.

Community at UW seems to be local. Both academically and socially, respondents felt more communal in their programs and departments than campus-wide. Furthermore, the importance respondents placed on community matches this pattern. There was an appreciable proportion of respondents that did not feel a part of any community, however. Perhaps this group should be further investigated.

Reaching these students may suggest one of the GSA’s goals moving forward. After all, respondents seemed split on knowledge of the GSA, as seen in Figure 40. Despite this, and the lack of regular contact a majority of respondents reported with their councillor (most didn’t even know who represents them), respondents had a generally positive view of GSA representation, communication, and engagement. Less positively viewed were the Grad House and dental fees administered by the GSA, respondents were consistently least satisfied with these costs. The GRT pass was both the most satisfying cost and highest quality service.

Somewhat conflictingly, Grad House was the second highest quality service, while the tax and legal aid services were rated as the poorest quality. Respondents typically received their GSA news by email, but Figure 8 suggests that this is an artifact of survey deployment and not necessarily a reflection of general student preferences.

As mentioned above, respondents were rather neutral about trends. For most trends, a majority of students felt little change either way. Only affordability shows a narrow majority in one direction. Just over half of respondents feel that education and living costs are becoming less affordable. The structure of these questions, relying upon comparisons over three years, placed a majority of respondents in a position of little knowledge. Perhaps a more targeted survey approach would better answer these questions, or further investigations on subsets of the data collected here.

Itemized findings

• Survey construction

- The survey appears to have been a reasonable length, only one in seven participants dropped out, and 85% of those who completed the survey did so in less than 30 minutes (see Figure 9)
- Drop out occurred primarily at the points of change between topic groupings of questions (see Figure 1)
- Sequential Likert scales produced strong anchoring effects, across all question groups the most common answers selected the same option for all adjacent questions
- Open-ended “Other” options led to inconsistent answers which led to considerably more difficulty in analysis

• Survey deployment

- Emails from the official GSA account seem to be directly responsible for the majority of survey response (see Figure 8)
- The lack of a statistical sampling plan and use of voluntary sampling makes inference from this data inappropriate, differences in survey response rates between faculties indicate that our survey is not an independent measurement device

• Demographics

- Responses were dominated by full-time students (1123 or 90%) and students attending the main campus (1125 or 90%)
- Most respondents (896 or 71%) are pursuing a degree with some research component
- Most respondents indicated they are master’s students (728 or 58%), PhD students made up a majority of the remainder (514 of 41%), a small minority of students selected “Other”
- Master’s students were typically in their first year, reflecting their shorter programs (see Figure 13)

• Experience at UW

- Respondents predominantly found the quality of all aspect of the UW environment to be “Good” or better (see Figure 14)
- In aggregate, and in individual responses, students found the social environment lacking compared to other aspects
- Social satisfaction among respondents is strongly associated with a feeling of community in their program and department, and less strongly associated with a feeling of campus-wide community

• Funding

- Most respondents indicated they receive some funding for their studies (987 or 81%)

- Funding sources differ greatly between funded and non-funded respondents (see Figure 25), but generally respondents do not fund their studies through part time jobs, and even funded respondents have some reliance on family and personal savings.
 - Funding features differ greatly between faculties (see Figures 28 and 27), among respondents engineers were the least likely to be funded and science were most likely to be funded.
 - Most respondents found funding fairness (954 or 79%), equity (979 or 81%), and timeliness (1069 or 89%) to be “Average” or better
 - Most respondents found the TA rate to be “Appropriate”, “High”, or “Too high” (714 or 59%, see Figure 29)
 - Timeliness was, on average, rated higher than other funding aspects
- **Working conditions**
 - Most respondents were neutral or agree that their roles are well defined (995 or 85%), the expectations of them are clear (992 or 84%), their rights are respected (972 or 83%), their work load is manageable (968 or 82%), and adequate training is provided (975 or 83%)
 - Most respondents were neutral or felt that overtime is required (816 or 70%)
 - On unionization, 531 (45%) of respondents felt it would improve working conditions, 175 (15%) of respondents felt it would not improve working conditions, and 468 (40%) were unsure (see Figure 30)
 - Unionization opinions differ somewhat by faculty, some faculties are predominantly unsure (see Figure 39)
- **Spaces**
 - Across all faculties, most respondents either indicated that they have no office space or have an individually assigned desk in a shared space (overall 991 or 85%)
 - On an index measuring overall quality of work and study spaces, 81% of respondents reported that their work spaces were “Average” or better, 72% had the same response for study spaces
 - Across all faculties, 73% or more of respondents reported work spaces as “Average” or better, and 65% reported the same for study spaces
 - The greatest point of variation in this survey is on the respondent perception of the quality of their work and study spaces (see Figure 3)
 - Safety was, on average, more highly rated than the other space aspects
- **Housing and transit**
 - Most respondents indicated they live in off-campus housing (1045 or 90%)
 - Only a minority of respondents (234 or 20%) live in single housing, all other students live in some form of shared or family housing
 - Most respondents (688 or 60%) spend between \$500 and \$900 per month on rent, and are split on affordability (473 or 40% find off-campus unaffordable, while 360 or 31% think it is affordable)
 - Predominant methods of transit to campus among respondents were GRT bus (399 or 34%), walking (336 or 29%), driving (216 or 19%), and the GRT Ion (123 or 11%)
 - Most respondents (1045 or 90%) live within 40 minutes of campus by their usual means of commute (see Figure 31)
- **Courses**
 - A majority of respondents rate as “Good” or “Very good” the delivery (68%), class discussion (68%), readings (63%), exercises (67%), evaluation (70%), and feedback (62%) for their courses
- **UW policies**

- An index meant to assess overall knowledge of UW policy found that students are typically familiar, but a large number of students have little familiarity with university policy (see Figure 32)
 - Generally, intellectual property, contract research, and TA employment policies seem to be most poorly understood
 - A majority of respondents (890 or 78%) support making UW campus smoke-free
- **UW services**
 - Among respondents, the two services most used were health services (used by 74%) and athletics (used by 72%)
 - Service use varied greatly: 52% for the Writing Centre, 48% for the Centre for Teaching Excellence, 29% for AccessAbility Services, 42% for the Housing Centre, 52% for CECA, 42% for the Student Success Office, 44% for Counselling Services, 26% for the Family Health Clinic, 23% for GradVenture, 19% for the Human Rights Office, and 18% for the Equity Office
 - The percentages of users rating the service as “Good” or “Very good” were 62% for Health Services, 74% for the Writing Centre, 57% for athletics, 76% for the Centre for Teaching Excellence, 66% for AccessAbility Services, 53% for the Housing Centre, 65% for CECA, 71% for the Student Success Office, 52% for Counselling Services, 54% for the Family Health Clinic, 56% for GradVenture, 50% for the Human Rights Office, and 50% for the Equity Office
 - A majority of users of the athletics services report using these services more than once a week (73% of users)
 - Users of Counselling Services, the Student Success Office, and Grad House typically use the service once a month (87% of users, 87% of users, 69% of users respectively)
 - 42% of respondents report never going to Grad House
- **Stress**
 - A majority of respondents rated their workload as heavy rather than light, and this is true across all faculties (see Figure 38)
 - Respondents, on average, found finances and academics to be similar sources of stress, and resources less commonly a source of stress
 - Grad House and athletics were the services most frequently used by respondents to relieve stress, more than a third of respondents indicated they use these services to relieve stress
- **Grad House**
 - 81% of respondents (883) reported going to Grad House at some point
 - Respondents most frequently reported going to Grad House for casual social gatherings and food, and least frequently reported going to study and for networking events
 - Respondents reported disposable income as the primary barrier to going to Grad House, with 399 (or 36%) indicating this barrier
 - Atmosphere, lack of events, and faculty sharing the space were not considered barriers by more than 96 (or 9%) of respondents
- **Community**
 - 269 (or 25%) of respondents reported not feeling a sense of community anywhere at UW
 - Of those that do, most reported they feel most strongly part of a community in their department, and only some feel like a part of a campus-wide community
 - Overall social experience was most strongly related to immediate community membership, rather than campus-wide membership
 - For all community levels, more respondents reported that these communities are important than report feeling a part of these communities

- Patterns are similar for academic communities
- **GSA**
 - Respondents were split on knowledge of the GSA, with two different modes of response common across all faculties (see Figure 40)
 - Respondents were unsure about whether 16 political positions is too many in all faculties (see Figure 33)
 - Despite a majority of respondents not knowing or rarely interacting with their departmental councillor (830 or 76%), 507 (45%) of respondents felt engaged with the GSA and 344 (31%) that their interests are represented by the GSA (51% of respondents are unsure if their interests are represented)
 - Most respondents reported not using the majority of GSA services, however among those that do, the services are rated as “Good” or “Very good” by a majority
 - On average, the legal aid and tax services are considered the poorest quality, while GRT is firmly the highest quality service followed by Grad House and health insurance
 - Overall, respondents seemed satisfied with the GSA costs (see Figure 34)
 - On average, respondents found the dental coverage cost and Grad House cost to be the least agreeable, and the GRT cost to be the most agreeable
 - More respondents agreed than disagreed that the GSA is communicating effectively
 - Email was, by far, the most frequent method of communication respondents use to keep up with GSA news (941 or 86% of respondents), however this is not necessarily indicative of sound GSA strategy, but of the bias of our sample as indicated by Figure 8
- **Trends**
 - While more respondents felt that the overall academic and social experience is improving than worsening at UW (366 compared to 171), a majority have not noticed any change (557 or 51%)
 - This pattern repeated for AccessAbility Services awareness and use (408 think it is improving, 637 think it is staying the same, 49 think it is worsening)
 - A majority of respondents felt that affordability of education and living costs is worsening (549 or just over 50%)
 - Most respondents felt that the GSA’s representation of students is staying the same (673 or 62%), but more felt it is improving than worsening
 - A similar pattern is present for trends in ability for students to receive assistance with specific problems faced by individuals, and for the social, intellectual, and political contact amongst students
 - Respondents were also split on the trends in mental health, 270 see some improvement while 319 see some worsening and 505 no change
 - Respondents were generally quite positive on sustainability trends, with 508 noting improvement and only 78 noting worsening
 - Most students seemed to find no trend in overall student life (see Figure 35)
 - On average, respondents found affordability and student health were worsening more than other aspects, while sustainability and AccessAbility were improving more than other aspects

Figures

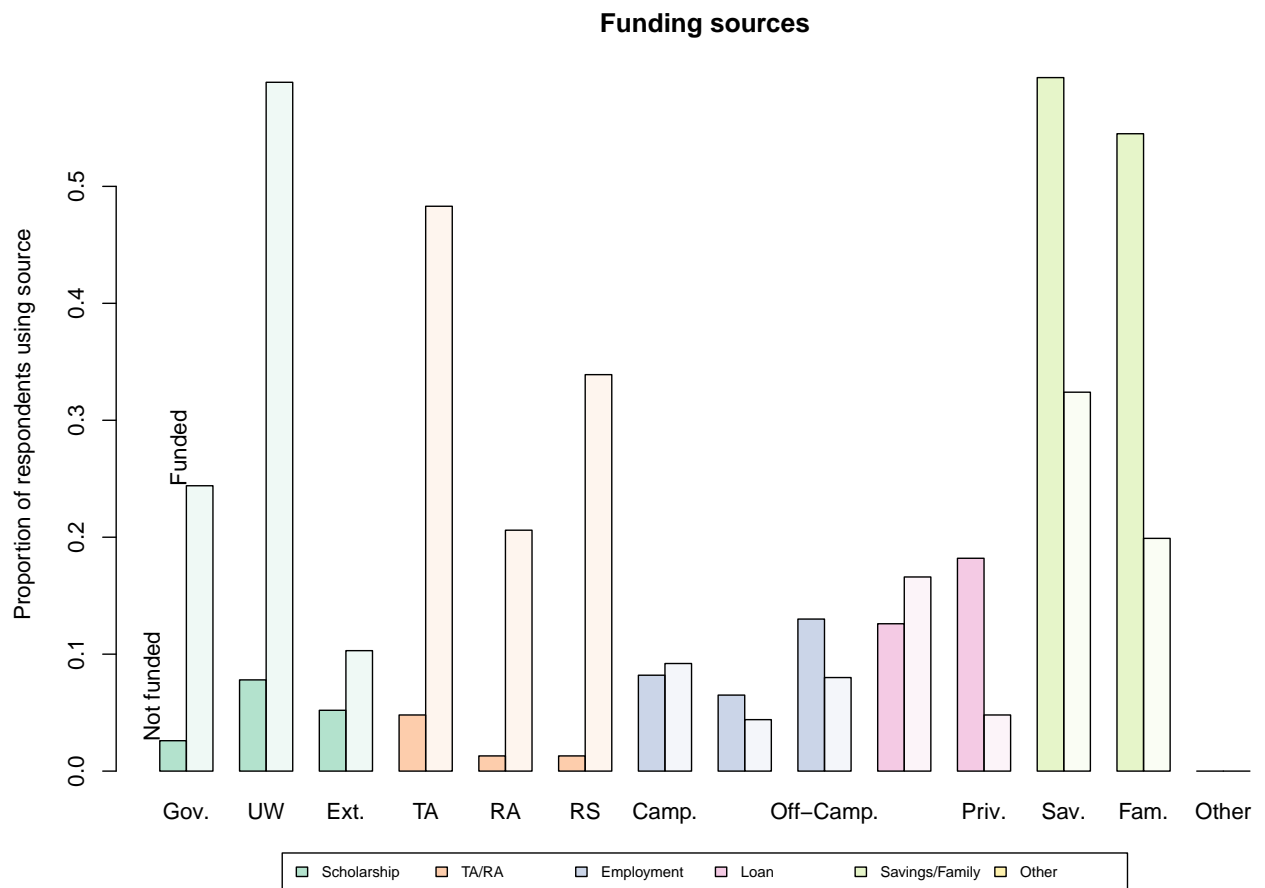


Figure 25: Funding sources for students indicating they are funded vs. those indicating they are not.

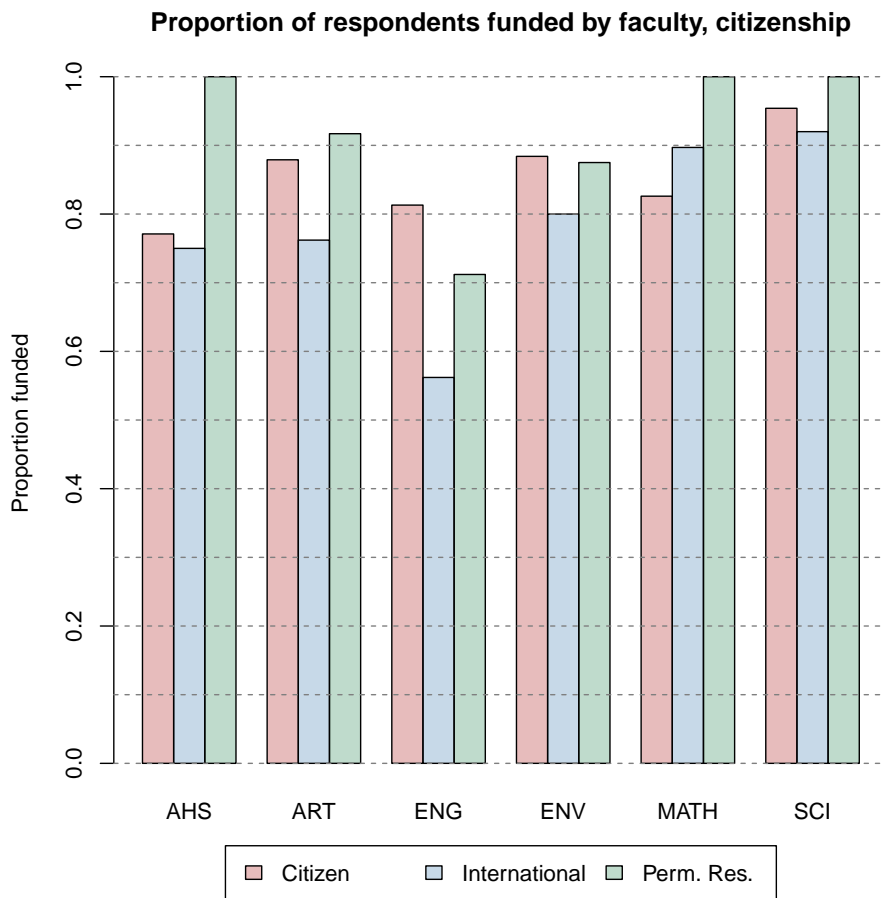


Figure 26: Proportion of funded students by faculty.

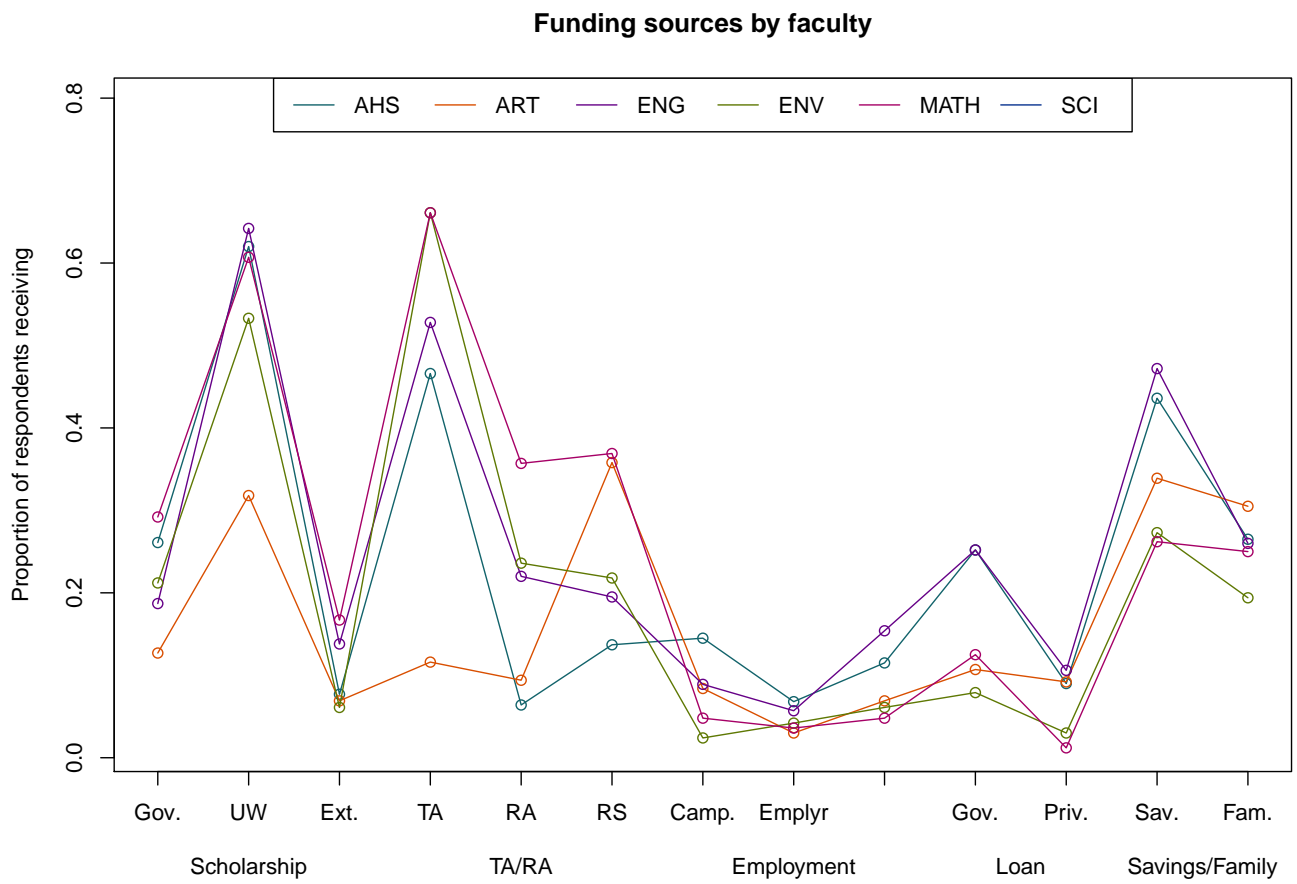


Figure 27: Funding sources for students by faculty.

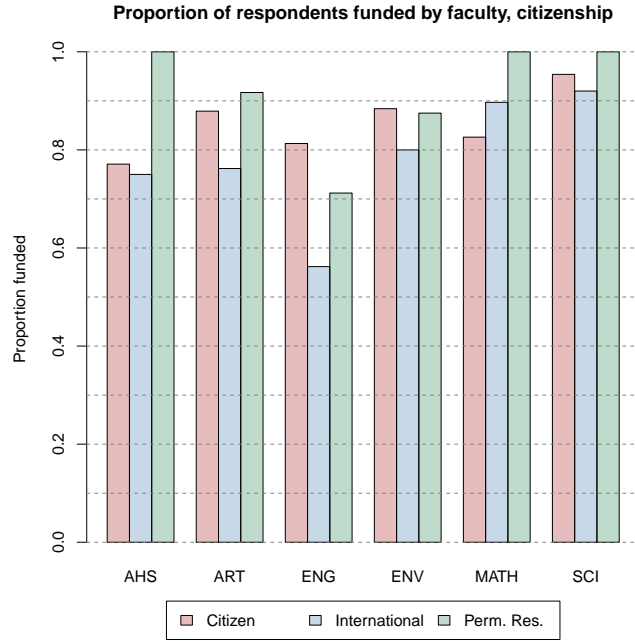


Figure 28: Proportion of funded students by faculty.

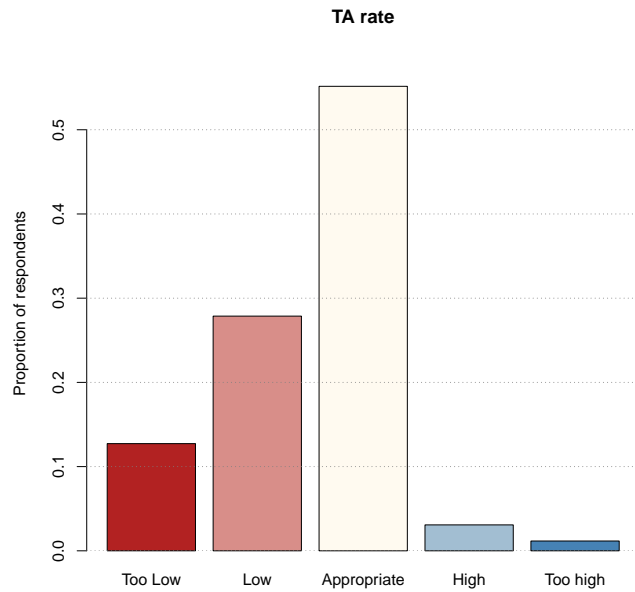


Figure 29: Respondent opinion on the rate of compensation for TA work.

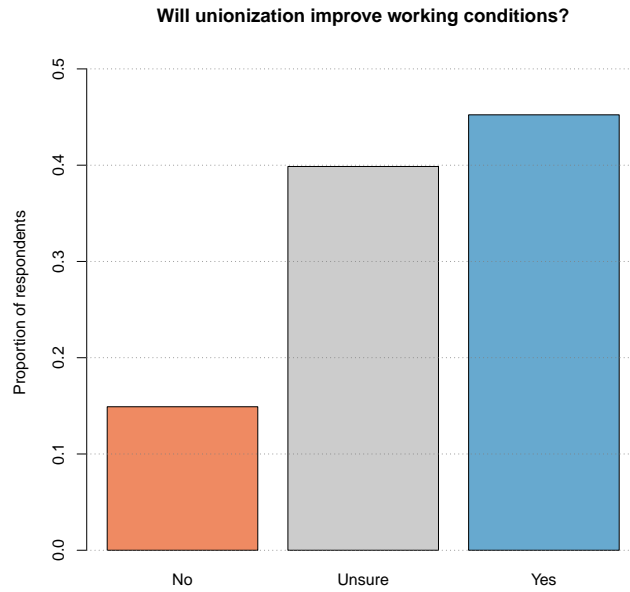


Figure 30: Respondent opinion on unionization for all respondents. The exact question asked was: “Do you believe that the unionization of graduate Teaching Assistants, Research Assistants, and/or sessional instructors would improve working conditions for graduate student employees at the University of Waterloo?”

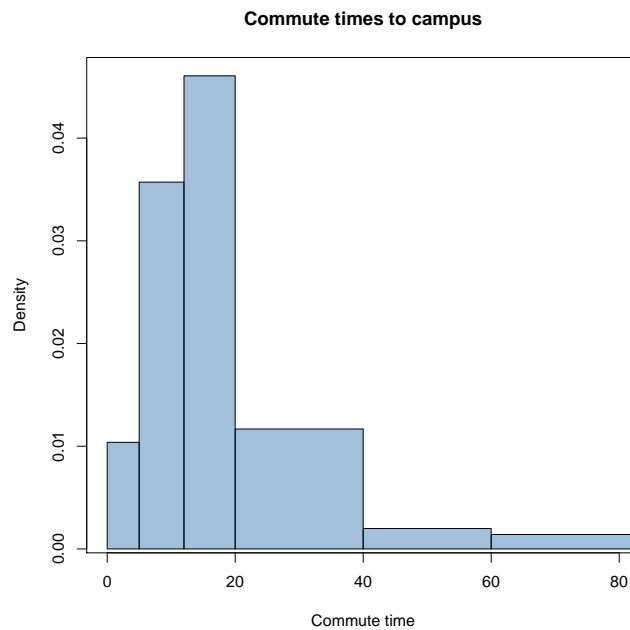


Figure 31: Adjusted table of responses to the transit time questions. Each rectangle has an area corresponding to the frequency of that range of responses in the survey and a width determined by the options provided.

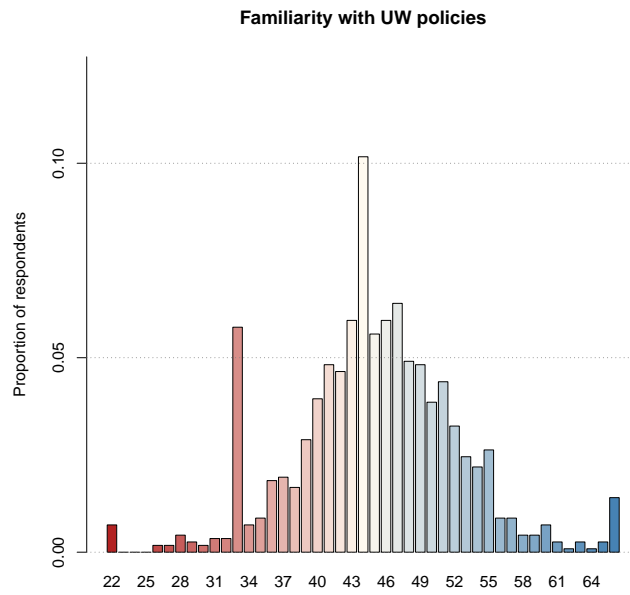


Figure 32: A barplot showing the familiarity index with UW policy for all respondents. Note a higher index value indicates greater familiarity.

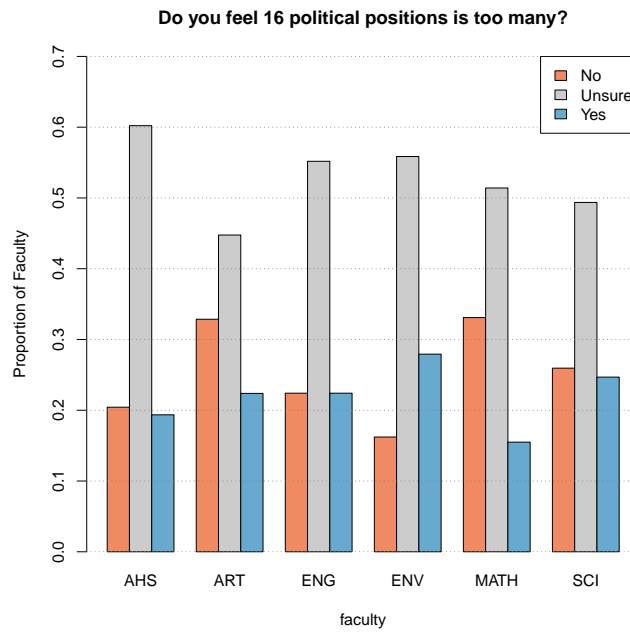


Figure 33: Response to the question of whether 16 political positions is too many by faculty.

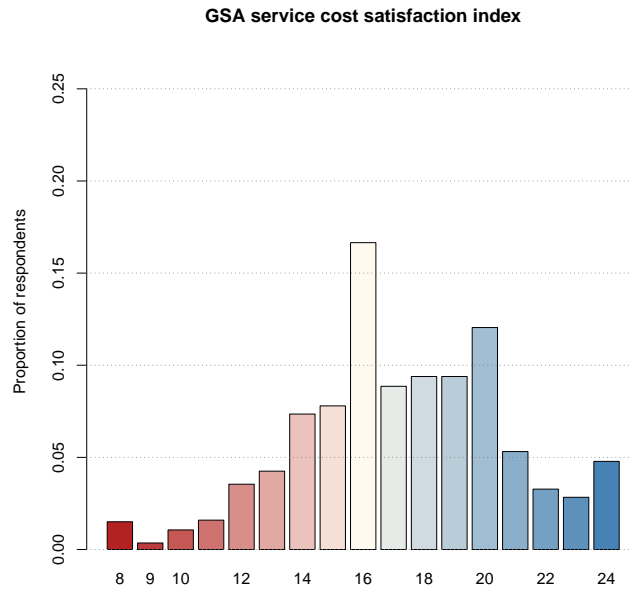


Figure 34: The index of overall satisfaction of GSA costs across all respondents, a higher score indicates a more favourable view.

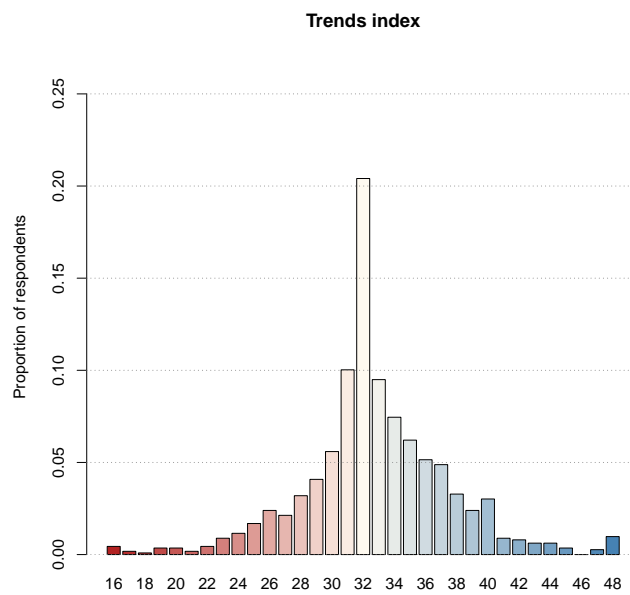


Figure 35: The index of preception of trends in student life across all respondents, a higher index indicates positive trends, a lower one negative trends.

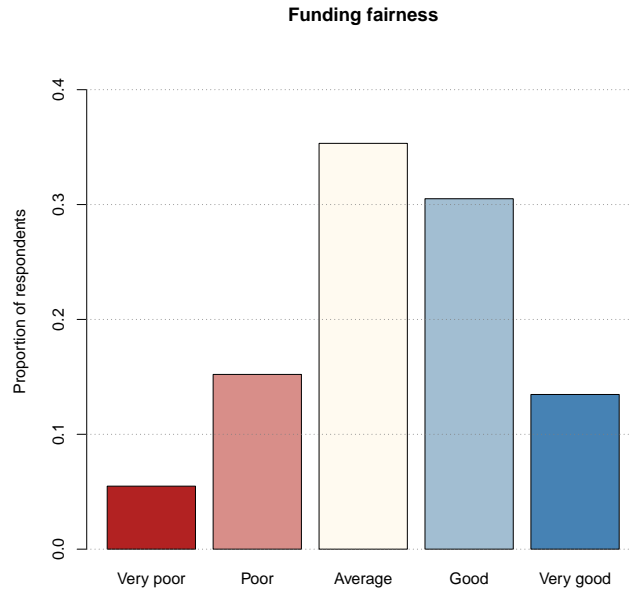


Figure 36: Funding fairness for students by faculty.

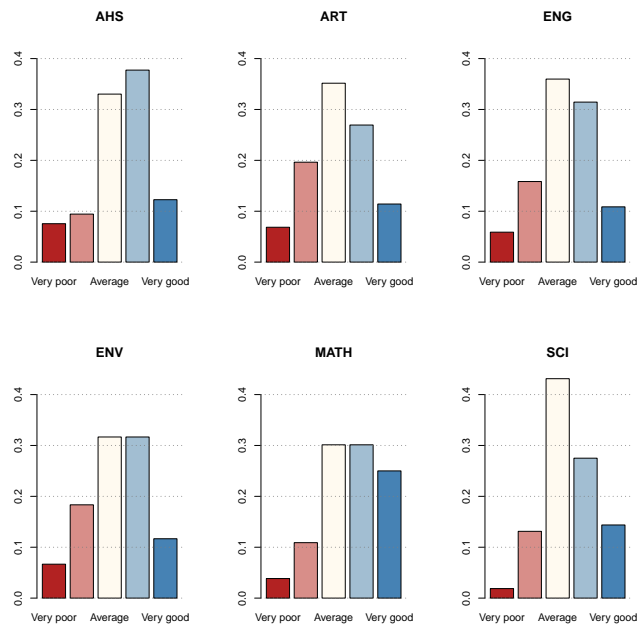


Figure 37: Funding fairness for students by faculty.

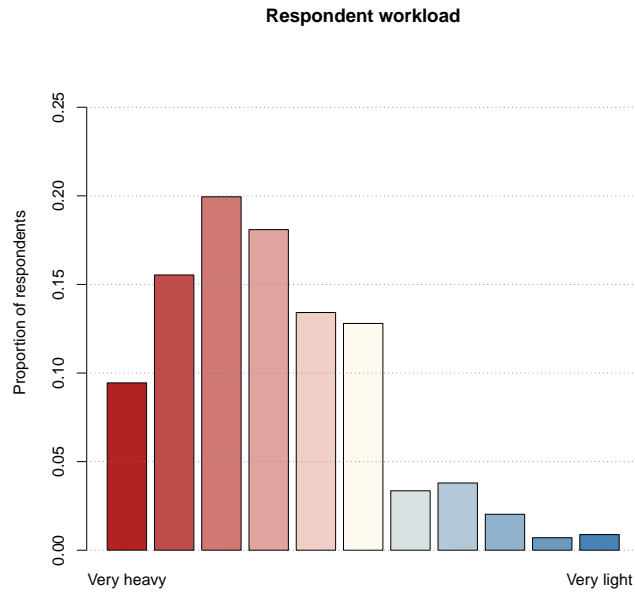


Figure 38: Respondent workload for all respondents. This same pattern appears when split by faculty.

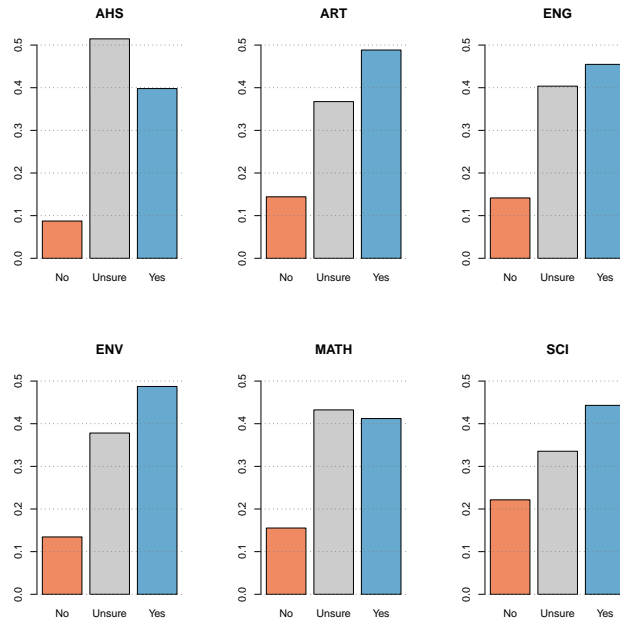


Figure 39: Respondent opinion on unionization by faculty. The exact question asked was: “Do you believe that the unionization of graduate Teaching Assistants, Research Assistants, and/or sessional instructors would improve working conditions for graduate student employees at the University of Waterloo?”

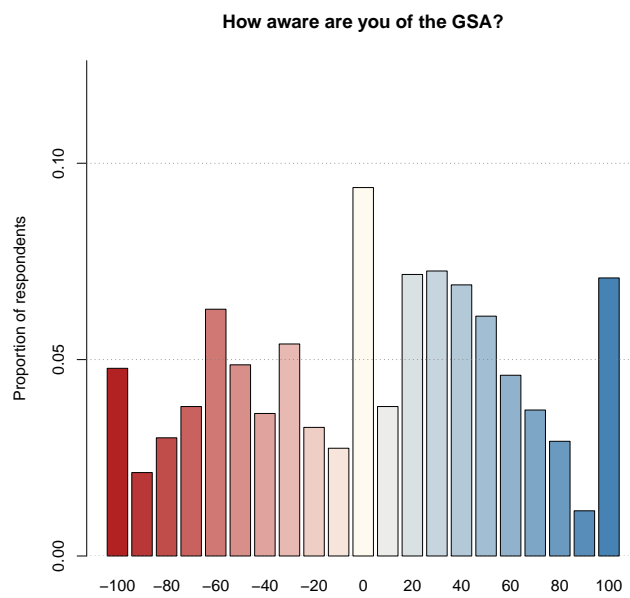


Figure 40: GSA awareness for all respondents, a similar pattern was repeated in each faculty.