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Commuter Student Integration During COVID-19

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Abstract

This Complete Research paper describes the experiences of commuter students pertaining to integration during COVID-19. Many colleges and universities host a large population of commuter students who often live at home and also work part-time or full-time jobs. Although there are varying definitions of commuter students, typically they are defined as someone who does not reside in University housing and primarily live at home with their families. Commuter student needs differ significantly from residential students. On top of academics and extracurricular activities, commuter students face the daily challenge of commuting to and from campus. However, a recent report found that there were more students that wanted to and or chose to live at home even with the extra demands on being a commuter student. The COVID-19 pandemic has added another challenge to commuter students as well. The incorporation of online classes and having almost no opportunity to be in on campus in person has left many students, especially commuter students, feeling isolated and disconnected from university life. The pandemic allowed for many technological solutions to attending classes but the challenge to stay connected and involved was often overlooked and left some commuter students disheartened.

The ability to integrate or involve those commuter students fully into the university environment is important to the success and graduation of those students. Commuter students face many challenges that students who live on campus do not. Socialization for college students and peer group interaction positively affects critical thinking skills as well as academic development, thus having this key element to university life is critical to the success of students. However, commuter students often miss out on those opportunities because of their living situation and were directly impacted by having no on-campus interaction because of the online nature of classes caused by the pandemic. Another hurdle faced by commuter students is a lack of face-to-face contact with their instructors. It is also important to understand the connection between student's involvement on campus and the benefits of a high-level involvement, especially in terms of graduation. Those students who integrate more successfully are at less of a risk of dropping out. Students that have higher interaction with university academic and social systems tend to persist at higher rates. In order to ensure the success of commuter students we need to find ways in which to integrate them fully into the campus and create new programs and outreach to ensure future success. Thus, we frame this study in the Model of Co-Curricular Support (MCCS) and focus on four elements of integration: Academic, Social, Professional, and University.

Using the MCCS as the framework, this study examines how first-year engineering commuter students are integrated academically, socially, and professionally into a regional university in the mid-west during COVID-19. For this study, we have one research question to examine: During

COVID, to what extent do commuter students differ in integration compared to residential students? To answer this question, 146 students in the first-year engineering program gave consent to use their survey responses on the engineering student integration instrument, which is a valid and reliable survey instrument containing 22 questions across four integration constructs (e.g., academic, social, professional, and university).

Data are presented for each of the four integration constructs and areas for improvement are discussed. Results show no significant differences for each of the four integration constructs between commuter and residential engineering students. Multiple reasons for this are discussed as well as implications for first-year programs that cater to commuter students in engineering.

Introduction

There is a multitude of calls and efforts to increase the rate at which engineering students graduate with a degree [1-3]. Additionally, there are as many efforts and programs to support students to succeed such as academic assistance or retention programs [4], yet until recently there were little ways in which to measure the effectiveness of the support students receive. If students can be supported, and are provided with proper support, students have a higher likelihood of graduation [5].

However, during the COVID-19 pandemic the way in which students were supported drastically changed as the educational arena was thrust into an environment in which it was not ready. Educational technologies were not ready for deployment nor were most faculty equip to teach online. As most universities were scrambling to keep the classroom learning space continuing, little was thought of how to support the students.

This full research paper explores the area of student support and success during the COVID-19 pandemic to understand if there were any differences between residential and commuter students in engineering as it pertains to integration, or the way in which students are involved in the college environment.

Literature Review

Commuter students represent a large portion of college enrollment nationally [6] and approximately 85% in engineering at X have multiple nonacademic commitments such as work and family along with additional time constraints that their residential counterparts do not have [7, 8, 9]. Consequently, commuter students face unique challenges in college including the development of social connections [10] which is linked to learning and persistence [11]. Commuting has also been shown to have negative impacts on academic [12] and social integration [13].

Theoretical Framework

Our research is grounded in Lee & Matusovich's Model of Co-Curricular Support (MCCS) [14], whereby it is posited that there exist four main areas in which students become integrated and educationally engaged within the university, these being: Academic, Social, Professional, and University Integration (AI, SI, PI, and UI). The MCCS was developed through multi-case studies supported by qualitative investigations and is an extension of the Model of Institutional Departure [11].

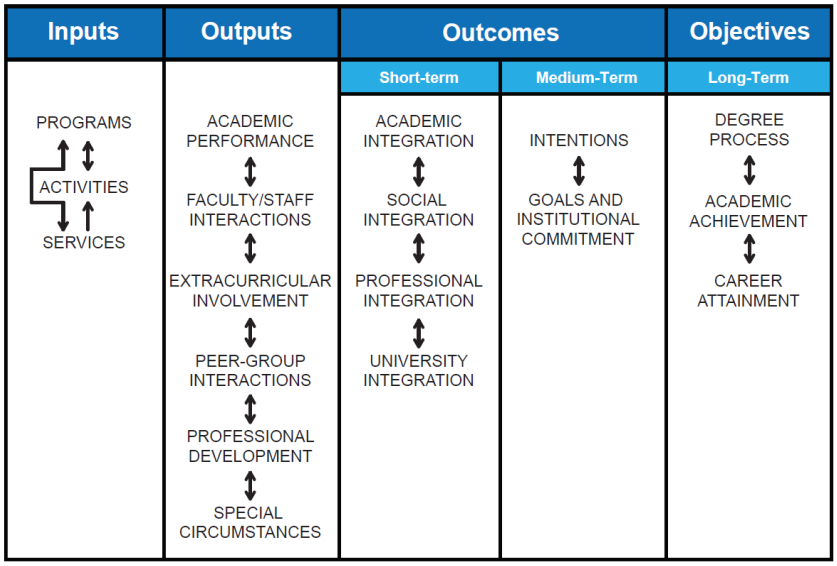

Figure 1: Model of Co-Curricular Support

The MCCS suggests it is the role of the institution to provide the necessary support for integration. If students are aware and have access to resources, which lead to their success, then they will integrate into the university environment at higher rates than those students who are not aware and have access to those resources. The MCCS (Figure 1) contains four main areas which are Academic, Social, Professional, and University Integration (AI, SI, PI, and UI). The model represents the process by which students participate in inputs (e.g., programs, services, activities) to experience outputs (e.g., academic performance, faculty/staff interactions, extracurricular involvement, peer-group interactions, professional development, special circumstances) and obtain outcomes (e.g., AI, SI, PI, UI) so they can achieve objectives (e.g., degree progress, academic achievement, career attainment).

Academic integration includes academic performance and faculty/staff interactions. Students experiencing positive academic performance and interactions with faculty and staff achieve positive academic integration. Social integration includes extracurricular involvement and peer-group interactions, leading to positive social integration. Professional integration refers to the professional development activities, which students participate in that lead to successful professional integration. University integration refers to the services provided by the university which students utilize and leads to becoming a part of the university.

This research study focuses on answering one research question: During COVID, to what extent do commuter students differ in integration compared to residential students?

Research Study

Methods

To understand if students felt connected to the university we surveyed first-year engineering students in Fall 2020 using the Engineering Student Integration Instrument (ESII) [15]. The ESII is a valid and reliable instrument which contains 22 likert-type questions on a 6-point scale ranging from 1=strongly disagree, 2=disagree, 3=somewhat disagree, 4=somewhat agree, 5=agree, and 6=strongly agree. The 22 questions align to four constructs of academic integration, social integration, professional integration, and university integration.

Data Collection

At the end of the semester in Fall 2020 the first-year engineering program at X issued the Engineering Student Integration Instrument and received 147 responses in total. Show in Table 1 below, of the 147 responses, 36 identified as female, 110 as male, and 1 did not respond. We also asked students if they lived on-campus (n=49), walked to campus (n=3), or commuted to campus more than 5 miles away (n=86), or other (n=8). We combined those living on-campus and walking to campus as 'Residential' and those that commuted to campus as 'Commuters'.

Table 1: Categories

Identity		**Commuter Status**	
Female	36	I live on-campus in a residence hall or apartment.	49
Male	110	I live off-campus but walk to campus.	3
NA	1	I commute to campus and live more than 5 miles away.	86
		Other	8

Data Analysis & Findings

For the analysis of the study we converted the categorical responses of strongly disagree, etc. to numeric values as discussed above. This always us to compute mean values for each of the four constructs. As shown in the figures below, each of the constructs contain five survey questions except professional integration which has seven questions associated with it. The descriptive statistics for each of the four constructs are shown in Table 2 broken down between 'Residential' and 'Commuters'. Residential students have slightly higher mean scores for academic and social integration whereas Commuters have slightly higher scores for professional and university integration.

Table 2: Descriptive Statistics Table

	Residential (52)					Commuters (86)				
Constructs	**Mean**	**SD**	**Kurtosis**	**Skewness**	**CA**	**Mean**	**SD**	**Kurtosis**	**Skewness**	**CA**
AI	5.08	0.68	0.46	-0.74	0.88	5.01	0.69	0.14	-0.49	0.89
SI	5.10	0.84	8.83	-2.34	0.92	5.05	0.73	0.65	-0.80	0.88
PI	4.67	0.47	-0.14	-0.32	0.87	4.70	0.50	1.16	-0.39	0.84
UI	5.06	0.67	0.82	-0.69	0.79	5.10	0.67	-0.28	-0.46	0.82

To determine if there were any differences between groups (i.e., Residential and Commuters), we conducted a simple t-test to see if there are any significant differences at the $p=.05$ level. Table 3 shows the t-statistics, *p-value*, and confidence interval for each of the constructs. There were no significant differences among any group pairs suggesting that residential and commuter students did not experience integration at differing levels.

Table 3: T-test for group difference.

Constructs	**t-statistic**	**p-value**	**95% CI**	
AI_C vs AI_R	-0.5227	0.6022	-0.3017	0.1758
SI_C vs SI_R	-0.3543	0.7239	-0.3277	0.2284
PI_C vs PI_R	0.3739	0.7091	-0.1352	0.1981
UI_C vs UI_R	0.3779	0.7063	-0.1895	0.2788

For each of the four sections below we show the survey questions that make up each construct along with the distribution of responses shown in a horizontal stacked bar chart. We then show alluvial plots for each construct using the categorical variables of identity and commuter status. For the third categorical variable in the alluvial plots, Likert-type responses, we converted the mean scores back to the original Likert-type categories using the following range:

Strongly Disagree (1.0-1.85)
Disagree (1.86-2.70)
Somewhat Disagree (2.71-3.55)
Somewhat Agree (3.56-4.40)
Agree (4.41-5.25)
Strongly Agree (5.25-6.00).

Academic Integration

Figures 2 and 3 show the responses for academic integration.

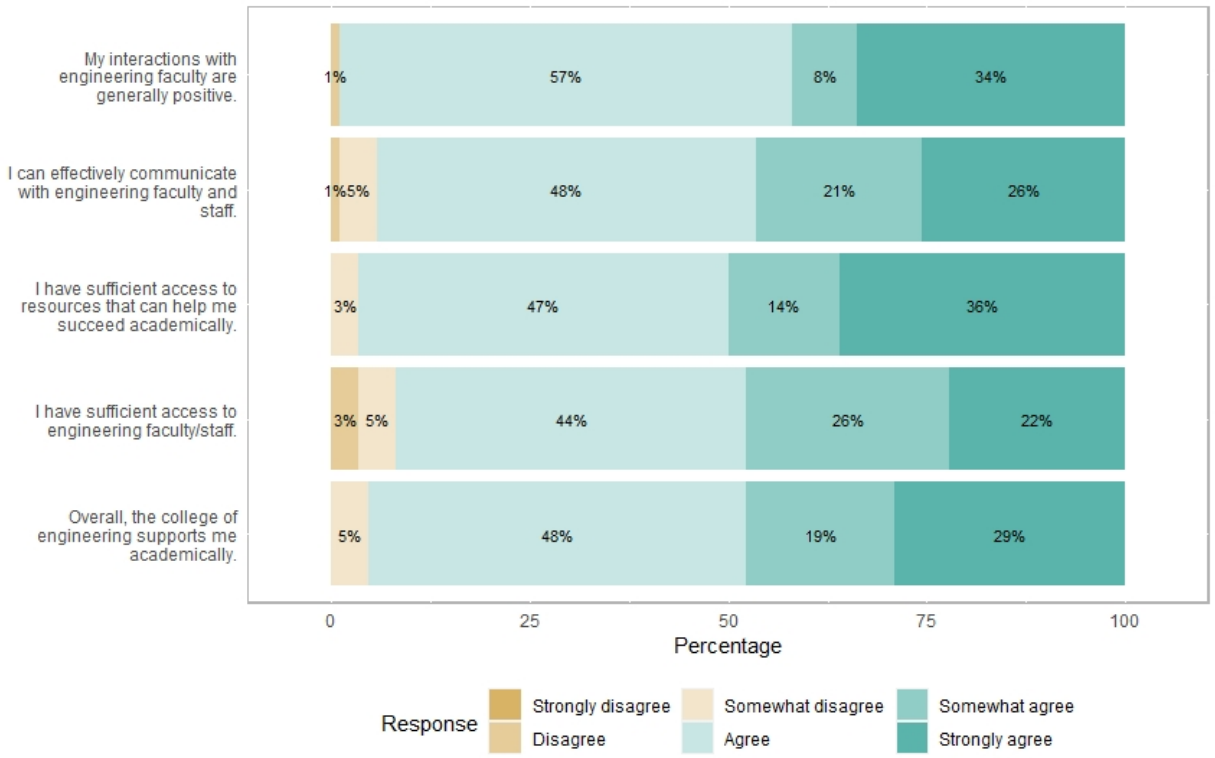

Figure 2: Academic Integration Responses

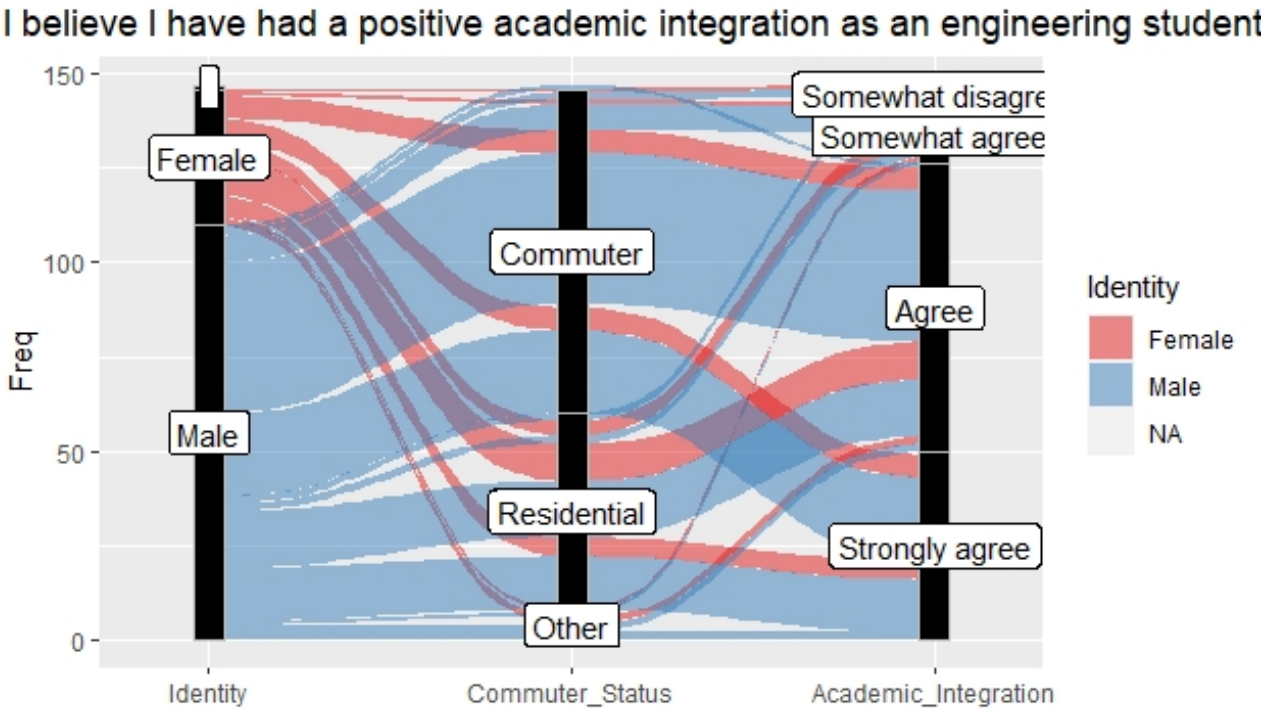

Figure 3: Academic Integration Alluvial Plot

Social Integration

Figures 4 and 5 show the responses for social integration.

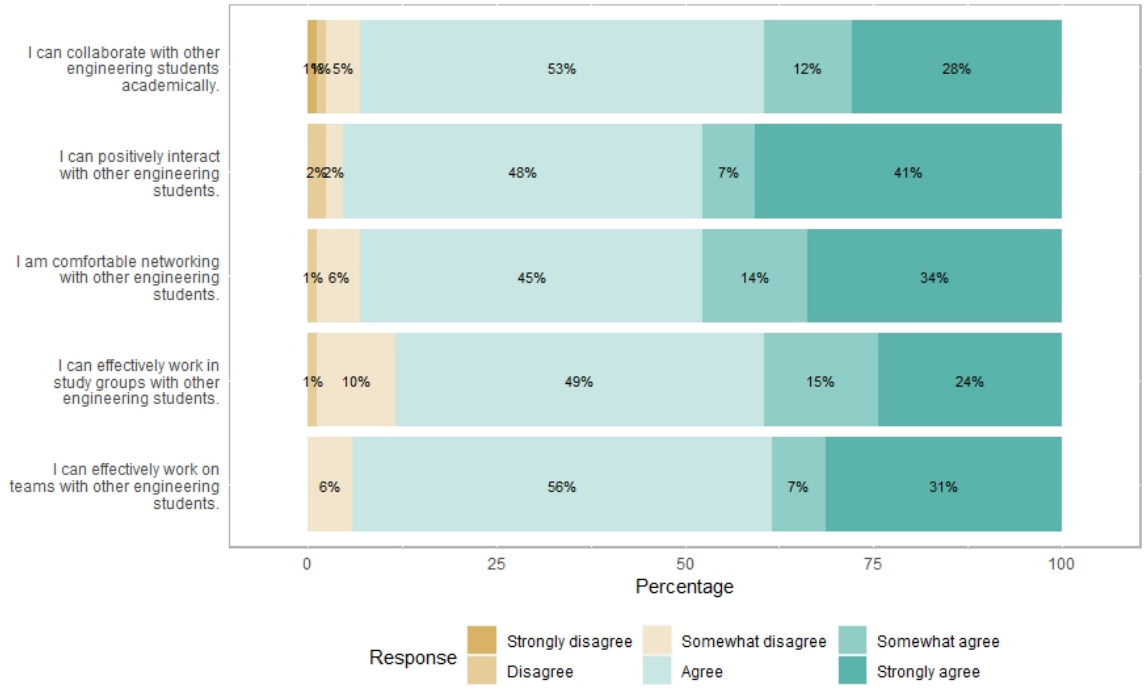

Figure 4: Social Integration Responses

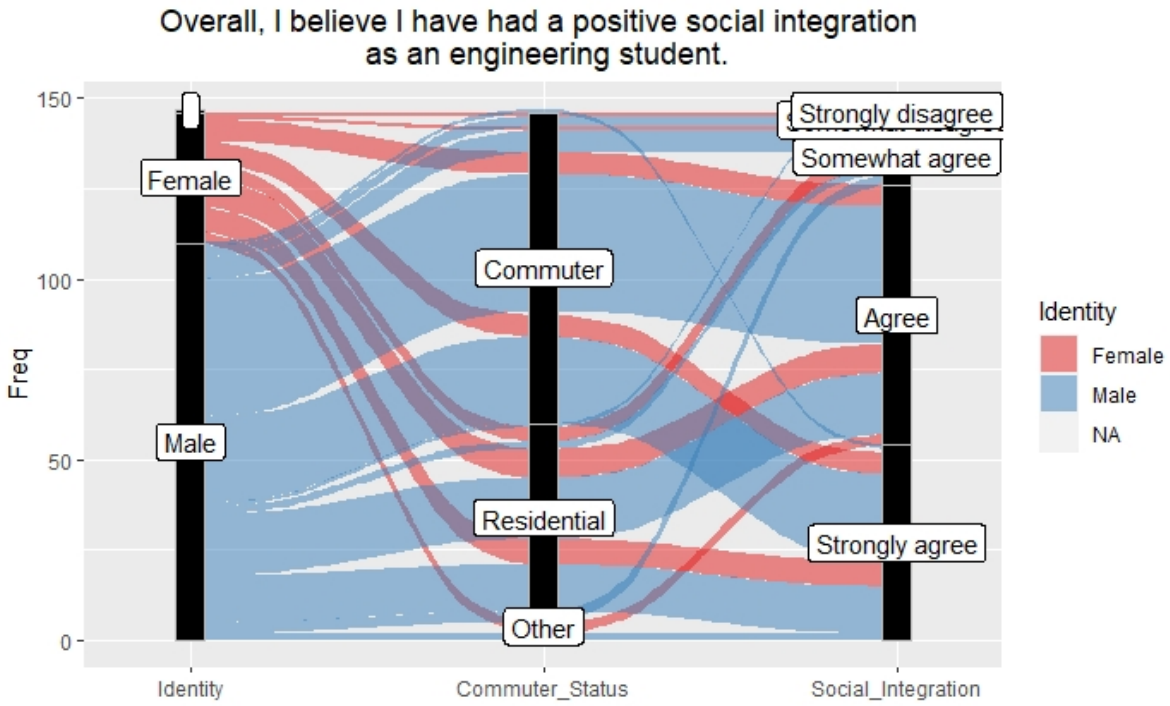

Figure 5: Alluvial Plot of Social Integration

Professional Integration

Figures 6 and 7 show the responses for professional integration.

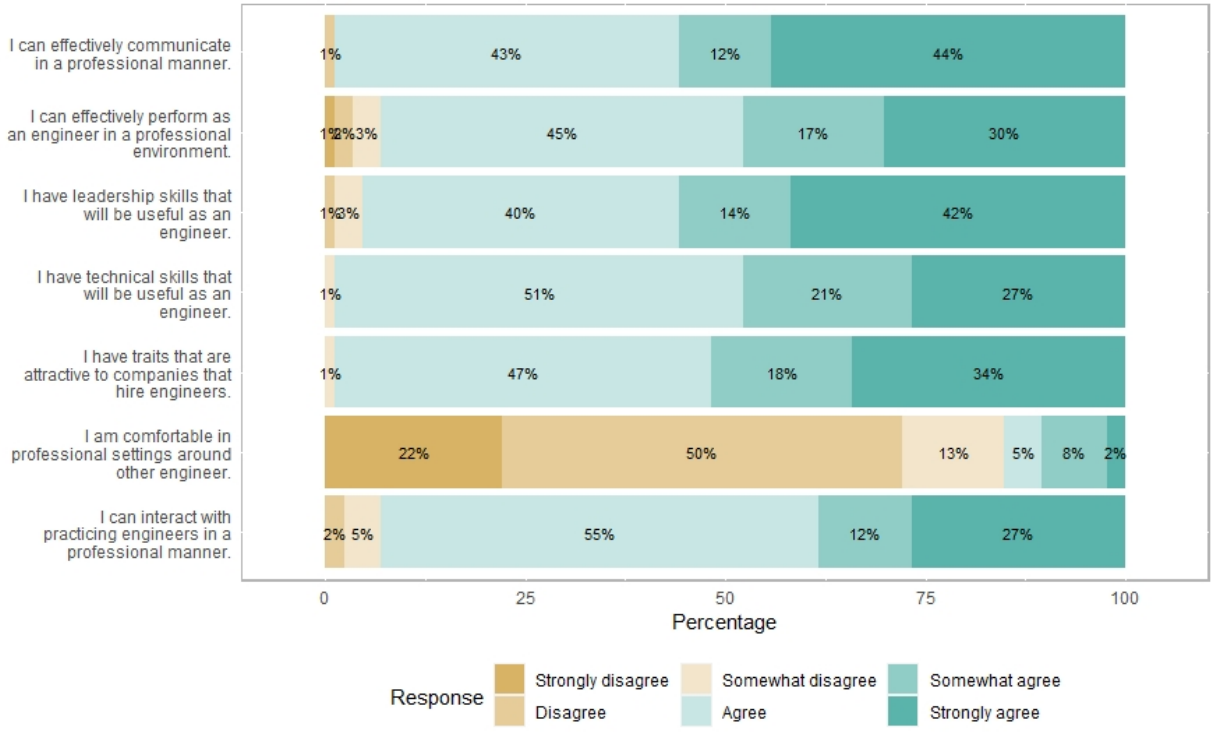

Figure 6: Professional Integration Responses

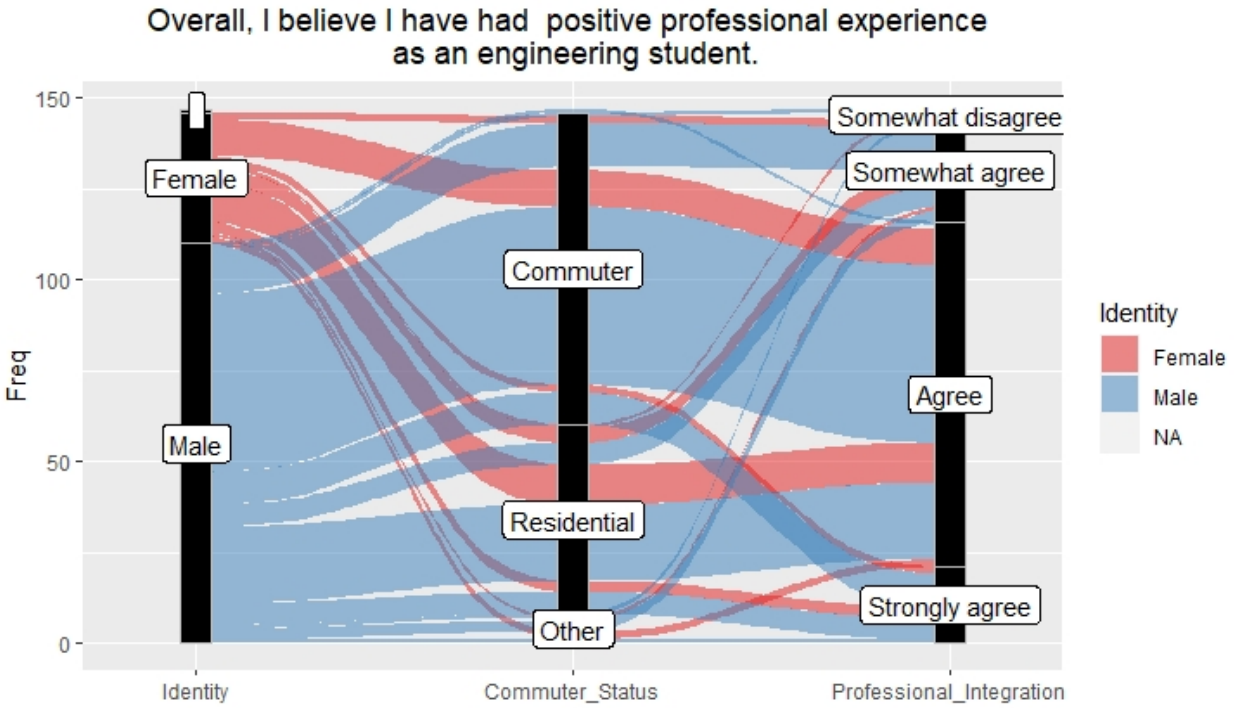

Figure 7: Alluvial Plot for Professional Integration

University Integration

Figures 8 and 9 show the responses for university integration.

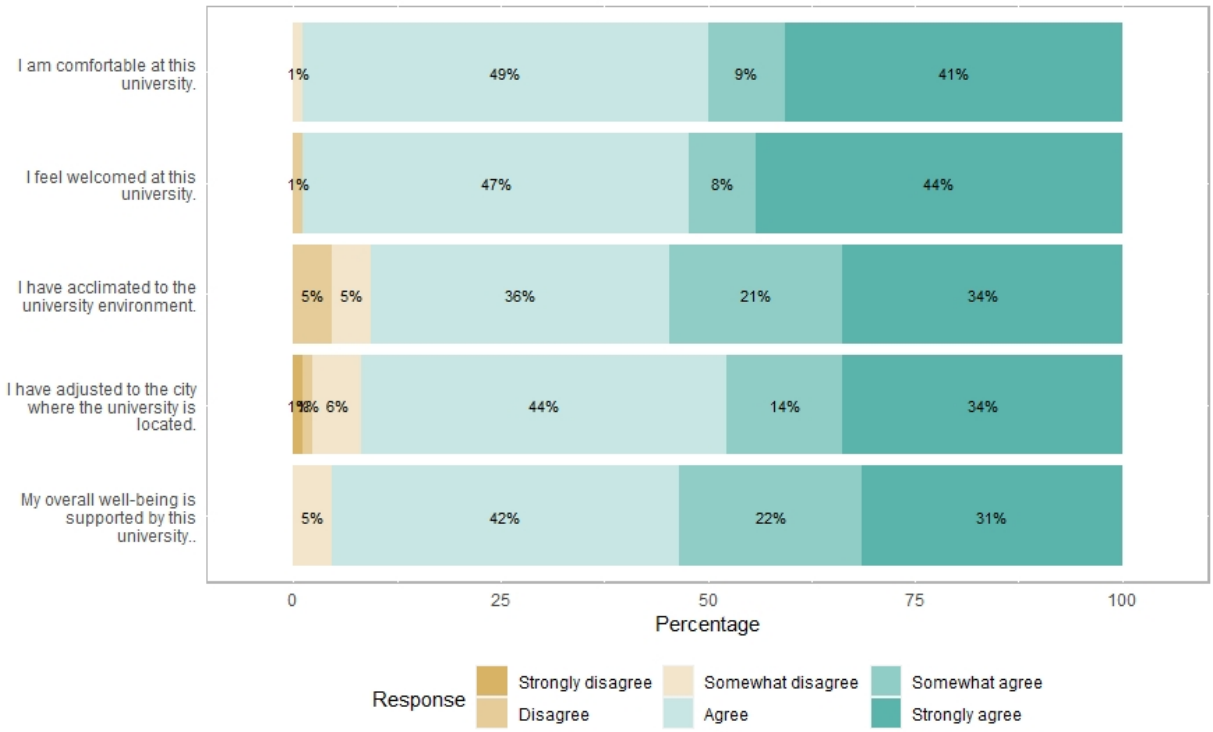

Figure 8: University Integration Responses

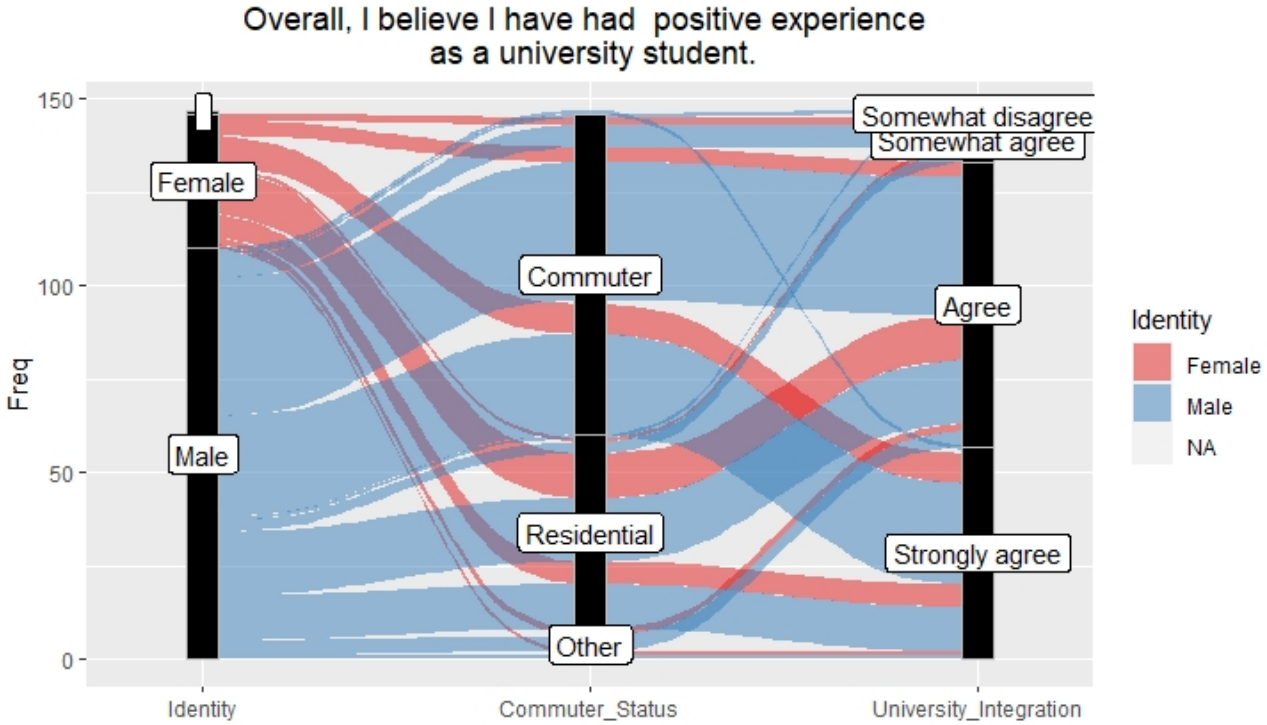

Figure 9: Alluvial Plot for University Integration

Discussion

As students were mostly learning virtually for the Fall 2020 semester there were concerns that students who did not live on-campus would be disconnected from faculty, peers, and the university environment. From the survey results of 146 first-year engineering students that concern does not seem to be actuality. As there were no significant differences between residential and commuter students the data show that both groups were able to be connected to the university environment.

There could be various reasons for both residential and commuter students experiencing college life similarly. First, as all the construct means were fairly high suggesting at least an 'agree' for each question the concerns for students being disconnected may simply have been false. The data suggests students were just as engaged as in years past when the survey was conducted before [16]. This could mean that it was easier for both residential and commuter students to connect with faculty, staff, and peers by being virtual. Second, students who commuted could have had other courses that were in a hybrid format thus bringing them to campus more often allowing them to connect in-person with faculty and peers. Although this is most likely limited as a majority of courses went fully online. Lastly, the time saved by not commuting could have been a reason they were able to connect with others virtually as much as residential students connect with others as prior work has shown that commuting time can take up a significant portion of a student's time, along with work and other school duties [17].

Conclusion

The COVID-19 pandemic pushed many universities online and it drastically changed the way in which students connect with both faculty and peers. Being disconnected with others can make academic life difficult for students by not being able to review material and know how their classmates are performing. With being online, there was just less for students to be involved in especially in students lived off-campus. Our research investigates the integration of first-year engineering students, both residential and commuter to uncover the realities of having to be online for their first semester in college.

Results indicate that there were no significant differences between the two groups in terms of involvement academically, socially, professionally, and with the university environment. These results indicate that being virtually may have helped commuter students use saved time to form connections they have not been able to make in the past.

Acknowledgment

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