

# Preliminary Analysis of TEMS Diversity Survey

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*All code is omitted in this report for the sake of brevity. Original code can be viewed in Analysis at <https://github.com/graysonmeckfessel/diversity-survey-2023>. For original CSV data file, reach out to repository owner.*

## Challenges with the Methodology of This Survey

Designing a survey ideally involves achieving balanced representation across various demographics. For instance, a completely randomized design might target equal participation among all races, genders, and sexual orientations. However, our survey, based on voluntary participation, poses certain challenges. While this approach is ethical, especially considering the sensitive nature of the topics, it introduces the potential for response bias. To understand the extent of this bias, consider the proportion of participants who identify as straight, white, male or females.

Category	Percentage
White Respondents	63.86
Straight Respondents	68.15
Cisgender Respondents	94.49
Straight, White, Cisgender Respondents	43.64

### Total Completed Responses: 653

In this survey, a substantial portion of responses originates from what we have termed “comparison groups”<sup>1</sup>. As our analysis involves over 8 identity categories across various demographics, ideally, each group should be similarly represented. However, this is not the case, thereby necessitating a careful approach in our analysis.

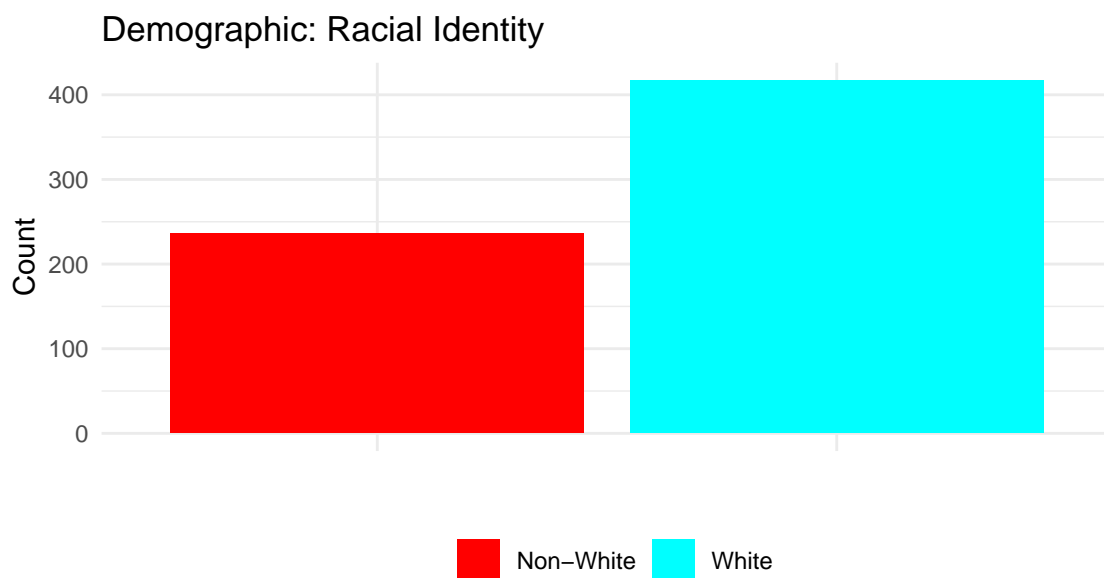
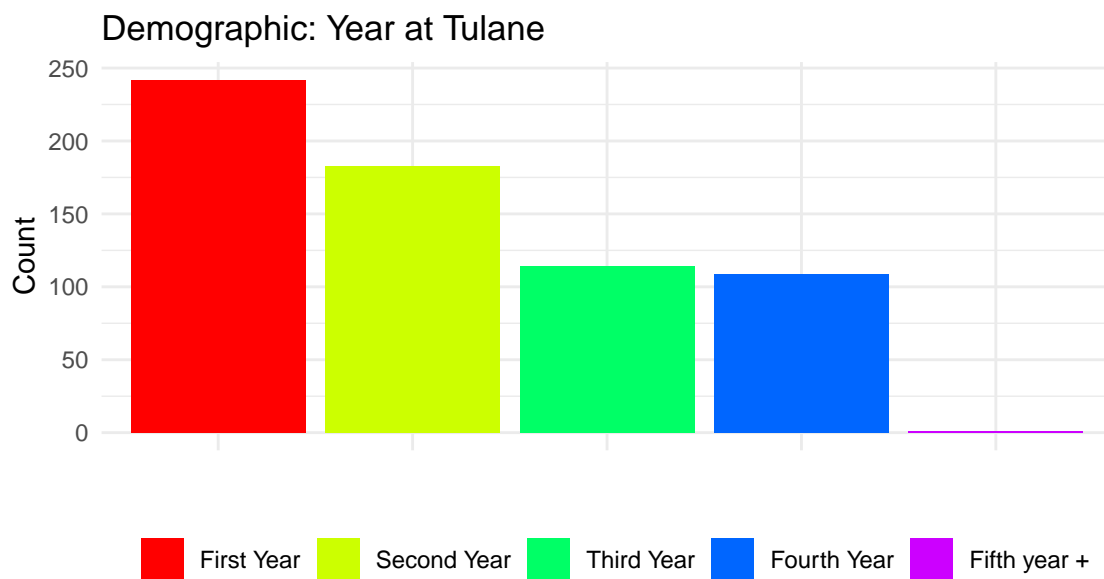
Moreover, our approach must be mindful of several factors:

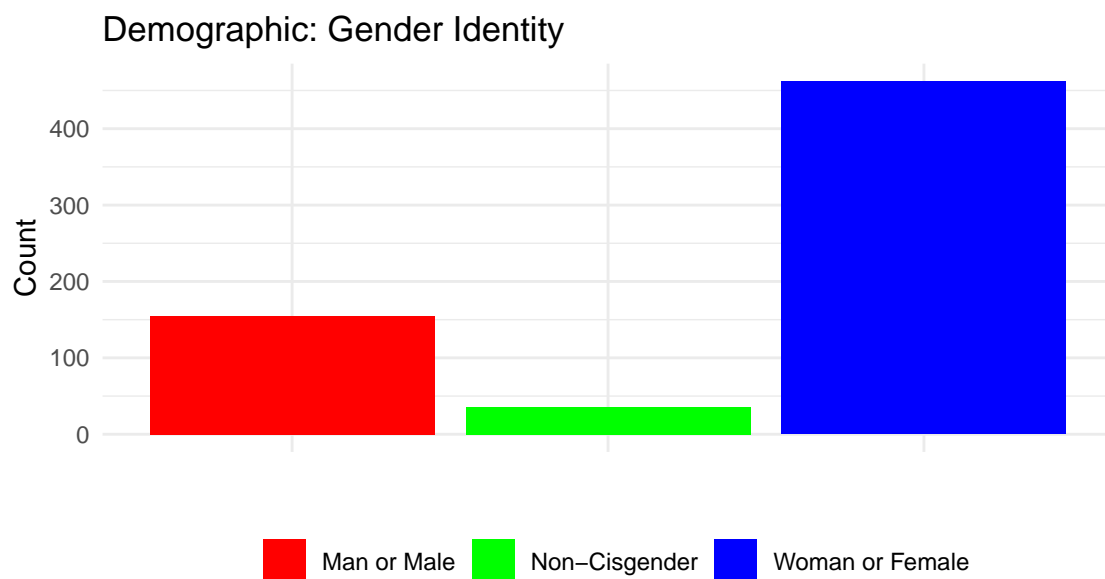
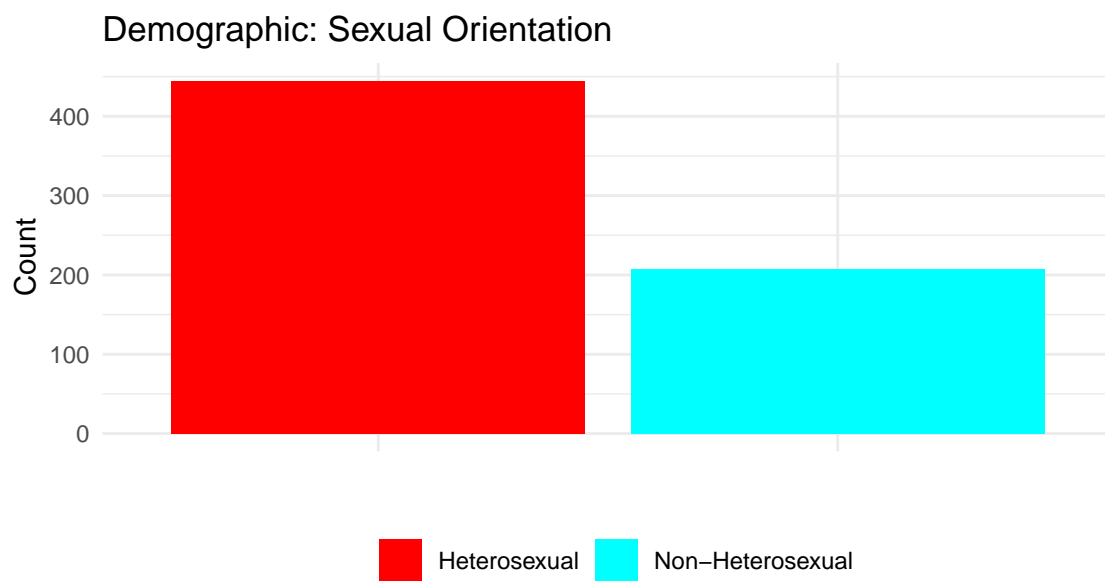
1. **Changing Demographics:** University demographics are evolving, with each new class reportedly more diverse than the last. This continuous change suggests that our sample might not accurately reflect the current student body, and thus we should not rely on parametric assumptions.
2. **Small Sample Sizes:** In some categories, the response count is as low as one. Such small sizes call for careful statistical treatment.
3. **Voluntary Survey Challenges:** Participants in voluntary surveys might hesitate to disclose sensitive information, particularly concerning race, gender, and sexual orientation. This reticence can impact the reliability of responses.

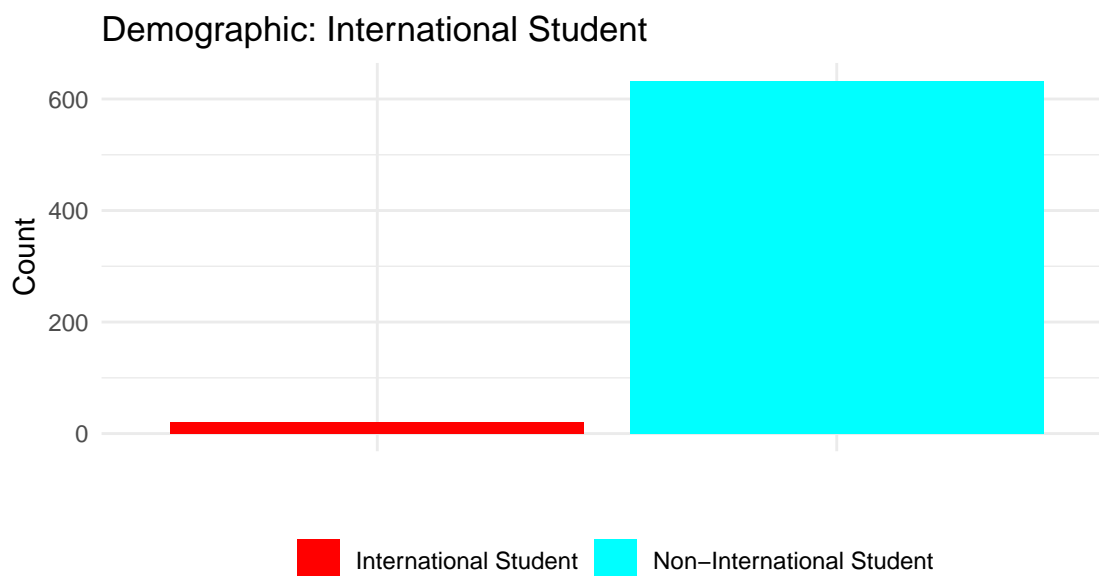
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<sup>1</sup>Here, ‘comparison groups’ refer to straight, white, and/or cisgender individuals. This designation is not a philosophical statement but a practical decision. In the 2020 version of this survey, the original researchers grouped identities into “non-heterosexuals”, “non-white”, etc., due to data sparsity. Our use of ‘comparison groups’ follows this precedent but is not meant to imply any inherent normativity.

Despite these challenges, our goal is to derive meaningful insights from the data, recognizing its limitations but also its potential to inform our understanding of the Tulane community. Here are a some further displays of the data spread...







Now, we begin our analysis. . . all significance is evaluated at the  $\alpha = 0.05$  level.

## 1. Does race/gender identity/sexual orientation have an impact on which chief complaints people are unwilling to call for?

To investigate whether race, gender identity, or sexual orientation impacts the likelihood of individuals being unwilling to call for help in various emergency situations, a comprehensive statistical analysis was conducted. This analysis involved the application of ordinal logistic regression to assess the influence of demographic variables on the responses to different emergency scenarios. Of the data, the following was significant. . .

### 1. Minor Medical Emergency:

- Sexual orientation showed a significant impact on the likelihood of calling for Tulane EMS. Non-Heterosexual individuals were less likely to call compared to Heterosexual individuals.
- Gender identity had a significant effect on taking alternative transportation to see a doctor, with Women or Female individuals being more likely to take this action.

### 2. Psychological Emergency:

- Significant differences were observed based on sexual orientation in the likelihood of calling for Tulane EMS. Non-Heterosexual individuals were less likely to call compared to Heterosexual individuals.

### 3. Ingestion Emergency:

- Year at Tulane (student's year) showed significant differences in the likelihood of calling for Tulane EMS, but without a consistent trend across different years.

- Gender identity impacted the likelihood of taking alternative transportation to see a doctor, with Non-Cisgender and Women or Female individuals being more likely to take this action.

#### 4. Cardiovascular Emergency:

- Year at Tulane influenced the likelihood of calling for Tulane EMS for a cardiovascular emergency, with Fourth-Year students being less likely to call compared to First-Year students.

Now we will take a deeper dive into the reasons why the significant groups differed in their responses. We will do this by looking at both the relative frequencies and written responses of factors which influenced decision making. Note, these are all hypothetical scenarios where participants were asked to rate their likelihood of taking different actions rather than any sort of actualization.

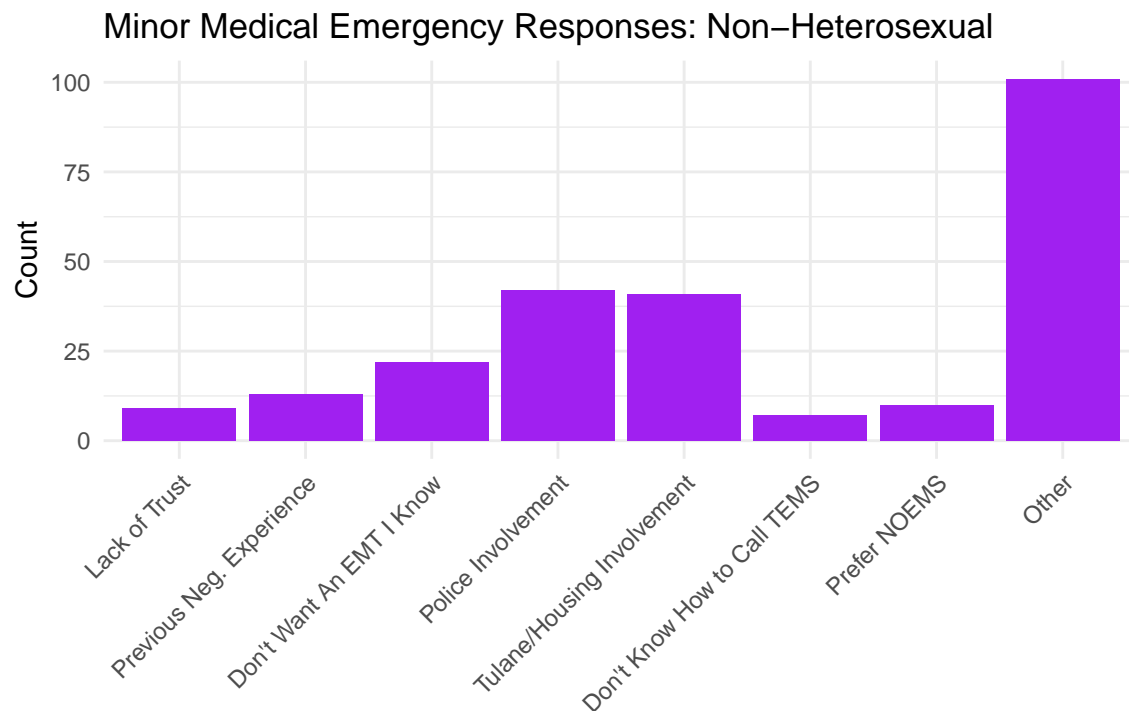


Table 2: Responses Labeled 'Other' for Non-Heterosexual

Response
Unnecessary
Seems unnecessary- I would like to save the calls for an emergency
Waste of other people's time
easier for me to deal with it
Same as above. Not an immediate emergency so I would rather drive there myself.
I might not need hospitalization
May not be necessary
I don't think the services are necessary
I can take care of it myself.
I would likely minimize the severity of the emergency until the pain became serious enough
I wouldn't need to in this situation either
I do not consider it serious enough.

Response
Unnecessary
I can call an Uber or take care of it myself.
Minor things i'd feel less likely to need an ambulance and would not want to waste anyone's time
I don't think it would be that necessary
Not necessary
Injury doesn't require EMS
do not feel a need
it's not important enough to call, i'd go to campus health
I feel like its not a big enough deal to call TEMS
Too minor
I can probably figure it out by myself, and if I can't, I would rather use my own transportation since it's not an emergency.
Im not about to go to the ER for a slight fever
treat it myself
Don't want to take up limited EMS resources for a non emergency
I feel I can care for that myself.
I would call.
Not necessary
Again, I can treat myself well enough in minor situations
Prefer bringing myself to doctor
i can go to a doctor that i know
If I am having symptoms like these I wait to see if they go away and if they do not I go to a doctor myself.
Seems like something I could go to campus health for
Don't think it's big enough to warrant help
Feels unimportant
If it's minor don't feel the need to call
It is not serious enough to call an ambulance
A tele health call may be better suited for this situation
The hospital seems unnecessary
Also wouldn't want to waste their time.
I can also drive myself to a hospital.
I can usually take care of it myself
For minor medical emergencies I have taken myself to student health or In-n-out Urgency when that's full
I can drive myself if it's not life threatening
Not call anyone
TEMS services not needed
probably something I'll just handle myself
I worry the members would appraise my issue as being too minor
N/A
Can treat self
Feel it's unnecessary
seems silly to call ambulance for something so minor
not necessary
If it is not urgent I wouldn't call any EMS
i would not deem that an emergency requiring medical attention
Depends how severe the pain is. I would trust members of TEMS to care for this situation.
rather go to a doctor
It's fine
doesn't feel severe enough
I wouldn't likely try to seek out medical attention for that
It's not that serious for me to call/cultural beliefs
not serious enough

Response
I wouldn't need EMS, just a ride to a doctor
It doesn't seem important enough to get ems involved
I don't necessarily see the point of calling an EMS over something so minor
I can treat it myself
too minor to call anyone
Not too serious. I can treat myself.
It's unnecessary
I don't feel like it's at the severity to need outside assistance like TEMS.
Possible costs
Easy to care for
Don't want to waste their time
would rather go elsewhere, ambulance seems unnecessary
probably not that serious
Not necessary
Unnecessary
Not important enough to need help
I can either care for it myself or drive myself/get a ride to the hospital if I need to.
money/ incurring costs
Campus health offers care, so I wouldn't really need TEMS
I feel like I wouldn't need EMS

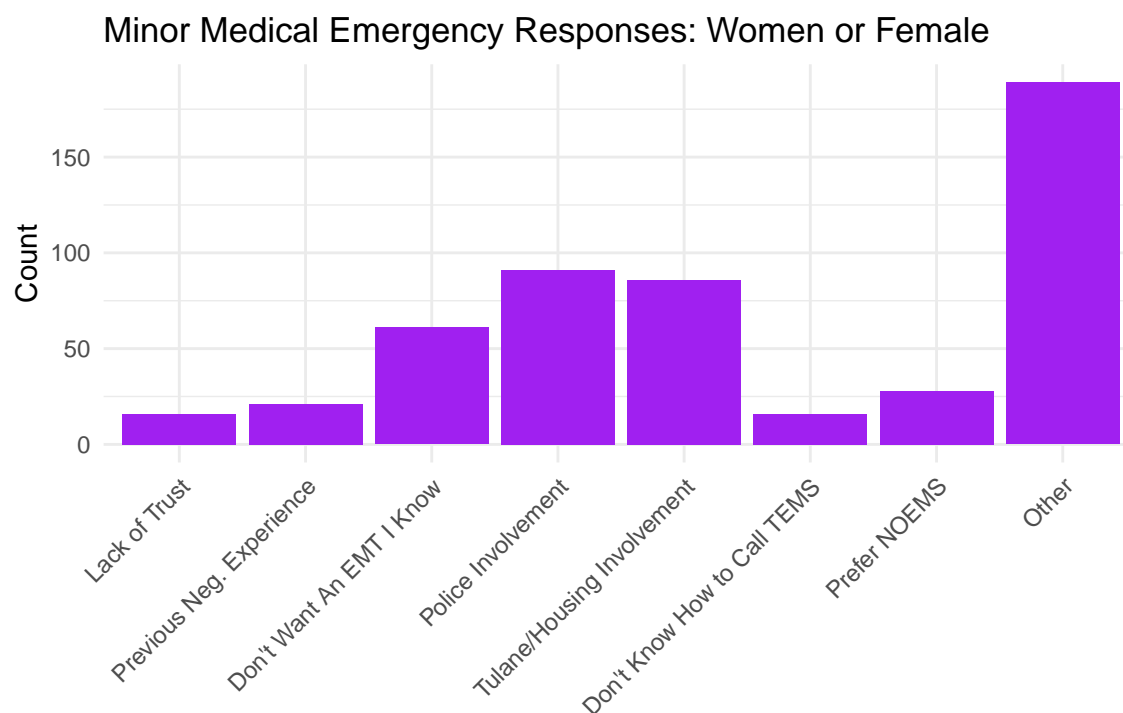


Table 3: Responses Labeled 'Other' for Woman or Female

Response
I do not believe it to be necessary for minor medical emergencies
It's not serious enough to call TEMS when I can take OTC medication and sleep

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Response

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Seems unnecessary- I would like to save the calls for an emergency  
Waste of other people's time  
easier for me to deal with it  
Same as above. Not an immediate emergency so I would rather drive there myself.  
I don't want to go to the hospital  
dont need it  
May not be necessary  
It doesn't feel like a medical emergency, I don't feel like there is much they could do.  
I don't think the services are necessary  
I can take care of it myself.  
I would likely minimize the severity of the emergency until the pain became serious enough  
I wouldn't need to in this situation either  
I don't need to call for something like this.  
minor  
Does not seem necessary - I can handle it myself  
not necessary  
I do not consider it serious enough.  
Again, depending on the severity and the situation, I don't think I would need an EMT  
Don't feel the need to unless it's persistent  
too much work  
I can call an Uber or take care of it myself.  
Minor thing that I can treat myself  
Minor things i'd feel less likely to need an ambulance and would not want to waste anyone's time  
I can deal with it myself  
Situation does not require EMS  
I don't think it would be that necessary  
Not difficult to deal with on my own  
Not necessary  
I know how to care for this myself.  
it is not necessary  
Not necessary  
none  
Injury doesn't require EMS  
ambulance isn't necessary  
dont think its necessary  
it's not important enough to call, i'd go to campus health  
I feel like its not a big enough deal to call TEMS  
Too minor  
Im not about to go to the ER for a slight fever  
I could probably treat it myself  
treat it myself  
not necessary  
Don't want to take up limited EMS resources for a non emergency  
Doesn't seem necessary to call TEMS for a small issue  
I have a car and would be able to drive myself somewhere to get treated  
I dont feel like that is emergent enough, i would go to doctor if symptoms persisted  
Not necessary  
I don't think it requires EMS  
it's a minor injury that could be handled on its own  
Prefer bringing myself to doctor  
not necessary  
I can treat it



Response
<p> i can go to a doctor that i know  can deal myself  I can handle it myself  I feel like it's unnecessary and costs too much  If I am having symptoms like these I wait to see if they go away and if they do not I go to a doctor myself.  Don't think it's big enough to warrant help  Not an emergency. I can go to doctor after making an appt.  I can deal with those myself  Feels unimportant  can manage, if it's bad i'll go to walk in clinic  Think it's unnecessary  If it's minor don't feel the need to call  Feel like I can care for it myself  It is not serious enough to call an ambulance  The hospital seems unnecessary  Also wouldn't want to waste their time.  Again, wouldn't want the ambulance involved  I can care for it myself  not needed  I think that type of injury is minor, something I can probably just go to campus health for or ask my parents about.  it's easier to just drive there or have a friend drive me  Involvement of TUPD (trash)  Those aren't serious enough to me  I don't think it's too big of a deal  I can also drive myself to a hospital.  For minor medical emergencies I have taken myself to student health or In-n-out Urgency when that's full  Not call anyone  there's no need  TEMS services not needed  probably something I'll just handle myself  I worry the members would appraise my issue as being too minor  not enough to warrant  I don't feel my situation warrants the need for emergency medical attention.  Don't want to bother them as it's not major medical emergency  It's not an emergency, and I can probably deal with it on my own. If I need to see a doctor, I can schedule an appointment.  i would rather just make a doctors apt on my own  Not severe enough  N/A  I don't feel it's necessary  Can treat self  This can easily be treated alone  Not needed  seems silly to call ambulance for something so minor  Not something an EMS would be needed for  No problem calling TEMS  It seems unnecessary to call TEMS  not necessary  Not that serious or will see obgyn about those issues  Its not necessary  I feel that this is not as extreme and can be cared for on my own </p>

Response
Telehealth is easier
Likely unnecessary
If it is not urgent I wouldn't call any EMS
I don't want someone who I could see around campus to know my medical history
Not a big deal
i would not deem that an emergency requiring medical attention
It's fine
doesn't feel severe enough
I wouldn't likely try to seek out medical attention for that
It's not that serious for me to call/cultural beliefs
See above
not serious enough
Don't need hospital
Don't feel it's necessary
i would not want to waste time
I can treat it myself
I would rather use a doctor so I can monitor my issue which is not an emergency
People at campus health were super unhelpful when I was suffering from a UTI and Kidney infection. So I just call my dads doctor now.
too minor to call anyone
unnecessary
It's unnecessary
Possible costs
I can treat it myself
Can handle it myself
Easy to care for
its not an immediate medical problem, i can uber to urgent care
Not necessary
Don't think it's necessary.
Don't want to waste their time
I can treat myself in this situation
Not necessary
probably not that serious
Not a big enough deal
unnecessary
my mom is a doctor so i would call her
Not necessary
Unnecessary
Not severe enough
can be solved by local doctor or self-treated
Not important enough to need help
I have a mother in the medical field that can help me deal with the issues first
I do not think I need it for fever
Campus health offers care, so I wouldn't really need TEMS
If it's not serious, I would not call anyone and just walk to campus health
I can take care of minor emergencies myself

## Psychological Emergency Responses: Non-Heterosexual

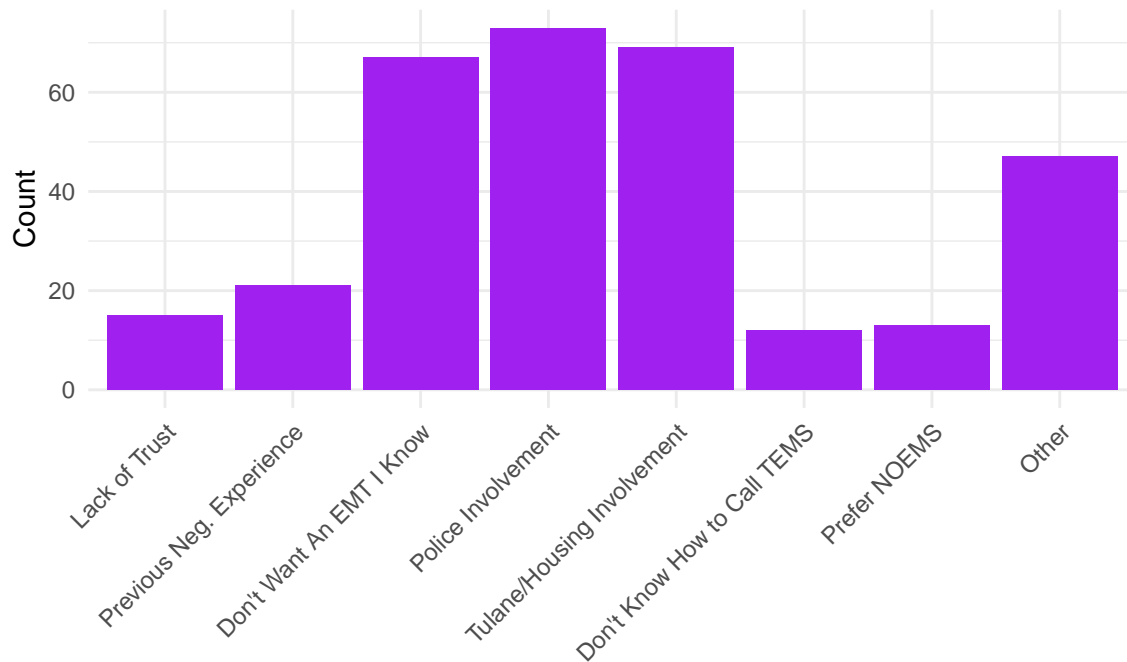


Table 4: Responses Labeled 'Other' for Non-Heterosexual

Response
Might be awkward as a member of Tulane EMS.
I don't think the services are necessary
I don't think it would be that necessary
do not feel a need
I don't know how they would help
I just personally would not call for transportation to a hospital for something like this since I would probably just work through it or have my friends help me.
I would call.
Concern about level of training for these kinds in incidents
I would call my therapist instead.
I just don't think it's big enough of an emergency
I would rather call someone I trust
I would only do it if they were at risk of hurting themselves, otherwise I think it might escalate the situation more than help it.
I don't think TEMS can help me with an anxiety attack, they aren't trained therapists
I have other resources available for this kind of emergency that pose less risk to my social and academic standing at Tulane
I would call a close friend
unsure what TEMS could do in this situation that CAPS could not do
N/A
more likely to call the line or the counseling center
could handle myself
I don't feel that someone could help me out of these episodes.
It's fine

Response
do not feel that professional medical attention would impact recovery time, unless in the event of an emergency so severe I no longer feel control or certainty about its end
I don't know how EMS will handle it and therefore is not something I want to figure out while in such a precarious
I can treat it myself
i believe i am able to handle it
I can handle it myself.
Psychological emergency is a broad term and for most psychological-related problems, I feel comfortable handling them. However, I would call for psychotic episode, active suicidal ideation, losing consciousness from an anxiety attack etc.
Costs
I prefer finding someone professional later
I have psychiatric sources I would call first
I have ptsd so some members have similar physical characteristics similar to my abuser which would worsen a ptsd attack
unless it was a violent issue, emergency services usually can't do much if the person needs to be in psych treatment
Not really necessary
I can handle it myself
money/ incurring costs

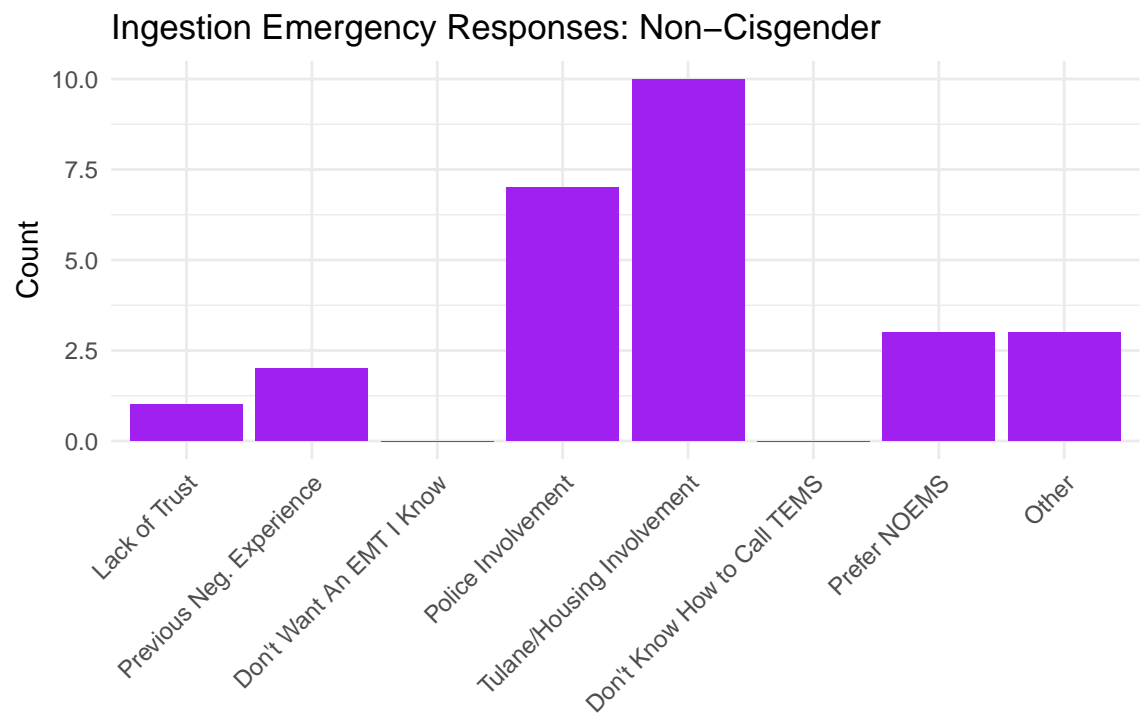


Table 5: Responses Labeled ‘Other’ for Non-Cisgender

Response
i would call tems.
None

### Ingestion Emergency Responses: Women or Female

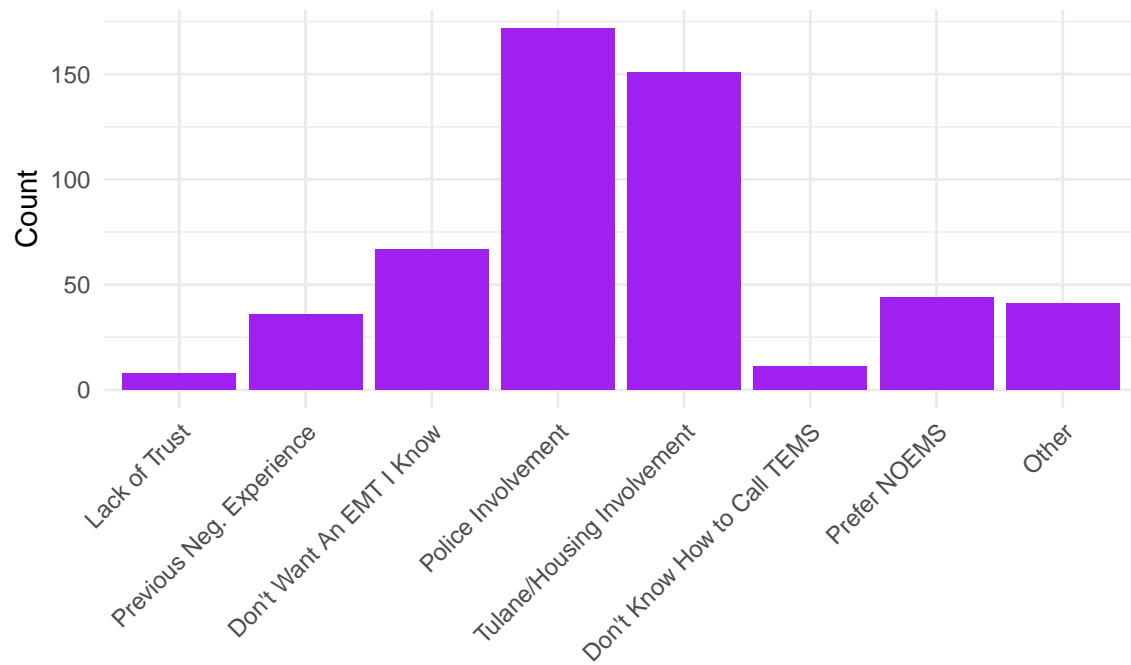


Table 6: Responses Labeled 'Other' for Woman or Female

Response
I don't drink or do any form of drug so this situation doesn't apply
none
never experienced this
If its super severe I'd rather get ALS involved
cost
I would call.
I would call
I would definitely call TEMS.
I don't drink or party, so I don't feel this applies to me.
No problem calling TEMS if needed
don't want my coach notified
probably would
I would call EMS unless it was resolvable with time
I don't want someone who I could see around campus to know my medical history
i would call unless there was evidence that i or the person would be ok without intervention
depends on the severity of the emergency/idea that i could handle it myself
I most likely wouldn't have the capacity to do that

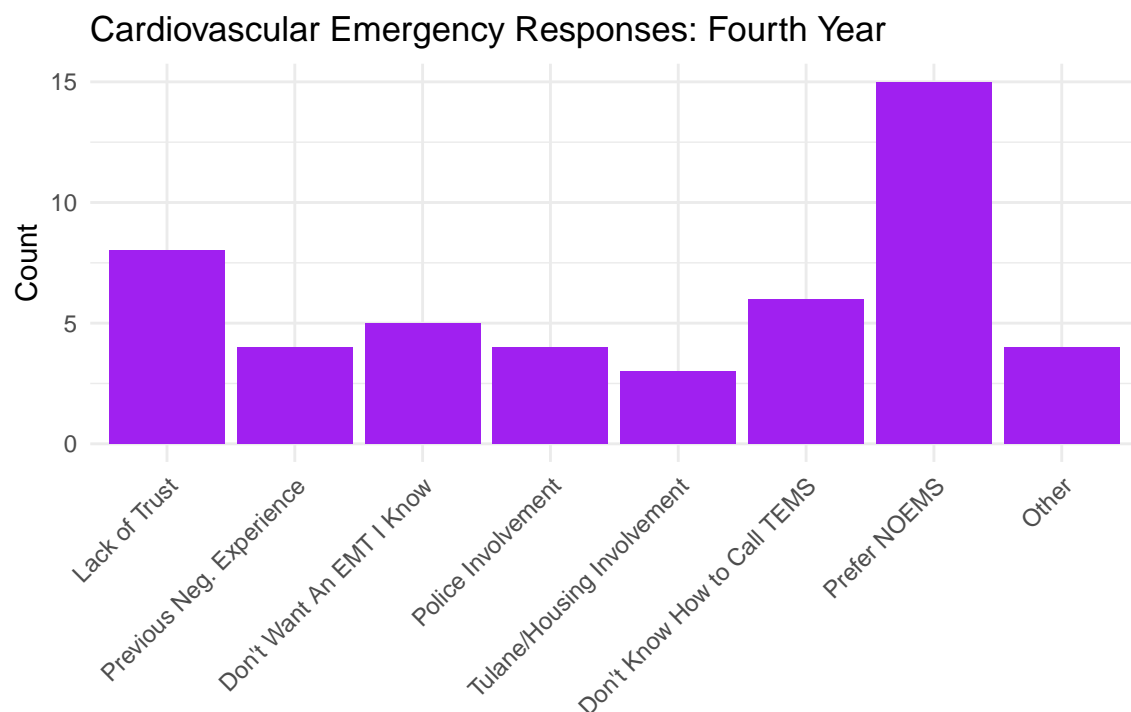


Table 7: Responses Labeled 'Other' for Fourth Year

Response
n/a
none

## 2. Does getting rejected from TEMS make you less likely to call for help?

To determine whether the status of an application to Tulane EMS (accepted, rejected, or neither) influences the likelihood of calling for help in various emergency scenarios, an in-depth statistical analysis using ordinal logistic regression was conducted. This analysis evaluated the impact of TEMS application status on responses to different chief complaint questions. The following are the significant results...

### 1. Minor Traumatic Emergency:

- Individuals with no history of applying to TEMS were less likely to choose self-care compared to those who had applied.

### 2. Minor Medical Emergency:

- Both rejected applicants and those who never applied to TEMS were less likely to consider calling TEMS for help.

### 3. Psychological Emergency:

- For the question “Call for Tulane EMS for a psychological emergency” (Q21\_2) and “Care for yourself for a psychological emergency” (Q21\_4), non-applicants and rejected applicants were less likely to opt for these choices.

#### 4. Ingestion Emergency:

- Non-applicants and rejected applicants showed a higher inclination to call 911 in contrast to accepted applicants.

The analysis indicates that the TEMS application status can influence the decision-making process in emergency situations, highlighting the varied perceptions and trust levels towards the EMS system among different groups.<sup>2</sup>

### 3. Does race/gender identity/sexual orientation have an impact on opinions of TEMS?

To assess whether demographic factors such as race, gender identity, and sexual orientation influence perceptions of Tulane EMS members, an in-depth statistical analysis using ordinal logistic regression was executed. This analysis examined the impact of these demographic variables on responses to questions about Tulane EMS members’ social inclusivity, trustworthiness, kindness, cliquey-ness, social exclusivity, and rudeness.<sup>3</sup> Here are the significant results...

#### 1. Social Inclusivity:

- Race (White): A significant predictor with an estimate of 0.379 (p-value: 0.014). This suggests that being White is associated with a higher likelihood of agreeing that Tulane EMS members are socially inclusive.
- Gender Identity (Non-Cisgender): A significant negative predictor with an estimate of -1.148 (p-value: 0.003). Non-Cisgender individuals are less likely to perceive Tulane EMS members as socially inclusive.

#### 2. Social Trustworthiness:

- Gender Identity (Non-Cisgender): A significant negative predictor with an estimate of -1.177 (p-value: 0.003). Non-Cisgender individuals are less likely to agree that Tulane EMS members are socially trustworthy.

#### 3. Kindness:

- Gender Identity (Non-Cisgender): A significant negative predictor with an estimate of -1.07 (p-value: 0.007). This indicates that Non-Cisgender individuals are less likely to agree that Tulane EMS members are kind.

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<sup>2</sup>Here, I have omitted filtering the data and generating graphs since it is very time consuming to do this in R, if you end up wanting to evaluate these graphs, I recommend using python. It could be valuable to look at them, ggplot2 just started to break my soul so I shifted my focus on the analysis itself opposed to the visualization.

<sup>3</sup>The significant results here are not two-way... ie the fact that white people view TEMS as socially inclusive does not imply that non-white people believe the opposite. The lack of significance means no conclusion can be drawn from all other hypotheses assessed.

## Practically Relevant Results and Suggested Action:

First off, the outputs in the Rmd file with the code included are a little messy, so if you need me to interpret any p-values or anything beyond this results section, please let me know. The p-values are in the file with the outputs included. I didn't make it more presentable because I didn't know how much of this was going to be used so I figured it wasn't a good use of time to be a perfectionist. However, here are my take aways from the analysis...

### CCC Questions vs. Demographic Data

1. Minor Medical Emergency: Though significance was observed here with respect to non-heterosexuals and women/females, the graphs and text responses illustrate how a vast amount of respondents think it's just not that urgent to call TEMS for this.
  - SUGGESTED ACTION: Nothing. Many minor medical emergencies do not require EMS.
2. Psychological Emergency: Non-Heterosexual individuals were less likely to call TEMS compared to Heterosexual individuals. After reviewing the text responses and graphs, it is evident that many people within this group have varied reasons for preferring alternative care ranging from a lack of trust to personal preference with alternative resources.
  - SUGGESTED ACTION: Implement robust psychiatric emergency training run by outside professional organizations and advertise to the community that this training is being implemented. This should at the minimum present a better image of the competency of the EMTs in TEMS (something that was a concern for many respondents).
3. Ingestion Emergency: Non-Cisgender people and Women/Female individuals were more likely to take alternative means of transportation to a hospital. After reviewing the responses, it is evident that fear of police and tulane housing involvement played a large role in this decision.
  - SUGGESTED ACTION: Work with university administration to ensure punishments for over-intoxication are not stringent to the point where people will opt out of taking life saving measures.
4. Cardiovascular Emergency: Fourth-Year students were less likely to call TEMS compared to First-Years. A large amount of respondents preferred NOEMS over TEMS for such emergencies.
  - SUGGESTED ACTION: Nothing. NOEMS is far more equipped to handle such emergencies and fourth years typically know the city of New Orleans more than first years, which may be why they opt for a different EMS service. Thus, it may just be a natural and unavoidable patient preference.

### CCC Questions vs. Application Status

For this section, I have avoided drawing conclusions or making suggestions. This is because it may be overreaching to draw causal relationships between application status and decisions in an emergency for the significant results. It is logical that there would be many more factors that would influence someone's decision prior to some deep vendetta against the organization. A large clue that the results should be handled this way is in the fact that, for the most part, people who had no application history often behaved identically to those that were rejected. Here are the significant results from this section once more...

1. Minor Traumatic Emergency: Individuals with no history of applying to TEMS were less likely to choose self-care compared to those who had applied.



2. Minor Medical Emergency: Both rejected applicants and those who never applied to TEMS were less likely to consider calling TEMS for help.
3. Psychological Emergency: For the question “Call for Tulane EMS for a psychological emergency” and “Care for yourself for a psychological emergency”, non-applicants and rejected applicants were less likely to opt for these choices.
4. Ingestion Emergency: Non-applicants and rejected applicants showed a higher inclination to call 911 in contrast to accepted applicants.

## Perceptions vs. Demographic Data

The results of the perception data are interesting because most of the significant results originated from the participants who identified themselves as non-cisgender. Non-cisgender individuals were less likely to find TEMS members socially inclusive, socially trustworthy, and kind. This is an interesting finding because the presence of significance in one demographic across multiple negative perceptions may suggest a true causal relationship. However, we need to recall that there may be bias in the data given the disproportionate sample sizes. . .

Number of Cisgender Respondents: 617

Number of Non-Cisgender Respondents: 36

- **SUGGESTED ACTION:** Conduct a follow-up study to evaluate the connection between perceptions of TEMS and gender identity. This should be done by developing an experimental design with equal numbers of participants across demographic factors. This will provide a more reliable way to analyze the data and draw causal connections.