

**Cars on Campus:
Reducing Unnecessary Car Use on Williams College Campus**

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Environmental Planning 302
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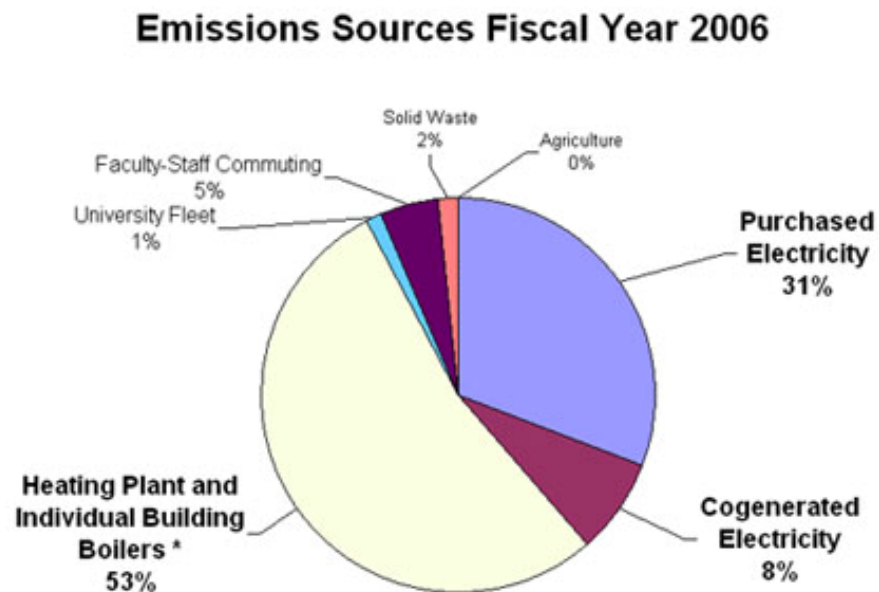
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I. Introduction

Patterns of parking and driving around campus have significant effects on campus life, the Williamstown community, local business, and regional business, and the environment at large. While it seems like a relatively small issue in the context of the operations of the College, reducing driving behavior fits within many of the other initiatives that the College has set forth to achieve, such as the Sustainability Initiative and creating well-rounded citizens of the community at-large. Currently, the College is beginning to monitor its carbon footprint and focus on a more environmentally sustainable campus, which is in conflict with the increasing number of cars and parking lots on campus. Although vehicle emissions actually contribute to a relatively small percentage of Williams' total emissions, driving is an ingrained part of the American way of life and a very visible contributor to the carbon footprint on the overall scale.



* This number includes the natural gas and fuel oil burned at the central heating plant and individual buildings.

Figure 1.¹ This pie chart shows the emission sources for Williams College, fiscal year 2006. It illustrates that College-related driving (i.e. faculty commuting and the university fleet) are only a small percentage of the emissions. However, this graph lacks student-related data, such as commutes from home to the College or off-campus trips, and thus is incomplete in that regard.

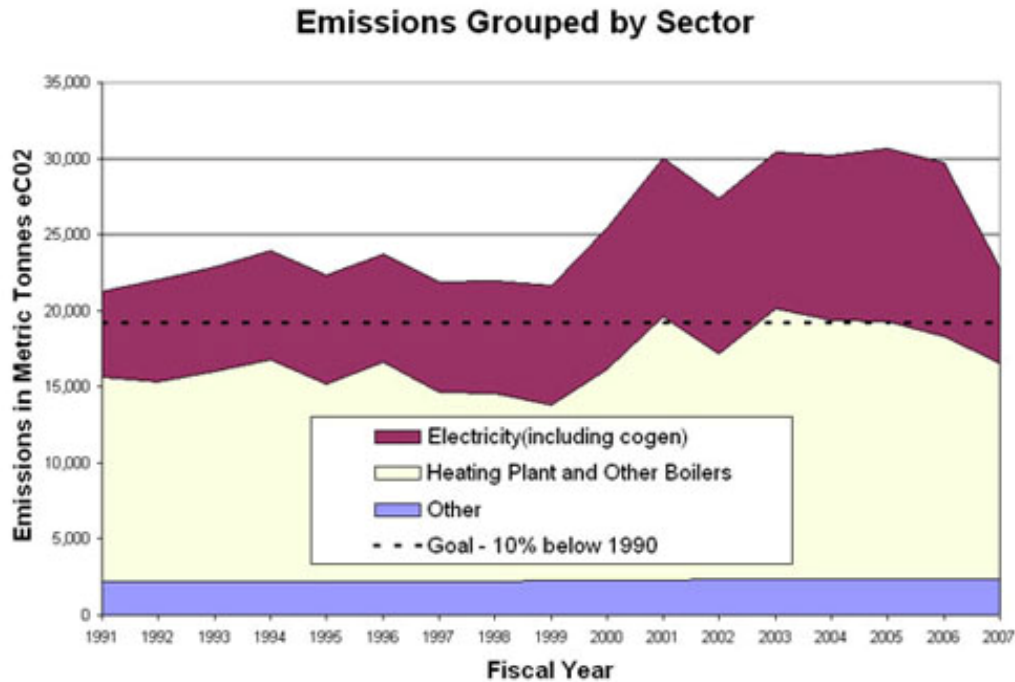


Figure 2.² This figure is another representation of Williams' emissions. Student, faculty, staff, and operations driving emissions fall under the category of "Other." This graph shows that Williams has calculated its 1990 emissions level in order to reduce its carbon footprint under the Sustainability Initiative.

¹ This graph is from the Williams College Sustainability Report found at http://www.williams.edu/resources/sustainability/co2_sources.php.

² Williams College Report on Greenhouse Gas Emissions Fiscal Year 2007 <http://blogs.williams.edu/sustainability/2007/09/24/report-on-greenhouse-gas-emissions-during-fiscal-year-2007> (accessed 10.15.07)

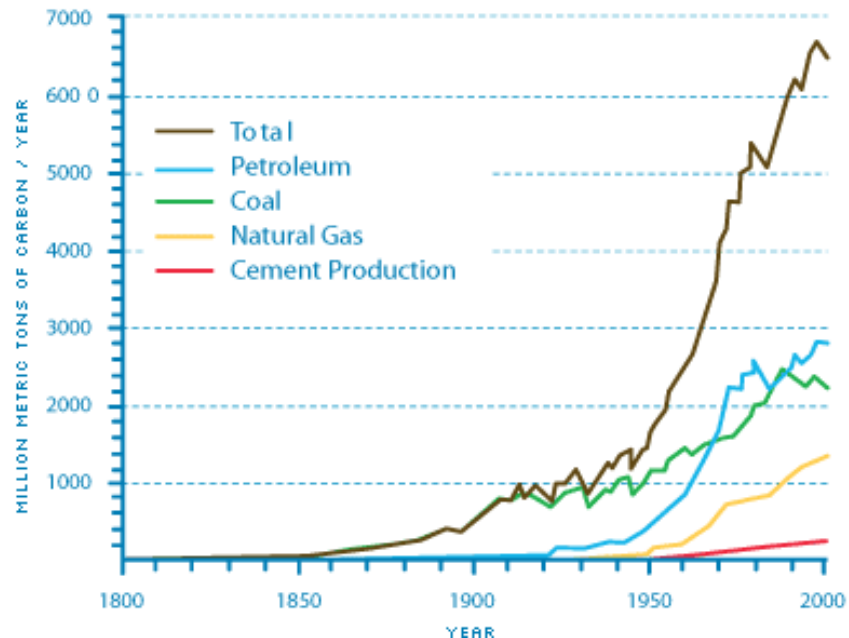


Figure 3.³ This graph shows global carbon emissions by type (in millions of metric tons). The blue line represents petroleum-sourced emissions, which is the category driving falls under. According to the Environment News Service, the U.S. contributes approximately 45% of the world's cumulative automotive emissions.⁴

The problem this project addresses is the unnecessary overuse of cars on Williams College campus. The amount of driving by students, faculty, and staff in the process of getting to and from campus, as well as between points on campus, is not in line with the College's goals of reducing greenhouse gas emissions and encouraging sustainable lifestyles among its constituents. Driving also has many other negative impacts on the campus such as congestion, noise, safety concerns for pedestrians and bicyclists, infrastructure, and maintenance costs, which would decrease if overall driving rates are reduced. The way we move to, from, and around campus also influences town/college relations, the amount of money spent on security patrols, and the aesthetic and environmental quality of college grounds, most notably the percent of campus that is covered by parking lots.

³ <http://www.climatedome.com/who-is-responsible.asp> (accessed 12.12.2007)

⁴ Environment News Service. June 28, 2006. Accessed online 12.07.07 <http://www.ens-newswire.com/ens/jun2006/2006-06-28-03.asp>

Driving habits, like electricity usage, make good targets for reduction because they are within the control of individuals, are publicly visible and therefore subject to social or community pressure, and can have an immediate impact to motivate changes in behavior. This study should help the College to understand the effects of car use on campus and the town as well and come up with effective strategies to reduce unnecessary driving. By addressing this issue, we hope to not only reduce student, faculty, and staff driving habits on campus, but encourage mentalities and behaviors which lead to lower impact lifestyles for all College members.

II. Community Profile

The 450 acre campus is nestled in the heart of the Purple Valley, and as such, Williams College is in a relatively remote location. Therefore unique issues exist when it comes to campus driving and mobility. The campus is about half an hour from other towns with commercial infrastructure, which makes the car an important mode of mobility for both students who wish to visit outlying areas and faculty who want or need to live outside of Williamstown and commute to work. The campus is physically organized around the main thoroughfare of Route 2 which runs through the center of campus, with Southworth and Water Streets bounding the East side of campus, while North and South Streets roughly bounding the West side. The main routes of travel around campus are small road branching off of Rt. 2, with the main business district located on Spring Street, a small one-way road to the south of Rt. 2 as illustrated in Figure 4 below.

The organization of parking on campus for the most part relegates student parking to larger lots on the periphery such as Mission Park, Thompson, and the Health Center

lots, and intersperses faculty and staff parking in smaller lots more evenly distributed throughout campus. The map below shows the distribution of parking of approved and restricted parking areas in and around Williams College.

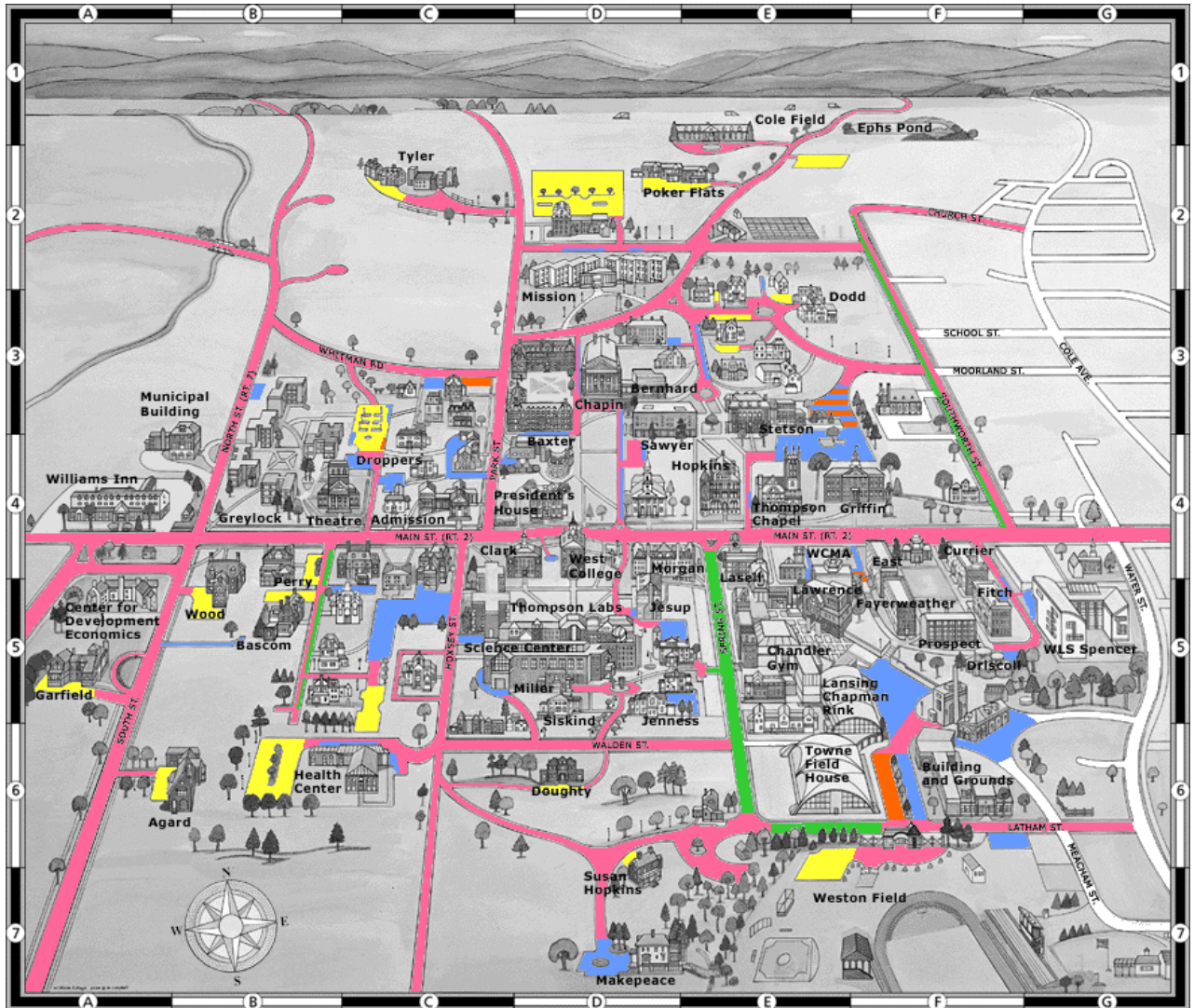


Figure 4.⁵ This is a map of Williams College Campus and designated parking areas. Student parking is yellow, Faculty and Staff parking is blue, Visitor parking is orange, Restricted parking is pink, and Public parking is green.

The first parking lot on record was built in 1941 for the Adams Memorial Theater, with a steady increase in the amount of parking areas being built over the next 30 years.⁶

⁵ Campus Safety and Security, Rules and Regulations.
<http://www.williams.edu/admin/security/rules/vehicle/map.php> (accessed 10.16.07)

Two peaks of parking construction occurred during the mid-1960s and the mid- to late-1990s. The trend towards greater parking capacity has a number of impact on college operations. The level of car usage supported by the College through infrastructure such as parking lots and road maintenance costs Williams in terms of both money and carbon footprint. It is estimated that the average parking space costs from \$2,000 (flat parking lot) to \$20,000 (parking garage) in initial construction costs alone.⁷ The additional costs of maintenance, not to mention the financial and environmental costs of paving land that then becomes a storm water management and runoff problem, can add up quickly.

2,112 students compose the undergraduate population at Williams College. 323 faculty members and 745 administrative and staff members support them on a daily basis.⁸ 678 student parking permits were issued by Campus Safety & Security in 2006-2007.⁹ The permits are administered via a lottery system. Students who register their vehicles pay a \$60 fee for a parking decal which specifies in which lot they may park. In contrast, faculty and staff members receive two non-site-specific decals free of charge.¹⁰ There are parking spaces allotted for approximately 55% of faculty and staff (not including service vehicle parking), while there are spaces allocated for 35% of the student population. All told, there are about 1500 parking spaces for the Williams community.

⁶ Williams College Facilities Property Book online, "History of Construction Projects"

http://www.williams.edu/admin/facilities/propertybook/const_proj.php (accessed 10.15.07)

⁷ Boston Metropolitan Area Planning Council, "Sustainable Transportation Toolkit: Parking"
http://transtoolkit.mapc.org/Parking/Issues/Problem_affordability.htm (accessed 10.17.07)

⁸ Demographic data from http://www.williams.edu/home/fast_facts/.

⁹ Campus Safety and Security records, courtesy of Dave Boyer

¹⁰ Interview, Dave Boyer, October 26, 2007.

TOTAL	2,146	
PARKING SPACES	581	Faculty/Staff
	72	Handicap
	3	Post Office
	122	Public
	6	Reserved
	60	Service Spaces
	19	Temporary
	18	Tenants
	521	Visitors
	3,174	
	315	Faculty
	735	Staff
RESIDENT POPULATION	2,124	Students

Table 1.¹¹ Allocation of parking spaces on Williams College campus.

III. Problem Identification and Scoping

Our client, Stephanie Boyd, the Acting Director of the Zilhka Center for Environmental Initiatives, is seeking to reduce the amount of driving on campus in order to address the problems outlined above. Her goals for this project are to create a comprehensive picture of driving behavior of students, faculty, and staff on the campus,

¹¹ Williams College Facilities Property Book online, "Parking Lot Capacities" <http://www.williams.edu/admin/facilities/propertybook/parking.php> (accessed 10.16.07)

and to use this information to develop feasible policy options and initiatives that address undesirable behaviors. Thus, the main project objectives are to accurately describe current trends in driving behavior of the student, faculty, and staff populations, to assess how changes in College parking policy might affect the groups, their driving habits, as well as residents of the Town, particularly the businesses on Spring Street, and to develop possible solutions addressing the problem from multiple angles. The scope of our solutions should address student, faculty, and staff needs and promote change through positive incentives rather than negative prohibitions.

In order to fulfill these project goals, accurate and relevant data concerning the driving and parking habits of the three subgroups (students, faculty, and staff) are necessary. This data should encompass a variety of both directly and indirectly related variables including place of residence, parking location, accumulation of parking tickets, in addition to information like sports affiliation and student graduation dates. This data should also be accompanied by documentation of the motivations of individual drivers in order to provide the context necessary for effective solutions to be created.

IV. Past Research and Emerging Trends

In the autumn of 1999, there was an Environmental Planning project entitled *Cars on Campus* that specifically examined “parking options and availability for people directly associated with the College: students, faculty, and staff.”¹² They conducted surveys to determine whether there existed a need for change, and if so, what that change might be. The authors concluded that there were two lenses through which they could examine the issue of parking: to meet the increasing demand for parking on campus or

¹² Becca Parkinson, Tanu Kumar, Olivia Imoberdorf, Aya Reiss, *Cars on Campus* Environmental Planning 302 (1999), 1.

alternately, provide an environmentally-friendly solution that encouraged non-automotive transportation.

Before analyzing each option, they described the history of cars at Williams College. Williams had been reluctant to allow cars on campus, but after the student body expressed strong feelings of isolation, the acquiesced to the students' demands around 1920. At the time of their research, the necessity for parking spaces increased continuously and a number of new parking lots had been constructed to accommodate this demand. As they saw it though, this desire for parking was not going to subside soon, even with the addition of those lots, and the College was unwilling to provide any more parking access on campus.¹³

The authors then discussed the amount of parking spaces that existed on campus at that time, as well as how the College allocated parking spaces to faculty, staff, and students. They briefly discussed the role of Campus Safety and Security and the role they played with parking enforcement. Finally, there was another brief paragraph which illustrated the alternatives to driving, which include a local shuttle service, buses, bicycling, and walking.

The results of their survey were telling. Over 60% of both the students and faculty who responded expressed a desire for additional campus parking. Clearly demand was high and thus the authors began to analyze two possible resolutions for the problem. The first solution (meeting the demand) acknowledged that in order to achieve this goal, construction was unavoidable in order to expand existing lots or create new ones. They examined the economic and environmental cost of building a new lot (one

¹³ Ibid., 4. The College's unofficial stance was conveyed by way of personal communication with Michael Card.

parking space costs \$4,200) and tried to determine which lots might be expanded.¹⁴ Of the lots on campus, only six were available for the latter option. After their analysis, the authors concluded that the Poker Flats, Dodd, and Weston lots were the best areas for expansion.

An alternative to creating parking lots that the report examined would be the construction of a parking garage. The authors looked at several different types of garages and listed them from least expensive to most expensive (but did not give numerical data to demonstrate their claim).¹⁵ The parking garage option was not pursued very far due to the high economic and environmental cost.

The report studied what other policies the College could enact to reduce car presence and use on campus. Potential changes in the parking policy structure include: increasing the parking decal price, creating an agreement between the College and students demonstrating that having a car is a privilege, and eliminating student use of faculty/staff parking. Alterations of the traffic pattern on campus could also achieve some goals. Increasing signage and/or speed bumps, and decreasing traffic flow are two options. The last policy change would be transportation alternatives which could include: implementation of a community bike program, increased use of the College shuttle service, and improving the ride sharing service.

The group then tackled the second option, the environmentally-friendly approach. The report examined de-paving small lots which would “deliberately inconvenience the students in order to prevent the unnecessary use of cars, increase green space, and

¹⁴ Ibid., 9. As conveyed by personal communication with Vince Guntlow.

¹⁵ Ibid., 14. Their list was the result of a personal communication with Eric Beattie.

increase pedestrian use.”¹⁶ This was the only mechanism that the students proposed for the second option.

They recommended a solution which combined each option. Several lots would be de-paved while the Dodd, Poker Flats, and Weston lots were enlarged which would create a net loss of 70 spots.¹⁷ Furthermore, they suggested that the College only issue one decal to each faculty member, use a seniority-based allocation system to curb underclassmen car use, increase the parking registration fee, enforce faculty parking tickets, and use alternative transportation policies.

It is clear in the eight years since the release of the report that many of their suggestions went by the wayside. The lots were not de-paved or expanded, the transportation policies were not enacted, the parking registration fee remained the same, and, to our knowledge, faculty parking tickets still are not enforced. The seniority-based allocation system has been implemented it seems, but that may be it. From our perspective, it appears that many of the same challenges faced by this team still exist today and will need to be addressed to improve the parking situation on campus (by improve, we mean to reduce the use of cars on campus).

V. Laws and Policies

A. Town Laws:

The Williamstown Zoning Bylaws discuss how and where to build parking lots in § 70-5.4. It discusses lighting, landscaping, and other site design requirements. These rules would only apply to the proposed solutions “long-term parking lot” and “underground parking garage.” Since the Mission Park lot already exists, we can assume

¹⁶ Ibid., 24.

¹⁷ Ibid., 25.

that it was built according to the standards in the town bylaws. In § 70-6.1 the town has set forth the regulations for off-street parking and loading. The code says that the purpose of such parking is “to limit the amount of pavement coverage within the Town.”¹⁸ Generally, Williams College falls under the “Nonlisted uses” category as it often must account for requirements set forth by the Inspector of Buildings or the Planning Board. Thus, Williams usually has less parking per building than typically required as it can rightly claim that its students tend to walk to get to class and areas of interest.¹⁹

B. Williams College Policies:

Except for first-years, Williams College allows students to bring a car to campus. Students must register their cars for a \$60 decal which covers the length of the school year. There is a separate registration for cars and students on campus over the summer. When not in use, each student must park his or her car at its designated parking lot. Failure to do so will result in a parking fine.²⁰

VI. Ideas from Outside the Purple Bubble

After looking at campus maps for Wesleyan University, Middlebury College, Colby College, Bowdoin College, Amherst College, and Mount Holyoke College, it is clear that the parking model used at Williams is consistent with that of other New England schools of similar sizes. For the most part, each school keeps the majority of its student parking on the periphery, with only small lots and faculty lots intruding into the middle of campus. This mirrors the situation at Williams, where the major lots such as

¹⁸ Williamstown Code, § 70-6.1A, page 7030.

¹⁹ Jamie Art. Personal communication. 11.13.2007.

²⁰ Please see Appendix 2 for the 2005-2006 Parking Arrangement.

Thompson and Lower Mission house the majority of the student cars while smaller lots such as the parking lot near Perry account for a small fraction. The big parking lots at these schools seem to be concentrated around the athletic facilities, as it is at Williams. There is however, one significant difference. While Williams is built around a commercial area (Spring Street) most other colleges are self contained. The closest immediate parallel to Spring Street was a street separating the heart of Bowdoin from its athletic fields, but this one was lined with houses instead of storefront spaces. Thus even though Williams seems to have a parking situation that mirrors the other schools, this is not the case. At Colby, for example, it makes no sense for a student living in a dorm to drive his car on campus. If the student had parking in one of the bigger lots on the edge of campus, he would have to go way out of his way to get the car in the first place. However, even if he was lucky enough to have a spot in one of the nearby parking spaces, there would be nowhere on campus worthwhile for the student to drive. At Williams, however, it is possible to drive to Spring Street, leave your car there, and find yourself in the center of campus with easy access to a car.

Much of the more interesting solutions to parking are taking place at bigger schools. The University of Minnesota has received a federal grant allowing it to offer access to public transportation for a reduced price to students and faculty. It is estimated that an additional 8,000 people now use public transportation at the University.²¹ At Champlain College in Vermont, which is a Williams-sized private college, students and faculty who walk or bike to classes at least three times a week for a four week period are rewarded with \$15 gift cards to local restaurants.²² In addition, many Colleges and

²¹ <http://www.peterli.com/archive/cpm/681.shtm>

²² http://my.champlain.edu/public/parking/parking_programs.html

Universities that encourage public transportation, carpooling, and other alternative means of getting to campus offer reimbursement if somebody needs to take a cab in an emergency. There are many possible approaches to transportation management on college campuses, and the possible solutions for this campus will lie both within the population itself and as well as ideas from the outside.

VII. Data Gathering

Rather than ask students on a survey how many miles per gallon their car gets or other questions they may not know or are disinclined to answer, we decided to ask CSS to provide us with information regarding student vehicle registration and parking fine data. Dave Boyer graciously agreed to supply the records. The list is anonymous, but with it we determined how many students per class had cars on campus, their home states, parking lot assignments, and class year. In addition to this information, we approached Chris Winters and requested that family income, dorm, athletic status, and total fines amassed be included in the data. This information helped us conclude whether or not there are trends regarding which types of students are more prone to getting parking tickets and if financial motivations or disincentives are effective driving regulators.

Dave Boyer mentioned in our interview with him that many merchants complain that students drive to Spring Street too often.²³ They are concerned that students take away parking spaces from potential customers. To determine the validity of this grievance, we surveyed Spring Street itself and counted the cars parked there. Cars were identified as student cars and faculty cars by whether or not they had a Williams parking

²³ Interview, Dave Boyer, October 26, 2007.

decal on them. A third category of cars, “other,” were those that were not explicitly associated with Williams College, meaning they did not have a parking sticker and included resident, merchant, and visitor vehicles. We divided up three weekdays into four three-hour blocks (9am-12pm, 12-3, 3-6, 6-9) and a group member tallied the amount of each type of car. We applied the same process to a weekend as well.

We interviewed Jaime Art, Dave Boyer, Tina van Luling, Wayne Haskins, and Stephanie Boyd. Mr. Art is a lawyer who often advises the College on parking regulations when it plans to construct a new building. He was also able to give us a bit of perspective on parking as a former student, as well as a current community member. Mr. Boyer is the Associate Director of Campus Safety & Security and was not only able to provide us with car registration data and ticketing information, but also discussed the history of parking during his tenure and also imparted some community perspective with us. Tina van Luling supplemented Mr. Boyer’s information with her own knowledge of student parking habits while Wayne Haskins discussed the feasibility of the charge-per-use park lot solution described below. Stephanie Boyd not only helped clarify the project’s goals but also served as a fount of information regarding Williams and sustainability. Each interviews supplied us with information regarding institutional memory in addition to community perspective.

Since a number of our survey questions were answered with the data from Dave Boyer and Chris Winters, we decided to utilize surveys, one for students and the other for faculty and staff, which we administered online via www.surveymonkey.com We made two surveys because we understood the motivations for each group to be fundamentally different. Students drive primarily to get to Williams and run errands or get to venues off

campus while the latter group commutes to work. We crafted the surveys to determine mentalities and habits associated with driving. The student survey also had questions regarding potential solutions in order to find out what ideas might be popular. The student and faculty/staff survey questions and the results may be found in Appendix I.

Our original plan was to integrate the results of security's ticketing data with GIS maps of Williams College to create a visual representation of the distribution of parking tickets by lot. We anticipated that this would add a lot to our report, as anecdotal evidence suggested that a car's assigned parking lot had a heavy influence on the amount of tickets one was likely to receive over the course of a year. However, after analyzing the data, we found that there were not very significant differences in ticket distribution by lot. This drastically reduced our projected value of using GIS in our presentation, as we already had an excellent map that showed the location of the parking lots in a sufficiently detailed and clear fashion for our purposes. In the end, we decided that the addition of a GIS map would clutter the presentation and put an undue emphasis on the correlation between assigned parking lot and number of tickets received, which our analysis had revealed to be insignificant.

VIII. Student and Faculty Survey Results

We e-mailed a survey to 800 randomly selected students and another survey to 400 randomly selected faculty and staff. Participation in this survey was excellent, with 369 students responding and 282 faculty and staff replying. We assembled the survey with the assistance of Chris Winters. We administered it online over www.surveymonkey.com, which allowed us to use branching questions. This means that students without cars did not have to answer any questions tailored to students with cars,

helping to ensure we received relevant data. The survey was designed to answer some questions regarding driving behavior that other methods could not and measure interest in a few of the solutions we considered. While some questions provided us with more helpful than others, the survey as a whole gave us a much better understanding of the community's driving habits, attitudes, and perceptions. We believe the survey was answered honestly for the most part. Since it was anonymous, no incentive existed for a student to answer deceitfully. We anticipated that some students who incurred large parking fees might be reluctant to answer questions about their driving, or might have been indifferent to our efforts altogether, skewing the results towards a better-behaved student population. Also, we thought more faculty than staff would reply as we believed faculty checked their e-mail more regularly, but this concern turned out to be unfounded.

67.8% of the survey respondents do not have a car on campus, while 32.2% of students did. This statistic accurately reflected the data that we received from Dave Boyer which said 32.1% of students have a car on campus. Most of the students without a car seem happy without one, as 60% cited "Don't need one" as a major reason for not having a car on campus, though almost as many (59.5%) cited cost as a reason. Over 75% of the students without a car thought that not owning a car did not adversely affect their Williams College experience, and only 3% felt strongly that not having a car was a big hindrance. In addition, there seems to be absolutely no correlation between bike ownership and car ownership, as about 79% of respondents in both groups replied do not own a bike on campus. Students who do not own cars reported walking in over 90% of their trips, and over 60% of them never borrow a friend's car to drive. While this is a lot of data, what it all points to is that car ownership is not a necessary facet of the Williams

College experience. The campus is very compact and for most of the year students are able to take advantage of everything the college has to offer without using a bike or car. However, there is a strong interest in Zipcar amongst students without cars on campus and a significant majority of non-owners do get rides, especially to off campus locations. When Williams students drive, it tends to be to off campus locations, especially restaurants and shops located away from the campus. Indeed, approximately 90% of respondents said that they drove off-campus to restaurants and other locations, while 70% of students said that they used the car to get to Williams from their home.

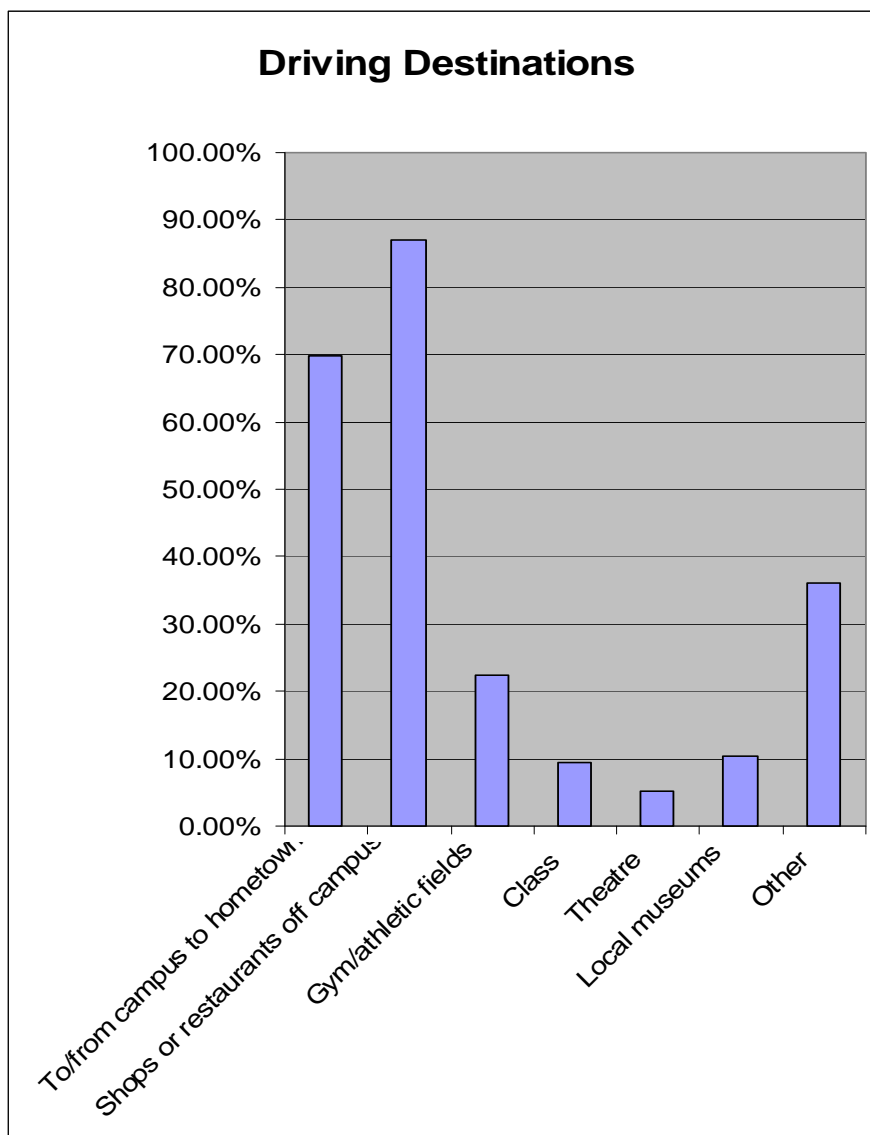


Figure 5. This graph shows what locations students typically drive. Since this question was presented in a “choose all that apply” format, the percentages represent how many students frequently drive to the given destinations.

Much of the data from car owners confirmed the lack of importance car use has on campus. Car owners estimated that they drove for only about 15% of their trips and over 80% of car owners drive on a less than daily basis.

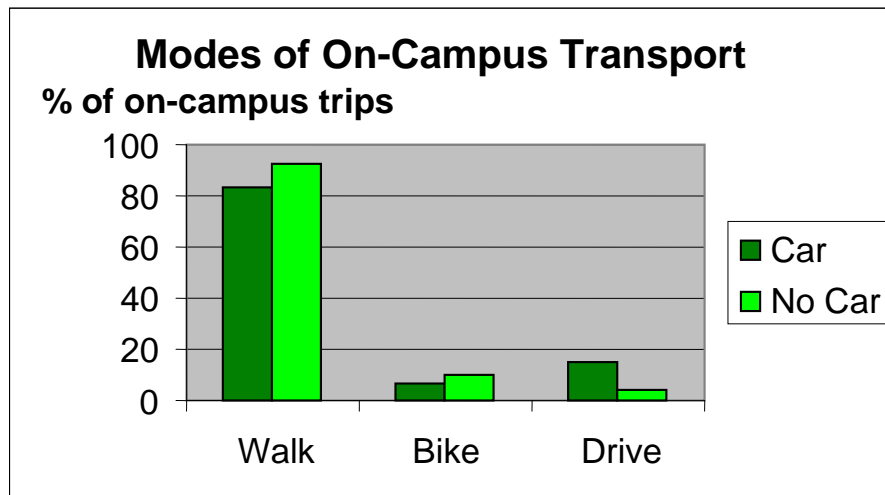


Figure 6. This figure demonstrates that the vast majority of on-campus travel is achieved by walking. Those who do not have a car walk and bike slightly more than their “with car contemporaries,” but the disparity is not great.

Much of the driving that is done on campus tends to be part of multi-legged trips, with students reasoning that they might as well drive if they have their car out anyways. The data from students with cars confirm that most student drivers here are carpoolers, with over 85% of car owners reporting that they have other students in the car with them for off-campus trips at least some of the time with almost half claiming to carpool most of the time. The idea of a long term parking garage was rejected, with over 90% of car owners saying they would not be interested in using it. However, there are some indications that one or two times a semester was too limiting, and people would consider using it if they were given more free passes (five to ten per semester.)

One potential fault of our faculty/staff survey is that it may represent a greater proportion of faculty than it does staff due to its electronic distribution. However, the excellent response rate we got on it (about 70%) implies that the e-mail distribution was not as much of a barrier to entry as we feared it may have been.

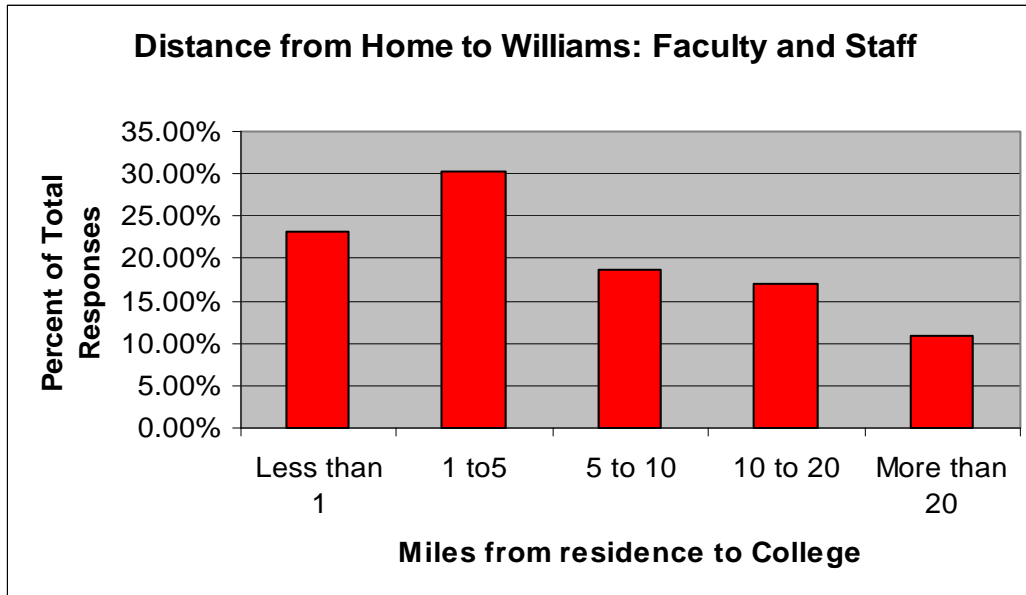


Figure 7. This graph shows the distance faculty and staff live from Williams College. We recognize that most people do not live within convenient walking distance (more than one mile), but almost 25% (64 people) of our respondents do. Thus, we hope to find ways to encourage their use of alternate forms of transportation.

As illustrated in Figure 8, most respondents listed driving as their primary method of getting to work, with walking finishing in a distant second, and biking and carpooling at virtual ties for 3rd. Only four people listed carpool as their primary method of getting to Williams though there was a greater percentage (still under 10%) who did participate in carpools on occasion. About 35% of the respondents said they might be interested in carpooling if Williams gave them a list of potential ride-sharers.

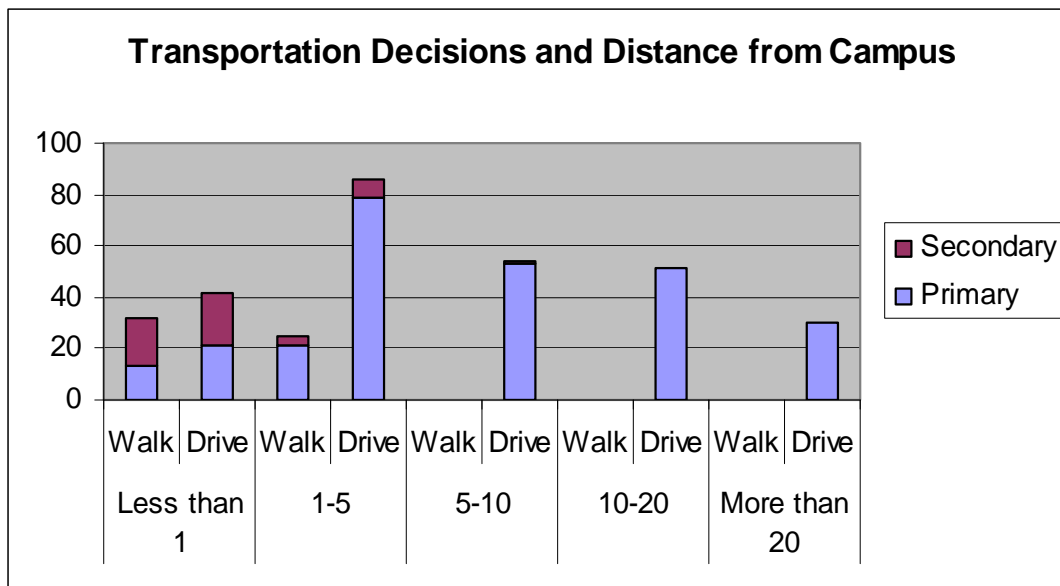


Figure 8. This graph shows the decisions faculty and staff make when determining how to get to Williams College. The overwhelming majority of respondents drive to work. It is encouraging though, that more than half of those who live within a mile of campus walk to work regularly.

Once the staff and faculty get here, however, their driving habits begin to mirror students closely. 18 people or 6% of those surveyed, use their cars to drive around campus on a daily basis, and 172 respondents, or 60%, claim that they never do it.

Breakdown of Faculty and Staff Driving During the Workday

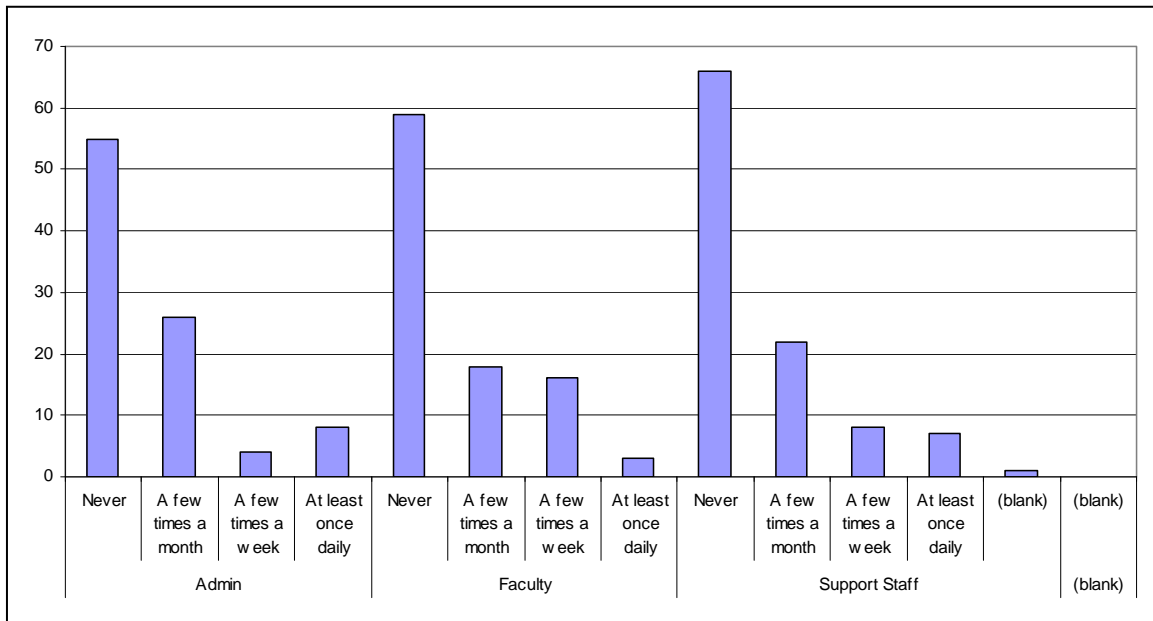


Figure 9. According to this graph, the vast majority of faculty, administrative, and support staff do not drive once they get to campus.

Perhaps the most disheartening statistic is that only 4 people responded that they did use public transportation to get here, and even for them it was not the primary method. This confirms our suspicion that public transportation in this area offers virtually nothing to anyone associated with the college as the population density is too low for it to be effective.

The responses to both surveys indicate the same basic idea: driving at Williams is primarily done to get off campus. Thus, any attempt we make to reduce car use on campus should focus on providing people with reasonable alternatives to get to their destinations and incentives to use those alternatives. For example, getting more faculty to carpool could potentially reduce the emissions of Williams affiliated vehicles more than any policy that restricted intra campus driving could.

IX. Analysis of Campus Safety and Security Data

Driving behavior is intrinsically a difficult thing to monitor and measure. The closest thing to an objective record of driving behavior available for Williams College students are the records kept by Campus Safety and Security (CSS). CSS is the campus authority in charge of parking and driving regulations on Williams College Campus. The most prominent processes undertaken in this regard are permitting of faculty, staff, and student vehicles, and ticketing vehicles violating parking regulations on College property. Due to the nature of the way this data was gathered, it is intrinsically limited in what it can tell us about the daily driving behavior of students. It only reports on students who are breaking parking regulations, not legal driving behaviors. Despite these limitations, it can also give us some valuable insight into what kinds of incentives work or do not work to modify student behavior, what factors may cause differences in student driving behavior, what may be causing inappropriate parking behavior, and how policies may be shaped in the future to avoid causing further parking issues on campus.

We were able to utilize part of this database gather data on students with vehicles on campus, with data on all registered student vehicles and all student vehicles which received tickets, including registered lot, whether a car had been issued a ticket, and total dollar amount charged for parking tickets. This database of information was then merged, using student identification numbers, with College records on class, sex, home state, financial aid status, and athletic participation. The identification numbers were then disassociated from the data set and replaced by case ID numbers, allowing the information to remain completely anonymous during analysis. See Appendix 1 for a sample of the data.

The data showed several interesting trends. One of the characteristics of the data immediately noticeable is the distribution of ticket charges, which is heavily concentrated near the bottom of the spectrum (\$0-\$150), but has an extreme range due to a number of high outliers, as you can see in Figure 10 below.

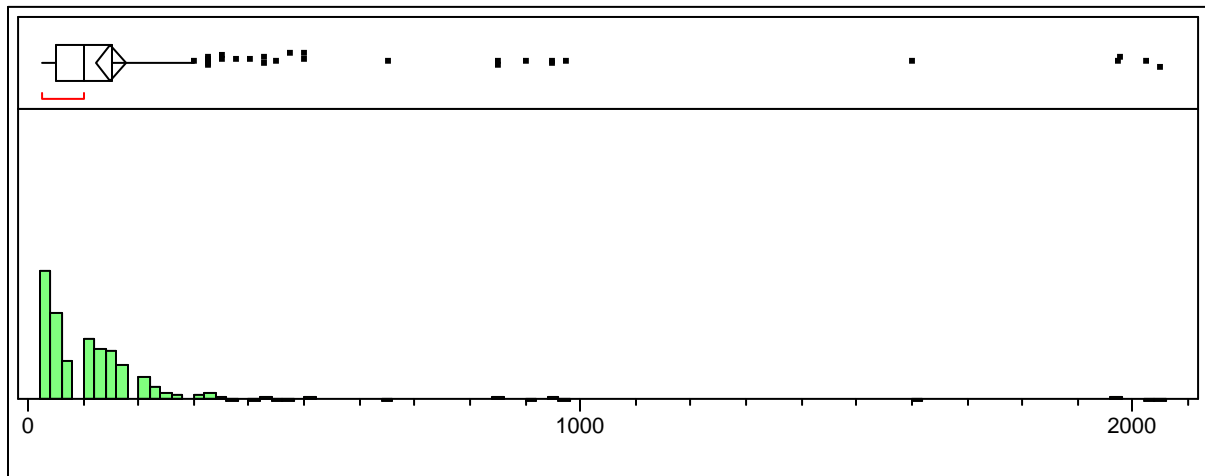


Figure 10. Distribution of parking tickets, by total dollar amount, shown in both box plot and histogram. The box plot especially shows the density of the center of the distribution and small number of highly spread outliers.

To most students, parking tickets are the rare result of an absentminded mistake or accidental infraction on parking regulations that is an exception to their regular driving habits. To some students, a parking ticket is the price you pay for more convenient parking. Examined in this light, this data tells us that financial incentives that penalize students for certain behaviors are functional strategies for a majority of the population, but some students behave independently of these incentives due to a high willingness to pay for the benefits of parking illegally. In the context of the student body as a whole, the number of students who are not affected by financial penalties is very small, as you can see in Figure 11 below. This suggests that as a strategy, financial disincentives are a very effective way of changing behavior.

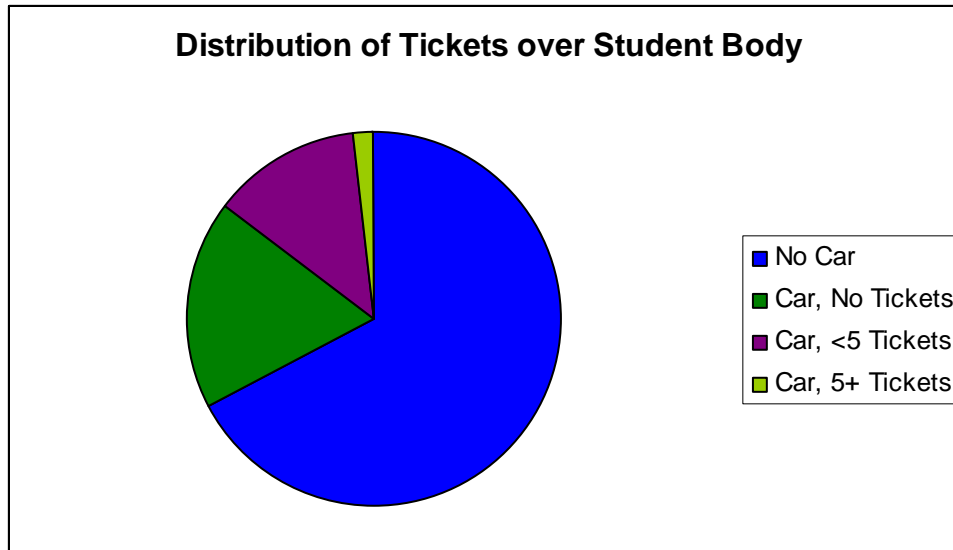


Figure 11. The total student body, divided into groups with similar numbers of tickets. Approximately 85% of the student body has not received a ticket, including those without cars and those with cars that have not received a ticket. Those earning large numbers of tickets represent less than 1.7% of the population.

The distribution of student parking permits is skewed towards the upper classes, especially seniors, who hold nearly 40% of the permitted parking spaces. Freshmen are officially forbidden to have cars on campus, which explains why in Figure 12 below, the ratio of known freshman vehicles to parking fines is very high (freshmen receive higher priced parking tickets since their car is technically illegal in the first place). All freshman are unregistered drivers, therefore they only appear on Safety and Security records after having been caught and put on record. This means that although their fines are especially high for reasons outlined above, the actual number of freshmen who have cars on campus may be higher than represented here. This also suggests that any kind of policy that restricts driving severely may cause an increase in illegal driving and/or parking behavior because some students will refuse to comply.

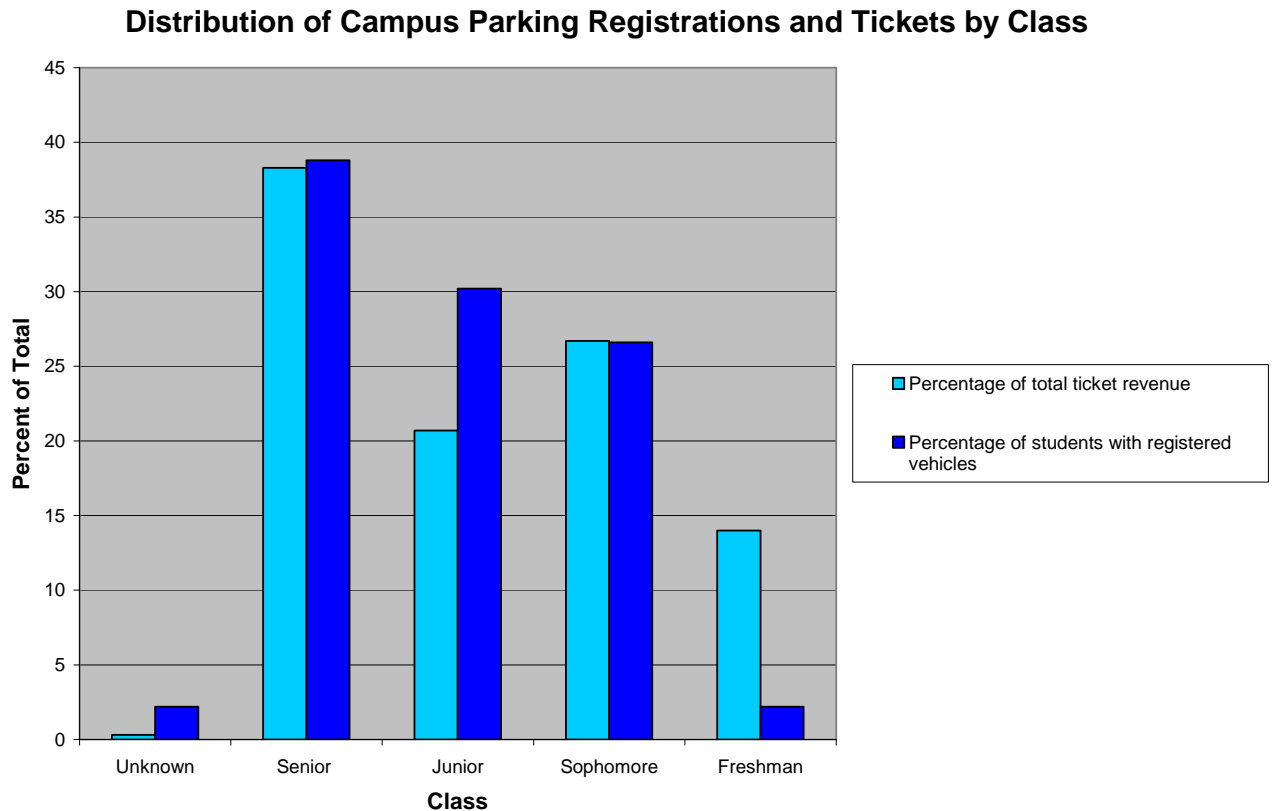


Figure 12. Distribution of parking permits and parking tickets by class. Note: freshman vehicles are not permitted, but are on record after accruing parking tickets.

The prevailing belief about driving behavior and parking tickets among CSS officials is that students who live in dorms on the periphery of campus, especially male students, tend to drive more and accumulate more tickets²⁴. The data tell a slightly different story, as you can see in Figure 13. The average fine assessed per student in all of the student lots tends to be fairly stable, hovering between \$25 and \$50 (equivalent to 1 and 2 tickets, respectively). None of the dorms typically cited as the worst offenders, such as Tyler or Garfield, showed a disproportional amount of ticketing. Nearly equally far away from the center of campus, other peripheral lots such as the Health Center show significantly lower total fines per parking space, contradicting the idea that peripheral

²⁴ Dave Boyer. Personal communication. 10.26.2007.

parking increases the amount of deviant parking problems on campus. The only real outlier here is the Susie Hopkins lot, a very small lot with only 7 spaces, usually assigned to the residents of the co-op. The co-op structure, which allows seniors to live in small groups of friends communally, suggests that the high fines for this lot may be the product of acceptance or encouragement of this kind of driving behavior in a small social group.

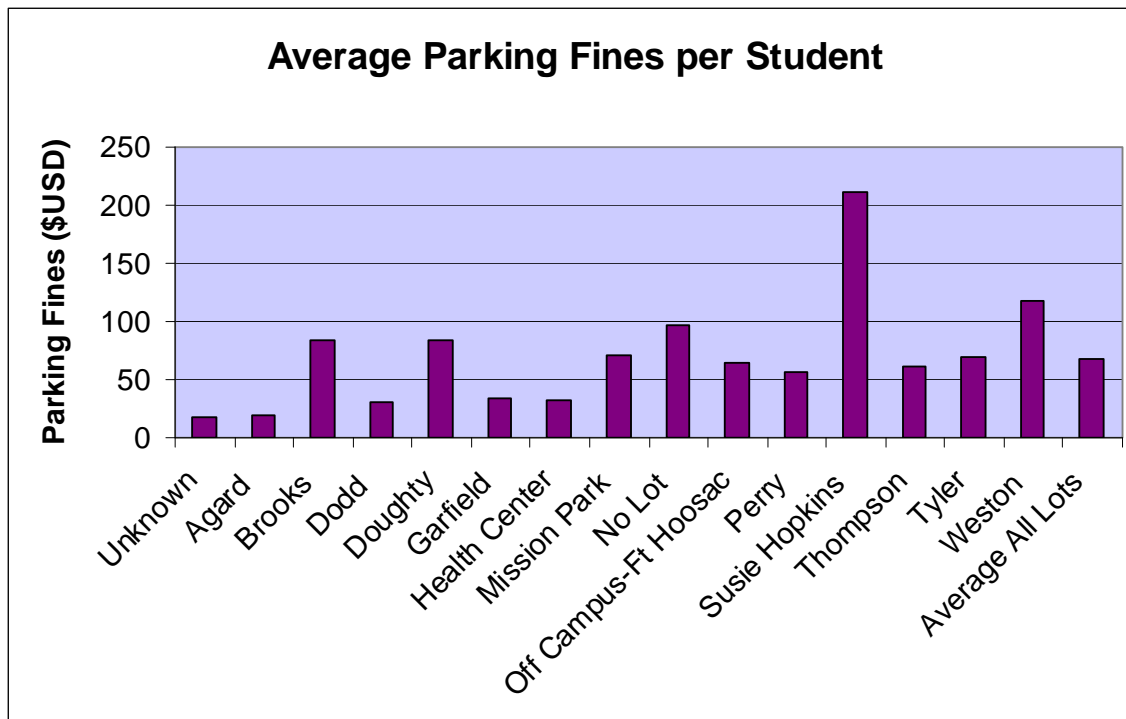


Figure 13. Average parking fines per student in each of the student lots. “No Lot” refers to unregistered or otherwise unassigned vehicles, including all freshmen with cars.

On the other hand, there is great support for the assertion that male drivers tend to accumulate more tickets. The number of males and females with registered vehicles is nearly equal, but the amount of fines accumulated over the course of a year by the male and female drivers shows quite a disparity, as shown in Figure 14 below. This also suggests that improper driving behavior, and by extension driving behavior in general, is likely a product of social norms, attitudes, and habitual behaviors than the direct result of campus layout or specific policies.

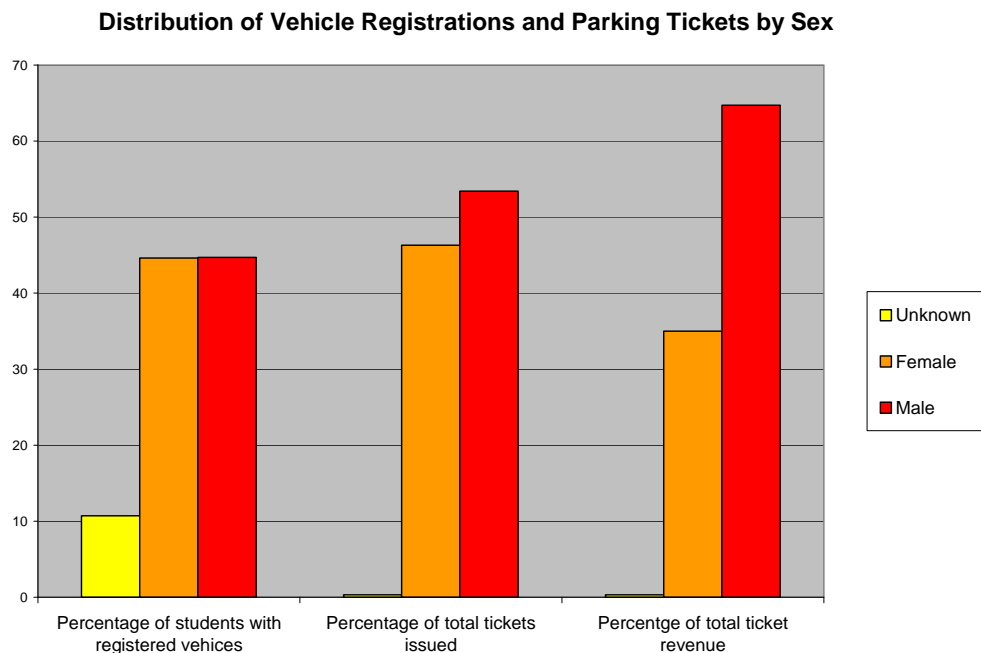


Figure 14. Vehicle Registrations and parking tickets by sex. Persons of unknown gender had no vehicle registration on file with CSS.

X. Spring Street Parking Analysis

The main commercial activity in the vicinity of the College is concentrated along a short one-way road running through the southern half of the campus. On Spring Street 15 to 20 small businesses rely on the availability of on-street parking for their customers, although a small public lot is located at the end of the road for overflow purposes. In order to address the concern that student parking on Spring Street occurs at a high enough rate to inconvenience shoppers and negatively impact business interests²⁵, we collected daily data on the number and affiliation of the vehicles parallel parked along the street. The results of these daily counts were then averaged to provide an approximate model of the daily flow of traffic and parking availability shown in Figure 15.

²⁵ Jamie Art. Personal communication. 11.13.2007.

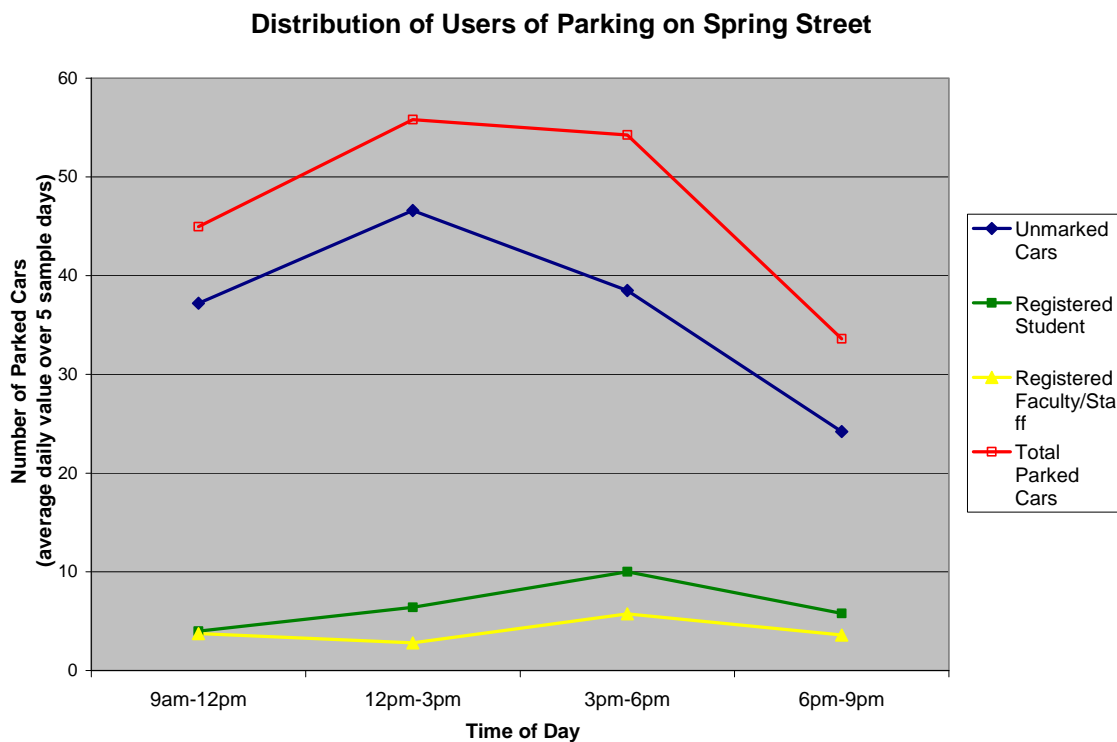


Figure 15. Daily model of parking patterns on Spring Street, showing the different traffic patterns typical of residents and tourists, as well as Williams College faculty, staff, and students.

The data clearly show that the number of student, faculty, and staff cars parked on the street at any given time is fairly low in relation to the total number of cars parked and to the approximately 60 total available spaces. While unmarked cars (presumably composed of Williamstown residents, visitors, tourists, etc) peak in number in the early afternoon, student and faculty vehicles tend to increase in later afternoon (generally rising sharply around 4 pm) and peak sometime in early evening, when the number of unmarked cars begins to fall steeply. From our general observations, the vast majority of all student vehicles park on the northernmost end of the street, between Morgan Hall and Chandler Gymnasium, where there are no businesses. Further south along the street where most businesses are located, parking is generally taken by unmarked vehicles and occasionally a faculty or staff vehicle. Taken together, this data suggests that on an

average day there is no conflict between student parking and customer parking for Spring Street businesses.

While students, faculty, and staff of the College unquestionably comprise a large amount of the customer base for merchants on Spring Street, the relationship between the College and residents is tied closely to the College's ability to control the flow of traffic created by its members, lest it be seen as an interference to the commercial and social functions of town life. Thus it is important to know whether or not students, faculty, and staff are currently creating a traffic problem on public streets, as well as to contextualize how future changes in policy or behavior would affect businesses and residents.

XI. Potential Solutions

It has been very difficult for us to judge the level of institutional will to implement any parking recommendations that we make. There is a general consensus that we don't want to implement any ideas that would antagonize students, and being car-driving students ourselves, we agree with that. Furthermore, policies must be created in such a way as to minimize overflow parking onto public streets like Southworth and Spring Streets. We certainly do not want to advocate anything that would strain the relationship between Williamstown and the College. Also, we would like to ensure that residents of the town can still utilize College services like the athletic facilities and library system. Other concerns include guaranteeing access for emergency, delivery, Buildings & Grounds vehicles. Last we want to make sure that everyone can participate in cultural and sporting events.

With those concerns in mind, we are looking at recommending a broad range of solutions, any of which would be an improvement in itself though some may be

synergistically improved by the implementation of others. Ideas we have range from small things such as increasing the number of covered bike racks on campus and offering faculty incentives to only take one parking sticker or to share their parking sticker with a co-worker (to encourage carpooling), to much more complicated solutions such as designating a charge-per-use parking lot.

A. Athletic Field Van

Members of the varsity football, soccer teams, and rugby (club sport) teams drive to Cole Field daily during the fall to practice as evidenced by the parked cars lining both sides of the roadway. To mitigate this, the College could hire students to drive some of the vans down to practice. Student-drivers would only need a van license to operate the vehicles which does not require any testing, contrary to a light bus which would necessitate more extensive licensing and possibly a new hire for the college. The student-drivers could be paid an hourly wage of \$8 and work for two hours (pre-practice and post-practice pickup). The football team is moving to Weston Field next year²⁶ which should remove some of the pressure from Stetson Road; however we do not want the same problem transferring itself to the Weston lot, or worse to Spring Street, so perhaps such a program could be expanded to accommodate those players as well. To help ensure that students utilize this service and do not continue to drive to practice, Campus Safety & Security (CSS) could rigorously ticket offending students. Coaches and medical staff would be allowed to continue parking at the fields as necessary to transport equipment.

²⁶ Stephanie Boyd. Personal communication. 11.27.07

Not only would such a program be useful on practice days, but the College could also utilize it on game days. A large number of students drive down to Cole Field on Saturdays and Sundays to watch the soccer and rugby teams compete. By removing the student cars, there could be more room for parents and visitors alike. Also, there would be less congestion which would help an ambulance or emergency vehicle access the fields. Again, CSS could ticket students who drive down to the fields.

Clearly the van service would not be the only method for student-athletes and fans to access the fields. The program would promote walking and biking to the fields by virtue of eliminating the possibility of students driving down to the fields. Costs of such a service include the student-driver wage of \$8/hour and fuel for the vans.

B. Bike Sharing Program

We suggest that the College institutionalize a bike sharing program. While a number of student groups have attempted to jumpstart a bike sharing program over the years, none have found success. Results from a survey given to both students with cars and students without cars indicated that over 70% of students from each group expressed a desire for such a program, as illustrated in Figure 16.²⁷

²⁷ 78.0% of students with cars and 72.3% of students without cars.

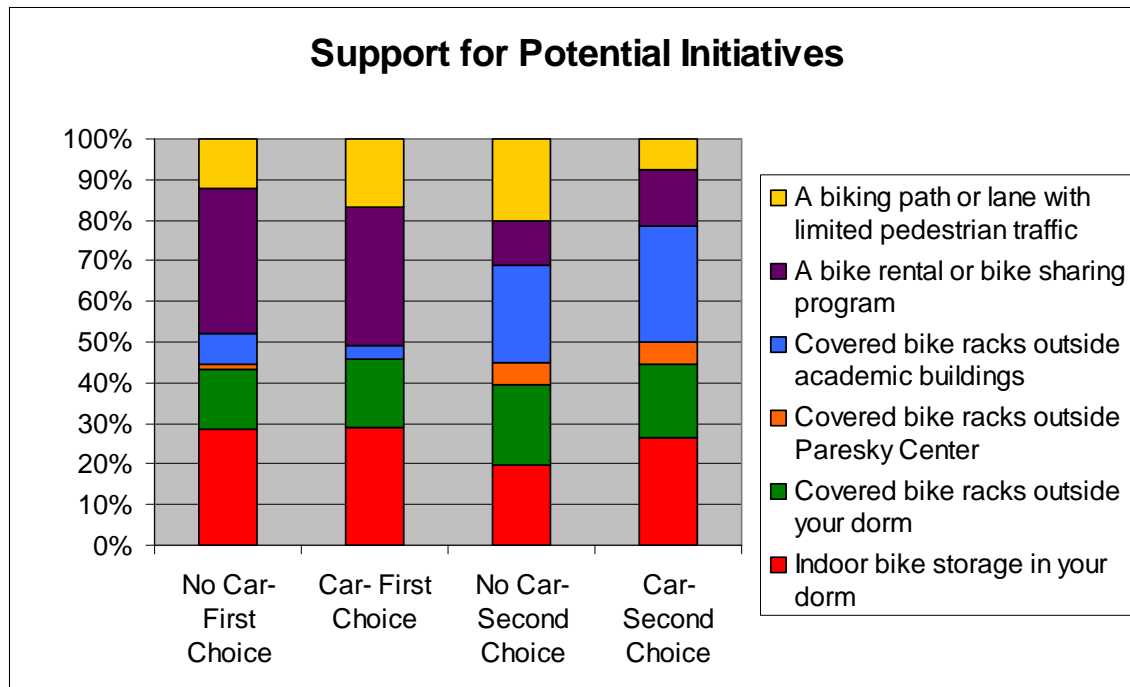


Figure 16. This graph shows the levels of support expressed in the student survey for different bike initiatives, broken down to the primary and secondary choices for students with cars and students without cars. According to the survey, students primarily want a bike sharing program, while covered bike racks are a popular second option. Indoor bike storage is another popular idea since many students do not wish to risk damaging their bikes with rust from storms and winter exposure.

To reduce the possibility of theft or vandalism, there could be a system set up where a rider signs out a bike and assumes all responsibility for damages to the bike.

Furthermore, the bikes could be painted one color so that other students are made aware of the fact that the bike is the College's property and any intentional harm done to the bike would incur some penalty (e.g. paying for damages and given a strike). In order to fund repairs to the bikes, there could be a nominal membership fee for using the bikes, \$10 per year for example, or perhaps some sort of advertising could be placed on the bike frames.²⁸

Another concern for having a bike program would be insurance. Williams would have to ensure that the bikes were properly maintained, but clearly it is not in the

²⁸ The idea for advertising came from this website: <http://www.ibike.org/encouragement/freebike-issues.htm#Starting> (Accessed 11.28.2007)

College's best interests to be held liable for any injuries sustained while using a College bike that is in good condition.²⁹ Therefore, members of the bike sharing program would sign a form waiving the College's responsibility. In addition, it would stipulate that they abide by all laws related to biking.

A system run by Williams College rather than by a student organization is more likely to succeed as it has the funding to cover costs and can have the necessary oversight for running the program. In terms of how to supply the program with bikes, in addition to purchasing new (and used) bikes outright, perhaps Williams could arrange a deal with Spokes, the local bike shop, in which the shop refurbishes old bikes and sells them at a reduced price. In addition, Spokes would be contracted for bike repairs and maintenance. Thus Spokes could have a customer for old bikes and parts that local residents might not want to purchase in exchange for safe bikes that such a program would require. Also, Williams could ask graduating students to donate or sell their bikes at a reduced price once they leave as transporting bikes is not always easy or convenient.

C. Bike Racks

It appears that having a car does not affect whether or not a student is more likely to own a bike campus as bikes are almost evenly distributed between the student groups.

²⁹ <http://www.ibike.org/encouragement/freebike-issues.htm#Starting> (Accessed 11.28.2007)

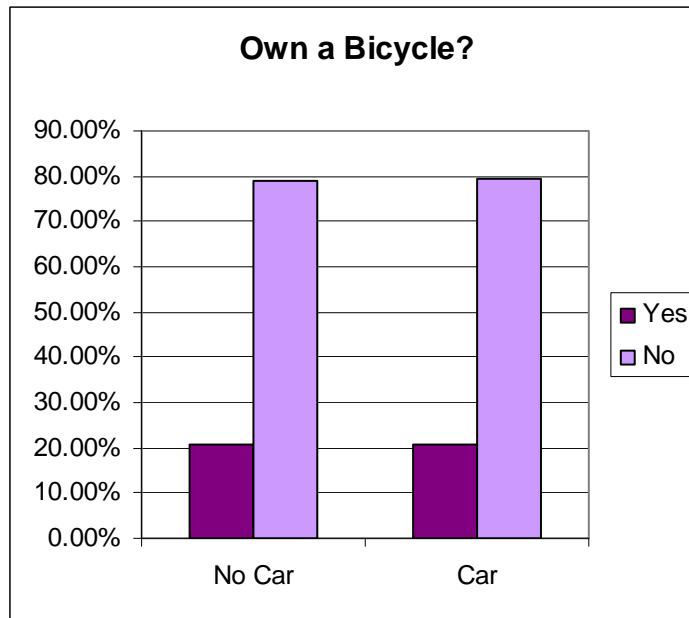


Figure 17. This graph demonstrates that bikes are evenly distributed amongst student with cars and students without cars.

That said, an overwhelming majority of the surveyed students said they would be more inclined to bike around campus if there were more covered bike racks.³⁰ The campus has bike racks at virtually every dorm on campus; however there are few bike racks located around academic buildings. A glance at Griffin and the Morley Science Center highlights this problem. Presumably covered bike racks would reduce rusting and prolong the life of the students' bikes, allowing them to bike more and drive less. DERO Bike Rack Company sells bike racks to at least 68 universities and sells space-saving racks (useful as covered racks) as well as the swerve bike racks (like those outside of the Paresky Center). The swerve bike racks cost \$95 per rack. A more exciting bike rack in the shape of an Eph could be custom made by DERO. Their website sports a purple bull rack, so this option seems plausible. These racks are more expensive so maybe only one or two should be ordered, but they are unique indeed. They could raise bike awareness

³⁰ See Figure 8.

on campus and even inspire faculty and students to ride their bikes more frequently just for the chance of locking their bikes into such a rack.

D. Zipcar Incentives

Zipcar is a “short-term car rental service” which has recently become available for Williams students, faculty, staff, and even town residents.³¹ There is an annual membership fee of \$35 and an hourly usage charge of \$9-12.³² Not only will this service provide transportation to off-campus locations from students, but it may also reduce the amount of student driving around campus. Should this program become a mainstay at the College, it is possible that some students leave their cars at home due to the availability of cars on campus, a hope expressed by Director of Administrative Services Tim Reisler.³³ Not only would there be fewer students with cars on campus, but College-related greenhouse gas emissions would decline as well.

For those students without cars who would otherwise be eligible to drive on campus (i.e. everyone except freshmen), Williams could pay the annual fee for them which gives them a \$35 credit for the program. We hope that in light of this, students who would to school would consider leaving their cars at home due to the availability of Zipcar. Some might argue that such incentives would negate the effects of students leaving their cars at home; however, \$35 only allows a driver about 4 hours of time with a car. Presumably this would be less than round trips of coming to Williams and that additional time spent driving once on campus. 75% of students with cars were not

³¹ Julian Suhr, “Flexcar Brigade Provides Rentable Cars for the Rideless,” *Williams Record*, News, September 19, 2007.

³² For the \$35 charge see Ibid. Regarding the hourly charge see Steve Arenas, “Telecommunication Issues Delay Flexcar,” October 31, 2007.

³³ Tim Reisler as quoted by Suhr.

interested with the Zipcar program while 118 (50%) students without cars were somewhat interested and 42 (18%) were very interested with the service.

For faculty and staff, we suggest that the College pay for their annual fee if they only have one non-site specific parking decal. For faculty and staff who do not take any decal whatsoever could have a larger credit of \$100. Thus, those who carpooled or walked would have access to a car in emergency situations and could leave if the circumstances demanded such action.

E. Charge-per-Use Sophomore Parking

Rather than pay \$60 for a parking decal as is the norm for students who wish to bring a vehicle to college, we suggest creating a charge-per-use parking lot for which the decal would be free. We chose the sophomore class because we hope to encourage sustainable lifestyles early on in a student's career. Mission Park lot should be designated for this lot as it has a 125 student vehicle capacity (there are other spaces reserved for faculty/staff, service, etc.), is enclosed with a fence, and only has one entrance/exit so one gate and card-reader would be necessary.³⁴ Furthermore, the College plans to expand the lot to accommodate lost student parking at Weston lot, so there should be enough space for the entire sophomore driving population.³⁵

Each student would be allowed to use their car free of charge four times each semester. Every subsequent trip would cost \$6. Of course, this fee would be waived for medical emergencies (with proof [e.g. a bill] of a doctor or hospital visit). Over the course of a year, that would translate to one needing to take their car out 18 times (8 free rides+ \$60/6), or twice a month (18 trips/9 months), to reach the \$60 students currently

³⁴ <http://www.williams.edu/admin/facilities/propertybook/parking.php> (Accessed 11.28.2007)

³⁵ Personal communication. Stephanie Boyd. 12.9.07.

pay for parking. We believe that is a very fair deal, which encourages responsible driving while not being overly restrictive.

To monitor this lot, a parking gate would be installed at the entrance/exit to regulate car usage. Wayne Haskins intimated that such a gate would cost approximately \$6,000 and wiring/maintenance fees could increase that number to a total of \$8,000.³⁶ Tina van Luling of the CSS department suggested that the C-BORD system be used to grant access and charge for outings. The C-BORD program is the one that Dining Services currently uses. We think that students could purchase five-trip packages (or greater), similar to the packages offered by Dining Services, and each time a student swipes his or her card, one of those trips is checked off. This way a student does not have to continually load his or her card with money when wanting to leave the lot. Thus, students would be financially motivated to refrain from driving their car. This solution would also promote carpooling since several students could split the cost of exiting the lot, rather than all paying the fee.

This lot would also benefit CSS greatly. CSS does not have any way to bar a student from driving his or her car once that student exceeds the ten ticket limit. It can only fine them. With this lot, an offending student's car could be placed in this lot for a few weeks at a time (or the remainder of the year depending on the violation) and the student would be denied access via the C-BORD system and gate.

XII. Cost Benefit Analysis

We performed an analysis of the solutions based on their merits in several categories. Effectiveness was broken down into impact and popularity. Essentially, will

³⁶ Interview. Wayne Haskins, Fire Safety Technician. 12.5.07.

the solution actually reduce driving on campus, and will targeted groups utilize the service or abide by its recommendations. Public Image and Community Relations are important as we hope to enhance the College’s image as a leader of institutional sustainability and maintain a positive relationship with the Town. The category of Aesthetics judges whether or not the solution fits with the visual tradition of the College; we do not want to be creating eyesores. Last, Cost is always an issue, but one that should not be valued more so than the other categories.

The proposals were then given a numerical score. Be mindful that solutions are not mutually exclusive and in fact, often have a synergistic relationship. More than one may be appropriate to implement at one time since they tend to address similar, but different issues, and the effectiveness of one solution might be enhanced by others.

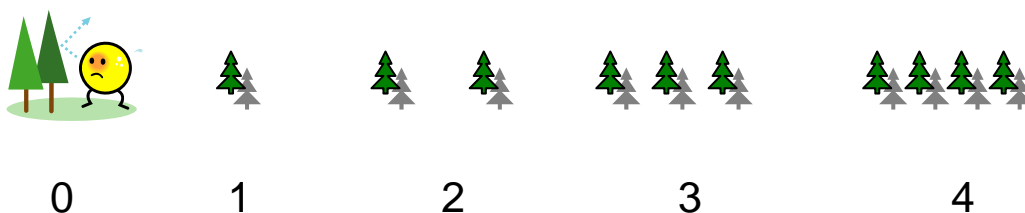


Figure 18. This is the scale that we used to evaluate the solutions. Zero is the worst while four is the best. In our case, having more pine trees equals being a better solution.

	Probable Popularity	Cost	Impact	PR Value	Aesthetics	Total
Athletic Field Van						11
Bike Sharing						14
Bike Racks						12
Zipcar Rewards						14

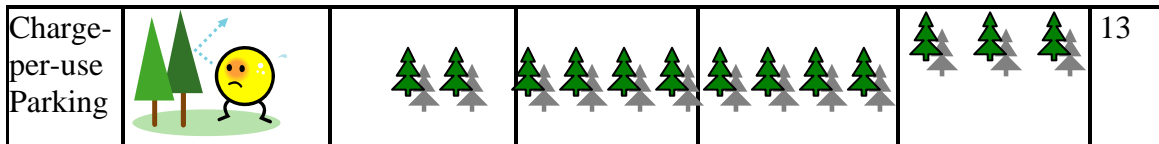


Figure 19. This chart shows the analysis of the various solutions. Bike sharing and Zipcar rewards tied for best proposal, while the athletic field van ranked lowest.

The Athletic Field Van would cost little to implement, thus its good rating. The College already owns potential vans for such a program and would only have to pay for fuel, maintenance, and the cost of paying a student driver. The program would only influence a small subset of the student population, nor would it greatly affect aesthetics in a negative or positive manner. The students that would use this service already carpool, further reducing the impact this solution would have. Also, we have no way of knowing whether students would be willing to use the service.

Bike sharing received a number of high grades due to the fact that students ranked it highly as a potential motivator of bike use in the survey. Indeed, 112 students cited this as the factor that would best encourage them to bike. The cost of the bike sharing program could be low as most of the bikes would be donated, or bought at a discount, rather than being brand new. In addition, by supplying bikes to students, more people would have the ability to bike rather than drive. Aesthetically, a bike sharing program would contribute to a lack of bike rack space unless the program was combined with an increase in the number of bike racks. This, in combination with additional bike racks (a one time expense) would likely make more students inclined to bike on campus. These two solutions would work best in concert with one another as they complement each other very nicely. This is a great program that the school can market and were the bikes painted purple and if the new bike racks were custom-made cow-shaped racks, the program could receive even more positive reviews.

Since Zipcar is a relatively new development, such an incentives-based program would only serve to bolster members and motivate people to use the service. The program would show parents that students do not need cars to enjoy their time at Williams and would give faculty and staff members one less reason to avoid carpooling, or walk (distance permitting). In addition, it has the potential to reduce the amount of cars on campus, perhaps enough so to reduce the amount of paved lots on campus, which would definitely improve the College from an aesthetics-based standpoint. It is a bit more expensive than the bike programs and the van option; however, we feel that it will be a popular option, especially among students who do not have a car on campus as it encourages a smarter, more sustainable use of cars.

The charge-per-use lot is quite expensive; however, if in use long enough, perhaps the College can recoup some of the initial costs. 107 of 117 students (91.5%) said they would not want such a lot on campus, thus the low popularity score. The fact that it would be mandatory for sophomores and serious parking offenders might lower its popularity among students. Its impact and public relations value are important as this type of lot would significantly reduce the amount of driving on campus and serve to reduce the perception that students frequently park on Spring Street. The lot is on the periphery of campus and already has a large fence around it, thus we do not feel that such improvements would negatively impact the campus aesthetics. Also in this regard, more cars would be out-of-sight, making the campus look nicer.

XIII. Recommendations

Overall, we suggest that the College implement as many of the proposed solutions as possible to minimize driving on campus. Since they address slightly different causes

for driving, the greatest impact would be felt if all proposals were initiated. Furthermore, since some work in synergy with others, their effects would only be multiplied. Some do represent a greater investment on the College's part, but this issue is important enough that cost should not influence whether or not these solutions be realized.

Appendix 1

Survey Instruments

A. Survey for Faculty/Staff

*Administered through online survey service "Survey Monkey," via direct e-mail to random selection of 552 faculty and staff members. Faculty, Staff, and Student Surveys. The response rate was 51%. All survey questions are shown below with corresponding data on the responses for each question.

Faculty & Staff				
1. How many miles do you travel to get to work?				
		Response	Response	
		Percent	Count	
Less than 1		22.90%	64	
Between 1 and 5		30.70%	86	
Between 5 and 10		18.90%	53	
Between 10 and 20		16.80%	47	
More than 20		10.70%	30	
	answered question		280	
	skipped question		0	
2. How do you get to Williams? Please select your Primary and Secondary (if applicable) forms of transportation below				
			Rating	Response
	Primary	Secondary	Average	Count
Walk	55.6% (45)	44.4% (36)	1.44	81
Bike	28.6% (6)	71.4% (15)	1.71	21
Drive	88.8% (223)	11.2% (28)	1.11	251

Carpool (2 or more people)	20.0% (4)	80.0% (16)	1.8	20
Bus	0.0% (0)	100.0% (4)	2	4
answered question				280
skipped question				0
3. If you sometimes drive, what are the main reasons you drive to campus? (choose all that apply)				
		Response	Response	
		Percent	Count	
Distance between home and campus is great		48.20%	123	
Shortens the travel time		29.40%	75	
Risk of inclement weather		35.30%	90	
Need to make multi-leg trips (daycare, errands, etc)		50.20%	128	
Lack of public transport/carpooling options		22.40%	57	
answered question			255	
skipped question			25	
4. How many on-campus parking tickets to you typically get over the course of a year?				
		Response	Response	
		Percent	Count	
None		82.40%	229	
One or Two		15.10%	42	
Three to Five		2.20%	6	
Six to Eight		0.40%	1	
More than 8		0.00%	0	
answered question			278	
skipped question			2	
5. How frequently do you use your car to get around campus DURING the work day?				
(Not counting the travel to and from work)				
		Response	Response	
		Percent	Count	
At least once daily		6.50%	18	
A few times a week		9.30%	26	

A few times a month		22.60%	63	
Never		61.60%	172	
	answered question		279	
	skipped question		1	
6. Where do you park on campus?				
	Frequently	Occasionally	Never	Response Count
Designated faculty/staff parking spaces in college-owned lots	90.4% (246)	9.2% (25)	0.4% (1)	272
On Southworth Street	3.5% (4)	9.6% (11)	87.0% (100)	115
On Park Street	3.9% (5)	36.2% (46)	59.8% (76)	127
On Spring Street	3.4% (4)	36.1% (43)	60.5% (72)	119
On another public street	2.7% (3)	15.2% (17)	82.1% (92)	112
In a public (non-college) parking lot	7.3% (9)	24.2% (30)	68.5% (85)	124
Other	4.3% (3)	13.0% (9)	82.6% (57)	69
	answered question		277	
7. Do you use Faculty/Staff parking spaces in nearby lots when spending non-work-related time on Spring St.?				
		Response Percent	Response Count	
Yes		27.70%	77	
No		62.60%	174	
Not Applicable		9.70%	27	
	answered question		278	
	skipped question		2	
8. Would you consider carpooling if you were provided with a list of Williams faculty and staff members who live in the general area where you live?				
		Response Percent	Response Count	
I'd consider it		34.50%	95	
Probably not		65.50%	180	
	answered question		275	
	skipped question		5	

B. Student Surveys (Students with Cars and Students without Cars respectively)

* Administered through online survey service “Survey Monkey,” via direct e-mail to random sample of 783 students. The response rate was 46%. Faculty, Staff, and Student Surveys. All survey questions are shown below with corresponding data on the responses for each question.

Students with Cars				
1. Do you have a car on campus?				
		Response	Response	
		Percent	Count	
Yes		33.20%	121	
No		66.80%	243	
	answered question		364	
	skipped question		1	
2. When you think about how you get around campus over the course of a typical week, what proportion of your trips do you:				
		Response	Response	Response
		Average	Total	Count
Walk		83.16	9563	115
Bike		6.78	556	82
Drive		14.97	1572	105
	answered question			117
	skipped question			248
3. How often do you drive your car?				
		Response	Response	
		Percent	Count	
Daily		19.00%	22	
One or two times a week		59.50%	69	
One or two times a month		19.00%	22	
One or two times a semester		2.60%	3	
	answered question		116	
	skipped question		249	

4. What proportion of your driving trips are to locations:					
		Response Average	Response Total	Response Count	
On campus? (e.g. Spring St., Gym, Athletic Fields, Class)		19.44	2119	109	
Off campus? (e.g. home, North Adams, the mall)		89.45	10466	117	
answered question				117	
skipped question				248	
5. Where do you typically go when you drive? (choose all that apply)					
		Response Percent	Response Count		
Drive to or from campus to hometown		69.20%	81		
Drive to shops or restaurants off campus		87.20%	102		
Drive to the gym/athletic fields		22.20%	26		
Drive to class		10.30%	12		
Drive to theatre		5.10%	6		
Drive to local museums		10.30%	12		
Drive to other (please specify)		36.80%	43		
answered question			117		
skipped question			248		
6. When you drive around campus, what are the main reasons for doing so? (choose all that apply)					
		Response Percent	Response Count		
Distance between dorm and destination is great		44.40%	40		
Shortens the travel time		35.60%	32		
I am always running late		12.20%	11		
Risk of inclement weather		18.90%	17		

Need to make multi-leg trips (off-campus job, errands, etc)		62.20%	56		
Some other reason (please specify)		10.00%	9		
	answered question		90		
	skipped question		275		
7. How often do you have passengers in your car for your:					
	never	seldom	some of the time	most of the time	Response Count
On campus trips	14.4% (15)	21.2% (22)	34.6% (36)	29.8% (31)	104
Off campus trips	1.7% (2)	13.0% (15)	36.5% (42)	48.7% (56)	115
	answered question				117
	skipped question				248
8. How often do you park on Spring Street?					
		Response Percent	Response Count		
Every day		3.40%	4		
One or two times per week		18.80%	22		
One or two times per month		18.80%	22		
One or two times per semester		28.20%	33		
Never		30.80%	36		
	answered question		117		
	skipped question		248		
9. What is your primary purpose for parking on Spring Street?					
		Response Percent	Response Count		

Going to the athletic facilities (gym, rink, pool, track, etc)		25.30%	20		
Dining/restaurants		16.50%	13		
Shopping/Buying groceries		16.50%	13		
Proximity to dorms (e.g. Morgan, West)		10.10%	8		
Proximity to academic buildings		13.90%	11		
Other (please specify)		17.70%	14		
answered question			79		
skipped question			286		
10. Do you have a bicycle on campus?					
		Response	Response		
		Percent	Count		
Yes		20.50%	24		
No		79.50%	93		
answered question			117		
skipped question			248		
11. Which of the following would make you more inclined to bike on campus (please select your top 2 choices):					
	First choice	Second choice	Rating Average	Response Count	
Indoor bike storage in your dorm	53.7% (29)	46.3% (25)	1.46	54	
Covered bike racks outside your dorm	50.0% (17)	50.0% (17)	1.5	34	
Covered bike racks outside Paresky Center	0.0% (0)	100.0% (5)	2	5	
Covered bike racks outside academic buildings	10.0% (3)	90.0% (27)	1.9	30	
A bike rental or bike sharing program	72.3% (34)	27.7% (13)	1.28	47	
A biking path or lane with limited pedestrian traffic	70.8% (17)	29.2% (7)	1.29	24	
answered question				100	
skipped question				265	

12. Flex Car is a new service on campus that will allow members to use cars for an hourly rate. Are you interested in utilizing this service?					
		Response	Response		
		Percent	Count		
Very interested		7.70%	9		
Somewhat interested		17.10%	20		
Not interested		75.20%	88		
			answered question	117	
			skipped question	248	
13. How convenient is your assigned parking lot to your dorm?					
		Response	Response		
		Percent	Count		
Very convenient		40.50%	47		
Somewhat convenient		25.00%	29		
Not at all convenient		34.50%	40		
			answered question	116	
			skipped question	249	
14. Would you be willing to park your car in a long-term lot where access to your car would be limited (to once or twice per semester) in return for a greatly reduced (or free) parking sticker?					
		Response	Response		
		Percent	Count		
Yes		8.50%	10		
No		91.50%	107		
			answered question	117	
			skipped question	248	

Students without Cars					
1. Do you have a car on campus?					
		Response	Response		
		Percent	Count		
Yes		33.20%	121		

No		66.80%	243		
	answered question		364		
	skipped question		1		
2. What are the main reasons you don't have a car on campus?					
(Select all that apply)					
		Response	Response		
		Percent	Count		
Don't need one		59.90%	112		
Don't have a driver's license		18.70%	35		
Too expensive to buy and maintain		59.40%	111		
Too far to drive here from home		29.40%	55		
Concerned about environmental effects of driving		16.60%	31		
Other (please specify)			75		
	answered question		187		
	skipped question		178		
16. When you think about how you get around campus over the course of a typical week, what proportion of your trips do you:					
		Response	Response	Response	
		Average	Total	Count	
Walk		92.93	22024	237	
Bike		9.66	1169	121	
Drive		3.78	506	134	
	answered question			237	
	skipped question			128	
17. How often do you ride as a passenger in someone else's car for your:					
	never	seldom	some of the time	most of the time	Response Count
On campus trips	45.8% (103)	41.8% (94)	8.0% (18)	4.4% (10)	225

Off campus trips	0.9% (2)	27.4% (63)	23.0% (53)	48.7% (112)	230
answered question					236
skipped question					129
18. Do you ever borrow a friend's car?					
		Response	Response		
		Percent	Count		
Yes, one or two times per week		4.20%	10		
Yes, one or two times per month		14.80%	35		
Yes, one or two times per semester		20.30%	48		
No, never		60.60%	143		
answered question			236		
skipped question			129		
19. Flex Car is a new service on campus that will allow members to use cars for an hourly rate. Are you interested in utilizing this service?					
		Response	Response		
		Percent	Count		
Very interested		17.80%	42		
Somewhat interested		50.00%	118		
Not interested		32.20%	76		
answered question			236		
skipped question			129		
20. Do you have a bicycle on campus?					
		Response	Response		
		Percent	Count		
Yes		20.80%	49		
No		79.20%	187		
answered question			236		
skipped question			129		
21. Which of the following would make you more inclined to bike on campus (please select your top 2 choices):					
	First choice	Second choice	Rating	Response	
			Average	Count	
Indoor bike storage in your dorm	61.2% (63)	38.8% (40)	1.39	103	

Covered bike racks outside your dorm	44.4% (32)	55.6% (40)	1.56	72	
Covered bike racks outside Paresky Center	15.4% (2)	84.6% (11)	1.85	13	
Covered bike racks outside academic buildings	25.8% (17)	74.2% (49)	1.74	66	
A bike rental or bike sharing program	78.0% (78)	22.0% (22)	1.22	100	
A biking path or lane with limited pedestrian traffic	39.4% (26)	60.6% (40)	1.61	66	
answered question				218	
skipped question				147	
22. Please agree or disagree with the following statements:					
	Strongly agree	Agree somewhat	Disagree somewhat	Strongly disagree	Response Count
Not having a car adversely affects my ability to attend events and activities	3.8% (9)	15.7% (37)	24.3% (57)	56.2% (132)	235
Not having a car adversely affects my experience at Williams College	3.0% (7)	14.6% (34)	23.6% (55)	58.8% (137)	233
answered question				235	
skipped question				130	

Appendix 2

Sample of Parking Ticket Data

The following sample table was taken from the database used for all analysis of student driving permits and parking tickets. The database was created by merging data from Campus Safety and Security records with demographic data.

CASE_ID	matched	Tickets	Ticketed	State	Aided	Class	Sex	Athlete	Lot
435	1	\$25	1	MD	0	7	M	0	Agard
484	1	\$25	1	MN	0	7	M	0	Brooks

479	1	\$25	1 TX	0	7 F	1 Brooks
104	1	\$25	1 MA	0	7 M	0 Brooks
439	1	\$25	1 NJ	0	7 M	1 Brooks
278	1	\$25	1 ME	0	7 M	1 Brooks
758	1	\$25	1 NJ	0	9 F	1 Brooks
326	1	\$25	1 MA	0	7 F	1 Brooks
204	1	\$25	1 MA	0	8 M	0 Dodd
544	1	\$25	1 MD	0	8 F	1 Dodd
157	1	\$25	1 NY	0	8 F	0 Dodd
143	1	\$25	1 NJ	1	8 M	1 Dodd
370	1	\$25	1 NY	0	7 F	0 Dodd
666	1	\$25	1 MA	1	9 F	0 Garfield
160	1	\$25	1 ME	0	9 M	0 Garfield
462	1	\$25	1 IL	0	7 F	0 Health Center
447	1	\$25	1 NC	1	7 M	0 Health Center
281	1	\$25	1 MA	1	7 F	1 Health Center
364	1	\$25	1 NY	0	7 F	0 Health Center
430	1	\$25	1 MD	0	7 F	0 Health Center
375	1	\$25	1 NY	0	7 F	0 Health Center
365	1	\$25	1 NY	0	7 F	1 Health Center
166	1	\$25	1 MD	0	8 M	0 Health Center
629	1	\$25	1 MN	0	8 F	0 Mission Park
353	1	\$25	1 NY	0	7 M	1 Mission Park
635	1	\$25	1 NJ	0	8 M	0 Mission Park
592	1	\$25	1 CT	1	8 M	1 Mission Park
474	1	\$25	1 OH	1	7 F	0 Mission Park

Appendix 3

Motor Vehicle Regulations³⁷

Parking Agreement 2005-2006

The Cardinal Rule of Parking - During the work day, Monday through Friday the only place students can legally park on Williams College property is in their assigned lots, all other areas are restricted!

Parking – Seasonal Changes As a test for the 2005-2006 academic year, students will be granted additional access to faculty/staff parking areas on a seasonal basis. This two year

³⁷ As listed on the Williams College Campus Safety & Security website:
<http://www.williams.edu/admin/security/rules/vehicle/index.php> (accessed 12.3.07)

exception will only become a permanent change if student compliance with the season regulation is deemed reasonable by the Parking Committee.

April 15 – November 15

1. Students may park in faculty/staff spaces between the hours of 5:00 PM and 5:00 AM, Monday through Friday nights.

2. Students may park in faculty/staff spaces between the hours of 9:00AM and 5:00 AM on Saturday and Sunday, except Lawrence Hall Drive where students may park between the hours of 6:00pm and 5:00am, seven days a week.

3. Students may park in the lot between Facilities and the Towne Field House as early as 3:30pm on weekdays and 9:00am on weekends, no overnight parking allowed. All vehicles must be removed prior to the 5:00am deadline.

November 16 – April 14th SNOW SEASON

1. Students may park in faculty/staff spaces between the hours of 5:00PM and 2:00 AM, Monday through Friday nights.

2. Students may park in faculty/staff spaces between the hours of 9:00AM and 2:00 AM on Saturday and Sunday, except Lawrence Hall Drive where students may park between the hours of 6:00pm and 2:00am, seven days a week.

3. Students may park in the lot between Facilities and the Towne Field House as early as 3:30pm on weekdays and 9:00am on weekends, no overnight parking allowed. All vehicle must be removed prior to the 2:00am deadline.

Off-campus and commuting students may park in the St. Patrick's Church lot at the rear of the church on Southworth St. There is no overnight or weekend parking in St.

Patrick's church lot. All vehicles left on campus during Spring Break must be parked in the Mission Park lot so as to facilitate the sweeping of all paved areas. Students failing to move their vehicle to Mission Park lot for Spring Break will be ticketed for parking in a restricted area and will be towed.

General Vehicle Regulations – Because of limited parking facilities, the use of motor vehicles on campus by students must be kept to a minimum and parking regulations must be strictly observed. All student vehicles, on or off campus, must be registered with Campus Safety Security. This must be done upon arrival in Williamstown ([see section 3, chapter 90, General Laws of Massachusetts](#)). To complete this process the following documents will be needed: registration certificate for the vehicle, evidence of liability coverage for any authorized operator of the vehicle, receipt from the Cashier's Office (Hopkins Hall) for the registration fee.

- The owner or person in charge of a motor vehicle is responsible for all violations involving his or her vehicle.
- Chapin Hall Drive, Hopkins Hall Drive and AMT Drive are ONE WAY ONLY streets, north from Main Street.
- Vehicles may not operate on campus in excess of 19 miles per hour and in many locations the speed should be much lower.
- All vehicles must be registered and appropriate decals/hangtags must be displayed.

- Any student who exchanges parking decals with another student, alters ,sells or gives away their parking decal to another student will permanently lose their ability to register a vehicle while a student at Williams College and may also be subject to disciplinary action.
- A Williams College parking decal must be displayed in the right lower corner of the rear window.
- The parking rules and regulations are in effect 365 days a year
- Congregational Church Lot – no student parking at any time, this includes the faculty/staff section
- Hopkins Hall Drive – no student parking at any time, this includes the temporary spaces
- Parking Garage – no student parking, this includes all of the faculty/staff spaces
- Temporary Spaces – no student parking unless specifically designated on the sign
- Town Street- check for time limits, no overnight parking which is enforced year round
- Service/Security spaces – no student parking at any time Williams Inn
- no student parking unless a patron/registered guest Jesup Parking Lot
- no student parking at any time in the west bay closest to Physics Penalties
- All rules are strictly enforced. We do, however, give every owner/person in charge of a motor vehicle two warnings a year for non-major offenses (\$25-\$50 violations).

Violations are assessed as follows:

Failure to register a motor vehicle	\$25.00
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Failure to properly display a parking permit	\$25.00
Overtime parking	\$25.00
Parking in a restricted area	\$25.00
Parking in a faculty/staff space (if student)	\$25.00
Parking in a student space (if faculty/staff)	\$25.00
Parking in the Congo Lot (other than east row for fac/staff vehicles)	\$25.00
Parking on the grass	\$50.00
Excessive speed	\$101.00
Failure to stop at a marked intersection stop/yield	\$101.00
Parking in a handicap space	\$101.00
Wrong way – one way	\$101.00
Parking in a fire lane	\$101.00
Wrong way – one way	\$101.00
Boot removal fee	\$101.00
Suspended vehicle (ten tickets or more)	\$125.00

An immobilizing device may be placed on unregistered or unidentified vehicles found repeatedly parked illegally on campus. It will be necessary for the person responsible for the vehicle to report to the Security Department before the apparatus is removed. There will be a \$101.00 fee assessed to remove the boot and the total fine must be either paid in

full or placed on a term bill. Repeated offenses beyond the tenth are \$125.00 each and may result in towing and/or disciplinary action. The suspension issued on the tenth ticket will be for the remainder of the current academic year. However, if a student receives five suspended tickets the suspension will be extended to the next academic year. Tickets will be placed on vehicles that are illegally parked or in violation of a rule or regulation. Students will be notified about the fine totals and should make payment at the Cashier's Office in Hopkins Hall. All unpaid violations will be placed on a term bill for payment. Ticket Appeals Ticket appeals will all be made in writing within 30 days (no exceptions) of the date of the ticket and will only be accepted if the citation is attached (no exceptions). Forms are available at the Campus Safety and Security Department in the basement of Hopkins Hall. The Ticket Appeals Committee will decide the merits of all individual ticket appeals. The Ticket Appeals Committee has three voting members representing the faculty, staff and students. The Committee's decision is final.

Appendix 4

Interview Subjects

Stephanie Boyd
Dave Boyer
Jaime Art
Tina van Luling
Wayne Haskins