

College of Charleston

2011 Campus Transportation Study

Analysis of Commuting Habits and Recommendations

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Executive Summary

This report examines the attitudes and behavior guiding those who commute to the College of Charleston. The report is based on data gathered from a campus-wide survey conducted in spring 2011 for the *Campus Greenhouse Gas Audit*. Commuting is integral to campus logistics and creates more efficient and sustainable paths for campus life (Toor, 2003). As part of the *President's Climate Initiative*, the College is required to reduce emissions by targeting key sectors of campus life. Transportation, and commuting in particular, is a key area highlighted by the Initiative. The broader focus of this report addresses sustainability assessments of health, safety, efficiency, and convenience as well as reducing campus emissions.

There are two important caveats to note before presenting the findings of the commuting survey. First, there are other forms of transportation directed and supported by the College that should also be targeted in the future (e.g. campus fleet, faculty, staff and student travel, etc). Second, while this report makes recommendations, along with implementation strategies, they require fuller evaluation by Higher Administration, Public Safety, Parking Services, and input from the campus community. Accordingly, we recommend the creation of a *Transportation Committee* to assimilate this information and assess options for implementation.

1,121 individuals (faculty, staff and students) completed the *2011 College of Charleston Commuter Survey*. Among those responding, **71 percent** reported using some form of motorized transportation in their daily commutes, with **64 percent** relying exclusively on motorized transportation. A total of **66 percent** of commuters who use motorized transportation live less than 10 miles from campus, while **35 percent** are less than 5 miles away. The close proximity to campus provides a wider range of options for alternative transportation for a clear majority of commuters. At present, commuting is a substantial part not only of the campus carbon footprint, but also key to address in developing a campus sustainability plan.

Summary of Key Findings:

1. Faculty and staff tend to use motorized transportation to get to campus at much higher rates than students (a likely function of campus proximity). This suggests that alternative programs may have to target faculty and staff differently than students.
2. Nearly half of survey respondents (**44 percent**) exclusively drive to campus alone—the majority of whom commute between 11-20 roundtrip miles to the main campus at least five days a week or more. This represents a clear target group for many of the alternative strategies suggested here.
3. The primary reason respondents indicated that they drive to campus alone is because they have “nobody to carpool with” (**49 percent**), signaling the need for an online CofC carpooling network. A secondary reason was conflicting schedules or freedom with other possible carpoolers. Faculty and staff value “freedom” in driving to campus much more than students. This highlights the need

for alternative transportation methods that emphasize convenience, varying incentives, and emergency options.

4. Currently, only **3 percent** of respondents carpool exclusively to campus, while almost **10 percent** do so in combination with other forms of transportation. Only **9 percent** of respondents take the bus exclusively to campus, with **17 percent** taking the bus some of the time. A higher portion of staff takes the bus than students or faculty. Therefore, of those taking motorized transportation to campus, only **12 percent** take alternative transportation exclusively to campus. New programs must generate creative and efficient incentives to enhance this potential group, particularly to increase participation from faculty and commuting students.

5. The most important factors influencing the decision of whether to bike to campus more often are the weather and safety. Particularly in terms of safety, this suggests both working with the broader community and increasing the security for bikers on campus is key to encouraging non-motorized transportation.

6. **41 percent** of student respondents walk or bike to campus, while **11 percent** of faculty and staff do so. This suggests a potential strategy of enhancing safety for those already commuting by non-motorized transportation, including greater safety education, and providing a wider array of incentives and protections to induce more to bike and/or walk to campus. **75 percent** of respondents currently using bicycles are within 1.5 miles of campus emphasizes this point, and suggests that working with the broader community is necessary to enhance safety.

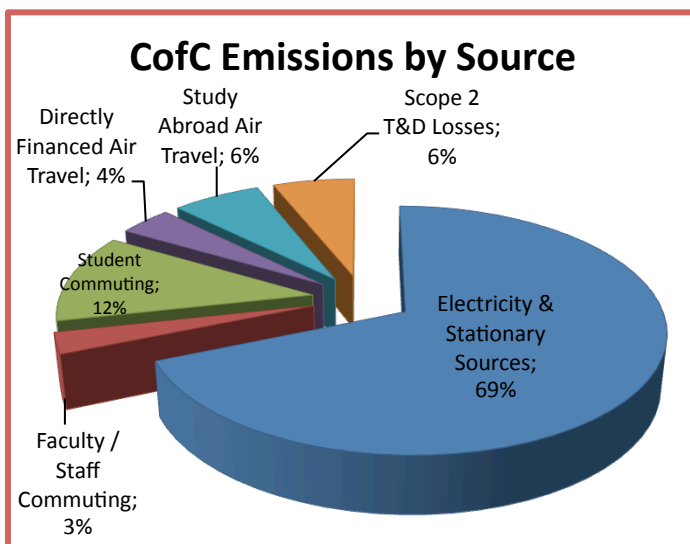
7. The factors influencing behavior to take alternative modes of transport vary but coalesce around greater financial incentives, safety, and convenience. To carpool, respondents seek discounted parking passes, more convenient spaces, and guaranteed rides for emergencies; to take CARTA, respondents would like to see closer bus stops, more consistent scheduling, and again guaranteed rides for emergencies; to bike, all agreed on greater safety getting to campus, while faculty/staff wanted more shower access and guaranteed rides for emergencies, and students wanted greater financial incentives.

8. The policy recommendations attempt to address these trends in the behavior and attitudes through a mix of approaches and strategies. They focus on greater financial incentives, enhancing safety, parking incentives, education, carpooling matching, emergency modes of transportation, and greater cooperation with the city and Charleston NGOs to facilitate the use of alternative transportation networks.

We recommend that policy considerations should be based on close examination of synergies between different areas to create efficiency and effectiveness. For example, creation of an emergency transportation system would meet the needs of carpoolers, bicyclists, and those utilizing CARTA. In addition, single incentives rarely work to motivate behavioral change, so consideration of *multiple, overlapping incentives* can result in more effective policy. The benefits from employing these recommendations will create a safer campus with less strain on parking resources, while decreasing traffic congestion, our carbon footprint, and pollution.

Introduction

In May 2008, the President signed the *American College and University President's Climate Commitment* (ACUPCC), requiring the College to undertake systematic reductions in campus' greenhouse emissions. As part of a greenhouse emissions audit designed to calculate the campus' carbon footprint, a survey ("2011 Commuter Survey") was administered to all members of the CofC community in April 2011 to assess emissions from commuting to/from campus. 1,121 individuals completed the survey (approximately 60 percent of which were students, 15 percent were faculty and 24 percent were staff). The overall response rate was significant at 9.4 percent, reducing the potential margin of error to +/- 2.7 percent. The survey was used as an opportunity to assess not only emissions, but also commuting habits and attitudes toward alternative (non-motorized) modes of commuting. This report analyzes the data from this survey and provides insights that contributed to tentative recommendations for advancing campus transportation policy.



Transportation and commuting are significant aspects of both the logistics of campus life and in attempting to transition toward sustainability (Toor, 2003). The Charleston population has grown by ~20 percent in the last ten years (Charleston Regional Development Alliance, 2011), while similarly CofC infrastructure and population has also grown. This has led to significant impacts on traffic, parking, campus mobility, and safety. Commuting represents 15 percent of CofC's total carbon footprint, a significant emission's conduit. During this same growth period, campus planning

throughout the nation has shifted away from building more parking as a monolithic solution to increased demand in favor of more economical and sustainable alternatives (Miller, 2001; Daggett and Gutkowski 2002; Toor 2003). The decline in physical campus space, higher construction costs, community pressure, and quality of campus life are critical factors driving this shift (Toor, 2003). Today, campus planning on transportation explores safer bicycle and pedestrian corridors, expanded public transit, incentives for carpooling, etc., all under the rubric of sustainable campus transportation. In addition, as transportation energy use represents a major portion of the campus' greenhouse gas emissions profile, a critical co-benefit of this shift is the reduction of greenhouse gas emissions and pollution.

It is from this perspective—concerns for health, safety, efficiency, convenience, emissions' reductions, and facilitation of campus mobility—that this report was developed. This analysis was designed to better understand campus transportation, to raise the profile of transportation as an integral aspect of campus life, and to advance recommendations to address deficiencies and/or inefficiencies in the College's current policies.

PART I: Current Commuting Habits of the CofC Community

Key Finding: *Although the majority of those surveyed rely on motorized transportation to commute to campus, just over one-fourth does not. Faculty and staff tend to use motorized transportation to get to campus at much higher rates than students do, though this is likely a function—at least in part—of differences in proximity to campus. This suggests that programs or policies developed to encourage alternative commuting habits should target faculty and staff differently than students.*

	Resp. Rates	Motorized Transportation				Non-motorized Transportation			Combo: Motorized & Non-motorized	Totals
		Drive alone only	Car-pool only	Bus only	Combo: Motorized	Walk only	Bike only	Bike & Walk		
Faculty & Staff	F: 20% S: 27%	49%	5%	15%	14%	5%	4%	2%	6%	100% (428)
Students	8.7%	40%	2%	5%	5%	24%	5%	12%	7%	100% (677)
All	9.4%	44%	3%	9%	9%	16%	4%	8%	7%	100% (1111)

Table 1: Breakdown of all Modes of transportation commuting to the College of Charleston.

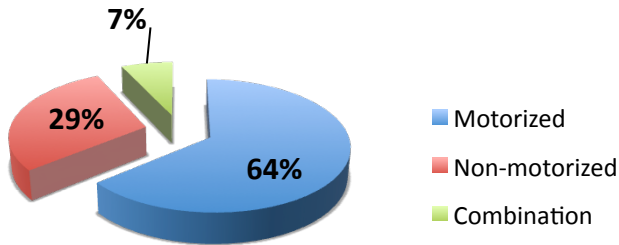
Of the 1,121 individuals who responded to the 2011 Commuter Survey, nearly 71 percent reported using some form of motorized transportation to commute to campus at least some of the time, either exclusively commuting via motorized transportation (64 percent) or relying on a combination of motorized and non-motorized transportation. Only 29 percent reported never relying on motorized transportation, exclusively walking to campus (17 percent), biking (4 percent) or relying on a combination of walking and biking to campus (eight percent).

A comparison with city-level data on commuting shows significant differences. First, fewer commuters to CofC rely on some form of motorized transportation in comparison to Charleston residents who do not belong to the CofC community (CofC: 70 percent; City: 91 percent). In addition, a much smaller percentage of Charleston residents use CARTA (less than 2 percent), while nearly nine percent of CofC commuters use CARTA exclusively and 11 percent commute with CARTA at least some of the time. However, the survey of Charleston residents reports greater proportions who carpool (13 percent) compared to just six percent of CofC community members who report carpooling at least some of the time.

	CofC	City
Drive Alone at least some of the time	53%	76%
Carpool at least some of the time	6%	13%
CARTA at least some of the time	11%	2%
Bike/Walk at least some of the time	30%	9%

Table 2: CofC Compared with City Residents

Modes of Commuting to CofC

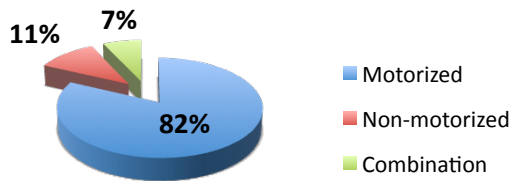


A much larger proportion of students reported using non-motorized transportation in comparison with faculty and staff. Forty-one percent of students surveyed commute to campus using non-motorized transportation, while 11 percent of faculty and staff reported the same behavior. In contrast, a vast majority (82 percent) of faculty and staff rely solely on motorized transportation to commute to campus, while just over half (52 percent) of students do the same.

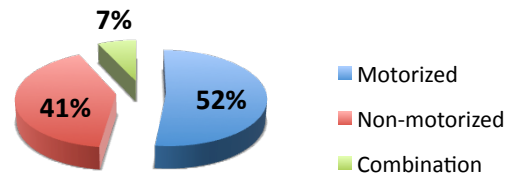
Equal proportions (seven percent) of faculty, staff and students commute to campus via a combination of motorized and non-motorized transportation.

As noted above, 41 percent of students commute to campus using non-motorized transportation exclusively. The vast majority of these students walk to campus, though approximately one-third of students who commute using non-motorized transportation bike exclusively to campus and another 10 percent walk or bike in combination. Of the 11 percent of faculty and staff who commute to campus using non-motorized transportation, approximately half walk to campus.

Faculty & Staff Commuting



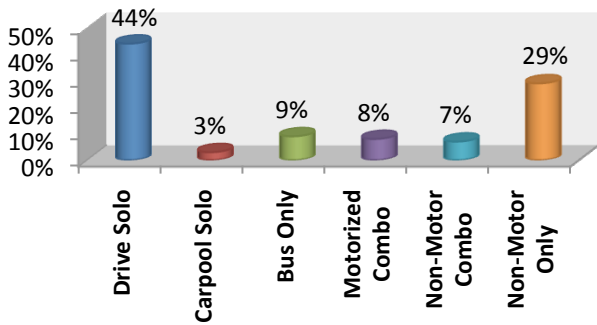
Student Commuting



Motorized Transportation Commuting Habits

Of the nearly 800 respondents who report using some form of motorized transportation to commute to campus, a substantial majority (80 percent) drive alone at least some of the time. However, this does not mean that these individuals drive alone all of the time. Some individuals also carpool (two percent), take the bus (five percent) or both (less than half of a percent)—in addition to driving alone. A very small amount (one percent) of those who drive alone also bike to campus as well. In fact, approximately seven percent of those surveyed report using a combination of both motorized and non-motorized transportation—biking at least part of the time but relying on driving alone, carpooling or taking the bus as well.

Modes of Commuting at CofC



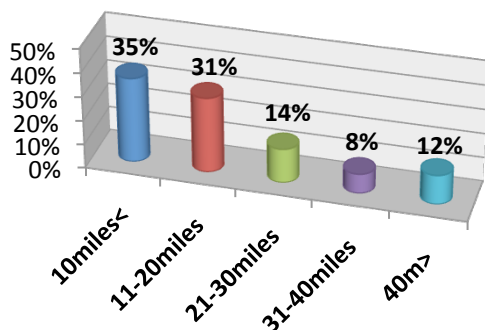
However, approximately 44 percent of those surveyed always drive alone when they commute to campus (i.e., they never use another form of transportation—whether motorized or non-motorized—to get to campus). In fact, among all motorized commuters, driving alone is the most common mode of commuting, although a greater percentage of faculty and staff drive alone exclusively (49 percent each) than students (40 percent).

Driving Alone

Key Finding: *Nearly half of survey respondents (44 percent) exclusively drive to campus alone—the majority of whom commute between 11-20 miles by car to the main campus at least five days a week or more. Another 36 percent drive alone to campus at least some of the time.*

The survey results indicate that those who drive alone to campus are primarily commuting to the downtown campus location. Of those who report driving alone to campus at least some of the time, nearly 69 percent drive to the downtown campus location at least five days a week or more; in contrast less than 13 percent drive to the downtown campus location two days a week or less. These patterns remain consistent, regardless of whether the traveler is a student, faculty member or staff member.

Commuting Distance (roundtrip)



Of those who do drive alone to the downtown campus location, the typical round-trip daily commute is less than 10 miles (a commute made by just over one-third of those who drive to campus). Approximately 31 percent travel between 11 and 20 miles to campus round-trip, and another 14 percent drive between 21 and 30 roundtrip miles. Approximately 21 percent commute more than 30 miles round-trip.

The survey results indicate, though, that there are important differences in the distance typically traveled among students, faculty and staff to get to the main campus—specifically, a larger proportion of students tend to report driving greater distances in their round-trip daily commutes. Approximately 15 percent of students commute more than 40 miles round-trip in comparison with just five percent of faculty and 10 percent of staff. In contrast, 33 percent of students report

commuting less than 10 miles round-trip to campus and nearly 49 percent of faculty and 28 percent of staff who do the same.

Of course, the College's commuting carbon footprint is partially a function of the combination of both the average number of days per week that individuals drive, the average number of miles that are driven per each trip and the fuel efficiency of the vehicles used. Of those who do drive alone to campus at least five days per week, the typical round-trip daily commute is between 11 and 20 miles. Approximately 11 percent of those driving alone to campus at least five days per week drive more than 40 round-trip miles per commute, while nearly 31 percent drive less than 10 round-trip miles. Those who commute to the campus the least (only one or two days a week) are also those who report the shortest commute to campus (less than 10 round-trip miles per trip).

In contrast to commuting to the downtown campus, fewer motorists report driving alone to other campus locations, such as Ft. Johnson, the North Campus, Patriots Point or the Sailing Center. Among these locations, more individuals report commuting to North Campus and Ft. Johnson, and those who do so are typically students, those who commute to these locations two days per week or less, and those who less than 10 miles per round-trip.

For those who drive to campus alone at least some of the time, the primary vehicle used by more than 89 percent is a car, while fewer respondents drive a truck (11 percent) or motorcycle /moped (less than one percent). For respondents driving a car, a plurality (41 percent) estimates that the miles per gallon (MPG) of their vehicle is between 24 and 30, and another 33 percent estimates their vehicles' MPG to be between 18 and 23. Only two percent of those who drive a car estimate that their cars get more than 40 MPG.

The survey also asked those who drive alone to campus to select their primary reasons for doing so from a list of options, providing respondents with an opportunity to select multiple reasons. Of the nearly 800 respondents who drive alone to campus, 614 provided a response to this question. On average, respondents selected three reasons why they drive alone, with approximately one-third (32 percent) of respondents selecting two or fewer reasons.

Key Finding: The primary reason respondents selected for driving alone to campus is because they have "nobody to carpool with." This indicates that the development of an online CofC carpooling network is needed. Other top reasons people report driving alone are "conflicting schedule," "the need to make special trips before and after school" and "the independence and freedom."

The number one reason selected by those who drive alone to campus is that they have nobody with whom they can carpool. In fact, this reason was selected by approximately half (49 percent) of respondents who commute to campus alone. Having a conflicting schedule, needing to make special trips before or after school and wanting the independence and freedom were the next most common reasons selected (46, 43 and 43 percent, respectively).

Top Three Reasons Individuals Drive Alone to Campus (2011)

1. Lack of partners for carpool (49%)
2. Conflicting schedule (46%)
3. Need to make special trips before or after school/
The independence and freedom (tied) (43%)

Overall, the majority of respondents did select a reason for commuting alone that referred specifically to some type of duty or obligation in terms of their schedules—whether due to special trips, travel to work or a conflicting or irregular schedule. Reasons that referred to convenience such as being faster or having independence and freedom were also selected by a substantial percentage of respondents, though fewer respondents selected reasons associated with the bus/CARTA system. Nearly seven percent of respondents who drive alone volunteered their own reasons as well, the majority of which were related to the need to travel to work before or after their campus activities.

Differences do emerge, though, in the reasons selected by students, faculty and staff. A much greater percentage of students who drive alone selected the “nobody to carpool with” than did faculty and staff. In fact, 65 percent of students who drive alone to campus selected this reason (compared to 31 percent of faculty and 30 percent of staff). Students were also slightly more likely to select the “irregular school schedule or night classes” response (42 percent compared to 37 percent of faculty and 14 percent of staff), and students also tend to feel that the bus is “unpleasant to ride on” in contrast to faculty and staff (14 percent compared to eight percent of faculty and seven percent of staff).

By Faculty & Staff vs. Students (2011)

Faculty & Staff	Students
1. Having a conflicting schedule	1. No carpool partners
2. Need to make special trips	2. Conflicting schedule
3. The independence and freedom	3. Need to make special trips

Faculty members are more likely to select reasons that reflect their schedules and independence. The top three reasons for driving alone selected by faculty were the need to make special trips before or after school (43 percent), “independence and freedom”(41 percent) and having a conflicting schedule (40 percent). In comparison with staff and students, a greater proportion of faculty also tended to report that there was no CARTA or bus-stop near where they live (27 percent compared to 19 percent of staff and 18 percent of students) and that they needed to drive their children to and from destinations (24 percent compared to 17 percent of staff and just eight percent of students).

Staff members’ top three reasons for driving alone mirror those of the faculty – referring to a conflicting schedule, the need to make special trips before and after school and the independence

and freedom. A greater proportion of staff members also selected the “in case of emergency” option as a reason for driving alone to campus; in fact, nearly three out of every ten (29 percent) of staff members selected this reason compared to only 10 and 11 percent of faculty and students, respectively.

Although the majority of those who drive alone to campus do not use any other form of transportation, some do rely on other modes. Approximately 10 percent of those who drive alone also ride the bus/CARTA, eight percent also bike and five percent also carpool in addition to driving alone at least some of the time.

Carpooling

Key Finding: *Although only three percent of all respondents report carpooling exclusively to campus, more than twice as many carpool in combination with either driving alone, taking the bus or biking to campus. Students report carpooling to campus less than faculty and staff; students also say that having “nobody to carpool with” is the number one reason they drive alone to campus. This suggests the need for a carpooling-networking program, particularly to encourage carpooling amongst students.*

Although only three percent of those surveyed report carpooling to campus exclusively, several additional respondents reported engaging in carpooling in combination with driving or taking the bus. In fact, more than seven percent of those surveyed reported carpooling at least some of the time. A slightly larger percentage of faculty and staff report carpooling to campus compared to students.

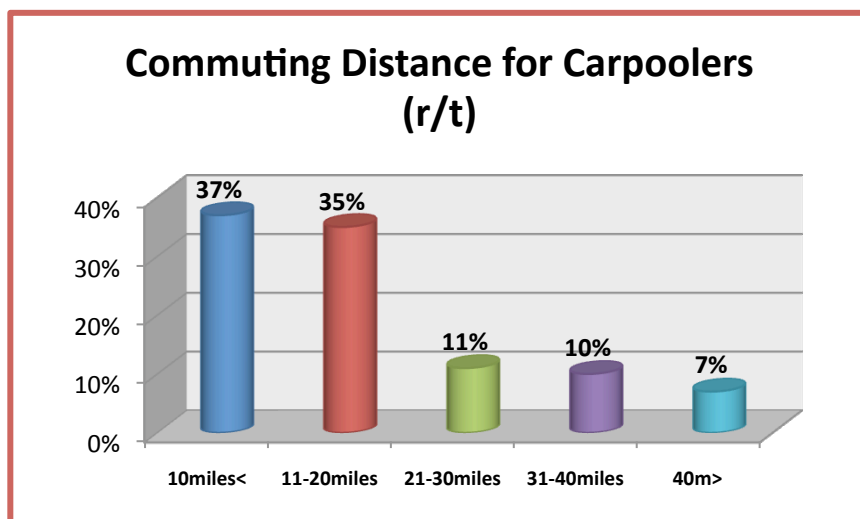
Those who do carpool report commuting to campus often, with nearly 40 percent reporting that they drive with other carpoolers five days per week or more. On average, faculty and staff who carpool do so approximately 4.5 days per week, while the average number of days that students report carpooling is just over three days a week. Interestingly, nearly 11 percent report carpooling but never having to drive their own car (i.e. they always ride). Of those who do carpool (regardless of whether they drive or ride), a vast majority (89 percent) report that there are only two people in their carpool.

Average Number of Days per Week Individuals Carpool to Campus, by Faculty, Staff and Students (2011)

Total	Faculty & Staff	Staff	Students
3.9	4.5	4.5	3.3

As with those who drive alone, those who carpool generally commute to the main campus downtown more than any other campus location and report a round-trip commute of between 11 and 20 miles (including pick-ups). Nearly 17 percent of carpoolers have a daily round-trip of less than five miles and seven percent of carpoolers commute more than 40 miles round-trip to commute to the downtown campus.

As noted above, the combination of the average number of days per week that individuals carpool as well as the average number of miles that are driven per each trip is of particular importance when calculating the College's footprint. Of those who commute to campus at least five days per week or more, a plurality (35 percent) commute between 11 and 20 miles round-trip. Approximately 10 percent of those who carpool to campus at least five days each week drive more than 40 round-trip miles per commute, while nearly 28 percent carpool less than 10 round-trip miles. Nearly all who carpool but never drive their own cars commute less than 10 miles round-trip.



Students who carpool commute not only fewer days per week to campus, but also travel fewer miles round-trip in comparison with faculty and staff. Twenty-three percent of students who carpool report driving less than five round-trip miles to campus in contrast with 12 percent of faculty and staff who do the same. For the majority (61 percent) of faculty and staff who carpool, they travel between 6 and 20 miles round-trip on their daily commutes.

Only a few respondents (seven in the entire sample) report carpooling to campus locations other than main campus. Those who do are nearly entirely students who carpool to the North Campus, Patriots Point and the Sailing Center.

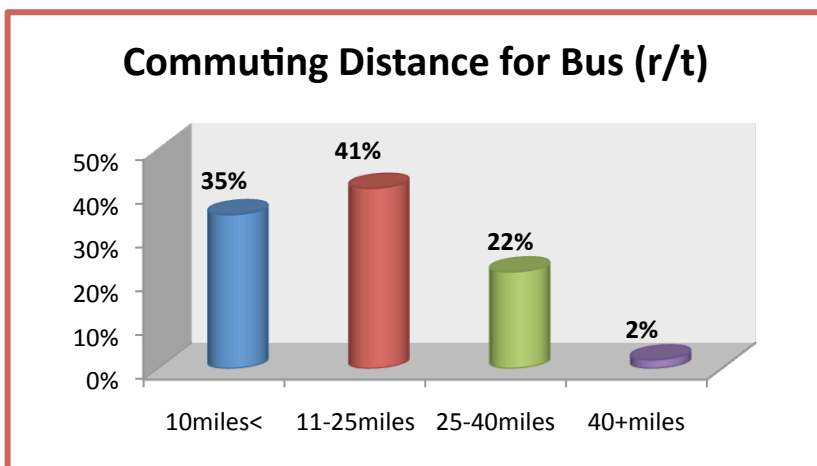
Bus/CARTA

Key Finding: *Approximately 17 percent of all respondents take the bus/CARTA to commute, but only nine percent do so exclusively. A higher proportion of staff report riding the bus, which suggests that – while efforts to encourage staff to use CARTA should continue – some educational programs about CARTA and its benefits should target students and faculty exclusively.*

As with carpooling, although a small percentage (nine percent) of the College community takes the bus or CARTA to campus exclusively, an additional eight percent do report taking the bus at least some of the time in combination with driving alone, carpooling or biking. Virtually all (95 percent) of those who do take the bus commute to the main campus downtown, although approximately 13

percent of those who take the bus use this mode of transportation to other campus locations as well, most notably Fort Johnson and Patriots Point. Staff members are considerably more likely to take the bus exclusively to the main campus; 19 percent of staff report commuting to campus by bus alone in comparison to eight percent of faculty and just five percent of students. Staff members and students are also the most likely to report taking the bus to other campus locations as well, particularly Fort Johnson and Patriots Point. Staff members also tend to report taking the bus in combination with driving alone and carpooling at slightly higher rates as well.

Of those who travel by bus to the main campus downtown, more than one-third (35 percent) report having a round-trip bus trip of 10 miles or less and 41 percent report having a round-trip bus trip of 11 to 24 miles; one-fourth (25 percent) report having a round-trip bus commute of 25 miles or more. Faculty who report taking the bus also travel fewer miles round-trip to campus in comparison with students and staff. Nearly 69 percent of faculty report that their round-trip bus commute to campus is less than 15 miles (in contrast to 57 percent of students and 54 percent of staff). In contrast, 43 percent of students and 46 percent of staff report that their bus commute to campus is more than 15 miles round-trip, compared to less than one-third (31 percent) of faculty. Interestingly, those who report the longest round-trip commute to campus (staff members) are also the same group who tend to ride the bus exclusively to campus. This may reflect CARTA’s Express Bus routes—particularly for those who live in the North Charleston area and wish to avoid driving in heavy traffic on I-26 during the morning and evening commuting hours.



Of course, many of those who travel to campus by bus may enlarge the College’s carbon footprint by driving to the bus stop, though 35 percent report driving less than two miles to the bus stop round-trip (a majority of whom are faculty). Forty-seven percent of those who commute by bus report driving between three and 10 miles round-trip to the bus stop, and 18 percent drive to the bus stop 11 miles or more round-trip (most of whom are staff).

Non-Motorized Transportation Commuting Habits

Key Finding: *Just over one-fourth of respondents rely exclusively on non-motorized transportation to commute to campus—the majority of which are students. The most important factors influencing the decision of whether to bike to campus more often are weather and safety. Particularly in terms of safety, this suggests both working with the broader community and increasing security for bikers on and off campus are key to encouraging non-motorized transportation.*

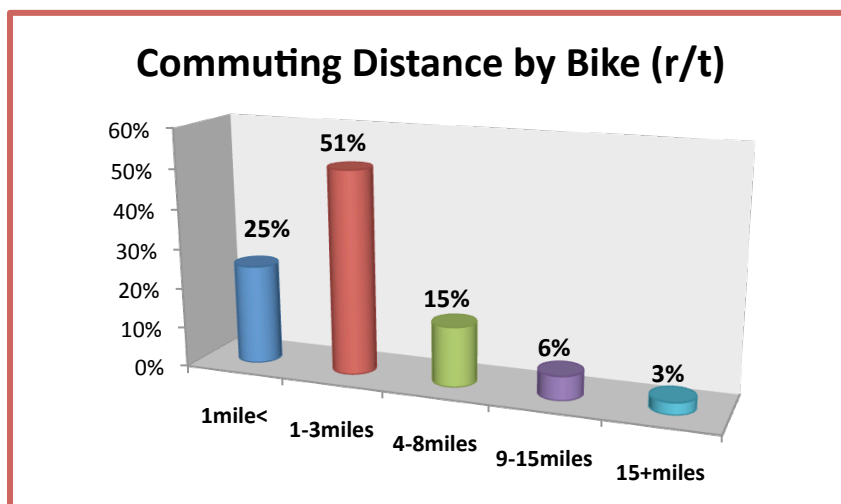
As noted above, only 29 percent of survey respondents exclusively rely on non-motorized transportation to campus—whether walking or biking. However, an additional seven percent report biking in addition to using motorized transportation at least some of the time. Students are much more likely to report commuting by walking, biking or a combination of both; in fact, 41 percent of students surveyed either walk or bike to campus, while only 11 percent of faculty and staff surveyed reported the same behavior.

Of those who do bike to campus (whether exclusively or in addition to other transportation), the majority (51 percent) bike to campus five or more days per week during the academic year, although the average number of days that bikers commute to campus is 4.2 per week. On average, students and staff bike to campus more days per week than faculty do.

Average Number of Days per Week Individuals Bike to Campus, by Faculty, Staff and Students (2011)

Total	Faculty	Staff	Students
4.2	3.5	4.3	4.4

More than three-fourths (76 percent) of those who bike to campus travel less than three miles round-trip, and an additional 15 percent bike between four and eight miles. Nearly 10 percent bike nine or more miles round-trip to campus, though this is largely a function of the longer distances traveled by faculty to campus in comparison with students and staff. In fact, approximately 23 percent of faculty who bike to campus have a round-trip commute that is more than nine miles, compared to just one percent of staff and students who report the same. Students who bike to campus report the shortest commuting distance with 29 percent biking less than one mile round-trip per commute (compared to 17 percent of faculty and six percent of staff). The average round-trip commute for all respondents who report biking at least some of the time is between one and three miles, regardless of whether they are faculty, staff or students.



Those who do bike to campus indicate a willingness to bike more often to campus, though the factors that would “moderately” or “significantly” increase the frequency of biking to campus are primarily

related to weather and safety. Of those who bike to campus, 77 percent reported that weather is a moderate or significant influence on their willingness to bike more often. Approximately 60 percent of those who bike said that both the “lack of sufficient bike lanes” and the “danger of motorized vehicles” are moderate or significant influences on their willingness to bike more often. “Increasing traffic laws against bikers” was also a moderate or significant influence on just over half of the bikers surveyed (51 percent), although a sizable minority (30 percent) indicated that these laws had no influence at all on their willingness to bike more often.

Top Three Influences on Cyclists’ Decisions to Bike to Campus (2011)

1. Weather
2. Lack of sufficient bike lanes
3. Danger of motorized vehicles

Of the options provided to respondents, “insufficient incentives by CofC” and “costs of bike maintenance” appeared to not have any influence on bikers’ willingness to bike to campus more often. More than 48 percent and 58 percent of bikers in the survey reported that these two factors, respectively, would have no influence on their decision-making. The relative influence of other factors, such as the lack of bike racks and potential bike theft, were more diverse with approximately even proportions of bikers in the sample indicating that they had a significant, moderate or little influence to them.

These closed-ended survey results were somewhat different than those volunteered as individual comments by bikers in the sample with 37 individuals providing such alternative answers to this question. The single most common response (24 percent) volunteered by respondents referred to more bike lanes or greater space in which to bike due to safety concerns. Nearly half (49 percent) of all responses referred to some type of safety factor, such as bike theft prevention, more bike lanes or safer bike racks. Nearly one-fourth (24 percent) of the responses mentioned convenience factors (such as the amount of items they need to transport to campus, weather and time) as the primary determinant in choosing to bike. Eleven percent of the responses referred to the need for a change in attitudes toward cyclists amongst those in the College and broader Charleston communities.

Distinct differences also emerged in the factors that influence students to bike more often in comparison with faculty and staff. Considerably higher percentages of student bikers indicated that “weather” (60 percent vs. 38 percent of faculty and staff), “increasing traffic laws against bikers” (32 percent vs. seven percent of faculty and staff) and the “lack of bike racks” (23 percent vs. four percent of faculty and staff) were significant influences on their willingness to bike more often. Although faculty and staff are also influenced most by weather, they report the most significant influences on their decision-making are the lack of sufficient bike lanes and the danger of motorized vehicles. In contrast, solid majorities of faculty and staff who bike to campus reported that increasing traffic laws against bikers and the lack of bike racks had “no influence” on their willingness to bike

more often. Clearly, the factors that would motivate more students to bike more often are different from those that would encourage faculty and staff to bike more often.

PART II: Factors that Would Encourage Behavioral Change

All survey respondents were asked which factors would influence them to consider riding a bike to campus, carpooling or taking the bus/CARTA; those who wouldn't ever consider these alternative modes of transportation were instructed to skip the question. Of the respondents who completed the entire survey, 61 percent skipped the question regarding biking, 51 percent skipped the question regarding carpooling and 44 percent skipped the question regarding taking the bus. Similar proportions of faculty, staff and students skipped these questions. Although skipping the question may be an indication of their lack of consideration of these alternative modes of transportation, it is also possible that some individuals ended the survey early or merely chose to not complete these questions.

Respondents were prompted with various policies or programs and asked to indicate the amount of influence that each would have on their willingness to carpool, take the bus or bike to campus. Respondents were also given an opportunity to provide their own open-ended responses to these questions to indicate other factors that would influence them to engage in these alternative modes of transportation as well. The following details the results for each.

Factors that Influence Carpooling

Approximately half (49 percent) of all respondents provided a response when asked how much influence different policies or programs would have on their consideration of carpooling (or carpooling more often than they currently do). Approximately 65 percent of those who responded indicated that “discounted parking passes for carpoolers” and “reserved (and very convenient) parking for carpoolers” would be a significant influence on their willingness to carpool or carpool more often. Seven percent of respondents indicated that these factors would have no influence on them. Nearly half (47 percent) indicated that “guaranteed rides home for personal emergencies” would significantly influence them to carpool or carpool more often, with 14 percent saying that this factor would have no influence on them. Smaller proportions (though pluralities) indicated that “help finding carpool partners” and a “select drawing every month for gift cards amongst verified carpoolers” would significantly influence them to carpool or carpool more often, at 37 and 31 percent respectively.

Key Finding: The top three factors that respondents say would significantly influence their consideration to carpool (or do so more often) are: discounted parking passes for carpoolers, reserved/convenient parking for carpoolers, and guaranteed rides home for personal emergencies, indicating that both financial incentives and programs that provide this type of security are important to increasing carpooling.

When examining the ways in which these factors would influence faculty, students and staff differently, two patterns emerge: first, the top three factors selected by all three groups as the most significant influences on their carpooling considerations are the same. The most common three factors that would influence all respondents across the board are discounted parking passes for carpoolers, reserved/convenient parking for carpoolers, and guaranteed rides home for emergencies. However, considerable differences remain between these groups as to the intensity with which these factors would influence faculty, staff and students to carpool—with financial incentives and convenience serving as a greater motivator for carpooling amongst students.

A much greater proportion of students indicate that discounted parking passes for carpoolers would be a “significant influence” on their consideration of carpooling (70 percent compared to just 51 percent of faculty and 60 percent of staff who responded the same). Students and staff also tend to be motivated by parking incentives and gift cards in comparison to faculty. Seventy percent of students and 63 percent of staff indicated that reserved and convenient parking for carpoolers would also be a significant motivator to carpool, though just 45 percent of faculty reported the same (which may reflect the fact that many already hold convenient parking spaces because parking lot assignments are based on seniority. Greater proportions of students (37 percent) and staff (32 percent) also indicated that drawings for gift cards among verified carpoolers would significantly influence them to carpool in comparison to just eight percent of faculty who agreed the same.

Staff members appear to be more motivated by guaranteed rides home for personal emergencies in comparison to students and faculty. Although 44 percent of students and 42 percent of faculty said this would be a significant influence on them, approximately 60 percent of staff indicated that this factor would significantly influence their consideration to carpool.

**Top Three Factors that Would Significantly Influence Greater Carpooling,
By Faculty, Staff and Students (2011)**

FACULTY	STAFF	STUDENTS
Discounted parking passes for carpoolers (51%)	Reserved/convenient parking for carpoolers (63%)	Discounted parking passes for carpoolers (70%)
Reserved/convenient parking for carpoolers (45%)	Guaranteed rides home for emergencies (60%)	Reserved/convenient parking for carpoolers (69%)
Guaranteed rides home for emergencies (42%)	Discounted parking passes for carpoolers (60%)	Guaranteed rides home for emergencies (44%)

One step in reducing the College’s carbon footprint is not only to increase carpooling among faculty, staff and students, but particularly to do so among those who currently exclusively drive to campus alone. As a result, it is important to examine the specific factors that would encourage these individuals to engage in carpooling as well. Of the 485 respondents who drive alone exclusively to campus, approximately 45 percent chose to skip this question, indicating either that they would never consider carpooling or that they merely did not want to respond to this question. Of those who drive exclusively to campus, more than 60 percent indicated that discounted passes for carpoolers and reserved/convenient parking for carpoolers would be a significant influence on their

consideration to carpool. In fact, amongst those who drive exclusively to campus, these were clearly the top two motivators.

Approximately half (49 percent) of those who drive exclusively to campus said that having guaranteed rides for personal emergencies would significantly influence their consideration of carpooling. This was cited more by faculty and staff than it was for students (56 to 45 percent). Although a smaller proportion of those who drive alone indicated that “help finding carpool partners” was a significant influence on their decisions to carpool in comparison with these other options, nearly 71 percent did indicate that it would play either a significant or a moderate role in influencing their behavior. The notion of a drawing for gift cards for verified carpoolers received the least amount of support for being a “significant” influence amongst those who currently drive to campus alone, with nearly even proportions saying this would have moderate, little or no influence on their consideration to carpool.

As noted above, survey participants were also given an opportunity to provide their own responses as to what factors would influence their consideration to carpool. Of the 31 respondents who chose to do so, nearly one-fifth indicated that they had no need to carpool because they already take the bus/CARTA, bike or walk to campus. Another one-fifth indicated that they would never consider carpooling, largely due to scheduling conflicts or distance of their commutes. For the few respondents who did offer other factors, the most common responses referred to financial incentives, such as gas cards, discounted parking passes or a more convenient way to divide parking fees, as well as the ability to find people with whom to carpool, particularly others with similar schedules or who the respondent knew, liked or trusted to be on time. Interestingly, among respondents to this question who currently drive alone to commute to campus, the most common response was the ability to find other people with whom to carpool.

Factors that Influence Taking the Bus

Key Finding: Of those unaware that CARTA was free for the CofC community, a vast majority (80 percent) were students, indicating that developing a greater awareness of CARTA’s free services amongst students may be key to increasing ridership.

More than two-thirds (67 percent) of all respondents report being aware that CARTA is free for CofC students, faculty and staff for transportation to and from campus. Of those who reported being unaware of this service, a vast majority (80 percent) were students, indicating that developing a greater awareness of CARTA’s free services amongst students may be key to increasing ridership. Only 11 percent of faculty and nine percent of staff reported being unaware that CARTA was free for members of the CofC community.

When asked what factors would influence their consideration of riding the bus/CARTA system or to do so more often, more than half (56 percent) of all respondents provided a response. Five factors were presented to respondents: guaranteed rides home for personal emergencies; more information on the bus schedule and trip planning; lockers to store personal belongings; bus stops closer to their residencies; and small monetary inducements. Of these options, the factor rated as a significant

influence most by respondents answering this question was closer bus stops; more than 55 percent of respondents who chose to answer this question rated this factor as a significant influence. Just under half (46 percent) of respondents to this question rated “guaranteed ride home for personal emergencies” and 40 percent rated “more information on bus schedules and trip planning” as significant factors.

Key Finding: *The top three factors that respondents say would significantly influence them to consider riding the bus were: closer bus stops to their residencies, guaranteed rides for personal emergencies, and more information on bus schedules and trip planning. This suggests that providing ways for emergency travel and greater educational efforts would help to increase ridership and reduce the College’s carbon footprint.*

The responses to the other two factors were fairly mixed. Although one-third (33 percent) of respondents to this question said that small monetary inducements would significantly influence their consideration of riding the bus, more than one-fifth (22 percent) said that it would not influence them at all. Having lockers to store one’s personal belongings is the factor that would encourage riding the bus the least—nearly 44 percent of respondents said that this factor would be “no influence” on their decisions to ride the bus.

As with previous questions, some differences among the attitudes of faculty, staff and students exist as well. Although all three groups rate “closer bus stops” to their homes as the most significant factor in considering riding the bus, faculty, staff and students do differ on other factors. A greater proportion (44 percent) of students reported that more information on bus schedules and trip planning would significantly influence their decision to ride the bus in comparison with faculty (28 percent) and staff (38 percent). Similarly, students were more likely to rate lockers to store personal belongings as a significant influence (30 percent compared to just 11 percent of staff and four percent of faculty). Both students and staff rated small monetary inducements as a more significant influence (35 and 40 percent, respectively), while 37 percent of faculty said that this would have no influence at all on their considerations of riding the bus.

**Top Three Factors that Would Significantly Influence Greater Use of CARTA,
By Faculty, Staff and Students (2011)**

FACULTY	STAFF	STUDENTS
Closer bus stops to residence (60%)	Guaranteed rides home for emergencies (59%)	Closer bus stops to residence (53%)
Guaranteed rides home for emergencies (41%)	Closer bus stops to residence (58%)	More information on bus schedule/trip planning (44%)
More information on bus schedule/trip planning (28%)	Small monetary inducements (40%)	Guaranteed rides home for emergencies (41%)

As with the trends that appear for all respondents, those who currently drive alone to campus exclusively also rated closer bus stops to their homes as the number one factor when considering taking the bus. Sixty-two percent of these respondents said that this factor was a “significant influence.” Forty-six percent of those who drive alone to campus currently said that a guaranteed

ride home for personal emergencies would be a significant influence, and just over one-third (34 percent) agreed that more information on the bus schedule and trip planning was a significant influence.

As with the previous questions on carpooling, survey participants could also provide their own responses to this question. Nearly 11 percent of all respondents (or 119 individuals) provided one or more valid alternative comments on this question, only seven of whom indicated that they would never consider riding the bus/CARTA to commute to campus. Of the nearly 180 open-ended responses, the vast majority (68 percent) referred to improvements with the reliability, frequency and efficiency of CARTA. In fact, the two single most common responses were “more reliable buses/buses that are on time” (nearly 21 percent of responses) and “more frequent bus schedule” (14 percent of all responses). These two factors were the most commonly cited regardless of whether the individual was a student, faculty or staff member. Several individuals also referred to faster and more efficient bus routes and more frequent bus trips that occur earlier and later in the mornings, earlier and later in the evenings and mid-day, particularly for the Express Bus.

Approximately 16 percent of all responses referred specifically to the bus stops. The majority of these responses indicated that individuals would consider taking the bus if there were different or more bus stop locations (particularly Express Buses/park-and-rides from James Island, John’s Island, Summerville and Ft. Johnson) and covered bus stops or shelters (especially on campus). An additional four percent of responses referred to the bus itself as a significant influence, citing cleanliness, comfort and safety concerns. Three percent referred to educational factors, such as more user-friendly instructions and navigation of the bus schedule as well as greater marketing of the free services to the College community, particularly students.

Key Finding: Of the open-ended responses that those surveyed provided, the vast majority referred to the need for greater reliability, frequency and efficiency of the CARTA bus as being a significant deterrent in their consideration of riding the bus.

For those who commute to campus by driving alone exclusively, the two most common factors that were cited as influencing their considerations of taking the bus were “more reliable buses/buses that are on time” and “more frequent bus schedule,” which parallels the trends amongst all respondents to this question. “Different/more bus stop locations” and “faster bus rides” were also cited by a majority of those who exclusively drive alone, with many noting that driving to the bus stop and then riding the bus to campus would take considerably longer than just driving.

Factors that Influence Biking

Key Finding: Faculty, staff and students alike agreed that the primary way to increase the likelihood of biking to campus was providing safer ways to bike through downtown. This also was the number one reason cited by those who currently drive alone exclusively to campus.

Just under 40 percent of all respondents chose to answer the question regarding the factors that would influence their decisions to ride a bike to commute to campus (again, those who would never

consider biking to campus were instructed to skip the question). Of the eight factors presented to respondents, one emerged as the most significant: safer ways to bike through downtown. In fact, 65 percent of respondents to this question reported that this was a “significant influence” on their consideration to bike to campus (or do so more often) and another 15 percent said that this factor was a “moderate influence” on their decisions. This was the top factor selected by all respondents to the survey.

**Top Three Factors that Would Significantly Influence Greater Biking,
By Faculty, Staff and Students (2011)**

FACULTY	STAFF	STUDENTS
Safer ways to bike through downtown (69%)	Safer ways to bike through downtown (57%)	Safer ways to bike through downtown (65%)
Showers for bike riders (36%)	Guaranteed rides home for personal emergencies (47%)	Small financial incentives (43%)
Guaranteed rides home for personal emergencies (28%)	Showers for bike riders (35%)	Coupons/discounts at bike shops (40%)

Clear consensus regarding the influence of two other factors also emerged, in the opposite direction. The vast majority (66 percent) of respondents said that bicycle rentals would have “no influence” on their decisions to ride a bike to campus, and only 10 percent said that this would “significantly influence” their considerations. This pattern continues regardless of whether the respondent is a student or not; in fact, nearly 62 percent of students who answered this question indicated that bike rentals would have “no influence” on their decisions to bike or bike more often to campus.

Similarly, nearly twice as many respondents said that showers for bike riders would have no influence on their considerations in comparison with those who said this would have a significant influence (42 compared to 22 percent), although this factor does tend to have a greater influence on faculty and staff than students. While more than half (52 percent) of students agreed that showers available for bike riders would have no influence on their decisions to bike, just over one-third of faculty and staff (36 and 35 percent, respectively) indicated that this would significantly influence their considerations of biking.

For the other factors, no clear consensus emerged, with the sample nearly evenly split. For example, 37 percent of those who answered this question said that small financial incentives would significantly influence their consideration of biking, while 21 percent said it would have no influence. Similarly, approximately 34 percent of respondents indicated that “coupons/discounts at bike shops” and “guaranteed rides home for personal emergencies” would significantly influence their consideration to bike to campus, while this factor would have “no influence” on 26 percent of the respondents who answered this question. For “more bike rack parking” and “covered bike rack parking” nearly even amounts of respondents indicated that these factors would have significant, moderate, slight or no influence on them.

Although the single most important influence for faculty, staff and students is safety (as noted above), the relative importance of the other factors differs considerably among these groups. As with

carpooling and taking the bus more often, staff were more likely to agree that “guaranteed rides home for personal emergencies” was a significant influence on their considerations to bike (or bike more often) in comparison to faculty and students (47 percent compared to 28 and 31 percent, respectively). Similar to trends for other modes of transportation, both students and staff members appear to be more motivated by financial incentives: 43 percent of students and 34 percent of staff members who answered this question said that “small financial incentives” would significantly influence their decisions to ride a bike in comparison to just 18 percent of faculty.

In addition, students’ considerations of biking to campus appear to be slightly more influenced by the amount of bike racks and whether these bike racks are covered. Thirty-one percent of students said that “covered bike rack parking” was a significant influence on their decisions to bike or bike more often compared to 21 percent of faculty and 19 percent of staff. Nearly 26 percent of students also said that “more bike rack parking” would significantly influence their decisions to bike compared to just 13 percent of faculty and 16 percent of staff.

Amongst respondents who drive exclusively to campus alone, 65 percent chose to skip this question (again, it should be noted that those who would never consider biking to campus were instructed to do so). Of the 35 percent of drivers who did answer this question, the vast majority (63 percent) indicated that safer ways to bike through downtown were a significant influence on whether to bike to campus. This was the most common factor selected. Thirty-four percent of those who drive alone said that “guaranteed rides home for personal emergencies” would significantly influence their considerations, while 29 percent indicated that “small financial incentives” would be a significant influence of their decisions as well. Pluralities of those who currently drive alone indicated that these factors would have “no influence” on their decisions to bike to campus.

As with previous questions on carpooling and taking the bus, survey participants could provide their own alternative responses to this question. Nearly eight percent of all respondents in the sample (or 92 individuals) provided a valid alternative comment to this question, though an additional nine respondents did indicate that they already bike to campus exclusively.

Of the 92 respondents who provided an alternative comment, nearly half (47 percent) indicated that they would never consider biking to campus, largely due to distance. Many of these individuals expressed that they would consider biking if they didn’t need to live so far from campus. Others who indicated that they would never even consider biking to campus referred to safety concerns or to medical issues that would prevent them from biking.

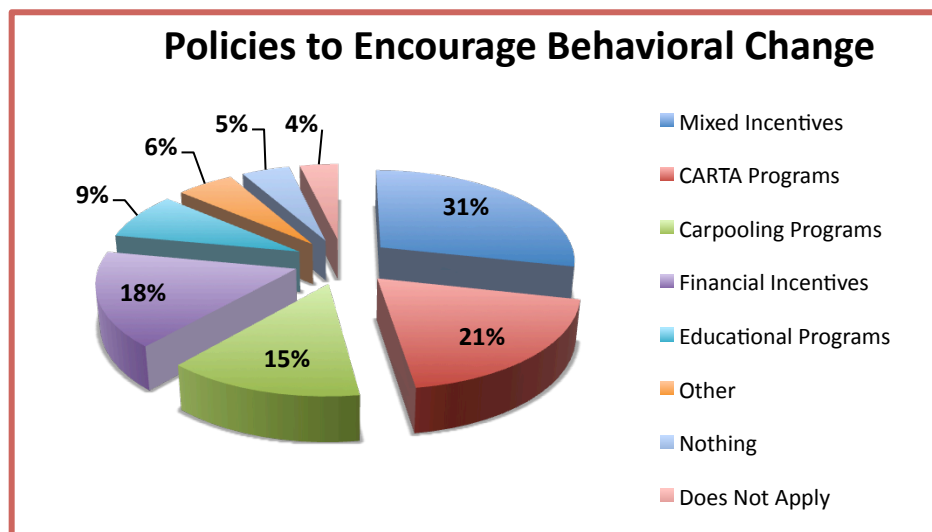
For the 49 individuals who responded to this open-ended question and indicated that they would consider biking to campus or doing so more often, the most common factor that would influence their willingness to bike to campus was more/safer bike lanes or paths. In fact, 34 out of these 49 individuals mentioned this as a key influence on their decisions to bike to campus, the majority of whom indicated specifically bike lanes or paths from West Ashley and across the James Island Connector. The second most cited reason amongst this group was the use of showers or lockers for bikers.

Other Programs to Encourage the Use of Carpooling and Non-motorized Transportation

Respondents were also asked what programs, projects or activities could the College undertake that would make them more likely to carpool or use non-motorized transportation to get to campus. Thirty-one percent of all respondents (or 351 individuals) offered a valid comment to this question, and some offered multiple comments on programs and activities that would make them more likely to engage in these behaviors. An additional five percent (or 54 individuals) indicated that there was nothing that could be done to encourage them to carpool or use some form of motorized transportation, while an additional four percent of all respondents (or 43 individuals) commented that this question did not apply to them because they already use non-motorized transportation to get to campus.

Key Finding: *When asked what would specifically increase the likelihood of using non-motorized transportation, respondents consistently referred to greater safety when biking to campus, more security of their property, and the ability to reside on or closer to campus.*

Of the 545 comments received on incentives that would encourage alternative transportation, 31 percent referred to programs, activities or incentives that would encourage biking, walking and skateboarding. More than one-fifth (21%) of all comments referred to CARTA programs and activities or other bus transportation, and 15 percent of all comments referred to carpooling initiatives. An additional 18 percent of comments referred strictly to financial incentives to encourage carpooling, busing or biking, and nine percent of all comments referred to educational programs to encourage the use of CARTA or forms of non-motorized transportation. The remaining six percent of all comments suggested ways to increase other modes of transportation, such as motorcycles, a light rail system or ferries from locations off of the peninsula, or other suggestions that would reduce the amount of commuting to campus and, thus, reduce the College's carbon footprint.



General Programs and Activities to Encourage Non-Motorized Transportation

As noted above, nearly one-third (31 percent) of all comments regarding ways to encourage alternative modes of transportation dealt with programs that would increase the likelihood of biking, walking or skateboarding to campus. In fact, the single most common factor cited by respondents to increase their use of non-motorized transportation to campus was increasing the amount, location and safety of bike lanes in Charleston and its surrounding areas, most notably from West Ashley and James Island; more than 14 percent of all comments to this question referred specifically to this factor. Another four percent of all comments referred to increasing the number, type and security of bike racks, including covered bike racks and more secure storage. Four percent of all comments also mentioned additional places to shower or to provide lockers on campus for those who bike to campus.

Safety when commuting, security (personal and of one’s property) and ability to reside on campus emerged as repetitive themes in the comments that referred to biking and walking to commute. These comments ranged from suggesting more and safer bike lanes to campus (as noted above – the single most common factor cited), allowing biking on sidewalks, closing some streets on campus to motorized traffic during the day to encourage more biking and walking on campus, and developing a bike “buddy” system so that cyclists could commute together more safely.

Top Three Incentives Mentioned by Respondents to Encourage Behavioral Change, by Mode of Transportation (2011)

Encourage More Biking or Walking	Encourage Greater Carpooling	Encourage Greater Use of CARTA	Financial Incentives	Educational Programs	Other
Increased the amount, location and safety of bike lanes	Carpool matching program/network	Increase the amount of bus stops	General financial incentives	Increase awareness of the importance of non-motorized travel (esp. to change attitudes toward cyclists)	Services that would provide transportation in case of emergency, in inclement weather or at night
Increase the number of bike racks, including covered bike racks	Discounted parking for carpoolers	Increase the frequency of bus trips/changed bus schedule	Food, drink or prize incentives	Informational programs regarding CARTA’s services and schedule	Reduce the need to commute to campus as often (i.e., flexible work schedules and online classes)
Increased security of one’s person and property	Priority parking for carpoolers	Increase the reliability of CARTA	Programs designed to reduce the cost of living downtown	Bike safety/legal programs	

In terms of security, several comments referred to the widespread levels of crime on campus, particularly when it comes to bikes, and in the Charleston area more generally. The most common suggested programs or activity to address these concerns (as noted above) was increasing the amount and security of bike racks. Other common suggestions were discounts for more secure bike locks, a more effective stolen-bike recovery program, and general crime prevention on campus as well as nearby neighborhoods to ensure the security of individuals who do walk or bike to campus.

In addition, the ability to reside on campus was also a recurring theme in comments regarding ways that would increase the likelihood of using non-motorized transportation to get to campus. This was particularly evident amongst students who suggested that greater options for on-campus housing be provided, including more residence halls, College-run apartments and on-campus housing for non-traditional students who are married or do not meet the age requirements to live in on-campus housing.

General Programs and Activities to Encourage Alternative Motorized Transportation

Key Finding: *The primary suggestion offered by respondents to increase carpooling was the creation of a carpooling matching program or network to find others to carpool with; in terms of increasing bus ridership, the primary factors mentioned were the amount of bus stops, frequency or timing of bus trips, and the reliability of the CARTA system.*

Approximately 15 percent of all comments to this question referred to factors that would encourage carpooling, and more than one-fifth (21 percent) referring to projects, programs or incentives that would increase use of CARTA.

With respect to carpooling initiatives, the primary suggestion was some type of carpool matching program or an online network to help to find other carpoolers. In fact, this single program was mentioned in more than 11 percent of all responses to this question. Other programs commonly mentioned in reference to carpooling were free priority/special parking spaces for carpoolers and more convenient ways for carpoolers to “split” parking fees.

To encourage bus usage, the amount of bus stops, frequency or timing of bus trips, and the reliability of the CARTA system were most commonly mentioned. Approximately 13 percent of all responses to this question indicated that respondents would be more likely to take the bus if there were more bus stops, particularly in areas farther from campus (such as Summerville), and more bus routes that would take individuals to off-campus locations for shopping or to the beach. More than four percent of all comments indicated that the frequency of CARTA buses would significantly motivate respondents to take the bus, especially if buses were to run more often in the mornings, during the daytime (particularly for Express Buses) and later at night. The third most commonly cited factor was the reliability of the CARTA buses and the need for these buses to both run on time and to be able to inform riders in some way if the bus is going to be late.

Financial Incentives

Key Finding: *Given that close to one-fifth of the comments referred to some type of financial incentives, this could be a critical pathway to creating more sustainable transportation or reducing CofC’s emission footprint.*

Approximately 18 percent of all comments referred to some type of general financial incentive to change commuting habits. Although several of these comments did not refer to any specific type of financial incentive, a larger number referred to parking discounts for carpoolers. A smaller number

mentioned food, drink or prize incentives for carpooling, biking or walking to campus. Support for these types of incentives tended to be very small in nature – ranging from small discounts at local restaurants or College dining halls to bells or stickers to give to bikers to recognize their efforts to reduce the College’s carbon footprint.

A sizable minority of comments that referred to financial incentives to increase non-motorized commuting also suggested that broader programs to reduce the cost of living in Charleston (including city-wide economic initiatives, reductions in tuition for students, or increases in the salaries of faculty and staff) were needed to make it more feasible to rely on non-motorized transportation to campus.

Educational Programs

Key Finding: *The most common educational programs mentioned by respondents are those designed to increase awareness about non-motorized transportation – specifically, educating drivers to share the road with bikers and educating bikers about bike safety – and to increase awareness of CARTA’s free services and schedules. Increasing this awareness could be key to promoting campus sustainability in general.*

Approximately nine percent of all comments referred to educational programs that the College could undertake to encourage the use of alternative modes of transportation. The most common suggestions referred to educational programs designed to increase awareness of the importance of non-motorized travel, particularly amongst those who drive to campus. Several of these comments emphasized the need to change individuals’ attitudes toward cyclists.

The two other most common comments made in terms of educational programs were to increase awareness of CARTA’s free services to the CofC community and schedule and to conduct bike safety programs. These comments suggested that more people would use CARTA if they knew more information about the bus schedule, bus routes and stops, and the process of riding the bus. In terms of bike safety programs, respondents indicated that if more was known about how to ride a bike safely, how to make property more secure (in terms of which locks to use, etc.) and what the legal requirements and restrictions were on biking in Charleston, then they would be more likely to bike to campus.

Other Suggestions for Reducing the College’s Carbon Footprint

Approximately three percent of the comments provided offered other suggestions for programs, projects or activities to encourage carpooling, alternative forms of motorized transportation or non-motorized transportation – the majority of which referred to some type of service (such as Zipcar) that would ensure the ability to use a car when needed, particularly in the case of emergencies, in inclement weather or at night.

An additional three percent of the comments provided gave suggestions that would not necessarily motivate respondents to use non-motorized forms of transportation when they do commute – but rather, reduce the need to commute to campus as often, thus helping to reduce the College’s carbon

footprint. The most common such suggestion was to allow for more flexible working schedules for faculty and staff to facilitate traveling less to campus (such as working from home). Others indicated that more regular class schedules or offering more online classes would also achieve this goal.

PART III: Recommendations

Both the College of Charleston and the City endorse ways to enhance the quality of community life. Transportation is a significant portion of both emission profiles, but also a critical variable in the quality of community life. The City's Transportation strategy (within the Green Plan) has similar goals to those promoted by CofC Sustainability. It emphasizes reducing single occupancy vehicles (SOVs) by reducing annual "vehicle miles traveled", expanding bicycle and pedestrian options, increasing fuel efficiency, enhancing "convenient, reliable public transportation", and to improve air quality (Green Plan, 2010). The key is to locate strategic synergies within the campus and with the City and other public/private organizations to share costs, integrate ideas and policy, and to collectively create a more sustainable city community. The recommendations made here are for the campus community, but mindful of larger city goals and other institutions and organizations that form our larger city community.

Educational & Networking Initiatives

1. CofC Carpooling Network – Given that those who drive alone identify "nobody to carpool with" as the primary reason that they commute to campus alone, we suggest the development of the **Cougar Ride Sharing Program**. This program would be a private, online ride-sharing network for members of the CofC community that matches drivers and riders (based on geographic area) who wish to carpool to campus, the airport or local events. Hosted on the CofC web site, this network would allow individuals to offer rides (as a driver) or request rides (as a passenger) with other members of the CofC community. This site would require a CofC log-in and password to use the service.

NOTE: There is already a tri-county web-based carpooling network, called Trident Ride Share Program. You can access and sign up here: <http://tridentrideshare.org/en-US/>. It is supported by the FTA ([Federal Transit Administration](http://www.federaltransitadministration.gov/)), and is *gratis*.

2. Increasing awareness of CARTA's services and schedule – Although more than two-thirds (67 percent) of those surveyed reported being aware that CARTA is free for CofC students, faculty and employees (<http://parkingservices.cofc.edu/information-for/carta-bus-service.php>) to and from campus, **greater information about these services and the CARTA schedule – particularly amongst students** – was one of the primary initiatives mentioned by survey respondents to increase the use of the bus. In addition to marketing the free services for the CofC community offered by CARTA, additional awareness programs as to how to locate bus stops, how to find bus schedules (including how to transfer buses) and how to engage in other procedures related to riding the bus should be offered. Specifically, **announcements to incoming students** (including transfer students) and newly

hired faculty/staff could help to increase awareness as well as **posting information regarding CARTA's services and schedule on the CofC web site** so that students, faculty and staff have easy access to this information.

3. Increasing awareness of the importance of non-motorized transportation – One of the recurring themes mentioned by respondents who bike or consider biking to campus is feeling safe when commuting. Educational programs designed to alleviate these barriers to non-motorized transportation are three-fold:

- First, a **“share the road” campaign** is recommended to increase drivers’ awareness of cyclists and the importance of green commuting; such a campaign may cause drivers to react differently when they approach cyclists in the Charleston area. The Office of Sustainability is uniquely positioned to generate a pamphlet or other document that can inform both drivers and bikers on rules, regulations on city biking as well as safety tips.
- Second, we propose a **“CofC Commuter Challenge”** – a fun and friendly competition amongst teams of CofC faculty, staff and students to track their commutes and post their progress online. The competition would last for approximately one month, and small prizes would be offered to the teams with the greatest success in reducing their carbon footprint when commuting to campus.
- Finally, a **Ride Safely! program** for cyclists – particularly for incoming students and newly hired faculty and staff – should emphasize ways to secure a bike (such as through the use of u-locks, etc.), how to ride safely (such as tips on seat position, safe turning and bike maintenance), and guidance on the local laws on cycling in and around Charleston (such as those prohibiting the riding of bikes against traffic on one-way streets).

Small Structural Initiatives

1. Emergency Ride Service – Ensuring that rides home would be guaranteed in the case of personal emergencies consistently was in the top three factors that faculty, staff and students alike reported would significantly influence their decisions to carpool, take the bus or bike to campus more often. The development of an **Emergency Ride Service** is recommended to provide those who regularly (i.e., at least twice per week) carpool, take the bus, or use non-motorized forms of transportation to work with a free and reliable ride home in the case of emergencies, such as personal illness or a family emergency.

2. Phone App for CARTA – The creation of an **integrated phone application** that would alert CARTA riders of precise schedules, with updates on delays and expected times of arrival. Repeatedly, many in the survey commented that they didn’t take the bus because of inconsistency in pickup times, or that the routes were inconvenient.

3. Work with the City/CARTA – In conjunction with #2, CofC should coordinate more with CARTA for more accurate assessment of bus routes and times to support the CofC community. See also #4 in “Larger Initiatives”. CofC should also coordinate more with the City and other institutions (MUSC and the Citadel) in developing additional ways to provide Express Buses and alternative transportation.

4. Zipcar at CofC – Similarly, developing a **Zipcar service** at CofC would also ensure that those who carpool, take the bus or rely on non-motorized transportation would have occasional access to a car for either personal or business-related purposes. Members of the CofC community would have the opportunity to become Zipcar members by paying an annual fee, which includes the gas, insurance and a designated amount of “free” miles earned. Additional driving time can also be purchased on hourly or daily rates.

5. Coupons for Bike Gear – Amongst those who bike to campus, a considerable deterrent from biking more often is the lack of safety while commuting to campus and the potential lack of security and proper maintenance of one’s bicycle once on campus. **Coupons for local businesses to provide discounts on helmets, u-locks and lights** for regular bike riders (i.e., those who ride their bikes at least twice a week) are recommended to further encourage the riding of bikes.

6. Motorcycle Parking – Motorcyclists may currently purchase permits to park in designated spaces in surface parking lots (“A”, “N”, and “PP”) for a reduced rate of \$125/year, but there are no current spaces that are covered. We propose building a modest covering structure for several specially designated parking spaces in one of the current surface parking lots.

NOTE: You can purchase a motorcycle permit IN ADDITION to a valid automobile permit for only \$5 per academic year! Advertising this policy should be a priority. See *Regulations III, 7(1)* at <http://parkingservices.cofc.edu/information-for/regulations.php>.

7. Carpool Preferred Parking – For those who do carpool, preferential parking should be provided as an additional incentive. Specific garages could be designated with preferred spaces reserved exclusively for carpoolers.

NOTE: currently, special carpool permits can be purchased (See *Regulations, III, 6*: <http://parkingservices.cofc.edu/information-for/regulations.php>), allowing the vehicle to be parked based on carpoolers with the highest seniority.

8. Partial Parking Permits – To encourage alternative transportation, we suggest that creating **partial parking permits**, which allow for commuters to have an allotment per month. This would further incentivize alternative transportation and free up additional on campus parking. Obviously, the ability for “smart” parking cards and card readers is essential to practically implementing this option, and would be restricted to parking garages and smart card access, which disadvantages parking on outside lots.

NOTE: Currently, there is the option (with current ID) to park on campus for \$5/day, and it could be promoted as an additional incentive for alternative transportation.

9. Enhanced Bike Security – Purchasing more secure bike racks (several in key locations around campus) would assist students in biking more frequently to campus. Many students indicated that bike theft was a primary concern in using a bike on campus. Security cameras in these locations is also recommended for enhancing security.

10. Bike Share Program – Similar to the zip car program, many institutions have successfully created a “bike share” program. This allows for any campus student, faculty or staff to retain a bicycle and use it around town/campus and return it to the same location when finished. This could minimize the need for using a car for short trips around town, thereby cutting down on congestion, parking, and costs.

11. Evaluation of Campus Bike Racks – It is clear that there is insufficient bike space in key locations around campus. It results in bikes locked to city poles, signs, and parking meters. We recommend a campus study and evaluation of bike rack locations to ensure more effective and convenient use, while improving campus and city aesthetics and compliance with local laws. We hypothesize that the problem is more a function of semi-permanent bike storage (those who only occasionally use their bike) in key locations. We recommend a storage facility to house these bikes for the occasional user somewhere on the campus periphery.

Larger Initiatives

1. Charleston Bike Safeways – CofC should advocate for “bike safeways” in downtown Charleston. That is, we suggest that the College work with the City of Charleston in developing a series of streets that can be specially marked for bikers to access CofC and MUSC (and other strategic locations). Creating special bike lanes could enhance safety for all commuters. Where these designated paths intersect with main street corridors, shared lane markings should be created. Given that more than 75% of all those commuting by bicycle do so from a distance of less than 1.5 miles (one way), this is needed both for safety and efficiency. Several factors indicate that the City of Charleston would be receptive to a partner in these efforts: the City of Charleston is currently studying ways to reserve a bike lane over the Ashley River; the state-wide Department of Transportation is planning to fund additional bike lanes in the area; and the Charleston Bicycle and Pedestrian Advisory Committee has had recent successes in raising awareness of the importance of safer (and more) bike lanes (Munday 2011). We thus encourage the College to work with these potential partners in advocating for “bike safeways” and evaluation of “pinch points” in accessing the College from outlying areas.

2. Safety campaigns – Integrated safety campaigns with other Charleston organizations on bicycling in the city. In conjunction with creating “bike safeways,” this complementary strategy would serve multiple goals: raise awareness on alternative transportation, educate on bike safety, and to work with other organizations to expand the biking corridors through the city and greater Charleston area.

3. Sustainability Corridor: We suggest expanding the pedestrian-only sections of campus to decrease car traffic and facilitate bike and pedestrian access. A preliminary suggestion is to close George Street to motorized transportation. This would expand the look and feel of the Greenway and Cougar Mall. As the campus population continues to grow, it is important to maintain safe access to all parts of campus, but also to integrate the “outer” edges of campus into the core of campus life. It would enhance the aesthetics as well as the feel and safety of the campus. At a minimum, pedestrians and bikes should be prioritized and auto traffic limited through campus, and incorporated into the Campus Strategic Plan. A larger sustainability plan could build on the pedestrian-only part of campus to create a corridor that links to sustainable city design.

4. Evaluation of Express Buses into Surrounding Areas: Express buses from the campus into the immediate suburbs have been a major success. We believe that this has already incentivized alternative transportation modes to and from campus, as evidenced by the 10%+ who in some combination commute to campus by bus. We recommend a more comprehensive study for other express buses to outlying areas.

5. Higher Levels of Policy Integration with City and Surrounding Areas: To fully advocate alternative transportation and to attain greater levels of sustainability will require more integration and influence of the policies of the greater Charleston area. This advocacy might include policy initiatives to create HOV lanes, light rail system, more defined bike pathways from Mt. Pleasant, West Ashley and James Island (for longer commutes), etc. Overlapping and complementary synergies at multiple scales must be considered for cost-effective policy designed to advance alternative transportation and a more sustainable community. For example, Express Buses with WIFI (see #4 above) would offer not only an alternative form of transportation but would offer an expansion of work or leisure time that provides a dual-layered incentive to taking CARTA. These are precisely the types of policies avenues that CofC could consider in developing a larger-scale transportation plan as part of campus sustainability.

Conclusion

Using Synergies to Cost Share for Greater Collective Benefits

We recommend that policy considerations should be based on close examinations of synergies between different areas to create efficiency and effectiveness with a specific objective of enhancing campus sustainability. For example, creation of an emergency transportation system would meet the needs of carpoolers, bicyclists, and those utilizing CARTA. In addition, single incentives rarely work to motivate behavioral change, so consideration of *multiple, overlapping incentives* will result in more effective policy. Providing more convenient parking spaces, along with a streamlined networking system to locate partners and cheaper (partial) permits, would offer significant overlapping incentives for carpooling. Similarly, for those who bike or bus, having the current \$5/day option to park in on-campus garages when combined with other incentives, such as emergency rides and small financial coupons for bike shops, would offer a package of incentives to induce behavioral change.

In addition, working with multiple partners through cost sharing can yield collective benefits that reduce congestion for the city and surrounding areas, create a safer campus and city, while decreasing pollution. This can be accomplished, for instance, by working with the city planners and community NGOs to create “bike safeways”, safety campaigns, and bike sharing programs. Further, it’s possible to expand the pool of potential carpoolers to city employees and those at MUSC that would provide increased convenience and efficiency.

Benefits from Updating Transportation Policy

The College of Charleston is uniquely positioned to take advantage of opportunities to induce alternative transportation. The weather and landscape are particularly inviting for enhancing non-motorized transportation (Clemson Architecture Center, 2009). Employing these recommendations will create a safer campus, particularly through safety campaigns and education, “bike safeways,” and less automobile traffic around the campus, all of which will enhance campus life (e.g. enhancing safety, campus aesthetics and community building, while reducing air and noise pollution). If properly implemented, these would ease the strain on parking resources and provide more convenient parking as an incentive for taking alternative transportation.

The most effective and efficient pathway to addressing pollution and climate change is through approaches where they are addressed indirectly as co-benefits. Minimizing motorized traffic congestion by using alternative modes offers significant co-benefits by reducing air pollution and the College’s carbon footprint. This meets one of the primary modes of reducing emissions under the President’s Climate Commitment and enhances our profile as a sustainable campus, both of which are key strategic goals for CofC.

Finally, another co-benefit of alternative transportation advocacy is personal health. Not only does alternative transportation reduce toxic air pollutants and reduce stress (by sharing the burdens of commuting), but it also encourages exercise and activities for healthier living. Again, strategies that engender direct benefits with significant indirect co-benefit streams create efficient and effective policy that enhances the quality of campus life.

Further Research and Development

1. Develop a campus committee for transportation to explore these issues and recommendations further, particularly in evaluating effectiveness, cost, and barriers to implementation.
2. Expand the scope of the research and survey to include geographic and economic components.
3. Expand the range of the research to include the College’s fleet of vehicles and for addressing off-campus transportation (e.g. Cougar Shuttle).

4. Explore ways to streamline and integrate transportation initiatives into the greater Sustainability Action Plan.

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