Projects for Sustainable City Year Semester Projects Report

CSUMB | ENSTU 471 | Fall 2016

Prepared by Michelle dela Cruz

Contents

Fall 2016 Projects for Sustainable City Year Class

Instructor

Professor Dan Fernandez

Group 1

Michelle dela Cruz
Stephanie Samos
Kelcey Tern
Nathaniel Todd

Group 2

Mariana Del Valle Prieto Cervantes
Ian DeVille
Darlenne Guerra
Giovanni Ibarra
Victoria McClellan
Rebecca Ortega

Group 3

Ryan Blackman
Madison Hare
Monica Mata
Brittany Whalen

Acknowledgements

Thank you to the following individuals and organizations who graciously provided insight, assistance, and helped support the student projects in this report.

California State University Monterey Bay

Daniel Fernandez
Rick Boggs
Matthew McCluney

Monterey-Salinas Transit

Erin Heatley
Tom Hicks
Hunter Harvath
Lisa Rheinheimer

The City of Salinas

James Serrano
Victor Gutierrez
Gary Petersen
Don Reynolds
Jose Sauceda
Survey Participants

Hartnell College

Melissa Hornstein
Pimol Moth
Jeffrey Hughey
Laura Miles
Survey Participants

Transportation Agency for Monterey County

Bernard Green

Projects for Sustainable City Year Report

CSUMB | ENSTU 471 | Fall 2016

I. Introduction

Fig. 1. *Main Street, Salinas*. 1941. Kytherian Society of California [Internet]. [cited 2017 June 15]. Available from: http://www.ksoca.com/notable-kytherians/cominos-bros/postcardsphotos/main-street-1941.html

History and Background of Salinas

Salinas, California is a Central Coast city that is located 10 miles from the Monterey Bay and known as the "Salad Bowl of the World." Its agricultural success can be attributed to its location near the Salinas River and the pre-European wetland environment where rich organic sediments accumulated. Over 90 percent of the wetlands were drained by the late 1860s, and the land was divided into two ranchos.[1] Rancho Nacional, located in the southwest near Mount Toro, was used as farmlands, while Rancho Sausal in the northeast developed into the City of Salinas.[2] The city was incorporated into Monterey County in 1874, two years after the Southern Pacific Railroad extended a line through the Salinas Valley.[3] Much of the city's infrastructure were developed for efficient agricultural production and transport and further influenced by the

[1] US Fish & Wildlife. 2008 May. Salinas River: National wildlife refuge brochure [Internet]. [cited 2017 June 12]. Available from: https://www.fws.gov/uploadedFiles/generalbrochure.pdf
[2] Seavey K. 2010. Monterey County Historical Society: A short history of Salinas, California [Internet]. [cited 2017 June 12]. Available from: http://www.mchsmuseum.com/salinasbrief.html
[3] City of Salinas. [date unknown]. History of Salinas [Internet]. [cited 2017 June 12]. Available from: http://www.ci.salinas.ca.us/visitors/history.cfm

suburban and car-centric culture of the post-war era, leading to wide roads and multi-lane throughways.[4] Salinas has rapidly expanded from a population of 14,000 to over 150,000 between 1950 and 2010 which has brought an influx of automobiles and traffic problems on outdated roads.[5] In an effort to improve traffic, the city is looking to redesign some of its roads, promote transit use, and encourage residents to walk or bike with improved safety measures.

Sustainable City Year Program at CSUMB

The University of Oregon launched the first Sustainable City Year Program (SCYP) in 2009 to bridge the gap between city level goals for community improvement and innovative university resources.[6] Regional cities apply for the program with the university and, if accepted, propose community supported sustainability projects that can be addressed by students in existing courses and across multiple disciplines. Existing faculty voluntarily choose to participate in the program if their courses fit a proposed project; and students can apply classroom knowledge to real-world problems while developing leadership skills and networking with local professionals in city government.[7]

In fall of 2015, California State University, Monterey Bay (CSUMB) initiated its SCYP with the City of Salinas, engaging faculty and students in the Environmental Studies, Psychology, Social and Behavioral Science, and Statistics departments. The following year, CSUMB collaborated again with the City of Salinas and offered its first SCYP-based group capstone course for Environmental Studies majors. This report summarizes the three projects of that course relating to sustainable transportation and the Public Works Department in Salinas. These projects address public outreach on transit use, community outreach regarding a road diet on East Market Street, and a bike share feasibility analysis for the city.

[4] Seavey K. 2010.
[5] Monterey-Salinas Transit. 2012 Aug. Salinas Area Service Analysis II [Internet]. [cited 2017 June 15]. Available from: http://mst.org/wp-content/media/SASA-II-Final-Report-080112-300dpi.pdf
[6] University of Oregon. [date unknown]. Sustainable Cities Initiative – History [Internet]. [cited 2017 June 12]. Available from: https://sci.uoregon.edu/content/epicn-context-and-history
[7] Schlossberg M, Larco N. [date unknown]. The Sustainable City Year Program (online version). Imagining America, 1(1-2). [cited 2017 June 15]. Available from: http://public.imaginingamerica.org/blog/article/the-sustainable-city-year-program/

II. Transit Public Outreach Project

Overview

Group 1 was interested in how increasing the use of public transit could help Salinas in its sustainable transportation goals. They did not work with the city directly, but instead corresponded with the local public transit agency Monterey-Salinas Transit (MST). Their research covered service analysis reports from MST, social conditions that support transit culture, and the benefits of public transportation. They met with MST Mobility Specialist Erin Heatley and discussed the need for public outreach on how to use transit. **Group 1 conducted transportation surveys at Hartnell College to assess how young adults perceive public transit and sustainable transportation in Salinas; They also created an illustrated how-to-ride booklet on transit use that could be distributed throughout the city and other locations served by MST, such as CSUMB.**

Research

MST Service Analysis Reports. MST conducted the first Salinas Area Service Analysis report (SASA-I) in 2005. The report resulted in increased ridership in Salinas until MST lost funding in the economic recession of 2008. MST conducted another service analysis in 2012 (SASA-II) which included a passenger survey with 559 responses. They found that 70.9% of residents drove alone; 2.4% used public transit; and the remaining percentage carpooled, walked, or used another method of transportation.[8] Seventy-seven percent of the 2012 survey respondents were satisfied with service on their route. Group 1 considered transit dependence or daily use as a potential bias in that result. However, an interview in the SASA-II with former Hartnell Student Trustee, Timothy Miguel, indicated a lack of reliable transit services for students in night classes. He also noted the decision to not include a full bus pass in the student fees due to low ridership on the MST Trolley which was free for Hartnell students. These findings inspired Group 1 to survey Hartnell students in their capstone project. They wanted to understand how Hartnell students perceived their own transit needs and benefits as associated students.

Conditions Required for a Shift to Transit Culture. The lack of ridership in Salinas can be attributed to a cost-benefit analysis that favors cars over transit. The association between cars, status, independence, and comfort has remained strong since the post-war era. As of 2003, the automobile industry has spent over $40 billion per year on advertising, successfully obscuring the costs of traffic accidents, congestion, pollution, fossil fuel dependence, and social inequality.[9] For society to shift to a transit-valued culture, public transit must be just as socially, physically, and economically beneficial as automobiles, if not more. Such transition would also require two

[8] Monterey-Salinas Transit. 2012 Aug.
[9] Brown BB, Werner CM, Kim N. 2003. Personal and contextual factors supporting the switch to transit use: Evaluating a natural transit intervention (online version). Analyses of Social Issues and Public Policy, 3(1):139-160.

shifts in society: first, that young people experience transit early on so that they feel comfortable with it when they're older; and second, that cities create infrastructure where goods and services are easily and conveniently accessible by bus.

Benefits of Public Transportation. According to the American Public Transportation Association, public transportation can ease traffic, pollution, and fossil fuel dependence, while also benefitting the economy and providing for various community needs. Choosing public transportation helps take cars off the road, allowing the United States to save 1.4 billion gallons of gas per year (equivalencies shown in **Figure 2**). It also reduces carbon monoxide, volatile organic compounds, carbon dioxide, and nitrogen oxide pollution caused by automobiles.[10] In communities, transit is a means of mobility for passengers of various age groups, living situations, and physical abilities. The industry strengthens local economies as a dependable, long lasting job that will always be need for some people. However, the benefits are not convincing enough on their own and must be presented with a visual or emotional appeal that people can relate to.[11]

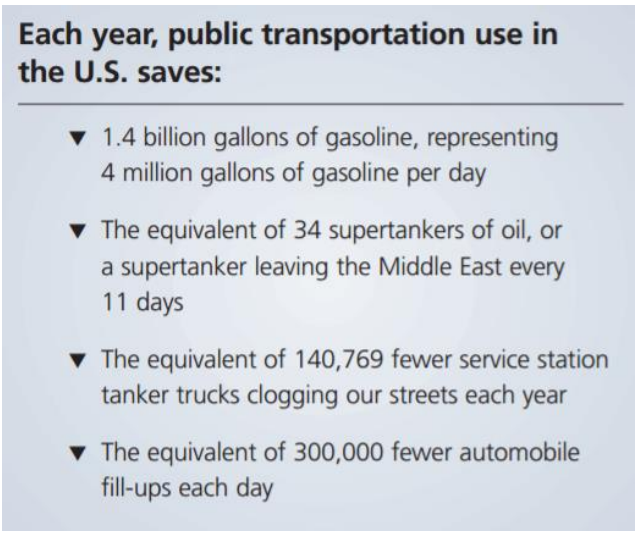

Fig. 2. ICF International. 2007 Jan. Public transportation and petroleum savings in the U.S.: Reducing dependence on oil [Internet]. [cited 2017 June 25]. Available from: http://www.apta.com/resources/reportsandpublications/Documents/apta_public_transportation_fuel_savings_final_010807.pdf

Data Collection and Methods

Group 1 designed a ten-question survey to understand how Hartnell students feel about public transit and to inform them of services that are available to them as associated students. Many of the questions allowed students to check all that applied, making it difficult to report the results as percentages. The majority of surveys were collected randomly in the morning and afternoon inside the student center, but some surveys were distributed within Hartnell courses, both in the classroom and online through generous faculty. Group 1 did not achieve ideal coverage due to time constraints and did not survey students who took early morning, late evening, or online classes; were in other areas on the main campus; or were at the Alisal and King City campuses. Group 1 also spent time at CSUMB planning the illustrations and transit situations they wanted

[10] American Public Transportation Association. 2007. Public transportation: Benefits for the 21st century [Internet]. [cited 2017 June 20]. Available from: http://www.apta.com/resources/reportsandpublications/documents/twenty_first_century.pdf

[11] Kalczuk J. 2016. Redefining the public outreach campaign: Visual storytelling creates emotional resonance to win the trust and understanding of the public (online version). Mass Transit, 42(4):30.

to include in their how-to-ride booklet. Group 1 suggested the project at a meeting with Erin Heatley and she supported the idea.

Results

Group 1 collected a total of 213 survey responses out of the approximate population of 10,000 students at Hartnell College. Fifty-three students—roughly 25% of the respondents—reported not knowing how to ride the bus. Of the remaining 160 students who did know how to ride the bus, 73 drove to campus alone, 56 rode the bus, 44 got dropped off or picked up, 39 carpooled, 21 walked, 8 rode a bicycle, and 3 reported 'other' which included running and skateboarding. No students reported riding a motorcycle. All 213 students responded about factors that deter them from riding the bus: there were 80 students for *too slow*, 75 for *long wait time*, 61 for *crowdedness*, and a tie of 54 each between *inconvenient* and *late* (shown in **Figure 3)**. When asked about the most confusing aspect of riding the bus, 131 students responded: 82 for *scheduling*, a tie of 61 each between *locations* and *transferring*, and 38 for *fares* (shown in **Figure 4)**. Of the 210 responses indicating a desired resource to help with bus travel, there were 97 responses for a website, 88 for a person, 79 for a booklet, 67 for a brochure, and 64 for a video (shown in **Figure 5)**.

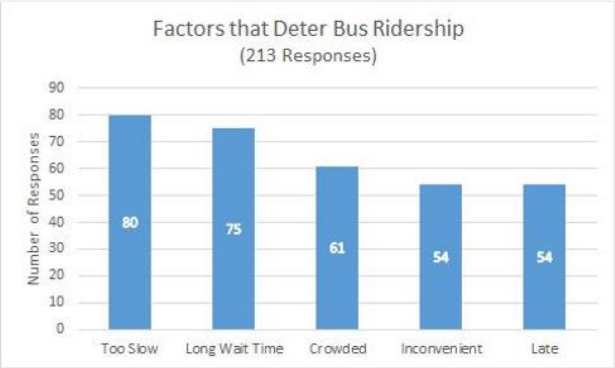

Fig. 3. Factors that deter Hartnell students from riding the bus to campus.

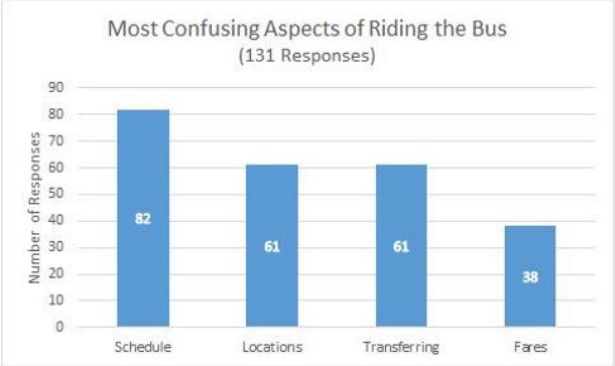

Fig. 4. Aspects of transit that Hartnell students found confusing.

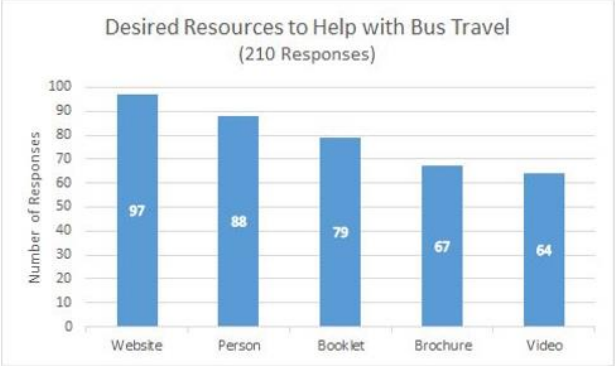

Fig. 5. Resources that Hartnell students would find helpful when using or learning to use transit.

Analysis

The results of the survey show that the majority of Hartnell students know how to ride the bus, but many do not choose to use transit anyway. This choice is likely a reflection of the factors that make transit inefficient and unattractive: it is slow with long wait times, sometimes crowded and running late, and overall inconvenient. Complications in scheduling, stop locations, transferring, and fares also make transit confusing to use and therefore unappealing. A website or

phone application would be most helpful, which makes sense; a well-designed website or app could simplify the confusion and increase the convenience planning trips with transit. However, Group 1's booklet (rated in the middle), and MST's video project (rated as least helpful) on how to ride the bus will be made available as new transit resources.

Recommendation

Group 1's survey of Hartnell students confirms the car-centric and transit-reluctant culture in Salinas. For public transportation to make a lasting impact in Salinas, the city will need to take a top-down approach. It will be important to maintain optimistic, yet provocative public outreach efforts as improvements are being made. Group 1 recommends redesigning city infrastructure for transit as the first and most important step toward sustainable public transportation in Salinas. The transit system must be efficient if it is to be convenient, and reducing prices or knowing how to use the bus will not be enough to convince residents to use transit instead of driving. Once an efficient system is in place, the benefits of transit should be able to speak for itself when compared to driving, which would also provide strong evidence to support public outreach campaigns with increased effectiveness. When residents can believe in public outreach, it will be easier for them to grow accustomed to transit and introduce the experience to younger people in their lives. As young people grow with transit as a typical mode of transportation, community can shift toward a more sustainable way of traveling.

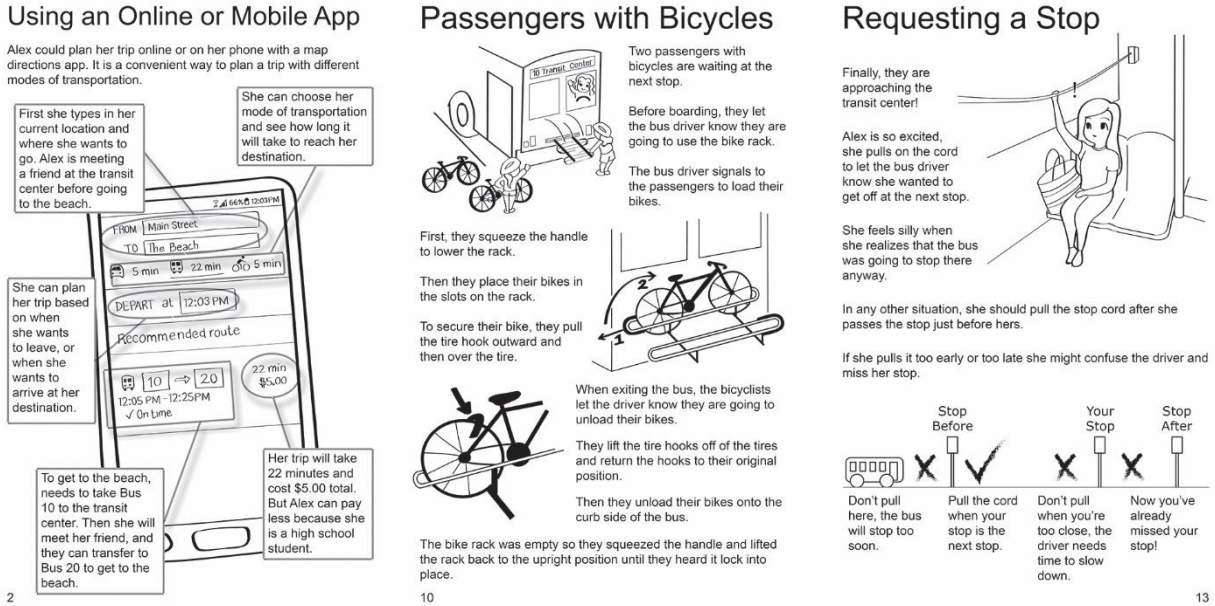

Fig. 6. Sample pages from Group 1's illustrated How-to-Ride-the-Bus booklet.

III. East Market Street Community Engagement Project

Overview

Group 2 assisted the City of Salinas with the road diet project on East Market Street. The proposed road diet—located near El Sausal Middle School and Fremont Elementary School—was scheduled to begin in January 2017. Group 2 researched the concept of livable streets, its association to road diets, and how they both contribute to safer community environments for school children. **Group 2 conducted public outreach in the East Market Street neighborhood to inform and encourage residents to participate in community meetings held by the city. Group members discussed project concerns with residents who attended the meetings. They also logged pre-construction bicycle and pedestrian counts on East Market Street for an anticipated comparative study once the road diet is finished.**

Research

Livable Streets. Livable streets prioritize public safety and right of way by providing a buffer of street parking, trees, continuous sidewalks, adequate lighting, and highly visible crosswalks.[12] The broad roadways in Salinas are not considered livable streets because they were designed to facilitate the movement of heavy vehicular traffic rather than bicycles or pedestrians. The lack of livable or safe streets near schools affects how students get to school—on average, 44% of students in the U.S. travel to school by car despite substantial national investment in school bus systems.[13] Modes of transportation can also impact an individual's health and lifestyle which is evident in the relationship between commute method and obesity in Denmark versus the United States: Fifty percent of workers in Denmark commute by bicycle and 8% are considered obese; in the U.S., 49% of workers commute by car and 23% are considered obese.[14] The cumulative quality of life among individuals determines the overall health of the community.

Road Diets. Road diets promote sustainable transportation in cities by creating shared roadways and supporting modes of transportation other than cars. The idea that additional road lanes decreases traffic and removal of lanes increases traffic is a misconception about road diets. Adding lanes actually makes traffic congestion worse because the extra road space makes it more convenient for people to drive out, resulting in more cars on the road.[15] The road diet on East Market Street is set to convert a four-lane road into a two-lane road with a shared, left-turn lane

[12] Dumbaugh E. [date unknown]. Safe streets, livable streets. Tree Lafayette [Internet]. [cited 2017 June 21]. Available from: http://treelafayette.net/downloads/Safe_Streets.pdf
[13] Osborne P. 2005. Safe routes for children: What they want and what works (electronic version). Children, Youth and Environments, 15(1):234-239.
[14] Ibid.
[15] Burden D, Lagerway P. 1999. Road diets: Fixing the big roads. Walkable Communities [Internet]. [cited 2017 June 30]. Available from: http://www.walkable.org/download/rdiets.pdf

in the middle (shown in **Figure 7**).[16] The new road will also include bike lines on both sides of the street, wider sidewalks, the addition of extended curbs called bulb-outs, and new traffic lights.[17] The redesigned roadway will improve visibility and safety for bicyclists and pedestrians. Calming vehicular traffic with slower speed limits will also reduce points of conflict where a motorist might collide with non-driving person due to high speed and low visibility. [18]

Safe Routes to School Program. In 1999, California became the first state in the country to implement a SR2S program. The program provides funding to cities for improved roadway infrastructure projects near school zones, such as the road diet project on East Market Street.[19] A two-year case study involving SR2S road diets showed a 114% increase in bicycling, a 91% increase in carpooling, and a 64% increase in walking among students across 15 schools in Marin County.[20] In 2013, Governor Brown combined various transportation programs—the Transportation Alternatives Program, Bicycle Transportation Account, and SR2S—into a single Active Transportation Program (ATP).[21] Victor Gutierrez, Engineer Director of the Salinas Public Works department, recently received a $2.1 million grant from the California Department of Transportation's ATP fund which will be applied to the East Market road diet project and its intended goal of improving transportation safety for students.

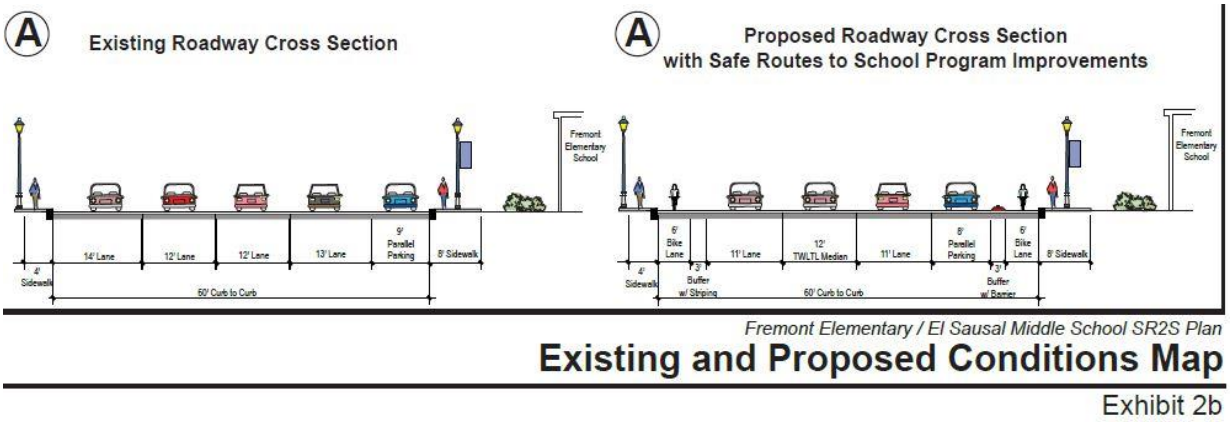

Fig. 7. Proposed roadway changes of the road diet on East Market Street according to the Salinas Downtown Vibrancy Plan.

[16] Federal Highway Administration. March 8, 2004. Evaluation of lane reduction [Internet]. [cited 2017 June 21]. Available from: http://www.fhwa.dot.gov/publications/research/safety/humanfac/04082/index.cfm.
[17] City of Salinas. 2016. Salinas downtown vibrancy plan [Internet]. [cited 2017 June 21]. Available from: http://www.cityofsalinas.org/our-city-services/public-works/downtown-vibrancy
[18] Jaffe E. September 12, 2014. "So what exactly is a road diet?" CityLab [Internet]. [cited 2017 June 21]. Available from: http://www.citylab.com/design/2014/09/so-what-exactly-is-a-road-diet/379975/
[19] State of California. 2016. Active Transportation Program (ATP). Caltrans Division of Local Assistance [Internet]. [cited 2017 June 21]. Available from: http://www.dot.ca.gov/hq/LocalPrograms/atp/
[20] Staunton C, Hubsmith D, Kallins W. 2003. Promoting safe walking and biking to school: The Marin County success story (online version). American Journal of Public Health, 93(9):1431-1434.
[21] State of California. 2016.

Data Collection and Methods

Group 2 recorded bicycle and pedestrian counts two different times at East Market Street and 2nd Avenue. They did their first count on October 13, 2016 between 2pm and 4pm, and the second count on October 19, 2016 between 7am and 9am. The pre-construction counts by Group 2 will be compared to post-construction counts to determine the effectiveness of the road diet on biking and walking behaviors once the project is completed.

The City of Salinas held three community meetings in the East Market neighborhood to receive stakeholder feedback about the road diet project. Group 2 conducted public outreach in the area over the course of four days. They posted flyers in mailboxes and on utility poles while also visiting residents door-to-door. They informed residents about the project and invited them to engage with city representatives during a scheduled community meeting at Fremont Elementary School.

Results

The bicycle and pedestrian counts yielded similar results despite differences in the date and time they were taken. **Figure 8** below shows that both counts reported around 180 and 190 pedestrians, only one bicyclist each, and a small number of counts for an "other" which was slightly higher in the afternoon count.

Bike and Pedestrian Counts - Salinas, CA - October 19, 2016 (AM), October 13, 2016 (PM)

E. Market St. & 2nd Ave.

Start Time (A.M.)	E. Market St. from North			2nd Ave. from East			E. Market from South			2nd Ave. from West		
	BIKE	OTHER	PED	BIKE	OTHER	PED	BIKE	OTHER	PED	BIKE	OTHER	PED
7:00-7:15	0	0	2	0	0	1	0	0	0	0	0	0
7:15-7:30	0	0	0	0	0	1	0	0	0	0	0	0
7:30-7:45	0	0	1	0	0	2	0	0	0	0	0	0
7:45-8:00	0	0	9	0	0	31	0	0	0	0	0	0
8:00-8:15	0	0	6	0	0	74	0	0	0	0	0	0
8:15-8:30	0	1	8	0	0	32	0	0	0	0	0	0
8:30-8:45	1	1	4	0	0	10	0	0	0	0	0	0
8:45-9:00	0	0	1	0	0	1	0	0	0	0	0	0
Total	1	2	31	0	0	152	0	0	0	0	0	0
										Grand Total PED:		183
										Grand Total BIKE:		1
										Grand Total OTHER:		2

Start Time (P.M.)	E. Market St. from North			2nd Ave. from East			E. Market from South			2nd Ave. from West		
	BIKE	OTHER	PED	BIKE	OTHER	PED	BIKE	OTHER	PED	BIKE	OTHER	PED
2:00-2:15	0	0	0	0	1	3	0	0	0	0	0	0
2:15-2:30	0	0	0	0	0	4	0	0	0	0	0	0
2:30-2:45	0	0	6	0	0	54	0	0	0	0	0	0
2:45-3:00	0	0	18	0	0	63	0	0	0	0	0	0
3:00-3:15	1	3	1	0	2	2	0	0	0	0	0	0
3:15-3:30	0	0	5	0	0	2	0	0	0	0	0	0
3:30-3:45	0	0	12	0	0	17	0	0	0	0	0	0
3:45-4:00	0	0	1	0	0	3	0	0	0	0	0	0
Total	1	3	43	0	3	148	0	0	0	0	0	0
										Grand Total PED:		191
										Grand Total BIKE:		1
										Grand Total OTHER:		6

Fig. 8. Group 2's bicycle and pedestrian counts taken at East Market Street and 2nd Avenue.

Group 2 visited 114 homes during their public outreach activities, and 51.7% of residents answered their door. With 75% of the Salinas population being Hispanic or Latino[22], they encountered some language barrier problems. Of the homes they visited, 71.1% only spoke Spanish, but a few group members were fluent or proficient enough that they were able to communicate. The results of their public outreach activities are shown below in **Figure 9**. Despite their efforts, community turnout remained poor at the stakeholder meetings hosted by the city.

Date	Time	Street Name	Houses Approached	Houses that only Spoke Spanish	Houses that took the Flyer in person	Left in Mailbox
11/3/16	5:20 PM	First Ave.	23	7	11	12
11/8/16	4:30 PM	East Market 1st - Sunborn	41	15	22	19
11/10/16	4:30 PM	Eucalyptus	30	15	17	13
11/15/16	4:30 PM	Towt	20	5	9	11
			114	42	59	55

Fig. 9. from Group 2's road diet public outreach campaign in the East Market Street neighborhood.

Analysis

In addition to Group 2's bicycle and pedestrian counts, the City of Salinas also recorded pre-construction vehicle counts at cross streets to be directly impacted by road diet construction. These data can also be compared to vehicle counts once the road diet is complete. Stabilized, reduced car counts will indicate the road diet was effective as a traffic calming measure.[23]

Community participation at city meetings regarding the road diet project was relatively low despite the city's approaches to public outreach. Going door to door and handing out flyers is more personal, but can also be time consuming and less effective as a dated method of public outreach. Salinas will need to communicate with the public through various media, but establishing an online presence on social media platforms will be important. Salinas has accounts on Facebook and Instagram with a fair number of followers, but its profiles are not regularly and actively updated. There is a great opportunity for Salinas to connect with its public in the way that most people stay connected now—through the internet. The city's public outreach efforts may improve once they begin to tap into this resource.

[22] U.S. Department of Commerce. 2010. U.S. Census of 2010 – Quick facts [Internet]. [cited 2017 June 21]. Available from: http://www.census.gov/quickfacts/table/PST045215/0664224
[23] Burden D, Lagerway P. 1999.

Recommendation

The City of Salinas is headed in the right direction toward safe and sustainable transportation with the SR2S road diet on East Market Street. However, the community's unresponsiveness to public outreach efforts indicates that the city will need to improve its relationship with the communities it seeks to help. A lot of Salinas infrastructure projects aim to improve environments close to schools. Group 2 recommends improving stakeholder relationships by providing school districts with information and resources about the benefits of nearby projects. Administrators can pass the information along to their faculty, and the faculty can help explain the purpose of those projects to students and their families. The city could also engage stakeholders through schools by issuing flyers containing project information and a survey that can be returned to the city. The City of Salinas should also try strengthening its community relations by being more active on social media. Taking advantage of tools such as live streaming, published recordings, and online conversation platforms would allow Salinas officials to conveniently maintain an open interaction with residents who are often unable to participate in city events in person, as was often the case in this group project.

IV. Bike-Share Feasibility Project

Overview

Group 3 was interested in how bike-share programs affected sustainable transportation in college campuses and cities. They considered whether the City of Salinas could benefit from such a program and if it was feasible. Their research includes the history of bike-share, environmental and social impacts of programs, program affordability and logistics, and the current state of bike-share in Salinas and Monterey County. **Group 3 conducted surveys at Hartnell and in downtown Salinas to better understand community knowledge, interest, and preferences regarding a possible bike-share program in Salinas.**

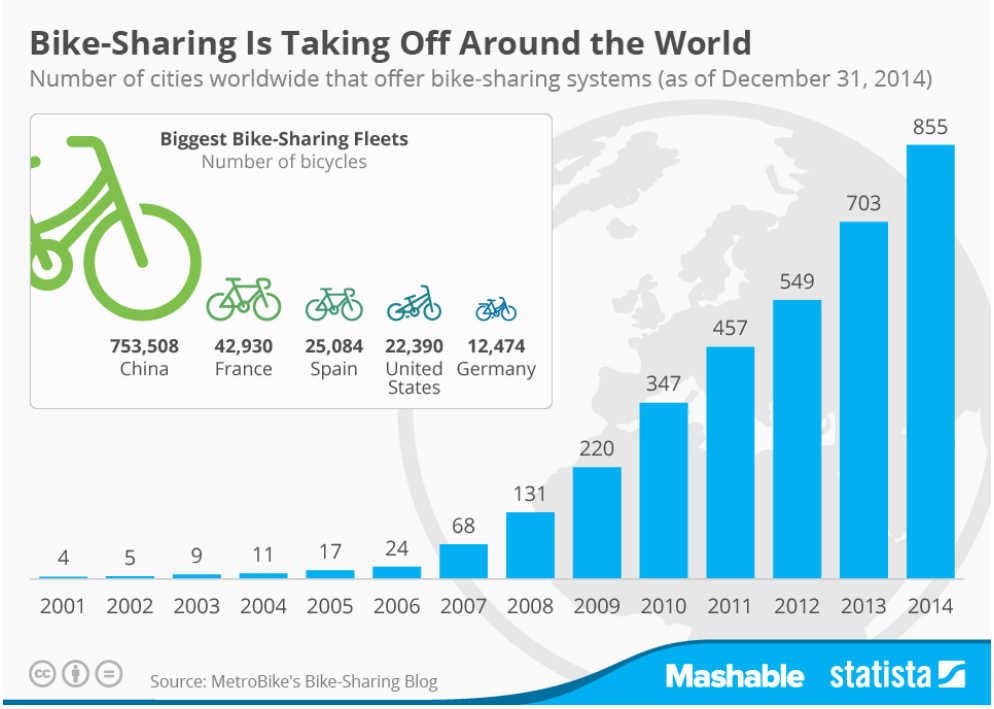

Fig. 10. Richter F. 2015. Worldwide growth of the bike-share industry since 2001. Statista [Internet]. [cited 2017 June 25]. Available from: https://www.statista.com/chart/3325/bike-sharing-systems-worldwide/

Research

History of Bike-Share. There have been four generations of bike-share programs since its establishment in Amsterdam in 1965. The Amsterdam program only lasted a few days before it failed due to theft and vandalism. The second generation resurged in Copenhagen in the 1990s with sturdier bikes and a coin-operated rental system, but it was still vulnerable to theft. Popularity of bike-share programs expanded rapidly following the second generation, as shown above in **Figure 9**. Modern programs of the third generation now have improved security

systems that operate with electronic locks, on-board computers, and payment methods that accept cellphone transactions and credit cards. Future innovations of the fourth generation will include features such as pedal assistance and improvements in the installation and power supply of bike stations.[24] Across the U.S., various programs have improved accessibility with the use of time-dependent tiered pricing, a credit system for riders who help redistribute bikes, integration with public transit cards, and affordable rates in exchange for brand advertisement on bikes.[25]

Environmental and Social Impacts. Positive impacts of bike-share programs include an offset of vehicular carbon emissions and stronger economies as riders explore local businesses. San Antonio's Citi Bike program calculated an offset of 1,297,902 lbs. of carbon emissions with a year's worth of bike trips[26]. The state of Wisconsin reported an economic contribution of $924 million from its bike-share industry in 2010.[27] Bike-share programs like the one in San Francisco establish a safer biking culture because the bikes are stable, have better visibility, and the program attracts inexperienced bicyclists who tend ride cautiously.[28] However, there is also a demographic barrier among programs in that many customers are often well-paid, and highly educated men—they can represent between 65 to 90 percent of the customer base in San Antonio's Citi Bike program in a given year.[29] In 2016, the Bikeshare Transit Act was introduced by Oregon Congressmen Earl Blumenauer to help address this issue by increasing the prevalence of bike-share programs among urban poor communities where more public transportation options are needed.[30] A bike-share membership program at 7-Eleven has also improved accessibility to those who prefer cash or don't have a bank card. The program allows customers to pay for bike-share credits using various forms of payment including cards, cash, and checks.[31]

---

[24] DeMario P. 2009. Bike-sharing: History, impacts, models of provision, and future. Journal of Public Transportation [Internet], 12(4):41-56. [cited 2017 June 25]. Available from: http://bike.cofc.edu/bike-share-program/history%20of%20bike%20sharing.pdf

[25] McFarland M. 2016 Sep 08. What the next great bikeshare system will look like [Internet]. Washington, D.C.: CNNMoney. [cited 2017 June 25]. Available from: http://money.cnn.com/2016/09/08/technology/bikeshare-network-future/?iid=EL

[26] Socha M. 2015. How bike shares are changing city life. The Huffington Post [Internet]. [cited 2017 June 25]. Available from: http://www.huffingtonpost.com/2015/11/30/bike-shares-improving-cities_n_7794226.html

[27] Flusche D. 2012 Jul. Bicycling means business: The economic benefits of bicycle infrastructure. Advocacy Advantage [Internet]. [cited 2017 June 25]. Available from: http://www.advocacyadvance.org/site_images/content/Final_Econ_Update(small).pdf

[28] Martin E, Cohen A, Botha J, Shaheen S. 2016 Mar. Bikesharing and bicycle safety [Internet]. San Jose, CA: Mineta Transportation Institute, Report 12-54. [cited 2017 June 25]. Available from: http://transweb.sjsu.edu/PDFs/research/1204-bikesharing-and-bicycle-safety.pdf

[29] Leighton W. 2016. Bikeshare systems: Recent research on their growth, users' demographics, and the health and societal impacts. Journalist's Resource [Internet]. [cited 2017 June 25]. Available from: https://journalistsresource.org/studies/environment/transportation/bikeshare-research-growth-user-demographics-health-societal-impacts

[30] Jaffe E. 2016 Jan 19. Yet more evidence bike-share isn't reaching the poor. Atlantic Citylab [Internet]. [cited 2017 June 25]. Available from: https://www.citylab.com/equity/2016/01/bike-share-poor-equity-transit/424656/

[31] 7-Eleven Corporate. September 22, 2015. 7-Eleven and PayNearMe introduce mobile bill payment center [Internet]. [cited 2017 June 25]. Available from: http://corp.7-eleven.com/news/09-22-2015-7-eleven-and-paynearme-introduce-the-first-mobile-bill-payment-center-for-cash-users

Program Affordability and Logistics. In the U.S., yearly bike-share memberships typically run from $75 to $100, often with free half-hour rides or shorter, and small fees (less than $5) for trips longer than half an hour.[32,33,34] Zagster is a prominent bike-share program that offers services to a variety of organizations at different prices: their program at CSU East Bay charges a one-time fee of $15 for an unlimited number of trips shorter than three hours, while their program at Santa Clara University costs a one-time fee of $35 for unlimited trips lasting under two hours.[35,36] According to Zagster Fleet Manager, Jeremy Jo, implementing a program requires skilled coordination in service, maintenance, replacement, storage, making sure customers know how to ride in urban environments, having enough bikes in the fleet, and ensuring an appropriate redistribution of available bikes.[37,38]

Bike-Share in Monterey County. The Transportation Agency for Monterey County (TAMC) conducted a bike-share feasibility study for a county-wide program that emphasized Monterey and Pacific Grove. The program would encourage the flow of bikes between cities. The Monterey City Council approved a citywide bike-share program in June 2016, based on fleets from pre-existing bike rental businesses in the area. Funding for the program came from a portion of a $250,000 grant from the Coastal Commission and Ocean Protection Council to reduce greenhouse gas emissions.[39] Salinas has a level terrain compared to the hilly and sandy substrate of Monterey County's coastal cities which makes it highly suitable for a bike-share program. Approximately 64 miles of Class I, II, or III bikeways (paths, lanes, and routes, respectively) have been created in Salinas since the 1990s.[40] However, the comfort and safety issues associated with the city's outdated, car-centric infrastructure must be addressed before a successful bike-share program can be implemented.

---

[32] Capital Bikeshare. 2016. Pricing [Internet]. Washington, D.C.: Capital Bikeshare. [cited 2017 June 25]. Available from: https://www.capitalbikeshare.com/pricing

[33] CoGo Bike Share. 2016. Pricing [Internet]. Columbus, OH: CoGo Bike Share. [cited 2017 June 25]. Available from: https://www.cogobikeshare.com/pricing

[34] Bay Area Bike Share. 2016. Pricing [Internet]. New York, NY: Motivate International, Inc. [cited 2017 June 30]. Available from: https://www.fordgobike.com/pricing

[35] Zagster. 2016a. Bike share at Cal State East Bay [Internet]. Cambridge, MA: Zagster Inc. [cited 2017 June 30]. Available from: http://bike.zagster.com/csueb/

[36] Zagster. 2016b. Bike share at Santa Clara University [Internet]. Cambridge, MA: Zagster Inc. [cited 2017 June 30]. Available from: http://bike.zagster.com/scu/

[37] Jo J. 2015 Nov 09. What does it take to run a bike share? [Internet]. Zagster. [cited 2017 June 25]. Available from: https://www.zagster.com/blog/what-does-it-take-to-run-a-bike-share

[38] Shaheen S, Guzman S. 2011. World bikesharing [Internet]. UC Berkeley: Transportation Sustainability Research Center. [cited 2017 June 25]. Available from: http://tsrc.berkeley.edu/sites/default/files/Worldwide%20Bikesharing.pdf

[39] Mayberry C. June 22, 2016. Monterey approves citywide bike share program and climate action plan. Monterey County Herald [Internet]. [cited 2017 June 30]. Available from: http://www.montereyherald.com/article/NF/20160622/NEWS/160629927

[40] City of Salinas. 2002. Salinas bikeways plan [Internet]. [cited 2017 June 25]. Available from: http://www.cityofsalinas.org/sites/default/files/departments_files/public_works_files/salinas_bikeways_plan_0_0.pdf

Data Collection and Methods

Group 3 created a 9-question, fill-in-the-blank survey that was available in English and in Spanish. They asked for respondents' opinions about various modes of transportation, whether the respondent knew what a bike-share program was, and what the respondent would want in a bike-share program for the City of Salinas. All surveys were distributed as paper copies. Group 3 collected some surveys at Hartnell College and at a local, car-free transportation convention in Salinas called Ciclovia. However, the majority of completed surveys were collected from passersby in downtown Salinas.

Results

Group 3 collected 89 surveys out of the approximate population of 155,000 in the City of Salinas. Eighty-nine percent of respondents reported owning a car, and 6% reported riding the bus. Most respondents were interested in having free, one hour rides in a bike-share program, with debit and credit cards as the preferred method of payment. However, 19% of respondents indicated they would not use the program even if it was free of charge. Seventy-three percent of respondents do not like riding a bike in Salinas because they considered the streets unsafe. Sixteen percent of respondents noted traffic as problematic factor, followed by 9% who felt that biking in Salinas was uncomfortable, and 2% who simply did not like bicycling. **Figure 11** below shows that a little over a third of the respondents did not know what a bike-share program was and wanted to learn more. A quarter of the respondents knew what a bike-share was and wanted one in Salinas. The remaining percentage of respondents indicated apathy, or a neutral familiarity with bike-share programs.

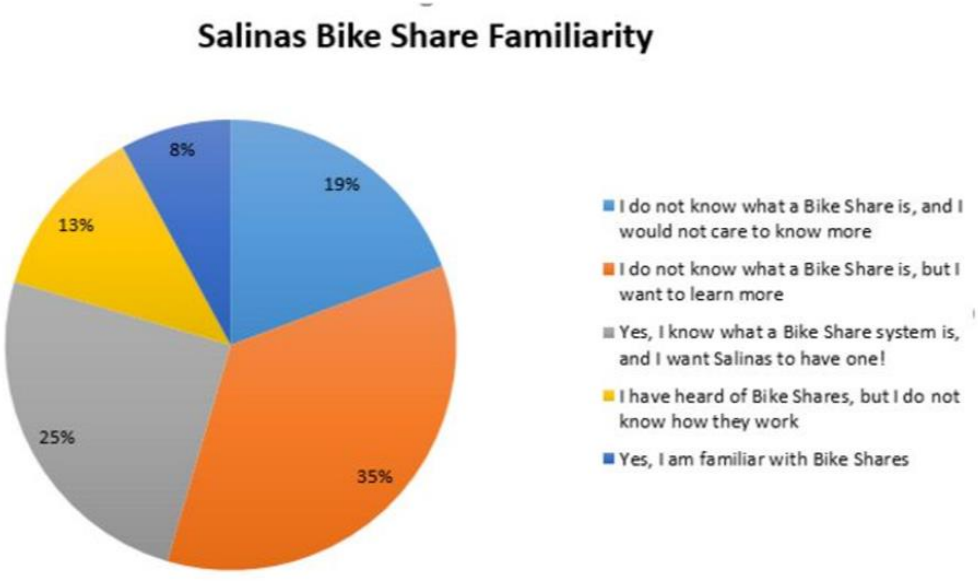

Fig. 11. Responses to Group 3's survey question regarding bike-share familiarity among Salinas residents.

Analysis

Given that a small majority of respondents were unaware of bike-sharing as an approach to sustainable transportation, shifts in bike-share familiarity in a follow-up survey could provide insight about the effectiveness of this project as a form of public outreach in Salinas. A follow-up survey could also help clarify why nearly one in five respondents showed no interest in a bike-share program, even though only 2% of respondents admitted a dislike for bicycling. It may also be interesting to see how survey responses correlate with demographic information and how those results might compare with the demographic pattern of educated males previously described in the research section. Group 3 noted that their data were not statistically significant due to the low number of surveys collected. In any case, the 89% response of car ownership confirmed that the majority of Salinas residents will continue driving as a primary mode of transportation. Bike-share interest from one out of every four respondents is a good indication that a program could be well supported sometime in the future. However, the 73% of respondents who felt that bicycling was unsafe shows that developing a bike-friendly culture in Salinas will require major changes in the general transportation environment of the city.

Recommendation

Group 3 recommends completing the Salinas Downtown Vibrancy Plan as it will create a good foundation for a future bike-share program. There is a good amount of interest in establishing a program; redesigning roads and improving traffic infrastructure will help address the safety concerns expressed by survey respondents. Group 3 also recommends accepting bike-share payment options offered by convenience stores such as 7-Eleven. Giving residents the opportunity to pay in any way they can afford will maximize program accessibility throughout the city. Lastly, Group 3 recommends engaging residents in regular, multi-lingual meetings during the planning process to help educate the community about bike-share programs. Education and familiarity will help residents feel more comfortable about using bike-share and participating at meetings so that the program will suit their interests and needs.

V. Conclusion

Summary

The three group capstone projects in the Projects for Sustainable City Year course covered broad topics in sustainable transportation for the City of Salinas. Group 1 explored the development of efficient transit systems as a major approach to addressing traffic problems. Group 2 assisted with infrastructure assessment and analyzed the disengaged relationship between city government and the communities it serves. Group 3 evaluated the benefits, feasibility, and community interest in creating a bike-share program in Salinas. All groups practiced some form of public outreach in their projects. Group 1 created an educational transportation resource, while Groups 2 and 3 communicated directly with residents about opportunities for improved environmental sustainability in the city. All groups also realized the systemic consequences of a city infrastructure that does not reflect the needs of its communities. Industrially designed roadways have limited transit efficiency and created safety issues for students, pedestrians, and bicyclists in Salinas.

Future Directions

These groups now have a better understanding about the steps that must be taken to help the City of Salinas become more sustainable. Streets need to be designed for safety and livability, and they need to help buses transport people in a timely manner. Social norms about transportation must be challenged. Overhauling the city's roadways is needed but not realistic given limited government resources and the time span of one semester. But that is why the Sustainable City Year Program exists—because each group in this course has concluded their projects with ideas that can be implemented by future CSUMB students, in future partnerships with the City of Salinas. They can rise to the challenge of helping Salinas reconnect with its communities through social media, with genuine compassion and excitement; or they can lead the way in facilitating productive relationships between community leaders. Transit projects could always use public outreach to persuade locals to support MST, even when the service is not ideal. Support through increased ridership brings funding, and funding helps improve service. The same public outreach approach could be applied toward gaining support for bike-share programs. Future students can educate others about the benefits of bike-sharing and find a way to cultivate enthusiasm for it until it gains enough momentum to become a reality. Students can try to inspire younger generations so that they will have a passion for sustainability to act on as they become more capable of impacting the world around them. Addressing sustainable transportation in Salinas will not be easy, but these projects now provide a starting point that anyone can build upon.