2 BIKING AT CHAPMAN

Sean W. Augustine

2.1 INTRODUCTION

Besides the stress that driving to campus and searching for parking can put on students, faculty, and staff, the environmental effects of driving personal vehicles on a daily basis is one of the leading emitters of carbon. In the current academic year, 7,532 parking permits were issued to students and employees, making it the highest number in Chapman’s history (Figure 2.1). Alternative forms of transportation, such as biking or walking, are more environmentally friendly, and simultaneously cut back on difficulty with finding parking due to over-crowded parking structures. Based on the Chapman University 2013 Environmental Audit, a clear majority of students, about 70%, drove private vehicles to campus regularly, while only 24% walked or biked (Figure 2.4). This chapter of the Chapman University 2017 Environmental Audit will focus on biking among Chapman commuters; the main goals of this study are to increase incentives to bike to campus, as well as to offer suggestions on how to make this mode of transportation safer and more efficient on campus.

![Figure 2.1 - Parking permits issued at Chapman University by academic year.](image)

2.2 HISTORY OF BIKING AT CHAPMAN

Over the past decade and a half, the size of the student, staff, and faculty populations have consistently risen, and along with it, the number of parking permits issued. Chapman University has offered several incentives to promote the use of active transportation methods. These initiatives have included a Public Safety-organized Bike Auction, a Bike Voucher Program, the installment of bike racks and repair stations across campus, and a bi-monthly Beeline Bikes service.

2.2.1 Bike Auction

Starting in 2001, the university’s Public Safety began hosting an annual bike auction, where they offered used bikes that were confiscated or left behind on campus (Steinberg). The auction raised funds to help pay for different bike services at Chapman, such as lowering costs for bike locks sold by Public Safety (Steinberg). The Bike Auction was canceled two years ago, after more than 10 years of existence.
2.2.2 Bike Voucher Program

In 2015, the university started utilizing a voucher program, which offers $350 to students, faculty, or staff, towards the cost of a bike, helmet, or lock at local bike shops. In return, the participant must relinquish their right to purchasing a parking permit for the next two years, which helps to cut down on the number of commuters driving to campus in personal vehicles. Since its implementation, however, the Bike Voucher Program has seen a decline in participation rates, dropping from 71 applicants to just 21, over the last two years (Figure 2.2).

![Figure 2.2 - Bike Voucher Program participation over past 2 years, including status of applications](image)

2.2.3 Bike Racks and Repair Stations

To help support the number of bikers that Chapman receives on a regular basis, the university has installed several bike racks of varying size, located near almost every building on campus and residential life buildings. In 2011, the university also added two bike repair stations, one next to Agyros Forum and another between Henley Hall and Pralle-Sodaro Hall. These stations allow cyclists to personally make minor fixes on their bikes, such as inflating tires or adjusting gears.

2.2.4 Beeline Bikes

Since October 2016, Chapman has allowed Beeline Bikes, a mobile bike repair service, to visit the campus twice each month and offer their services to the community. While on campus, they offer discounted prices on repairs for all students, faculty, and staff, as well as provide bikes for sale (Sustainable Transportation: Incentives).

![Figure 2.3 - Locations of bike racks and repair stations on campus (Sustainable Transportation)](image)
2.2.5 Chapman University 2013 Environmental Audit

The 2013 audit contained a chapter that focused solely on transportation, which included all aspects of the topic such as public transportation, electric vehicle parking, and carpooling to campus (2013 Audit). Following research on these topics, the chapter provided several recommendations for increasing the sustainability of Chapman’s transportation activities, including low, medium, and high cost and effort initiatives. These recommendations included providing more advertisement for sustainable transportation incentives, changing parking permitting from an opt-out system to an opt-in system, and utilizing biodiesel vehicles for Chapman’s fleet of vans and shuttles (2013 Audit).

2.3 Current Status

Currently, bikers account for 12 percent of the university’s commuting students, faculty, and staff, while personal vehicle usage is far and away the majority method of transportation (Figure 2.5). There are several incentives that the university employs today to promote biking to campus, including the Bike Voucher Program, free bike repair stations, and the Beeline Bikes visits to campus (Sustainable Transportation: Incentives). Participation in the university’s Bike Voucher Program has seen a decline since its inception in the 2015-2016 academic year; 271 members have joined the group since its creation, however, only 92 have applied for the bike voucher (Figure 2.2).
2.3.1 Survey Data

Members of the Chapman community were surveyed to give insight into their opinions and thoughts on the status of transportation at the university. These survey questions gauged the willingness of students, faculty, and staff to bike to campus, their knowledge of current university biking incentives, and their overall views of the status and safety of biking to campus. Figure 2.5 illustrates the fraction of the surveyed population that bike to campus regularly, as well as how the clear majority drive personal vehicles to campus.

2.3.1.a Reasons Preventing Biking

From the 2017 survey, one question prompted individuals to explain the reasons why they do not bike to campus regularly (Figure 2.6). Based on the responses, it appeared that the biggest factor deterring people from biking was lack of time at 49 percent, while the next biggest was fatigue or physical effort at 26 percent (Figure 2.6).

![Survey Data: Please rank concerns that may keep you from biking.](image)

Although this survey question made it clear that many Chapman commuters believe that biking to campus will take too much time out of their day, other survey data contradicted this conclusion. Figure 2.7 expresses the distance traveled on a daily commute to campus by surveyed students, faculty, and staff, who reside off-campus. Based on this data, it is evident that most off-campus commuters, or 56 percent of the surveyed population, live within 2 miles of campus (Figure 2.7). A bike ride of 2 miles, at an average casual pace of 8 to 10 miles per hour, would take between 12 and 15 minutes to go from one’s home to campus. Considering the time a car ride of 2 miles would take, any traffic along that route, finding a parking spot, and walking from the chosen parking structure to a building on campus, a 12 to 15-minute bike ride could potentially save a commuter time out of their day.
2.3.1.b Knowledge of Current Initiatives

Included in the 2017 survey was a question gauging how familiar individuals are with current sustainable transportation initiatives, such as the Bike Voucher Program, the U-Pass Plan, and carpooling permits. Chapman’s U-Pass Plan allows Orange County Transportation Authority (OCTA) bus riders to sign up for the program, allowing them $69 or $45 per month for bus rides, for employees and students respectively (Rideshare Incentives). The university’s Panther Plus Carpooling Program is an alternative form of a parking permit, which requires at least 2 full time students or employees to participate, and brings the price of a permit down to a rate of $175 per participant (Rideshare Incentives). From this survey question, only 40 percent of the surveyed population were aware of the university’s Bike Voucher Program (Figure 2.8).

![Figure 2.7 - Survey Data: If off-campus, how far do you commute (one way)?](image)

![Figure 2.8 - Survey Data: Are you aware of the transportation initiative at Chapman?](image)


2.3.2 Health Benefits

Biking undeniably has positive health impacts on the rider, such as muscle gain, weight loss, and strengthening joints and bones (Top 5 Benefits). Dr. Clare Safran-Norton, a physical therapist with Brigham and Women’s Hospital in Boston, says that biking can also help with other daily activities, such as balance, walking, and stair climbing (Top 5 Benefits). Table 2.9 below estimates the number of calories burned from 1 and 2-mile bike rides, based on average male and female body weights. From a single 2-mile trip, the average male and female can lose around 79 and 67 calories, respectively (Figure 2.8).

<table>
<thead>
<tr>
<th></th>
<th>Avg. Weight (lbs)</th>
<th>Calories Lost (1.0 mile)</th>
<th>Calories Lost (2.0 miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>195.5</td>
<td>39.0</td>
<td>79.0</td>
</tr>
<tr>
<td>Females</td>
<td>166.2</td>
<td>33.0</td>
<td>67.0</td>
</tr>
</tbody>
</table>

Table 2.9 - Number of calories burned by bike rides at casual pace (8-10 mph), based on average weights (CDC).

2.4 CONCLUDING ASSESSMENTS

2.4.1 Area Where Chapman is Doing Well

Over the past several years, Chapman has seen growth in populations of students and employees, as seen by the sharp increase in annual parking permits issued (Figure 2.1). At the same time, the university has done well to strive for sustainability in all aspects of Chapman’s daily activities, including transportation. Initiatives such as the Bike Voucher Program, bike auction, and free repair stations are encouraging approaches to incentivize commuters to not purchase parking permits, and to choose to bike instead.

2.4.2 Areas to Improve Upon

Reduction in the number of annual parking permits issued would not only benefit the overall efficiency of day-to-day life at Chapman, but would also benefit the university’s environmental sustainability by cutting down on carbon emissions. To accomplish this goal, additional initiatives should be created to promote the presence of biking among the commuting population. Additionally, knowledge among the Chapman community of the university’s sustainable transportation initiatives, as seen in Figure 2.8, is somewhat lacking; greater advertisement of these initiatives could result in an increase in participation.

2.5 RECOMMENDATIONS

2.5.1 Low Cost/Effort

Increasing publicity/advertisement of sustainable transportation incentives:

- Flyers around campus, during early weeks of academic year, that advertise Bike Voucher Program, Beeline Bikes, and any future incentives
- Utilize digital advertising boards on campus to display these advertisements

Highlighting Financial and Health Benefits
- Use creative messages to promote the financial savings that riding a bike regularly provides, as opposed to driving a personal vehicle
- Advertise the health advantages of biking regularly, including muscle building, fat loss, and other long-term health benefits

**Involving these Programs in Freshmen Orientation**

- Incoming freshmen may be unaware of incentives, such as the Bike Voucher Program, as they are first-time Chapman students; introducing them to sustainable transportation initiatives during their first week on campus will increase the likelihood of them participating

**Survey of Bike Parking**

- The university’s Public Safety conducted research in 2013 on the parking of bikes on campus during busy times of the day; repeating this survey in the upcoming year could provide helpful feedback on the ability of the campus’ bike racks to support the biking community at Chapman

### 2.5.2 Moderate Cost/Effort

**Increasing Size of Current Incentives**

- Increasing funding for the Bike Voucher Program could allow for more approved participants eligible for the voucher, and would also bring in more potential participants in the future

**Bike Auction**

- Re-implementing a bike auction that offers affordable used bikes, from a collection of impounded or abandoned bikes, would promote more biking among Chapman’s commuting population

**Opt-In Parking Permit**

- Creating a parking permit system that made commuters go online and purchase their permit, as opposed to one where they must go out of their way to get a parking waiver, could help reduce the number of permits issued

**Commuter’s Package**

- Creating a package deal for commuters who live near campus, such as several one-day parking passes, free public transportation vouchers, and money towards a bike, would incentivize individuals to choose a more sustainable mode of transportation

### 2.5.3 High Cost/Effort

**Bike Rental Program**

- An affordable bike rental program, offered to students, faculty, and staff, could encourage a greater presence of biking on campus; one which allowed commuters to rent a bike for a two-day period, either for free or for a moderate cost, could deter more individuals from driving personal vehicles to campus daily

**Improving or Adding Infrastructure**

- Based on the 2013 Public Safety survey of bike parking on campus, the locations of bike racks could be improved to accommodate more bikers near heavier-traffic buildings; the
type of rack that is utilized on campus can be purchased at prices ranging from $89 to $119 per rung (U-Shaped Bike Racks).

2.5.4 Future Areas of Research
Future research into the topic of biking at Chapman University should focus on the exact financial benefits that an increase in biking among commuters would provide, for both the university and individuals, as well as the long-term health benefits that biking regularly to campus could have. The monitoring and regulation of biking on campus should also be examined, to ensure that bikers are registered with the city of Orange and the university and to survey daily activity at bike racks.

2.6 Contacts
Sheryl Boyd, Transportation Services. Chapman University. (714) 997-6560. (transportation@chapman.edu)
Mackenzie Crigger. Sustainability Manager, Chapman University. (714)997-7370. (crigger@chapman.edu)
Tom Eichen. Beeline Bikes. (tom.eichen@beelinebikes.com)
Sgt. Michael Kelley. Public Safety. Chapman University. (mkelley@chapman.edu)

2.7 References