



TRANSPORTATION SERVICES
VIRGINIA TECH

2022 VIRGINIA TECH Transportation Survey Report



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INTRODUCTION

Virginia Tech's Alternative Transportation Department launched its fifth version of the biennial Transportation Survey (formerly known as the Commuter Survey) on January 1, 2022, and it remained open until May 4, 2022. The purpose of this survey was to gain insights into and better understand the travel behaviors of Blacksburg campus affiliates. Future outreach efforts and departmental programming will be based on the analysis of the survey data.

Virginia Tech offers a variety of alternative transportation options to help its commuters save time, money, and reduce their carbon footprint. Alternative options for getting around include: Blacksburg Transit (BT) for local trips in Blacksburg and Christiansburg; the Smart Way bus for getting to and from Roanoke; carpooling; vanpooling (for employees only); car share provided by Zipcar; and shared micromobility through Roam NRV bike share and Spin e-scooter share.

Blacksburg resumed in-person classroom environments in August 2021. This led to a dramatic increase in the number of responses compared to the 2020 Survey. While the 2020 Survey only had an initial 691 participants (628 valid responses), the 2022 Survey had a total of 2,256 initial responses. After reviewing the data, 28 responses were removed due to no listed affiliation with Virginia Tech, and an additional 516 responses were removed due to incomplete survey responses, resulting in a total of 1,740 valid responses. As Table 1 illustrates, this represents 4.2% of all Virginia Tech affiliates on the Blacksburg campus.

Table 1. Survey Response Rate

Survey Participants	Number of Participants	Total Affiliates	Response Rate
Undergraduate Students	670	28,208	2.37%
Graduate Students	265	5,002	1.06%
Faculty	402	5,285	7.60%
Staff	403	3,257	12.37%
Total	1,740	41,752	4.17%

The total number of Virginia Tech faculty and staff included employees with primary affiliation at all Virginia Tech locations. Faculty/Staff data specific to the Blacksburg campus is not currently available. That being said, this still represents a very low response rate, especially compared with previous surveys. Also, postdocs and faculty emeriti were counted as faculty, not staff. The undergraduate and graduate students, combined, make up more than half of the survey participants (53.7%) with undergraduates accounting for most of the student representation. Faculty and staff members, individually, make up about 23% of the survey participants. At a 95% confidence level, this sample size has a 1.88% margin of error.

PRIMARY MODE USAGE

Student Trends

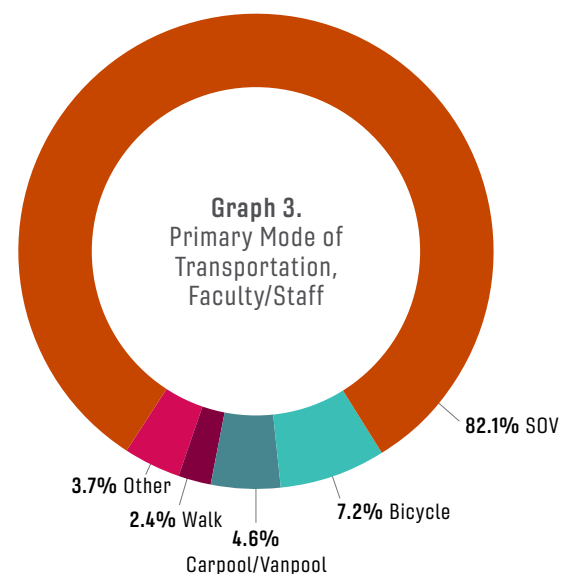
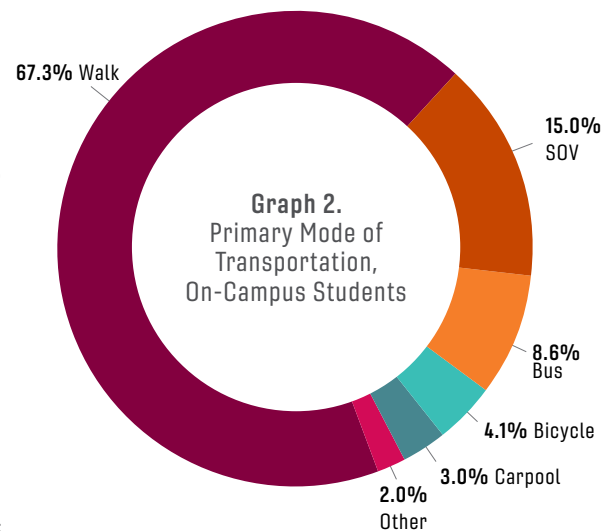
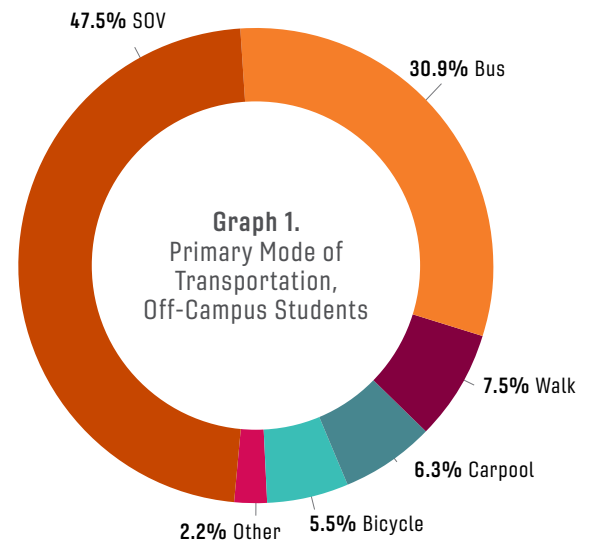
Graph 1 shows that students living off campus indicated a tendency to rely on single-occupancy vehicles (SOVs) over all other modes of transportation as their chosen primary mode for getting to/from campus. As for non-SOV modes, riding Blacksburg Transit (BT), walking, and carpooling were indicated as their top three. Except for carpooling (6.28%) and bicycling (5.53%), every option beyond that came in at less than 2% and were grouped together in the 'other' section.

Graph 2, however, shows a different tendency for students living on campus. Since these participants are located on campus, they were asked about their primary mode for getting to/from other destinations on campus. More than half indicated that walking was their chosen primary mode. However, the second-most popular mode for on-campus students was driving alone.

The 40 students who selected this mode likely live in the Oak Lane community, which comprises 19 buildings housing fraternities and sororities on the western side of campus. While still a part of campus, students must travel over a mile to get to classes, dining facilities, etc. Because of this, Oak Lane students are sold Commuter/Graduate permits despite living on campus. For the 2021-22 academic year, over 400 parking permits for the Oak Lane community were sold, about $\frac{2}{3}$ of the total student population for this area. Riding BT rounds out the top three chosen primary modes of transportation. Similarly, apart from bicycling (4.14%), and carpooling (3.01%), all other modes came in at less than 2% and were grouped together in the "Other" section.

Faculty And Staff Trends

Faculty and staff (F/S) members continue to overwhelmingly choose SOVs as their primary mode of transportation (see Graph 3) and were more than twice as likely than students to do so. Aside from driving alone, bicycling, carpooling/vanpooling, and walking were indicated as their top three alternative modes. All other options came in at less than 2% and were grouped together in the "Other" section.

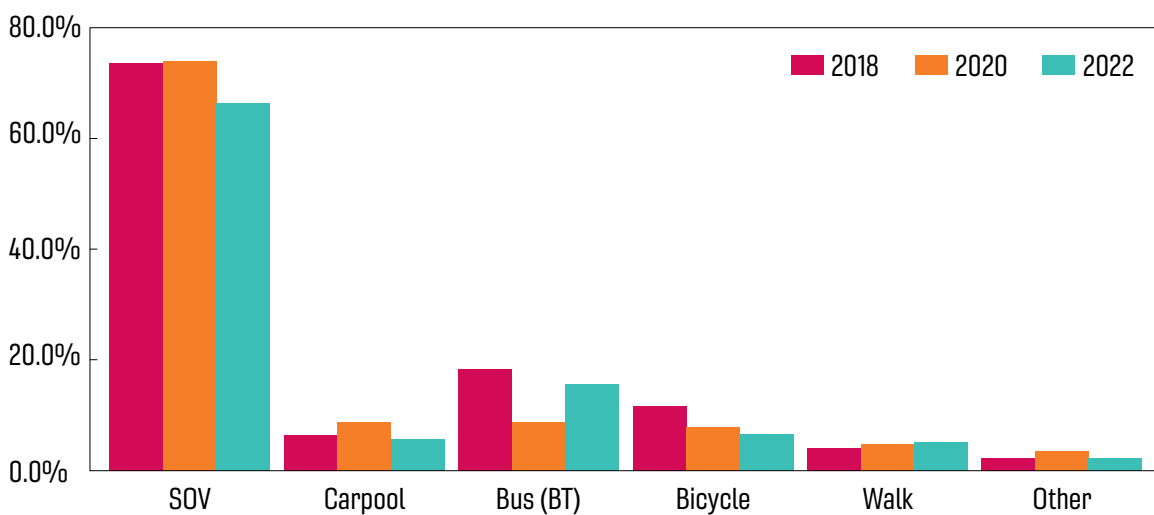


Staff members were more likely to choose SOVs as their primary mode than faculty members, as well as more likely to carpool/vanpool. Whereas faculty members were significantly more likely to choose a more active mode of transportation such as bicycling or walking.

This may be due to staff members having to commute longer distances than faculty and students. Seventy-four percent of staff member participants indicated commuting farther than five miles to and from campus, with half of those commuting distances farther than 15 miles. Compare this to 16% of faculty who also indicated commuting farther than 15 miles to and from campus. Most (70%) faculty member participants indicated commuting between 1-10 miles, with nearly half of those commuting within 2-5 miles of campus. Students were more likely than F/S to commute even shorter distances to and from campus with a majority (86.2%) of those living off campus commuting less than five miles, and more than half (66.3%) of those were commuting less than two miles.

CHANGES IN PRIMARY MODE USAGE

Graph 4. Change in Primary Mode of Transportation from 2018 to 2022



From 2018 To 2022

Graph 4 illustrates the changes in primary mode during the previous six years these surveys were conducted. It is worth noting that results from 2020 may be skewed due to campus shutting down, transitioning to virtual instruction and remote working as a result of the coronavirus disease 2019 (COVID-19). By fall of 2021, most classes had resumed an in-person format. However, the impacts and changes resulting from the pandemic are still ongoing.

While SOV usage has seen an overall declining trend, including a significant decrease from 74% in 2020 to about 66% in 2022, it remains the top mode choice for Virginia Tech affiliates. Driving alone has increased

slightly among students but is still holding above 70% for faculty and staff, which appears consistent throughout previous survey results. This decrease may likely be due to a reduction in convenient student parking in the Perry Street Area. Most commuter students have to park in the Duck Pond, Smithfield Road, and Litton Reaves lots and walk/bus to class. By the time they do this, it's often more convenient to take the bus from their residence.

Public transit usage among survey participants has recovered a significant amount from 8.21% in 2020 to 15.1% in 2022. Despite this bump, ridership is still lower than in previous years, and has been generally declining among affiliates. However, students are still overwhelmingly more likely to ride BT than faculty and staff members (see Table 2). BT has also been struggling with staff shortages since the start of the pandemic, which has resulted in a service reduction and a corresponding decrease in ridership.

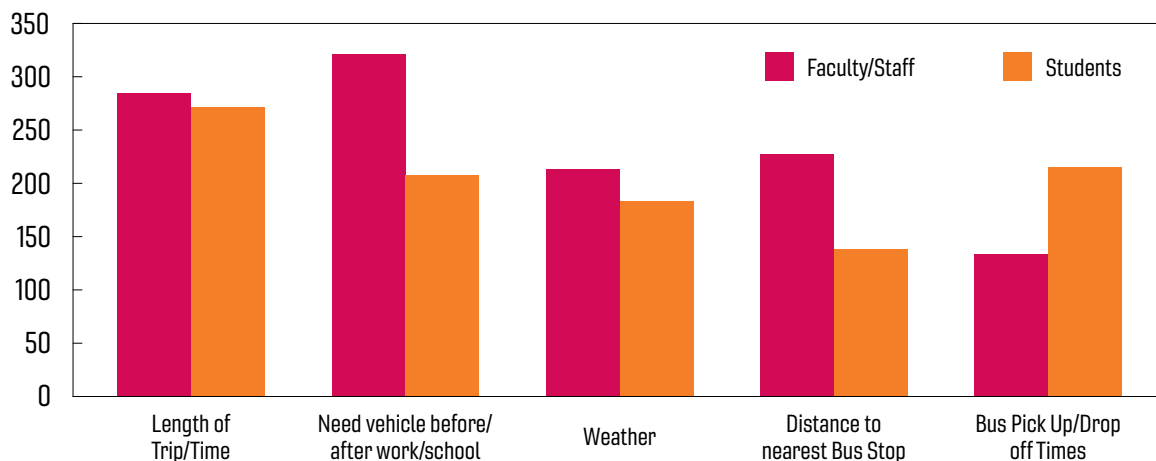
Despite an increased awareness of carpooling/vanpooling among affiliates, this mode has slightly declined over the past four years. Interestingly, in 2020, there was a slight rebound in those carpooling/vanpooling. However, this decline continues to occur despite participants indicating they are aware of this travel option. Nearly 400 participants (students, staff, and faculty) indicated that this option was available to them.

There has also been a noticeable downward trend in bicycling among campus affiliates from about 11% of participants bicycling in 2018 to only 6.5% bicycling in 2022. There was also an interesting change that occurred from the previous survey years, where bicycling had been increasing among students and decreasing among faculty/staff members, this year's survey showed bicycling decreasing among students and increasing among faculty/staff, particularly with faculty members. Walking on the other hand, has been on a slightly upward trend since 2018, particularly among students living on campus.

TRAVEL INSIGHTS

Barriers To Alternative Transportation Use

Graph 5. Top 5 Barriers Preventing Participants from Using Alternative Transportation More Often





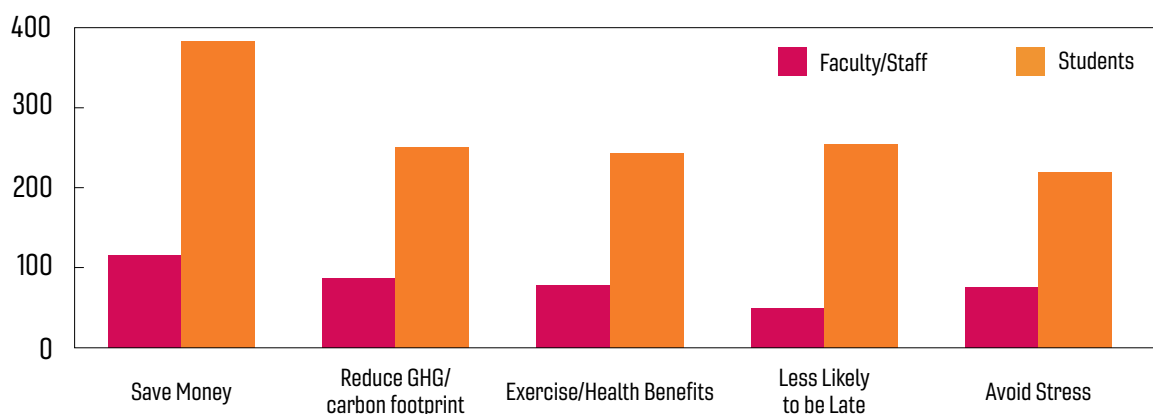
As Graph 5 shows, the top three concerns preventing all affiliates from using a transportation mode other than driving alone include the trip length/time, needing a car before/after work/school, and weather. Faculty also listed distance to the nearest bus stop as a top concern. Interestingly, staff additionally indicated that they preferred to commute alone and did not know anyone to carpool with. Students were also concerned about bus pickup/drop off times and bus crowding.

Write-ins for the other category primarily revolved around issues regarding safety, lack of infrastructure or accessibility of and relying on modes of alternative transportation as well as continued concerns with COVID-19/compromised immune systems, particularly in terms of utilizing public transportation.

Personal Benefits Of Primary Mode Choice

The top three benefits participants personally gained from using their chosen non-SOV transportation mode include saving money, reducing greenhouse gas emissions (GHG), and getting exercise/health benefits (Graph 6). Faculty and staff members also listed less wear and tear on their car as a top benefit, as well as avoiding stress. Students additionally listed arriving at their destination on time/less likely to be late as a top benefit and, similarly to F/S, avoiding stress. Write-ins for the other category primarily included comments regarding parking frustrations and hassles.

Graph 6. Participants



The Alternative Transportation Department could benefit from focusing more on campus employees, particularly staff members, moving forward. Improving infrastructure that supports the use of alternative transportation at greater distances and increasing available, accessible, and affordable options for greater distance travels are also crucial in helping convince some to make the switch from an SOV.

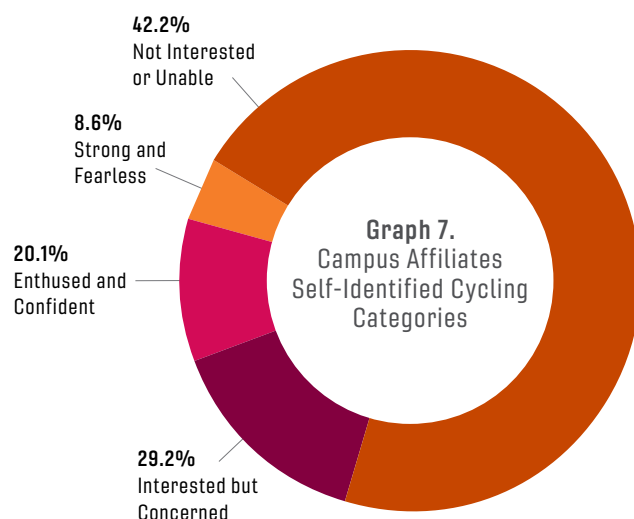
Bicyclists

Participants who indicated that bicycling was a mode choice available to them or their primary transportation mode were asked additional questions about what type of cyclists they would categorize themselves as and how comfortable they were with bicycling at night.

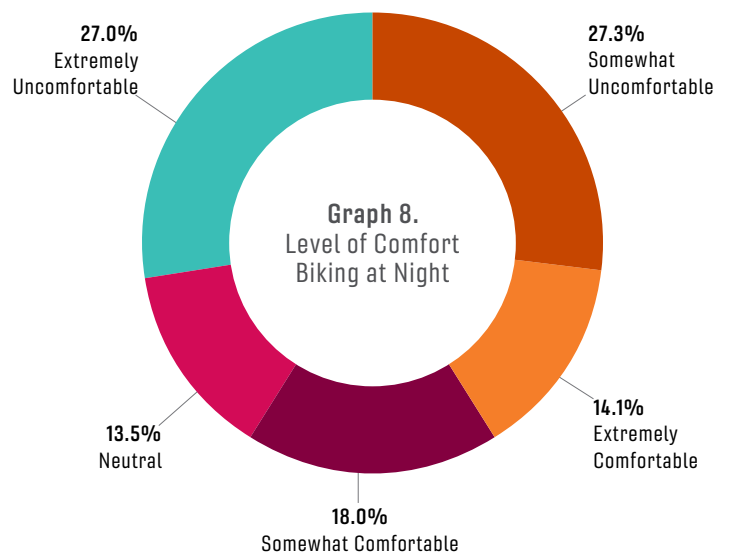
The concept of the 'Four Types of Bicyclists' was initially developed by Roger Geller (Bicycle Coordinator Portland Bureau of Transportation) and is used to help identify which community members need lower stress facilities to feel encouraged to bicycle more often or to give bicycling a try at all.

The four categories include:

1. **The Strong and Fearless:** those willing to bicycle in nearly any environment, including within fast-moving or congested mixed traffic.
2. **The Enthused and Confident:** those willing to bicycle if some bicycle-specific infrastructure is in place
3. **The Interested but Concerned:** those curious about bicycling but afraid to ride because of safety concerns, and/or willing to bicycle if high-quality, safe infrastructure is in place.
4. **The Not Interested or Unable:** those unwilling to bicycle regardless of the quality of infrastructure or not physically able to bicycle.



Graph 7 illustrates the distribution of the four types of cyclists based on responses to the survey question. The "strong and fearless" and "enthused and confident" categories make up just 28.7% of the overall population, while the interested but concerned category is nearly identical at 29.2%. When designing bicycle infrastructure, the goal is to create an environment the "interested but concerned" group will be willing to utilize. By doing this, a majority of people will find the facility safe and comfortable and be inclined to bicycle.





As seen in Graph 8, more than half (54.4%) of the participants indicated that they were somewhat or extremely uncomfortable biking at night. Participants were also asked to explain why they felt comfortable, neutral, or uncomfortable biking at night.

The top concerns participants wrote in regardless of how comfortable they felt were:

- + general concerns about their safety (particularly among those who identified as female) and/or not wanting to be hit by a car;
- + a lack of visibility and infrastructure (insufficient lighting and a need for more bike/ped infrastructure); and
- + a general distrust/lack of confidence in drivers' behavior and their attitude towards bicyclists.

Some of those who were neutral mentioned this was due to not owning a bike or that they preferred not to bike at night. Those who indicated they were comfortable, primarily attributed this confidence to their quality of gear (lights/helmets/high-visibility attire) and/or their overall experience and skill level.

CONCLUSION

Overall, participants seem to be aware of the variety of options available for alternative transportation. Over the past eight years students have opted to ride public transportation and walk more often, with a corresponding drop in SOV usage. Focusing on continuing this trend as well as encouraging more people to bicycle, will further decrease SOV use. Reaching out to faculty and staff to increase their knowledge of alternative transportation options, and constructing more and safer infrastructure for bicyclists, public transportation riders, and pedestrians should help to sway more people towards alternative transportation options.