



Santa Cruz County Regional Transportation Commission's

BICYCLE COMMITTEE

AGENDA

Monday, August 19, 2013

6:00 pm to 8:30 pm

Note Special Date and Earlier Start Time

**RTC Office
1523 Pacific Ave
Santa Cruz, CA 95060**

1. Call to Order
2. Introductions
3. Announcements – RTC staff
4. Oral communications – members and public

The Committee will receive oral communications during this time on items not on today's agenda. Presentations must be within the jurisdiction of the Committee, and may be limited in time at the discretion of the Chair. Committee members will not take action or respond immediately to any Oral Communications presented, but may choose to follow up at a later time, either individually, or on a subsequent Committee agenda.

5. Additions or deletions to consent and regular agendas

CONSENT AGENDA

All items appearing on the consent agenda are considered to be minor or non-controversial and will be acted upon in one motion if no member of the Committee or public wishes an item be removed and discussed on the regular agenda. Members of the Committee may raise questions, seek clarification or add directions to Consent Agenda items without removing the item from the Consent Agenda as long as no other committee member objects to the change.

6. Approve draft minutes of the June 10, 2013 Bicycle Committee meeting (pages 3-6)
7. Accept Bicycle Committee roster (page 7)
8. Accept summary of Bicycle Hazard Reports (pages 8-9)
9. Accept updated FY 2013/2014 Bicycle Committee meeting schedule (pages 10-11)
10. Accept letter to the County of Santa Cruz Public Works Department regarding recommendations for improvements to the East Cliff Drive Parkway (pages 12-16)
11. Accept letter from the Bicycle Committee to the County of Santa Cruz Public Works Department with recommendations for changes to the County's Capital Improvement Program (page 17)

12. Accept letter from the Bicycle Committee to Caltrans regarding Highway 1 shoulder and Wilder Ranch multi-use path pavement quality after overgrown vegetation cut-back, and the need for Bikes May Use Full Lanes signs to the approach of the Scott Creek and Waddell Creek bridge construction where the shoulder is closed (pages 18-20)

REGULAR AGENDA

13. Draft Monterey Bay Area Complete Streets Guidelines - Presentation from Grace Blakeslee, RTC Senior Transportation Planner (pages 21- 24)
14. Innovative Bicycle Facilities and Treatments in Current Regulatory Standard Manuals – Bicycle Committee member Amelia Conlen (pages 25-34)
15. 2011 Bicyclist Injuries and Fatalities for Santa Cruz County Report and 2013 Bicycle Safety Observation Study – Presentation from Becky Sox, Health Education Intern with County of Santa Cruz Health Services Agency (HAS) and Theresia Rogerson, HSA Community Traffic Safety Coalition Program (pages 35-45)
16. UCSC and Westside Santa Cruz Bicycle Transit Planning Study – Presentation from UCSC IDEASS student and Bicycle Transit Planning Team members Brenden Fant and Melissa Ott (pages 46-75)
17. Member updates related to Committee functions
18. Adjourn

NEXT MEETING: The next Bicycle Committee meeting is scheduled for Monday, September 23rd, from the special time of 6:00pm to 8:30pm at the RTC office, 1523 Pacific Ave, Santa Cruz, CA.

HOW TO REACH US

*Santa Cruz County Regional Transportation Commission
1523 Pacific Avenue, Santa Cruz, CA 95060
phone: (831) 460-3200 / fax (831) 460-3215
email: info@sccrtc.org / website: www.sccrtc.org*

AGENDAS ONLINE:

To receive email notification when the Bicycle Committee meeting agenda packets are posted on our website, please call (831) 460-3201 or email ccaletti@sccrtc.org to subscribe.

ACCOMMODATIONS FOR PEOPLE WITH DISABILITIES

The Santa Cruz County Regional Transportation Commission does not discriminate on the basis of disability and no person shall, by reason of a disability, be denied the benefits of its services, programs, or activities. This meeting location is an accessible facility. If you wish to attend this meeting and require special assistance in order to participate, please contact RTC staff at 460-3200 (CRS 800/735-2929) at least three working days in advance of this meeting to make arrangements. People with disabilities may request a copy of the agenda in an alternative format. As a courtesy to those person affected, Please attend the meeting smoke and scent-free.

SERVICIOS DE TRADUCCIÓN/TRANSLATION SERVICES

Si gusta estar presente o participar en esta junta de la Comisión Regional de Transporte del condado de Santa Cruz y necesita información o servicios de traducción al español por favor llame por lo menos con tres días laborables de anticipo al (831) 460-3200 para hacer los arreglos necesarios. (Spanish language translation is available on an as needed basis. Please make advance arrangements (at least three days in advance by calling (831) 460-3200.



Santa Cruz County Regional Transportation Commission's

BICYCLE COMMITTEE

Minutes - Draft

Monday, June 10, 2013

6:00 p.m.

RTC Office
1523 Pacific Ave
Santa Cruz, CA 95060

1. Call to Order

2. Introductions

Members Present:

Kem Akol, District 1
David Casterson, District 2, Chair
Will Menchine, District 3 (Alt.)
Amelia Conlen, District 4
Andy Ward, City of Capitola, Vice-Chair
Lex Rau, City of Scotts Valley
Leo Jed, CTSC
Rob Straka, Ecology Action/Bike to Work
Daniel Kostelec, City of Capitola (Alt.)

Staff:

Cory Caletti, Senior Transportation Planner
Grace Blakeslee, Senior Transportation Planner
Ginger Dykaar, Transportation Planner

Unexcused Absences:

Carlos Garza, City of Santa Cruz (Alt.)
Myrna Sherman, City of Watsonville

Excused Absences:

Eric Horton, District 2 (Alt.)
Holly Tyler, District 1 (Alt.)
Gary Milburn, City of Scotts Valley (Alt.)
Bill Fieberling, City of Santa Cruz
Jim Langley, CTSC (Alt.)
Peter Scott, District 3
Rick Hyman, District 5
Piet Canin, Ecology Action/Bike-to-Work (Alt.)

Vacancies:

District 4 – Alternate
District 5 – Alternate
City of Watsonville – Alternate

Guests:

Erik Erikson, member of the public

3. Announcements – Cory Caletti announced that the Draft Environmental Impact Report for the Monterey Bay Sanctuary Scenic Trail (MBSST) Network was released, comments are due on July 22nd and two public meetings will be held in June. She distributed project flyers. She also informed members that the RTC applied for a \$22 M grant to the Federal Lands Access Program for North Coast segments of the MBSST Network.

4. Oral communications – none

5. Additions or deletions to consent and regular agendas – Cory Caletti distributed replacement pages for items #14 and #16.

CONSENT AGENDA

A motion (Conlen/Kostelec) to approve the consent agenda as amended passed unanimously.

6. Approved draft minutes of the May 13, 2013 Bicycle Committee meeting
7. Accepted Bicycle Committee roster
8. Accepted summary of Bicycle Hazard Reports
9. Accepted letter to the City of Santa Cruz regarding recommendations on the Draft Capital Improvement Program
10. Accepted letter to the City of Scotts Valley regarding recommendations on the recently adopted Capital Improvement Program

REGULAR AGENDA

11. Development of Monterey Bay Area Complete Streets Guidelines - Grace Blakeslee provided a summary of the staff report and the *Draft Complete Streets Guidelines*. The draft guidelines will guide local jurisdictions and the RTC in transitioning auto-oriented streets into streets that will serve all mode types. Members discussed some of the specific goals, innovative treatments and the guidelines' ability to guide future street retrofits. Ms. Blakeslee informed members that the Committee will be asked to consider the final draft at the August meeting and that members may contact her directly should they have additional comments or questions.
12. Scenario planning for the 2014 Regional Transportation Plan and 2014 Metropolitan Transportation Plan—Ginger Dykaar provided a presentation and summary of scenarios to be utilized in determining how projects would be prioritized for funding in the Regional Transportation Plan. Ms. Dykaar mentioned the upcoming public meetings and outlined the time frame for providing input. Members expressed frustration at the lack of time to provide input from the Committee as a whole after the Association of Monterey Bay Area Governments makes hybrid recommendations. After additional discussion, a motion was made (Akol/Ward) to recommend a hybrid of scenarios 1, 2 and 5. The motion passed unanimously.
13. County of Santa Cruz Capital Improvement Program (CIP) – Committee members Amelia Conlen and Rob Straka provided a summary of their recommendations regarding projects to add to the County's CIP. After some discussion, a motion was made (Ward/Jed) to write a letter to County Public Works forwarding those recommendations as well as the recommendation to include the segments of the Monterey Bay Sanctuary Scenic Trail Network, as identified in the Draft Master Plan, that are within the unincorporated county into the CIP. The motion passed unanimously. An additional item was discussed regarding current impediments to safe bicycle travel on Graham Hill Road. A motion (Ward/Rau) was made to write a letter to the County of Santa Cruz Public Works requesting that consideration be given to maximizing the shoulder in the north bound direction, reallocating lane width from the south bound direction if necessary, as well as replacing the current "Share the Road" signs with a "Watch for Bikes/Peds" sign. The motion passed unanimously.

14. Consider Ad-Hoc Committee recommendations for East Cliff Drive Parkway improvements – Will Menchine, Bicycle Committee alternate, summarized the memo in the packet, containing the Ad-Hoc Committee's review of current conditions and improvement recommendations. After some discussion, a motion was made (Ward/Jed) to forward the recommendations identified in the memo on behalf of the Committee to County Public Works staff with the minor change of deleting the words "multi-use path" from the fifth recommendation. The motion passed unanimously.
15. Rumble Strips on Highway 1 Installation Update – Committee member Leo Jed provided an update regarding Caltrans' plans to install rumble strips on Highway 1. He noted that he and Cory Caletti have been assigned to Caltrans' Project Development Team (PDT) and that some modifications to the original proposal are now being brought forward by Caltrans in response to Bike Committee and community concern about negative impacts to bicycle travel. The current proposal includes only 4 miles of shoulder rumble strips instead of the 10 miles originally proposed, as well as centerline strips for the length of the project area. An alternative treatment is recommended by Caltrans but no gaps to allow for bicycle movement in and out of the shoulder are considered. Caltrans intends to present the rumble strip proposal to the Bike Committee at the September 23rd meeting and to the RTC at the October 3rd meeting.

Bike Committee members requested that Caltrans provide the following information at the September Bike Committee meeting along with the presentation: 1) average daily bicycle count data to supplement vehicle miles traveled data; 2) updated injury and fatality data; 3) measures that could be introduced to enhance safety of bicyclists (such as speed feedback signs to reduce speeding); 4) how to provide 10/15 foot gaps every 40/60 feet of rumble strip; 5) what the experimental process entails to pursue gaps outside of standard manual directives; and 6) design specification reflecting the additional 2 inches beyond what will go on the white edge line located into the motor vehicle side of the road way instead of the shoulder side, as depicted in "alternative rumble strip" photo sent for the PDT meeting. Finally, the Bike Committee requested that the alternative treatment be made available locally prior to any installation for testing.

16. Determine Bicycle Committee meeting FY 13/14 schedule –Cory Caletti summarized the need for continuing a bi-monthly meeting schedule, explained the slight modifications due to upcoming holidays, as well as the need for an additional meeting. A motion to approve the staff recommendation (Menchine/Ward) passed unanimously.
17. Member updates related to Committee functions – Chair Casterson informed the Committee that their recommendation for increasing the bike planning budget by an additional .25 full time staff person is being considered by the Budget and Administration Committee at their upcoming meeting. He indicated that the staff recommendation was to not accommodate that request and that he would attend the meeting to make another plea. Members provided information as to why the need exists and cited the doubling of bicycle ridership in the last decade as one example.

Concern was expressed over the maintenance technique used by Caltrans to prune overgrown brush in the shoulder of Highway 1 and the Wilder Ranch multi-use path that is in Caltrans' right-of-way. Members noted that the machinery used grinds down the asphalt and deteriorates the highway shoulder and the path thereby

reducing usable travel space. A motion to write a letter to Caltrans (Akoi/Jed) requesting that better techniques be used to clear back overgrown brush, and that the shoulder and multi-use path be repaired, passed unanimously.

It was also noted that due to construction at Scott Creek and Waddell Creek on Highway 1, the shoulder is closed and appropriate signage is installed. However, no indication is given as to what bicyclists should do when a shoulder is closed and what motorists should expect. The Scott Creek and Waddell Creek bridges are already narrow and the closure of the minimal shoulder in those location pose a hazard to cyclists. A motion (Jed/Starka) to write a letter to Caltrans requesting that "Bikes May Use Full Lane" signs be installed in those construction locations and as standard practice in similar scenarios passed unanimously.

18. Adjourned: 8:48 pm

NEXT MEETING: The next Bicycle Committee meeting is scheduled for Monday, August 19, 2013, from the special time of 6:00pm to 8:30pm at the RTC office, 1523 Pacific Ave, Santa Cruz, CA.

Minutes respectfully prepared and submitted by:

Cory Caletti, Senior Transportation Planner

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BIKE COMMITTEE ROSTER – August, 2013

Representing	Member Name/Contact Info	Appointment Dates
District 1 - Voting Soquel, Live Oak, part of Capitola	Kem Akol kemakol@msn.com 247-2944	First Appointed: 1993 Term Expires: 3/16
Alternate	Holly M. Tyler Holly.m.tyler@gmail.com 818-2117	First Appointed: 2010 Term Expires: 3/16
District 2 - Voting Aptos, Corralitos, part of Capitola, Nisene Marks, Freedom, PajDunes	David Casterson, Chair dbcasterson@gmail.com 588-2068	First Appointed: 2005 Term Expires: 3/15
Alternate	Eric Horton erichortondesign@gmail.com 419-7296	First Appointed: 3/09 Term Expires: 3/15
District 3 - Voting Big Basin, Davenport, Bonny Doon, City of Santa Cruz	Peter Scott drip@ucsc.edu 423-0796	First Appointed: 2007 Term Expires: 3/16
Alternate	William Menchine (Will) menchine@cruzio.com 426-3528	First Appointed: 4/02 Term Expires: 3/16
District 4 - Voting Watsonville, part of Corralitos	Amelia Conlen director@peoplepowersc.org 425-0665	First Appointed: 5/13 Term Expires: 3/15
Alternate	Vacant	Term Expires: 3/15
District 5 - Voting SL Valley, Summit, Scotts Valley, part of Santa Cruz	Rick Hyman bikerick@att.net	First Appointed: 1989 Term Expires: 3/16
Alternate	Vacant	Term Expires: 3/16
City of Capitola - Voting	Andy Ward, Vice Chair Andrew.ward@plantronics.com 462-6653	First Appointed: 2005 Term Expires: 3/14
Alternate	Daniel Kostelec dnlkostelec@yahoo.com 325-9623	First Appointed: Term Expires: 3/14
City of Santa Cruz - Voting	Wilson Fieberling anbfieb@yahoo.com	First Appointed: 2/97 Term Expires: 3/15
Alternate	Carlos Garza carlos@cruzio.com	First Appointed: 4/02 Term Expires: 3/15
City of Scotts Valley - Voting	Lex Rau lexrau@sbcglobal.net 419-1817	First Appointed: 2007 Term Expires: 3/14
Alternate	Gary Milburn 427-3839 hm g.milburn@sbcglobal.net/438-2888 ext 210 wk	First Appointed: 1997 Term Expires: 3/14
City of Watsonville - Voting	Myrna Sherman calgary1947@gmail.com	Term Expires: 3/16
Alternate	Vacant	Term Expires: 3/16
Bike To Work - Voting	Rob Straka rob@ecoact.org 909-967-0204	First Appointed: 5/13 Term Expires: 3/16
Alternate	Piet Canin pcanin@ecoact.org 426-5925 ext. 127	First Appointed: 4/02 Term Expires: 3/16
Community Traffic Safety Coalition - Voting	Leo Jed leojed@gmail.com 425-2650	First Appointed: 3/09 Term Expires: 3/15
Alternate	Jim Langley jim@jimlangley.net 423-7248	First Appointed: 4/02 Term Expires: 3/15

All phone numbers have the (831) area code unless otherwise noted.

**August 19, 2013
Hazard Report**

Date	First Name	Last Name	Contact Info	Location	Cross Street	City	Category	Additional Comments	Forwarded To	Forwarded Date	Response	Images
08/11/13	Lucian	Atkins	lvianwayne@gmail.com	Soquel		Santa Cruz	rough pavement or potholes, debris on shoulder or bikeway, vehicles or objects blocking sidewalk	rider states road work on soquel south over last couple months has destroyed bike lanes in numerous places. Bike lane unsafe during rush hour commutes due to potholes, lifted areas around plates, debris, etc. had to replace one front wheel and multiple rear tires since june 2013. please make bike lane safe	General Dept of Co of Santa Cruz	08/12/13	From Melissa Henderson - Thank you for reporting this issue. Soquel Creek Water District is replacing its lines along this stretch of road. Work is anticipated to be completed in the next few weeks, and our department will ensure that the final paving is smooth and consistent with County requirements. 08/12/13	
08/09/13	Piet	Canin	pcanin@ecoact.org	Branciforte Drive	Goss St	Santa Cruz	plant overgrowth or interference	rider says it is about 1/8 mile before branciforte drive and goss street intersection when traveling towards town	Cheryl Schmitt	08/09/13		
08/08/13	Piet	Canin	pcanin@ecoact.org	Market St	Avalon St	Santa Cruz	plant overgrowth or interference	rider state bush forces bikes out of the bike lane into traffic lane at a choke point as there is a center divide narrowing the road. This is an ongoing issue that should be on a calendared maintenance schedule.	Cheryl Schmitt	08/08/13	From Cheryl - Notice to Trim Vegetation was mailed to adjacent property owner on 7/12/13 and I received a call from the property owner that the trimming had been done. I will re-check. 08/08/13	
08/07/13	Pureheart	Steinbruner	env071@co.santa-cruz.ca.us	Soquel Dr	Park to Soquel Village	Soquel	rough pavement or potholes	rider states water main work along Soquel dr has left numerous patches in bike lane in both directions of travel from soquel village to park ave. some patches are significantly dipped and/or rutted from bicycle traffic to form some pretty severe depressions. bad patches probably in excess of 10.	General Dept of Co of Santa Cruz	08/07/13		
08/04/13	Saskia	Lucas	saskia_lucas@yahoo.com	San Lorenzo Trestle Bridge	West Side of River	Santa Cruz	space between boards	rider states space btwn boards of bridge walkway large enough for a narrow bike tire to fall into and cause crash	Cheryl Schmitt	08/05/13		
08/04/13	Saskia	Lucas	saskia_lucas@yahoo.com	Empire Grade	Heller Ave	Santa Cruz	rough pavement or potholes	rider states large and deep pothole on the right edge of road on empire maybe 1/2 to 1 mile before heller intersection	Cathy Crowe	08/05/13		
07/21/13	Steve	Piercy	web@stevepiercy.com	Soquel Dr	Robertson St	Soquel	plant overgrowth or interference, debris on shoulder or bikeway, lack of sidewalk, lack of wheelchair access	rider states overgrowth out into bike lane forcing all cyclists and peds into roadway, also, soil eroded from hillside narrowing bike lane	General Dept of Co of Santa Cruz	07/22/13		
07/21/13	Steve	Piercy	web@stevepiercy.com	Soquel Dr	Mattison Ln	Soquel	plant overgrowth or interference, lack of sidewalk, lack of wheelchair access	rider states overgrowth out into bike lane forcing all cyclists and peds into roadway	General Dept of Co of Santa Cruz	07/22/13		
07/17/13	Ben	Roberts	bsr316@gmail.com	Bonita Dr	Vista Del Mar-Zanzibar Dr	Aptos	plant overgrowth or interference, debris on shoulder or bikeway	rider states plant debris covering the shoulders/edges of paved roadway, removal of debris would be greatly appreciated by cyclists such as myself who use bonita dr as a cycling route	General Dept of Co of Santa Cruz	07/17/13		Bicycle Hazard Downloaded Images/2013/July/071713-BonitaDr-VistaDelMarDr-ZanzibarDr.jpg
06/24/13	Piet	Canin	pietcanin@gmail.com	Market St	Avalon St	Santa Cruz	plant overgrowth or interference	rider states overgrown trees/plants block bike lane as you cross the creek on blind turn. Recurring problem that can be solved through seasonal trimming along this section.	Cheryl Schmitt	06/25/13	From Cheryl - I will send a Notice to Trim Vegetation to the adjacent property owner. 06/25/13	
06/03/13	Bart	Coddington	bikerbart@sbcglobal.net	Freedom Blvd	Cottage Rd to Corralitos Rd	Watsonville	plant overgrowth or interference	rider states number of areas plant growth is very close to pushing cyclist/ped into road, other cyclists must duck to avoid being hit in the face with branches	General Dept of Co of Santa Cruz	06/03/13		
06/03/13	Richard	Masoner	rmasoner@gmail.com	Mt Hermon Rd	La Cuesta Dr & Glen Canyon Rd	Scotts Valley	debris on shoulder or bikeway	rider states debris from fallen tree left in bike lane, cyclists are forced to move out of bike lane into the right lane, sharing the road with 45 mph traffic accelerating to hwy 17	Trish McGrath, Frank Alvarez	06/03/13	From Trish McGrath - This was a tree that came down over the weekend. We only have one man on call over the weekend. He did what he could alone and has a crew scheduled to finish the clean up this morning. 06/03/13	
05/23/13	Karen	Gropi	kagropi@cabrillo.edu	Park Ave	Soquel Dr	Aptos	rough pavement of potholes, pavement cracks	rider states loss of asphalt adjacent to the PCC gutter and elsewhere in bike lane right on curve presents a significant hazard because it is a surprise when traveling around the curve, there are multiple holes that need to be avoided, holes are deep enough to cause damage to bike or fall during turning	General Dept of Co of Santa Cruz	05/23/13		
05/19/13	Rick	Hyman	bikerick@att.net	Soquel Ave	Front St	Santa Cruz	bikeway not clearly marked	rider states bike lane ends at an island, what is cyclist to do?	Cheryl Schmitt	05/21/13	From Cheryl - I will forward the email to traffic maintenance. 05/21/13	Bicycle Hazard Downloaded Images/2013/May/051913-SoquelAve-FrontSt.JPG
05/15/13	Roxanne	Lo	roxy@roxio.com	Bonny Doon Rd	Hwy 1	County of Santa Cruz	pavement cracks, plant overgrowth or interference	rider states road overdue for mowing btwn 0-1.5 miles after hwy 1 turn off, aggressive overgrowth @ blind turns, bicycle lane easement overtaken by vegetation encroachment on roadway, motorists crossing double yellow line to avoid hitting brush, overgrowth no allowing motorist/cyclists to maintain sight distance for road safety, causing damage to road	General Dept Co of Santa Cruz	05/15/13		Bicycle Hazard Downloaded Images/2013/May/051513-BonnyDoonRd-Hwy1.jpg

**August 19, 2013
Hazard Report**

05/05/13	Rick	Hyman	bikerick@att.net	Soquel Ave	N Branciforte Ave	Santa Cruz	bikeway not clearly marked	rider states westbound bike lane toward the intersection ends at the intersection; on other side of street there is no bike lane. Right travel lane is narrow forcing cyclists into path of motor vehicles; there is share the road sign a short distance farther west; needs to be signing and pavement marking prior to intersection to alert cyclist and motorists they	Cheryl Schmitt	05/06/13		Bicycle Hazard Downloaded Images\2013\May\050513-SoquelAve-NBranciforte.JPG
04/23/13	Rene	Denevan	denevan4@hotmail.com	East Cliff Bike Lane	Prospect Ave to Twin Lakes Beach	Santa Cruz	Plant overgrowth or interference, debris on shoulder or bikeway	rider states bike lane on east cliff btwn twin lakes beach and prospect ave dangerously narrow because of plant overgrowth and slippage of dirt from the slopes that plants grown on. Less than half of bike lane is available ins some spots along this strip of road. vehicles making the curve past beach accelerate here and are inches away from bicycles going up toward 12th. pedestrians walk on this side toward beach to face cars imperiling everyone.	General Dept of Co of Santa Cruz	04/24/13		

AGENDA: August 19, 2013

TO: Bicycle Committee

FROM: Cory Caletti, Senior Transportation Planner/Bicycle Coordinator

RE: FY 13/14 Bicycle Committee Meeting Schedule

FOR INFORMATION ONLY

BACKGROUND

At the last Bicycle Committee meeting, a schedule was approved for FY 13/14 but a change has since been made.

DISCUSSION

As a reminder for Bicycle Committee members and alternates and as an update for your calendars, here is the FY 13/14 schedule:

Monday, August 19, 2013 (one week later due to presentation scheduling needs)

6:00 pm – 8:30 pm
Location: RTC office

Monday, September 23rd, 2013 (two weeks later due to a special presentation)

6:00 pm – 8:30 pm
Location: RTC office

Monday, October 21, 2013 (one week later than usual due to holiday)

6:00 pm – 8:30 pm
Location: RTC office

Monday, December 9, 2013

6:00 pm – 8:30 pm
Location: RTC office

Monday, February 10, 2014

6:00 pm – 8:30 pm
Location: RTC office

Monday, April 14, 2014

6:00 pm – 8:30 pm
Location: RTC office

Monday, June 9, 2014

6:00 pm – 8:30 pm

Location: RTC office

SUMMARY

The FY 13/14 schedule is provided for Bicycle Committee members and alternates calendaring needs.

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SANTA CRUZ COUNTY REGIONAL TRANSPORTATION COMMISSION

1523 Pacific Ave., Santa Cruz, CA 95060-3911 • (831) 460-3200 FAX (831) 460-3215 EMAIL info@sccrtc.org

June 11, 2013

John Presleigh, Director
Department of Public Works
County of Santa Cruz
701 Ocean Street, Room 410
Santa Cruz, CA 95060

RE: East Cliff Drive Parkway improvement recommendations

Dear Mr. Presleigh:

I'm writing on behalf of the Bicycle Committee of the Regional Transportation Commission (RTC) to forward bicycle related recommendations for improvements to the East Cliff Drive Parkway.

The RTC Bicycle Committee serves to assist in the development and maintenance of a complete, convenient and safe regional bicycle network. As such, the Committee reviews projects, preliminary designs or policy related initiatives and makes recommendations as needed. After complaints from the public and members' own observations regarding unclear travel behavior and corresponding indicators, as well as deficiencies in serving west bound bicycle travelers on the new East Cliff Drive Parkway, the Committee concluded that improvements were needed. An Ad-Hoc Committee was formed to conduct observations, meet with Public Works staff and make recommendations. The Ad-Hoc Committee noted that the project represents a huge leap forward with respect to the aesthetic of East Cliff Drive and encourages active transportation and recreational opportunities. However, some clear deficiencies currently exist that could be addressed with minimal effort. The Bicycle Committee, through a motion that was passed unanimously, requests that the County Public Works Department consider the following improvements and process:

1. Re-configure the eastbound travel lane to include sharrows and any necessary signage
2. Install a westbound contra-flow bike lane using the remaining roadway area (which currently serves as an eastbound bicycle lane). Design the contra-flow bike lane to conform with established best design practices
3. Install signage, stenciling or striping to better inform pedestrians and bicyclists of shared path conditions and uses (directional arrows, center line and/or "Keep Right" stencils)
4. Modify path and roadway design at the entry and exit of the parkway to direct faster moving bicycle traffic to the shared roadway or contra-flow lane, and sightseeing or slower recreational bicyclists to the multiuse path facility
5. Until a contra-flow lane is installed, improve facility design and signage to make intended uses obvious and to discourage "wrong-way" riding on the roadway
6. Install stop signs or user activated controls at pedestrian crossing at 41st Ave end of parkway
7. Get design feedback from the Bicycle Committee, stakeholders and facility users prior to final design and construction

The Ad-Hoc Committee report, which was endorsed by the full Bicycle Committee, is attached for background information.

The Bicycle Committee believes that the facility has the potential to develop into a conflict free, valuable transportation and recreational resource for locals and tourists. The Committee urges you to make the recommended improvements to further enhance this community jewel.

Please feel free to contact the RTC's Bicycle Coordinator and staff to the Bicycle Committee, Cory Caletti at (831) 460-3201 or by email at ccaletti@sccrtc.org, for this and any other Bicycle Committee related matters.

Sincerely,



David Casterson
Bicycle Committee Chair

Attachment 1: Ad-Hoc Committee Report regarding East Cliff Drive Parkway improvements

cc: Santa Cruz County Regional Transportation Commission
Santa Cruz County Regional Transportation Commission's Bicycle Committee
John Leopold, District 1 Supervisor

June 10, 2013

From: SCCRTC Bicycle Committee East Cliff Parkway Ad-Hoc Committee

**William Menchine
Kem Akol
Nick Mucha**

To: SCCRTC Bicycle Committee

Consolidation of Subcommittee Findings on East Cliff Parkway Project and Recommendations

Background

Subcommittee members had an opportunity to observe, walk and ride the East Cliff Parkway to gain a better understanding of the design issues and possible solutions for improving the East Cliff Parkway facilities for both bicyclists and pedestrians.

Overview

The project design as built represents a major improvement for the general public in terms of access and aesthetics as a result of the construction of a multi-use path, parking and roadway improvements along East Cliff between 32nd Ave and 41st Ave. The success of the project is evident in the high numbers of users seen in the afternoons and on weekends. There is no doubt that the project has resulted in an increase in foot and bicycle traffic along this section of East Cliff. Unfortunately, the lack of a dedicated lane for westbound cyclists has resulted in a facility that is less than optimal for the needs of utility bicyclists, bicycle commuters and cyclists wanting to travel at speeds exceeding a walking pace.

From the perspective of a transportation or utility cyclist, the changes to the roadway that resulted in one-way eastbound traffic eliminated an efficient and scenic roadway that had served as coastal “bike route” and had been in use for decades.

The intent of planners was to channel westbound bicycle traffic onto the multi-purpose path but this has resulted in some confusion and potential danger due to a lack of signage and separation. As it stands, there are no indications to inform users where to ride or walk on the pathways. The resulting bikeway is “asymmetrical” in that eastbound riders can travel in a bike lane at higher speeds where westbound riders are forced to ride through and around pedestrians and other path users.

The dual path concept of decomposed granite (DG) to serve as a jogging or walking path and asphalt concrete (AC) as the “bike lane” is not necessarily obvious to different user groups. This was evident when observing pedestrians and bicyclists using both pathways and by the number of westbound bicyclists that chose to avoid the path altogether by riding the wrong way in the dedicated eastbound bike lane. It is clear that there is an immediate need for some form of “tweaking” to the facility to improve safety and reduce potential conflicts between user groups.

Observations

In observing and analyzing the East Cliff Parkway facility “as built” and in discussing the design intent of the project with County Public Works and Redevelopment Staff, our subcommittee has developed a summary of observations, suggestions and possible improvements.

Path Markings

It is clear that the path facility has been designed to function as a bi-directional bike path intended for slower bicycle traffic and separate from the roadway. As such, this path should be clearly marked as a bikeway with a separating line for directions and/or a regular stencil of graphic to educate and encourage all users to “Keep Right”. This change alone would help to reduce some of the conflict and chaotic movements and interactions between parents pushing strollers, children and families on casual bike rides and pedestrians.

In addition, it would be useful to have signage explaining path rules and etiquette placed at several point along the Parkway. This should include information to educate and encourage joggers and pedestrians to use the DG pathway and likewise discourage bicyclists from riding on the DG path and limiting speeds on the AC path to less than 10mph.

Entry and Exit Improvements

There is a need for better signage and possible redesign of the bicycle and pedestrian path and crossing at the east end of the Parkway near 41st Ave. The design as it exists is particularly confusing for bicyclists heading west as to where to ride and how to enter the path. It is also not obvious to drivers as they approach the crosswalk that this is a Bike and Pedestrian crossing. This may need to be controlled with a stop sign or a “push to cross” warning system with lights.

Likewise, the west end of the parkway needs some way to indicate to bicyclists how to enter and exit the pathway legally and safely. This could be handled by signage, painted pavement and or a system of rubber curbs or barriers to allow westbound bicyclists to continue on East Cliff after exiting the Parkway.

Contra-Flow Lane

From a bicycle transportation perspective the East Cliff Parkway facility is compromised by the lack of a separate and dedicated bike route for westbound bicyclists. It is the opinion of our subcommittee that this should be addressed and corrected by re-configuring the roadway to include sharrows in the eastbound travel lane and use the remaining roadway area for a separated, westbound contra-flow bike lane. The placement of the contra-flow lane is potentially challenging given the design of the

parking pullouts on the ocean side of the street and presence of driveways and streets entering East Cliff on the north (inland side) of the road.

The typical configuration of a contra-flow lane on a “one-way” street replaces the “normal” opposing travel lane with a separated bike lane. This preserves conventional turning maneuvers and traffic interactions at intersections and driveways. While recognizing that there could be potential challenges, the north (inland) side of the roadway is the preferred location for a contra-flow bike lane on East Cliff Parkway.

It is unfortunate that the addition of a contra-flow lane will be as a modification or afterthought to an otherwise first class facility. Whatever direction the design of a contra-flow lane takes, it is important to get it right. It is our committee’s request to be included in preliminary design and configuration studies to provide informed feedback and critique. It is strongly recommended that flexible (prototype) solutions be tried in advance of committing to the construction of a final hardscape design.

Summary of recommendations for improvements to the East Cliff Parkway:

1. Re-configure the eastbound travel lane to include sharrow markings and any necessary signage
2. Install a westbound contra-flow bike lane using the remaining roadway area to conform with established best design practices
3. Install signage, stenciling or striping to better inform pedestrians and bicyclists of shared path conditions and uses (directional arrows, center line and/or “Keep Right” stenciled on pathway)
4. Modify path and roadway design at the entry and exit of the parkway to direct faster moving bicycle traffic to the shared roadway or contra-flow lane and sightseeing or slower recreational bicyclists to the multiuse path facility
5. Improve facility design and signage to make intended uses obvious and to discourage “wrong-way” riding on the roadway
6. Install stop signs or user activated controls at pedestrian crossing at 41st Ave end of parkway
7. Get design feedback from the Bicycle Committee, stakeholders and actual facility users prior to final design and construction

Conclusions

The East Cliff Parkway represents a huge leap forward with respect to the aesthetic of East Cliff Drive and as an enticement and encouragement of active transportation and recreation opportunities for the community. The facility clearly has the potential to develop into a well-used and valuable transportation and recreational resource for locals and tourists. We are hopeful that through some redesign, improved signage and the application of new ideas it will become an even better facility and more effectively serve the needs of all users.

RTC East Cliff Parkway Ad-Hoc Committee
WM for KA and NM



SANTA CRUZ COUNTY REGIONAL TRANSPORTATION COMMISSION

1523 Pacific Ave., Santa Cruz, CA 95060-3911 • (831) 460-3200 FAX (831) 460-3215 EMAIL info@sccrtc.org

June 11, 2013

John Presleigh, Director
Department of Public Works
County of Santa Cruz
701 Ocean Street, Room 410
Santa Cruz, CA 95060

RE: County's Capital Improvement Program recommendations

Dear Mr. Presleigh:

I'm writing on behalf of the Bicycle Committee of the Regional Transportation Commission (RTC) to comment on the draft Capital Improvement Program (CIP) and suggest bicycle project modifications and additions.

The RTC Bicycle Committee appreciates Public Works staff's partnership in developing and maintaining a complete, convenient and safe regional bicycle network that promotes active and sustainable transportation and recreational options. The Committee reviews pertinent plans, projects, preliminary designs and policy initiatives to further advance those objectives. In reviewing the County's draft CIP, the Bicycle Committee, through a motion that was approved unanimously, recommends the following changes and additions:

- For the Green Valley Road Chip Seal project: include bike lanes where possible and sharrows otherwise in order to increase awareness of cyclists on this high-use corridor
- For the Boulder Creek Elementary School project: review bicycle lanes for possible inclusion as a jumping off block for further bicycle facilities to be constructed later that will provide safe avenues for parents and kids to get to school by bike
- Add all segments of the Monterey Bay Sanctuary Scenic Trail (as defined in the project's Draft Master Plan) that are within the jurisdiction of the unincorporated county
- In general, support all projects that include bike facilities and seek Bicycle Committee input into preliminary design proposals

Please feel free to contact the RTC's Bicycle Coordinator and staff to the Bicycle Committee, Cory Caletti at (831) 460-3201 or by email at ccaletti@sccrtc.org, for this and any other Bicycle Committee related matters.

Sincerely,

David Casterson
Bicycle Committee Chair

cc: Santa Cruz County Regional Transportation Commission
Santa Cruz County Regional Transportation Commission's Bicycle Committee

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SANTA CRUZ COUNTY REGIONAL TRANSPORTATION COMMISSION

1523 Pacific Ave., Santa Cruz, CA 95060-3911 • (831) 460-3200 FAX (831) 460-3215 EMAIL info@sccrtc.org

August 12, 2013

District Director Timothy Gubbins
Caltrans District 5
50 Higuera Street
San Luis Obispo CA 93401

Re: Highway 1 hazards and maintenance issues

Dear Mr. Gubbins:

I'm writing on behalf of the Bicycle Committee of the Regional Transportation Commission (RTC) to express concern regarding a few hazardous conditions on Hwy 1 and a poor maintenance issue on Highway 1 and the Wilder Ranch multi-use path.

The RTC Bicycle Committee serves to assist in the development and maintenance of a complete, convenient and safe regional bicycle network. As such, the Committee reviews projects, on-road conditions, preliminary designs or policy related initiatives and makes recommendations as needed. After receiving complaints from the public and members' own observations regarding unclear travel behavior and hazards, the Bicycle Committee requests that Caltrans consider the recommendations below.

- 1) As shown in the photos in Attachment 1, the method used for brush and overgrown vegetation clearance on Highway 1 between Santa Cruz and Davenport as well as on the Wilder Ranch multi-use path causes deterioration of the pavement surface. On Highway 1, the grinding of the pavement causes further narrowing of an already narrow shoulder. Due to an upcoming rumble strip project where rumble strips will be installed in areas where the shoulder is 5 feet or wider, the pavement quality being un-rideable means the effective width and bicycle ridership safety will be further compromised. A good example of the severity of pavement deterioration can be found just north of MP 28.59 in the NB direction. Similarly, on the Wilder Ranch multi-use path, where maintaining current width is paramount due to the high number of different user types, pavement conditions have deteriorated and have thus caused grass intrusion into cracks of the pavement. In certain locations, the usable width is highly constrained. The Bicycle Committee requests that Caltrans modify the technique used to clear back overgrown vegetation so as to not cause pavement deterioration and make repairs to the damage done.
- 2) The bridge work at Scott Creek and Waddell Creek involves closing of the shoulder and appropriate signs are installed as shown in Attachment 1. While this closure is necessary and understandable, roadway users are not aware of what behaviors are expected and allowed for bicycle travel in light of the shoulder closure. The Bicycle Committee requests that Caltrans install the Bikes May Use Full Lane (BMUFL) sign approved by the California Manual of Uniform Traffic Control Devices in the approach to each of the two bridges. This will inform motorists to yield to cyclists as they make their way across. The attached photos show a situation where a motorist is passing two cyclists as they make their way across the bridge while an oncoming vehicle is also approaching. This passing at an unsafe passing width endangered the cyclists. A BMUFL sign would inform both motorists and cyclists of the safest travel behavior across a narrow construction zone. Also noteworthy is that due to the gradient change in reaching the bridges, a fairly high speed is reached by bicyclists over the short span.

The Bicycle Committee requests that Caltrans consider these conditions and respond with any possible remediation initiatives. Please feel free to contact the RTC's Bicycle Coordinator and staff to the Bicycle Committee, Cory Caletti at (831) 460-3201 or by email at ccaletti@scrtc.org, for this and any other Bicycle Committee related matters.

Sincerely,

A handwritten signature in black ink that reads "David Casterson". The signature is fluid and cursive, with the first name "David" being more prominent than the last name "Casterson".

David Casterson
Bicycle Committee Chair

cc: Santa Cruz County Regional Transportation Commission
Santa Cruz County Regional Transportation Commission's Bicycle Committee
Doug Hessing, Caltrans Highway 1 Rumble Strip Project Manager

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Attachment 1: Photos of Highway 1 and Wilder Ranch multi-use path

Attachment 1

Wilder Ranch Path and Hwy 1 pavement conditions post brush clearance:



Scott Creek shoulder closure:



AGENDA: August 19, 2013

TO: Bicycle Committee

FROM: Grace Blakeslee, Transportation Planner

RE: Draft Monterey Bay Area Complete Streets Guidebook

RECOMMENDATIONS

Regional Transportation Commission (RTC) staff recommends that the Bicycle Committee (EDTAC):

1. Provide input on the Draft Monterey Bay Area Complete Streets Guidebook ([Attachment 1](#));
 2. Recommend that the Regional Transportation Commission adopt the Monterey Bay Area Complete Streets Guidebook; and,
 3. Provide input on local complete streets training opportunities.
-

BACKGROUND

A complete streets analysis is part of the development of the 2014 Santa Cruz County Regional Transportation Plan and Association of Monterey Bay Area Governments (AMBAG) sustainable communities strategy. The complete streets analysis consists of both a needs assessment and development of complete streets guidelines. The Draft Monterey Bay Area Complete Streets Guidebook has been developed as a collaborative effort between the Santa Cruz County Regional Transportation Commission, Transportation Agency for Monterey County, and the San Benito Council of Governments, in coordination with the Association of Monterey Bay Area Governments.

DISCUSSION

Draft Complete Streets Guidebook

The Draft Monterey Bay Area Complete Streets Guidebook ([Attachment 1](#)) outlines a strategy for transitioning auto oriented streets to complete streets. The strategies articulated in the Monterey Bay Area Complete Streets Guidebook will be incorporated into the region's sustainable communities strategy.

The purpose of the Monterey Bay Area Complete Streets Guidebook is to provide resources and a procedure for developing streets in the Monterey Bay Area that meet the needs of all users including non-drivers of all ages and abilities. Although great strides have been made by local jurisdictions across the Monterey Bay Area to

provide adequate facilities for all roadway users, many streets are not “complete” in the Monterey Bay Area due to lack of sufficient bicycle and pedestrian facilities. In recognizing that roadways have primarily been designed to serve the automobile, the guidebook addresses bicycle and pedestrian access as an essential design objective.

The Monterey Bay Area Complete Streets Guidebook contains sample policies and engineering best practices that can be adopted by local jurisdictions to comply with California Complete Streets Legislation (AB 1358). Various complete street types are identified and defined in the guidebook, along with sample cross-sections, associated land uses and suggested roadway user prioritization. The complete street types provide design recommendations for various roadway arrangements. Another key component of the guidebook is a complete streets project review and design checklist (located in the Appendix). The checklist is a tool that can be used in planning and public works departments to identify opportunities for complete streets and document constraints or exemptions.

Unlike many guidebooks, which may be more prescriptive, the Monterey Bay Area Complete Streets Guidebook places greater emphasis on process and the importance of understanding the trade-offs between different design considerations. Understanding these trade-offs is essential in the Monterey Bay Area, where right-of-way constraints and limited funding are significant challenges. The planning processes recommended by this guidebook seek to ensure that the resulting streets provide for the safety and comfort of all users to the greatest extent possible.

Process for Developing the Complete Streets Guidebook

The goals for the Monterey Bay Area Complete Streets Guidebook were established based on input from local jurisdictions, the public and stakeholders during the development of draft regional transportation plan goals and policies, and in response to state requirements for greenhouse gas reduction and general plan policies supporting complete streets.

The Monterey Bay Area Complete Streets Guidebook builds on best practices from across the nation. The policies, processes and design treatments included in the Monterey Bay Area Complete Streets Guidebook have been vetted, and refined by planners, advocates and policy makers both nationally as part of similar efforts, and locally as part of the development of the guidebook. RTC staff has worked closely with RTC Committees on development of the Draft Monterey Bay Area Complete Streets Guidebook to ensure the content in the guidebook is comprehensive, appropriate for local conditions and complimentary to local practices. RTC Committees and the public are requested to provide input on the Draft Guidebook via email and at regular public RTC and RTC Committee meetings in August.

RTC staff recommends that the Bicycle Committee provide input on the Draft Monterey Bay Area Complete Streets Guidebook,
<http://sccrtc.org/wp-content/uploads/2013/08/Draft-2013-monterey-bay-complete-streets-guidebook.pdf>.

Adoption

The Monterey Bay Area Complete Streets Guidebook is designed to be adopted in full or in part by local jurisdictions and regional agencies to guide the planning and design of streets. Adoption of the guidebook represents the agency's commitment to incorporate complete streets in policy, project evaluation, design, implementation, training, and public involvement.

It is recommended that local and regional agencies that adopt or use this guidebook should:

- Review their approach to street design through all stages of the process, from advanced planning through preliminary design and construction;
- Update existing design manuals and training materials to address complete streets concepts;
- Incorporate a comprehensive range of policies which address complete streets in the general or regional plan;
- Support training for planners and engineers in complete street concepts and design considerations; and
- Seek ongoing public input from the community.

RTC staff recommends that the Bicycle Committee recommend that the Regional Transportation Commission adopt the Monterey Bay Area Complete Streets Guidebook.

By adopting the Monterey Bay Area Complete Streets Guidebook, the RTC will use the Monterey Bay Area Complete Streets Guidebook as a resource to: review transportation planning goals to ensure policies address complete streets, incorporate a planning process that supports inclusion of perspectives of all stakeholders affected by existing or future streets, consider complete street design elements in project design, support integration of land use and transportation elements to reduce vehicle miles traveled, and support training for addressing complete streets concepts locally. Following adoption of the guidebook, RTC staff will work with project sponsors to provide training opportunities that support implementation of the guidebook.

Implementation and Training Opportunities

In order to support implementation of the Monterey Bay Area Complete Streets Guidebook, RTC and other regional transportation planning agency staff would like to provide opportunities for project sponsors and committee members to exchange ideas and learn about techniques and skills that support implementation of complete streets. Staff expects to coordinate two or three training opportunities.

RTC staff requests that the Bicycle Committee provide input on training topics. Staff is considering the following presentations and workshops:

1. How to use the Monterey Bay Area Complete Streets Guidebook: Detailed discussion about resources provided in the Monterey Bay Area Complete Streets Guidebook

2. Laying the Foundation for Complete Streets: Focus on building a common understanding of Complete Streets, examine several types of successful Complete Streets policies and best practices
3. Engineering and Complete Streets Design: Engineer perspective on implementation of complete street designs in California
4. Lesson Learned Implementing Complete Streets: Public works staff perspective implementing complete streets designs in California
5. Roundtable on Complete Streets: Local staff discussion about lessons learned from implementing complete street designs locally
6. Liability and Complete Streets: Perspective on standards, guidelines and liability concerns associated with complete street design
7. "Neighborhood Shared Streets": Opportunities and challenges associated with implementing "Neighborhood Shared Streets"
8. Presentations to City Councils regarding Monterey Bay Area Complete Streets Guidebook
9. Establish "Monterey Bay Area Complete Streets Certification": Local program for public work and planning staff to become "certified" in complete streets design

SUMMARY

The Monterey Bay Area Complete Streets Guidebook is being developed as a collaborative effort between the Santa Cruz County Regional Transportation Commission, Transportation Agency for Monterey County, and the San Benito Council of Governments, in coordination with the Association of Monterey Bay Area Governments. The Monterey Bay Area Complete Street Guidebook identifies strategies for transitioning auto-oriented streets into complete streets and guidance for incorporating complete streets policies into circulation elements of local jurisdictions' general plans as required by AB1358. The Monterey Bay Area Draft Guidebook is designed to be adopted in whole or in part by local and regional agencies. RTC recommends that the Bicycle Committee provide input on the Draft Monterey Bay Area Complete Streets Guidebook.

Innovative Bicycle Treatments in Current Regulatory Standard Manuals

- Amelia Conlen, District 4 Representative

Recommendation

That the Bicycle Committee accepts this report.

Background

Over the past decade, cities across the country have installed non-traditional bicycle facilities and treatments like cycle tracks, bike boxes, and bike traffic signals as a way to clarify traffic rules, improve safety and attract new cyclists. Many of these treatments have long been in use in other countries but are not reflected in the regulatory manuals used by U.S. planners and engineers. This can create hesitation on the part of cities, which fear that using untested treatments will render them vulnerable to liability lawsuits.

Appendix F of the Complete Streets Guidelines (attached) describes the type of manuals and their legal standing. The most pertinent are the Federal Highway Administration's Manual on Uniform Traffic Control Devices¹ (FHWA MUTCD) and California MUTCD², which set standards for traffic control devices including roadway markings, traffic signs, and signals. Most innovative treatments fall into these categories. The AASHTO 2012 Guide for Bicycle Facilities also provides non-regulatory guidance on bike infrastructure design.

Findings from the Berkeley Law School³ show that cities can deviate from street design standards (like AASHTO) without becoming vulnerable to liability. While compliance with design standards is one form of defense in a liability case, other evidence such as lack of accident history, expert testimony, and proper approval of a design feature can be a convincing defense.

Many innovative treatments have been shown to reduce crashes, improve the perception of safety, and increase business. The following statistics are

from the Green Lane Project⁴, a two-year campaign to install protected green lanes (a combination of green lane and cycle track) in six US cities.

- ❖ **When protected green lanes are installed in New York City, injury crashes for all road users (drivers, pedestrians, and cyclists) typically drop by 40% and by more than 50% in some locations.**

Wolfson, H., 2011, [Memorandum on Bike Lanes, City of New York, Office of the Mayor, 21 March 2011](#)

- ❖ **Eighty-six percent of respondents feel “safe” or “very safe” riding on Chicago's Kinzie Street green lane, compared with just 17 percent in traditional bike lanes.**

Chicago DOT, 2011, [Initial Findings: Kinzie Street Protected Bike Lane](#)

- ❖ **After buffered green lanes were installed on Philadelphia's Spruce and Pine streets, bike traffic increased 95% and the number of bicyclists riding on the sidewalks decreased by up to 75%.**

Bicycle Coalition of Greater Philadelphia, 2010, ["Bicycle usage up 95% on Spruce and Pine bike lanes," 10 December 2009](#)

- ❖ **NYC's Prospect Park West protected green lane saw a 190 percent increase in weekday ridership, with 32 percent of those biking under age 12.**

NYC DOT, 2012, [Prospect Park West: Traffic Calming & Bicycle Path](#)

- ❖ **New York City found that protected green lanes had a significant positive impact on local business strength. After the construction of a protected bike lane on 9th Avenue, local businesses saw a 49 percent increase in retail sales. In comparison, local businesses throughout Manhattan only saw a 3 percent increase in retail sales.**

NYC DOT, 2012, [Measuring the Street](#)

Findings

I reviewed six innovative treatments for this report; green painted bike lanes, buffered bike lanes, advisory bike lanes, cycle tracks, bike boxes, and bike traffic signals. Of those, buffered bike lanes and bike traffic signals are approved in California, and green lanes have received interim approval. The FHWA does not regulate cycle tracks, since they are not a traffic control

device. Bike Boxes and Advisory Bike Lanes are currently classified as experimental by the FHWA MUTCD.

1. Green Lanes: used to highlight bike lanes or draw attention to conflict areas where motorists merge or turn across a bike lane.

- FHWA MUTCD Status: interim approval granted
- California MUTCD Status: not addressed
- AASHTO status: not addressed

2. Buffered Bike Lanes: includes a marked buffer between bike lanes and adjacent travel lanes to separate cyclists from traffic.

- FHWA MUTCD Status: can be implemented at present time
- California MUTCD Status: not addressed
- AASHTO status: striped buffers may be used to provide increased separation between a bike lane and adjacent lane

3. Advisory Bike Lanes: markings used on narrow, low-volume streets to provide space for bikes but also allow vehicles to use the lane for passing.

- FHWA MUTCD Status: experimental
- California MUTCD Status: not addressed
- AASHTO status: not addressed

4. Cycle Tracks: an exclusive bike facility that is physically separated from motor traffic and distinct from the sidewalk.

- FHWA MUTCD Status: not a traffic control device, so no restriction on its use
- California MUTCD Status: not a traffic control device, so no restriction on its use
- AASHTO status: "Raised pavement markers, curbs, posts or barriers should not be used to separate bike lanes from adjacent travel lanes."

5. Bike Boxes: a colored area at a signalized intersection that allows bicyclists to pull in front of waiting traffic, reducing bike/car conflict.

- FHWA MUTCD Status: experimental
- California MUTCD Status: not addressed
- AASHTO status: not addressed

6. Bike Traffic Signals: used to separate vehicle traffic from bike traffic to prevent right-turn conflicts. Also used where bike paths approach intersections from a direction that doesn't allow cars.

- FHWA MUTCD Status: experimental
- California MUTCD Status: approved
- AASHTO status: "It may be appropriate to indicate that a signal head is intended for the exclusive use of bicyclists."

Use of FHWA Interim Approved treatments: Any jurisdiction that wishes to use a device or application that has received Interim Approval must submit a written request to the FHWA, Director of the Office of Transportation Operations.

Use of FHWA Experimental treatments: If a device or application is not compliant with or not included in the MUTCD, it is possible to experiment with the device or its use.

The "experimenter" must evaluate conditions both before and after installation of the experimental device and describe the measurements of effectiveness (MOEs) of the safety and operational benefits (e.g., better visibility, reduced congestion).

All requests for experimentation should originate with the State/local highway agency responsible for managing the roadway or controlled setting where experiment will take place. That organization forwards the request to the FHWA. The FHWA must approve the experiment before it begins.

Attachment 1: Legal Standings of Streets Manuals

Resources

1. Status of Bike Facilities in FHWA MUTCD:

http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/design_guidance/mutcd_bike.cfm

2. CA MUTCD Ch. 9, Bike Facilities:

<http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/pdf/camutcd2012/Part9.pdf>

3. Berkeley Law School Report:

<http://legalplanet.files.wordpress.com/2010/06/4-1-crec-codes-and-standards1.pdf>

4. Green Lanes Project: <http://greenlaneproject.org>

Appendix F- Legal Standing of Street Manuals

Note: The discussion included in Appendix E is adopted from Los Angeles County Model Design manual for Living Streets, 2011.

Local jurisdictions generally follow some established standards for designing streets. Much confusion exists as to what they must follow, what is merely guidance, when they can adopt their own standards, and when they can use designs that differ from existing standards. The text below untangles the myriad of accepted design documents. It is critical for cities and counties to understand how adopting this manual meshes with other standards and guides. The most important of those standards and guides are the following:

- The American Association of State Highway and Transportation Officials' (AASHTO) *A Policy on Geometric Design of Highways and Streets* (the "Green Book")
- The California *Highway Design Manual*
- Local manuals or street design standards
- The *Manual on Uniform Traffic Control Devices* (MUTCD)
- The California Fire Code
- The California Streets and Highways Code and California Vehicle Code

A discussion of the federal-aid roadway classification system helps to frame the requirements of each of these documents. Local governments that wish to use certain federal funds must use a street classification system based on arterials, collectors, and local streets. These funds are for streets and roads that are on the federal-aid system. Only arterials and certain collector streets are on this system. In Chapter 3, "Street Networks and Classifications," this manual recommends an alternative system. To maintain access to these federal funds, local jurisdictions can use both systems. The federal aid system encourages cities to designate more of these larger streets, and to concentrate modifications along these larger streets. Nevertheless, for the purposes of understanding design standards and guides, this is the existing system of street classification for federal funding.

AASHTO Green Book

The Green Book provides guidance for designing geometric alignment, street width, lane width, shoulder width, medians, and other street features. The Green Book applies only to streets and roads that are part of the National Highway System (NHS). These are Interstate Freeways, principal routes connecting to them, and roads important to strategic defense. These streets and roads comprise about 14 percent of all federal-aid roadway miles in California, and about 4 percent of all roadway miles (Urgo, J., Wilensky, M., and Weissman, S., *Moving Beyond Prevailing Street Design Standards*, The Center for Law, Energy, and the Environment at the Berkeley Law School, 2010). Although the Green Book's application is limited to these streets, some cities apply its recommendations to all streets.

Further, the Green Book provides guidance that cities often unnecessarily treat as standards. The Green Book encourages flexibility in design within certain parameters, as evidenced by the AASHTO publication

A Guide to Achieving Flexibility in Highway Design. For example, 10-foot lanes, which cities often shun out of concerns of deviating from standards, are well within AASHTO guidelines.

California Highway Design Manual

The California *Highway Design Manual* (HDM) applies only to State Highways and bikeways within local jurisdictions. If cities deviate from the minimum widths and geometric criteria for bikeways spelled out in Chapter 1000 they are advised to follow the exemption process or experimental process as applicable. The HDM does not establish legal standards for designing local streets. However, like the Green Book, some cities apply HDM guidance to all streets.

As of the writing of this manual, Caltrans is in the process of revising the HDM to meet Caltrans' commitment to Complete Streets in Deputy Directive 64-R1.

Local Street Manuals

Local jurisdictions follow the Green Book, the HDM, or design guidance from organizations such as the Institute of Transportation Engineers (ITE) out of liability concerns. Neither federal nor state law mandates adoption or adherence to these guides. However, municipalities often adopt them to protect themselves from lawsuits. Further, many don't have the resources to develop their own standards and practices, so they adopt those in the Green Book, the HDM, or another previously adopted manual, or those of other cities.

A question often posed by plaintiffs' attorneys in traffic-related crashes is, "Did they follow established or prevailing designs, standards, and guidance?" If the attorneys can prove that the local jurisdiction deviated from these, they enhance their chances of winning a judgment against the jurisdiction. Therefore, protection from liability is paramount.

Cities are authorized to adopt or modify their own practices, standards, and guidelines that may reflect differences from the Green Book and the HDM. If these changes generally fall within the range of acceptable practice allowed by nationally recognized design standards, the adopting agencies are protected from liability to the same extent they would be if they applied the Green Book or the HDM. Most changes to streets discussed in this manual fall within the range of the guidelines or recommended practices of nationally recognized organizations such as AASHTO, ITE, Urban Land Institute (ULI), and Congress for the New Urbanism (CNU).

Working within previously established regional guidelines generally should result in a design that is protected from liability. The Green Book and the HDM are silent on many design features, and do not consider the needs within unique contexts. In these cases, cities can develop their own guidelines and standards and incorporate international equivalents or practices from other cities. Cities may adopt the guidance in this manual, which compiles best practices in creating living streets. This manual could, in effect, become the legal prevailing standard by which liability would be assessed.

Cities can also utilize designs that fall outside the ranges specified by nationally accepted guidelines and standards, but these practices can potentially increase liability unless done with great care. When

agencies elect to utilize designs that fall outside the guidelines of nationally recognized documents, they need to use additional care to ensure they do not expose themselves to liability.

To minimize liability, local jurisdictions either need to adopt their own standards (which should be based on rationale or evidence of reasonableness), or they can conduct an experimental project. When conducting an experimental project, agencies need to show that they are using the best information that is reasonably available to them at the time, document why they are doing what they are doing, use a logical process, and monitor the results and modify accordingly. This is because the agency may be required in the future to show that its design is reasonable, and the agency may not be able to cite a nationally published guideline or recommendation to support its local action. Often, these experimental projects are conducted because the design engineer has reason to believe that the new or evolved design will be safer or otherwise more effective for some purpose than if the project had prevailing standards and guides been used. These reasons or rationales are based on engineering judgment and should be documented to further minimize exposure to liability.

Unless otherwise noted, everything in this manual can readily be adopted and incorporated without fear of increased liability. In addition, this manual carries the credibility of the many top-level experts who produced it.

In some cases, AASHTO design guidelines may not provide information on innovative or experimental treatments that have shown great promise in early experiments and applications. Since AASHTO is a design guide, agencies have some flexibility to use designs that fall outside the boundaries of the AASHTO guide. Deviation from the range of designs provided in the AASHTO guide requires agencies to use greater care and diligence to document their justification, precautions, and determination to deviate from the guidelines. In California, the precautions to establish “design immunity” should be followed. These include consideration/analysis and approval by a registered engineer qualified to sign the plans, and certification by the city council or reviewing body clearly indicating the agency’s intent. This process documents the engineering judgment that went into the design.

Many cities today use various traffic calming measures to slow traffic and to improve neighborhood livability. Traffic calming measures are not traffic control devices and therefore the state exercises no jurisdiction over them.

Local agencies may currently use many other reports and documents to guide their roadway design and transportation planning. Other documents provide valuable procedure and reference data, but they do not set standards. They can be referred to and defined as standards by local agencies, but the local authority often has the flexibility to selectively endorse, modify, or define how these informational documents can be used or incorporated into its engineering and planning processes. Also, newer versions of these documents have additional information that can conflict with the local historical approach.

The expected results of the design approaches presented in this document are generally intended to improve safety and/or livability. As a result, implementation of these features should generally reduce liability and lawsuits. There is no way to prevent all collisions or lawsuits, but adopting policies, guidelines, and standards and doing experimental projects with reasonable precautions is a defensible approach.

MUTCD

The MUTCD provides standards and guidance for the application of all allowed traffic control devices including roadway markings, traffic signs, and signals. The Federal Highway Administration oversees application of the MUTCD. California cities must follow the California MUTCD, which generally mirrors the federal MUTCD, but not always.

The rules and requirements for the use of traffic control devices are different than for street design criteria. Local agencies have limited flexibility to deviate from the provisions of the California MUTCD in the use of traffic control devices due to the relationship between the MUTCD and state law. The California MUTCD does provide flexibility within its general provisions for items such as application of standard traffic control devices, use of custom signs for unique situations, traffic sign sizes, and sign placement specifics. In contrast, agencies do not generally have the flexibility to develop signs that are similar in purpose to signs within the manual while using different colors, shapes, or legends. Agencies are also not authorized to establish traffic regulations that are not specifically allowed or are in conflict with state law. The provisions of the California MUTCD and related state laws thus make it difficult to deploy new traffic control devices in California. This can result in complications, especially in the areas of speed management, pedestrian crossings, and bikeway treatments.

The State of California and the Federal Highway Administration have procedures that allow local agencies to experiment with traffic control devices that are not included in the current MUTCD. Such demonstrations are not difficult to obtain from the Federal Highway Administration for testing of new devices, especially as they relate to pedestrian and bicycle facilities, but the requesting agency must agree to conduct adequate before-and-after studies, submit frequent reports on the performance of the experimental device, and remove the device if early results are not promising. The State process can be more difficult for obtaining approval. Federal approval must be obtained first. The California Traffic Control Devices Committee advises Caltrans, which must then agree to allow the experiment to be conducted and determine that the experiment is not in conflict with State law. Once approval is granted for the experiment, the city has been given some legal immunity from liability suits. Since the California Vehicle Code is written to mirror the MUTCD, provisions within the Vehicle Code may not allow the experiment to proceed. The need to modify the Vehicle Code can complicate obtaining State permission to experiment.

Both the federal and California MUTCD are amended through experimentation. After one or more experiments have shown benefit, the new devices are sometimes adopted into these manuals. In California, the Vehicle Code must be changed first if the Vehicle Code prevents use of the new device.

The federal MUTCD and California MUTCD establish warrants for the use of some traffic control devices. For example, stop signs, traffic signals, and flashing beacons are expected to meet minimum thresholds before application. These thresholds include such criteria as number of vehicles, number of pedestrians or other uses, distance to other devices, crash history, and more. These warrants often prevent local engineers from applying devices that, in their opinion, may improve safety. For example, trail and/or pedestrian crossings of busy, high-speed, wide arterial streets may need signals for user safety, but they may not meet the warrants.

As with street design guidelines, cities may establish their own warrants or modify those suggested by the California MUTCD to suit their context in order to use some traffic control devices. In special circumstances that deviate from their own warrants, cities need to document their reasons for the exception. For example, they may say the trail crossings or school crossings qualify for certain traffic control devices.

California Fire Code

The California Fire Code can impede street design in limited circumstances. The state legislature has adopted the National Fire Code. The National Fire Code is written by a private agency and has no official legal standing unless states or municipalities adopt it, as has been done in California. The primary barrier caused by this adoption is the requirement for a minimum of 20 feet of an unobstructed clear path on streets. To comply with this, streets with on-street parking on both sides must be at least 34 feet wide. This prevents municipalities from designing “skinny” and “yield” streets to slow cars and to make the streets safer, less land consumptive and more hospitable to pedestrians and bicyclists.

There are ways around this requirement. If the local jurisdiction takes measures such as installing sprinklers and adding extra fire hydrants, or the adjacent buildings are built with fire retardant materials, it may be able to get the local fire department to agree to the exception.

Alternatively, the state legislature could repeal its adoption of the 20-foot clear path requirement due to

- The arbitrary and unresearched nature of the provision
- The safety problems associated with the resulting excessively wide streets
- The contradiction that this provision causes with properly researched guidelines and standards by ITE, CNU, AASHTO, and others for streets under 34 feet wide
- The potential liability that the 20-foot clear provision creates for designers who maintain, modify, or design streets that do not provide 20-foot clear paths

It is likely that the state legislature was unaware of these issues when it adopted the code in its entirety.

California Streets and Highways Code and California Vehicle Code

The California Streets and Highways Code and the California Vehicle Code include laws that must be followed in street design. These are embodied in the California MUTCD. Changes to the Streets and Highways Code and the Vehicle Code may cause the California MUTCD to change.

AGENDA: August 19, 2013

TO: Bicycle Committee
FROM: Cory Caletti, Senior Transportation Planner
RE: Bicycle Safety Observation Study and Bicycle Injury/Fatality Data

RECOMMENDATIONS

Staff recommends that the Bicycle Committee review and discuss the County of Santa Cruz Health Services Agency 2013 Bicycle Safety Observation Study and 2011 Bicycle Injuries and Fatalities for Santa Cruz County report.

DISCUSSION

The County of Santa Cruz Health Services Agency (HSA) works to reduce bicycle-related injuries in Santa Cruz County. In May and June of 2013, health education staff and community volunteers conducted a countywide Bicycle Safety Observation study to evaluate the impact of educational efforts on bicyclists' behavior. The data was then compared with similar studies done in previous years. Because Bicycle Committee members were among the community volunteers participating in the Bicycle Observation Survey, your feedback is being solicited by HSA staff.

In March, 2007, members indicated that it would be helpful to compile bicycle use data. CTSC staff indicated that bicycle counts would take a collaborative effort and funding. Since that time, RTC staff pursued efforts to conduct bicycle counts.

Additionally included in the HSA report for Bicycle Committee review is the bicycle collision data from the Statewide Integrated Traffic Records System (SWITRS) for 2011. SWITRS is a statewide records system and acts as a centralized accumulation of data for fatal and injury traffic accidents. In addition, a large proportion of the reported property damage-only accidents are also processed into SWITRS. The reports are generated by over 100 CHP areas and over 500 city police departments, sheriffs' offices and other local jurisdictions.

SUMMARY

Staff recommends that the Bicycle Committee review and discuss the County of Santa Cruz Health Services Agency 2013 Bicycle Observation Survey Results and 2011 SWITRS Bicycle Collision Data.

Attachments:

- 1: County of Santa Cruz Health Services Agency's "Bicycle Safety Observation Study 2013" Report
- 2: Bicycle Injuries and Fatalities for Santa Cruz County – 2011

County of Santa Cruz Health Services Agency

BICYCLE SAFETY OBSERVATION STUDY 2013

BACKGROUND AND PURPOSE

The County of Santa Cruz Health Services Agency (HSA) in conjunction with the Community Traffic Safety Coalition (CTSC) and other community partners has spent the last decade working to reduce bicycle-related injuries and increase ridership in Santa Cruz County. In order to evaluate yearly trends in the number of cyclists and their behaviors, and to guide bicycle safety education efforts, the annual countywide survey was conducted during the months of May and June in 2013. The observations were made by HSA Chronic Disease and Injury Prevention staff, members of CTSC and their South County Bicycle and Pedestrian Work Group (SCBPWG), Santa Cruz County Regional Transportation Commission's (SCCRTC) Bicycle Committee members, and many other community volunteers.

The study is designed to observe behaviors considered by traffic safety experts to be safe or unsafe when riding a bicycle. While some behaviors might be legal, such as those over the age of 18 years choosing not to wear a helmet while cycling, those same behaviors could increase the risk of injury or death and are therefore considered unsafe in this survey. Sidewalk riding, as another example, may be legal in some areas but could increase the risk of collisions or conflict with other sidewalk users.

METHOD OF DATA COLLECTION

For the 2013 survey, a total of 33 staff and volunteers collected data at 47 locations throughout Santa Cruz County, with 29 observation sites located in North County and 18 in South County. All of the observation locations for the 2013 survey were the same as used in previous observation surveys, except for three school sites added in 2009, five school sites added in 2012, and the addition of one school site, Starlight Elementary, in 2013.

The survey included three types of locations: commuter, school, and weekend. The commuter sites were observed on weekdays, except Mondays and Fridays, from 4:00 pm to 6:00 pm. School sites were observed for an hour, beginning 45 minutes before each school's start time on a weekday morning, except Mondays and Fridays. Weekend sites were observed from 11:00 am to 1:00 pm on a Saturday or Sunday. Each observer had a form to record observations that included estimated age and gender, wearing a helmet, riding with traffic, stopping at a stop sign or red light, and riding on the sidewalk. Also recorded were date, day of the week, and weather conditions. A section was available for observer comments as needed. Observers were given instructions and a data collection tool to ensure reliable results.

SUMMARY OF RESULTS

A total of 3,047 bicyclists were observed. Significant overall findings for 2013 include:

- 75% of cyclists were men, 25% were women
- Female cyclists had a helmet use rate of 59% compared to males at 48%
- Watsonville cyclists wore helmets at a rate of 21% compared to 56% for North County cyclists
- 84% of cyclists rode with traffic on the correct side of the road
- 65% of cyclists stopped at stop signs and red lights
- 26% of cyclists rode on the sidewalk
- 332 cyclists, the highest number at a single site, were observed at High and Bay Streets
- 1,984 people were observed at commuter sites, 499 at school sites, and 564 at weekend sites

Tables 1, 2 and 3 summarize the results from the 2013 survey by age and gender.

Table 1: Santa Cruz County (All 47 sites)

	Sample Size	%	Wore a Helmet	Rode with Traffic	Stopped at signs/ lights	Rode on sidewalk
Total Bicyclists	3047	100%	51%	84%	65%	26%
Males	2282	75%	48%	83%	62%	28%
Females	751	25%	59%	87%	75%	20%
Children (0-12 yrs)	186	6%	72%	59%	87%	71%
Teens (13-17 yrs)	317	10%	39%	68%	50%	49%
Young Adults (18-24 yrs)	858	28%	44%	89%	69%	22%
Adults (25+ yrs)	1672	55%	54%	88%	63%	18%

Table 2: North/Mid County Sites (29 sites)

	Sample Size	%	Wore a Helmet	Rode with Traffic	Stopped at signs/ lights	Rode on sidewalk
Total Bicyclists	2621	100%	56%	87%	66%	20%
Males	1903	73%	54%	87%	63%	21%
Females	705	27%	60%	88%	75%	18%
Children (0-12 yrs)	143	5%	86%	58%	87%	67%
Teens (13-17 yrs)	227	9%	52%	74%	49%	41%
Young Adults (18-24 yrs)	787	30%	47%	91%	71%	17%
Adults (25+ yrs)	1450	55%	58%	90%	64%	12%

Table 3: Watsonville Sites (18 sites)

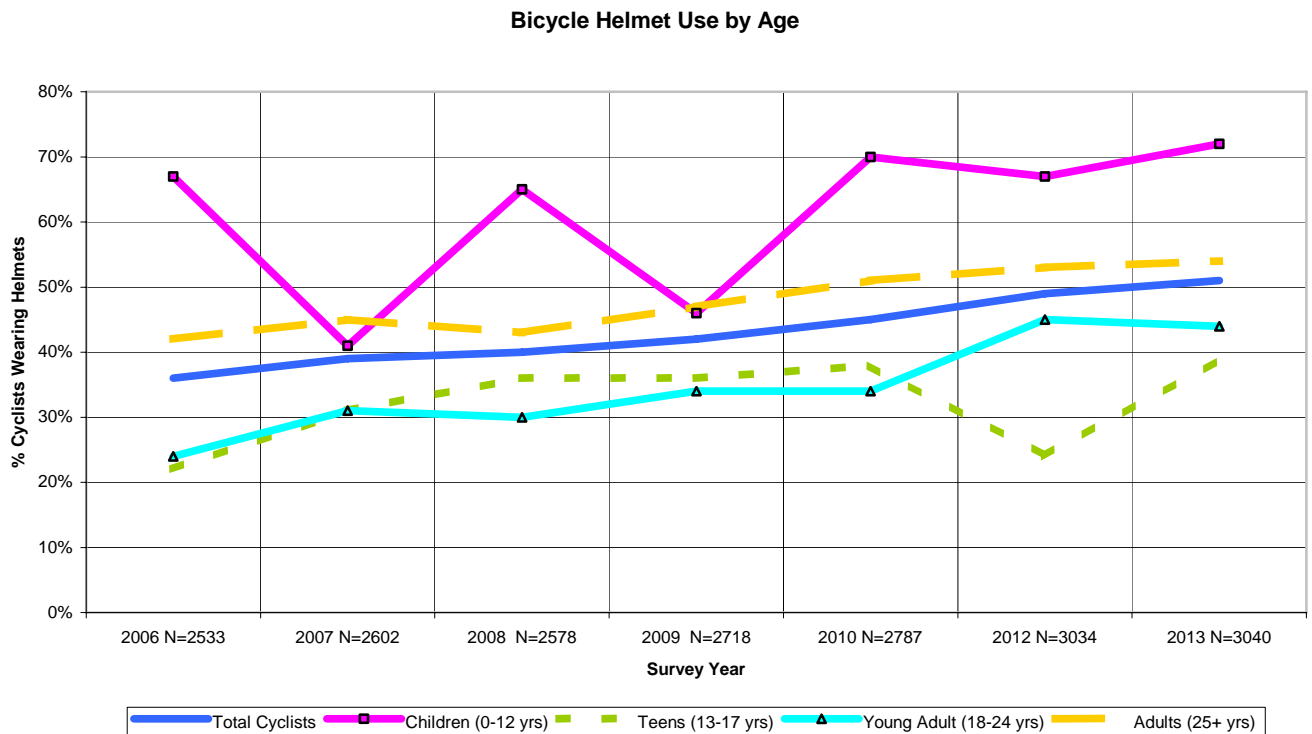
	Sample Size	%	Wore a Helmet	Rode with Traffic	Stopped at signs/ lights	Rode on sidewalk
Total Bicyclists	426	100%	21%	67%	59%	60%
Males	379	89%	19%	66%	57%	62%
Females	46	11%	39%	77%	71%	44%
Children (0-12 yrs)	43	10%	26%	60%	87%	84%
Teens (13-17 yrs)	90	21%	7%	54%	54%	69%
Young Adults (18-24 yrs)	71	17%	10%	69%	51%	56%
Adults (25+ yrs)	222	52%	29%	73%	59%	53%

TRENDS OVER TIME

The sections below compare survey data over the eight year period from 2006 through 2013 for helmet use, riding with traffic, stopping at stop signs/lights, and riding on the sidewalk by gender and age. Note that the survey was not conducted in 2011.

Helmet Use

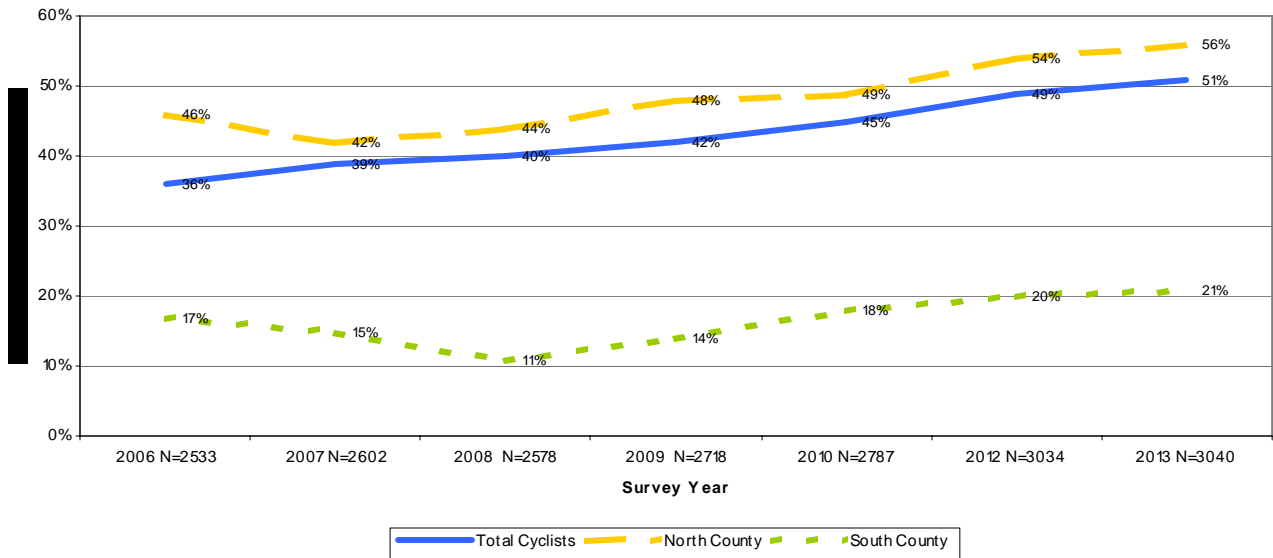
Although adults are not required to wear a helmet in California, the law requires persons under 18 years of age to wear an American National Standards Institute (ANSI), United States Consumer Product Safety Commission (CPSC), American Society for Testing and Materials (ASTM), or Snell Memorial Foundation's Standard for Protective Headgear approved, properly fitted and fastened helmet as an operator or passenger when bicycling, skateboarding, in-line or roller-skating, or riding a non-motorized scooter.



Total helmet use for the county has been steadily increasing since 2006 and increased from 49% in 2012 to 51% in 2013. An increase in helmet use took place for males from 45% in 2012 to 48% in 2013. This year female helmet use rate remained steady at 59% from 2012. Females have consistently worn helmets at a higher rate than males in all years surveyed.

The biggest increase in helmet use occurred this year amongst teens, with 39% wearing a helmet in 2013, up from 24% in 2012. Children age 12 years and younger observed wearing a helmet increased from 67% in 2012 to 72% this year. Children consistently wear helmets more often than other age categories but also have the smallest sample size observed. Helmet use among adults increased from 53% in 2012 to 54% for 2013. Young adult (18 to 24 years of age) helmet use dropped slightly from 45% to 44% since last year.

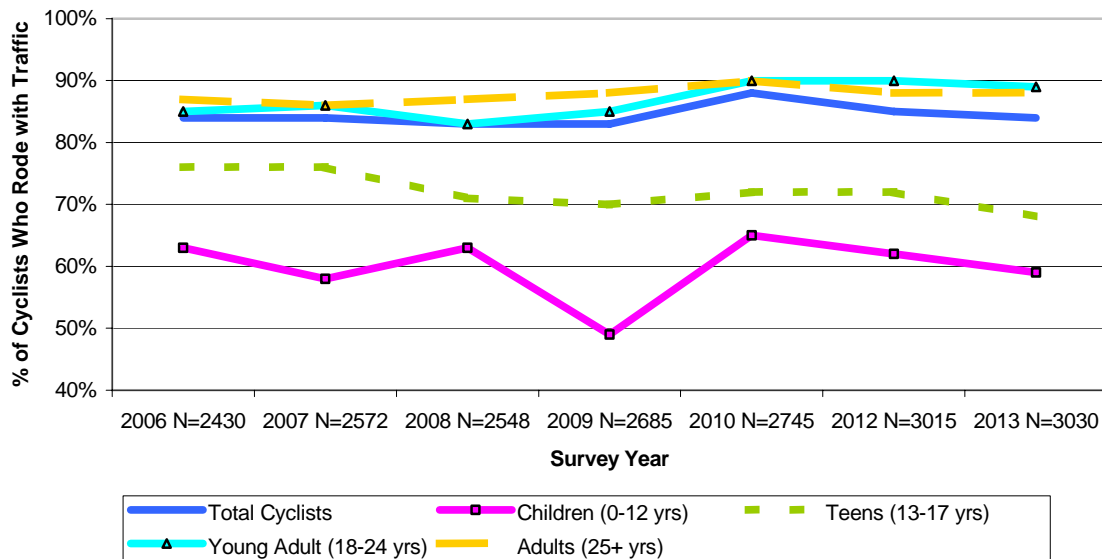
Bicycle Helmet Use by North and South County



In 2013, 21% of cyclists observed in Watsonville (South County) wore a helmet. Helmet use rates for children in Watsonville increased from 13% in 2012 to 26% in 2013, while rates for teens, adults, and young adults were 11%, 5%, and 25% lower respectively this year compared to 2012. Watsonville cyclists have had a lower helmet use rate compared to North County each year the survey has been conducted, but the overall helmet use rate for Watsonville has been slowly increasing since 2008. The total number of cyclists observed riding in South County has also been much lower than those observed in North County.

Riding with Traffic

Riding with Traffic by Age



The number of cyclists riding in the same direction as traffic has been fairly consistent within each demographic group observed over the years surveyed. The percentage of children observed riding in the direction of traffic has been lower than all other age groups and least consistent over the years surveyed, with 62% riding with traffic in 2012 and 59% in 2013. Teens riding with traffic declined slightly from 72% to 68% this year. Young adults and adults respectively had rates of 89% and 88% this year.

Stopping at Stop Signs and Red Lights

The percentage of bicyclists who stopped at stop signs and red lights decreased for most age groups observed in 2013 compared to 2012. There was an increase in stopping among cyclists 12 years of age and under, from 80% in 2012 to 87% in 2013. All other age groups saw a decline compared to last year, with the greatest decline among teens from 67% to 50%, and young adults from 80% to 69%. Looking at stopping rates for stoplights revealed that 81% of cyclists stopped for a red light, versus only 43% stopping at a stop sign.

Sidewalk Riding

Local ordinances exist in several jurisdictions in Santa Cruz County related to bicycle riding on the sidewalk. In the cities of Watsonville and Capitola, sidewalk bicycle riding is illegal in all areas. Within the City of Santa Cruz, sidewalk riding is illegal only in commercial areas. The City of Scotts Valley and the unincorporated areas of the county do not have an ordinance in place.

While it is legal in some areas to ride a bicycle on the sidewalk, sidewalk riding is generally considered unsafe. There are some exceptions, including children who may ride on the sidewalk until their operating skills and judgment allow them to ride safely in traffic on the roadway. In addition, there are some circumstances where riding on a segment of sidewalk is a safer choice than riding on the roadway, for example riding up East Cliff Drive before it becomes Murray Street in the City of Santa Cruz.

Generally, bicycle riding on the sidewalk has been found to carry a greater risk of injury than riding on the roadway due poor visibility, more opportunities for conflict with others, such as pedestrians, and motorists not expecting a cyclist on the sidewalk to enter the roadway. Comparing sidewalk riders to those using the roadway in 2013, sidewalk riders rode in the direction of traffic 49% of the time, while those using the roadway rode with traffic 95% of the time. Riding the wrong way on the sidewalk adds to the risk already associated with sidewalk riding.

In the 2013 survey, sidewalk riding increased slightly for total bicyclists, males, and females. Children and teens consistently have ridden on the sidewalk at higher rates than other age groups over the years surveyed. Young adults were observed riding on the sidewalk at higher rates this year, from 12% in 2012 to 22% in 2013. The rate of sidewalk riding for adults, children and teens decreased slightly this year compared to 2012. It is also important to note that 60% of all cyclists observed in Watsonville rode on the sidewalk, versus 20% for north/mid-county sites in 2013.

CONCLUSIONS

When comparing the 2013 bicycle observation data to the other years surveyed, there have been some areas of improvement. Since 2006, countywide helmet use continues to steadily increase. Helmet use for children has varied from year to year but has been consistently higher than other age groups. Rates of sidewalk riding decreased slightly for children, teens, and adults this year. A majority of cyclists are stopping at red lights and riding with traffic. Areas for improvement include helmet use among males, children riding with traffic, and stopping at stop signs, especially among teens and young adults. In addition, Watsonville sees much higher rates of sidewalk riding and lower rates of helmet use and riding in the direction of traffic compared with North County.

The County of Santa Cruz HSA provides staff to the CTSC, which works with affiliated partners to address bicycle safety in Santa Cruz County. CTSC programs include the Ride n' Stride Bicycle and Pedestrian Education Program, which reaches over 3,000 elementary and preschool students each year, and the South County Bicycle and Pedestrian Work Group to focus efforts in Watsonville. HSA also administers a Bicycle Traffic School for bicyclists who receive a traffic violation and a train-the-trainer model Helmet Fit and Distribution Site program to distribute free bicycle helmets. Many other bicycle safety efforts are also underway through partner agencies, such as the SCCRTC, Ecology Action, UCSC Transportation and Parking Services (TAPS), The Bicycle Trip, People Power, Santa Cruz County Cycling Club, as well as local public works departments and law enforcement agencies. Detailed results of this survey are available by request to inform all bicycle safety efforts in Santa Cruz County.

Funding for this project was provided in part by the Santa Cruz County Regional Transportation Commission and the California Office of Traffic Safety, through the National Highway Traffic Safety Administration. For more information, please contact the Community Traffic Safety Coalition c/o the Chronic Disease and Injury Prevention Unit of the County of Santa Cruz Health Services Agency at 1070 Emeline Avenue, Santa Cruz, CA 95060, (831) 454-4312. HSA staff wishes to acknowledge Rebecca Sox, MSN, CPNP, MPH Candidate, for significant contributions to this report.

Bicyclist Injuries and Fatalities for Santa Cruz County 2011

Using data from the California Highway Patrol (CHP) Statewide Integrated Traffic Records System (SWITRS) for bicycle-involved collisions, and other sources, this report presents the bicycle injuries and fatalities that occurred in Santa Cruz County in 2011. The number of bicyclists injured or killed in Santa Cruz County increased from 158 in 2010 to 170 in 2011 (SWITRS). The number of bicyclists injured in Capitola remained steady from 2010 while decreasing at University of California, Santa Cruz (UCSC) from 11 in 2010 to 1 reported injury in 2011. Injuries to bicyclists rose in the cities of Santa Cruz, Scotts Valley, Watsonville, and unincorporated areas of the county, with the largest increase occurring in the City of Santa Cruz from 57 in 2010 to 70 in 2011. There was only one bicyclist fatality reported for Santa Cruz County for 2011 (SWITRS); however, local sources reported three fatalities in 2011, including one that occurred after a crash on the UCSC bike path.

Santa Cruz County Bicycle Collision Injuries and Fatalities 2002-2011, SWITRS

Injured	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Capitola	10	11	20	7	5	6	8	4	9	9
Santa Cruz	58	77	63	71	82	64	91	68	57	70
Scotts Valley	4	4	6	2	0	14	4	8	1	2
Watsonville	20	7	17	12	13	3	16	18	11	17
Unincorporated	61	67	56	59	54	63	70	76	69	70
UC Santa Cruz	n/a	n/a	n/a	n/a	n/a	n/a	n/a	12	11	1
S.C. County Total	153	166	162	151	154	150	189	186	158	169

Killed	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Capitola	0	0	0	0	0	0	0	0	0	0
Santa Cruz	0	1	0	0	0	1	2	0	0	1
Scotts Valley	0	0	0	0	0	0	0	0	0	0
Watsonville	0	0	0	0	0	0	0	1	0	0
Unincorporated	0	0	0	1	1	1	0	2	0	0
S.C. County Total	0	1	0	1	1	2	2	3	0	1

The number of bicyclist injuries/fatalities in Santa Cruz County decreased for the age groups 0-4, 15-24, and 25-34 years from 2010 to 2011, with the most notable decrease in injuries in the 15-24 year age group. The other age groups showed slight increases, with the most notable increase for those age 55-64 years from 18 in 2010 to 29 in 2011.

Age Distribution of Bicyclists Injured and Killed in Santa Cruz County 2002 – 2011, SWITRS

Age (yrs)	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
0 - 4	1	0	0	0	2	2	0	1	1	0
5 - 14	26	15	26	19	12	20	16	21	11	14
15 - 24	35	48	53	41	29	47	71	61	55	46
25 - 34	36	34	22	19	32	23	33	26	28	21
35 - 44	21	28	25	19	21	18	17	18	19	22
45 - 54	18	26	21	28	37	22	27	27	21	29
55 - 64	9	12	8	15	10	17	19	23	18	29
65 and over	4	2	2	8	7	2	8	11	5	9
unknown	3	2	5	2	5	1	0	1	0	0
Total	153	167	162	151	155	152	191	189	158	170

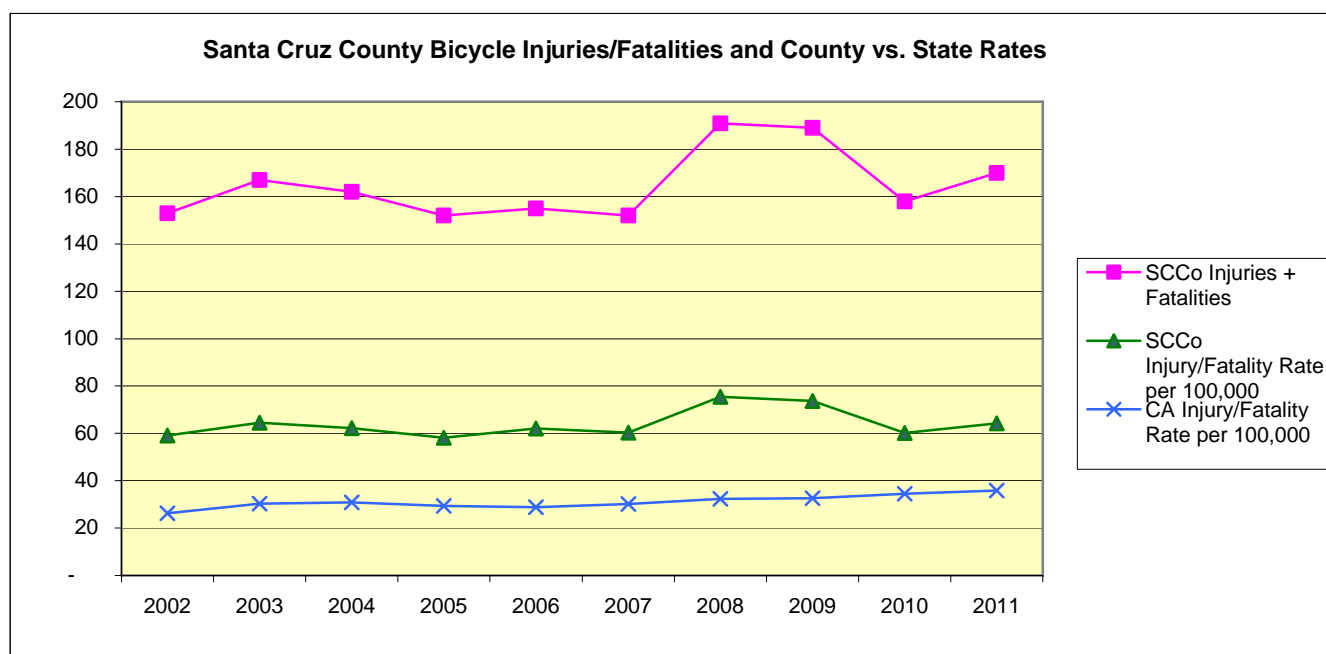
It is important to note that the data shown above was obtained by reviewing all 184 bicycle-involved collisions for Santa Cruz County in 2011 as collected by the CHP in their SWITRS database. This data does not include collisions that may have occurred off-road, nor does it examine data from medical providers or allow for self-reporting of incidents. In reviewing hospital and emergency department data from the California Department of Public Health, there were much higher numbers of unintentional injuries to bicyclists. According to their reporting, there were two fatalities, 577 emergency room visits, and 61 cyclists hospitalized in 2011 in Santa Cruz County (retrieved from <http://epicenter.cdph.ca.gov/ReportMenus/InjuryDataByTopic.aspx>).

Using the SWITRS data, the county bicyclist injury/fatality rate per 100,000 population in 2011 was 64, an increase from the 2010 rate of 60. The 2011 rate is the same as the average injury/fatality rate of 64 for the ten-year period between 2002 and 2011. In comparison, the state bicycle injury/fatality rate for 2011 was 36, up slightly from 35 in 2010.

State and County Bicyclist Injury/Fatality Rates Per 100,000 Population 2002-2011, SWITRS

Calendar year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
S.C. County Injuries+Fatalities	153	167	162	152	155	152	191	189	158	170
Estimated Population, Santa Cruz County	258,900	258,900	260,200	261,345	249,705	251,747	253,137	256,218	262,382	264,579
Injury/Fatality Rate	59	65	62	58	62	60	75	74	60	64
*CA Injuries+Fatalities	9,178	10,795	11,092	10,605	10,507	10,714	11,890	12,059	12,862	13,474
Est. Population, California	35,049,000	35,612,000	35,991,326	36,132,147	36,457,549	35,553,215	36,756,666	36,961,664	37,253,956	37,647,693
CA Injury/Fatality Rate	26	30	31	29	29	30	32	33	35	36

*Note: As of 2009, the number of California bicyclists injured and killed is reported by federal fiscal year rather than calendar year by the CA Office of Traffic Safety.



It is important to note that the injury and fatality rates are based on population and do not take into account the numbers of people who are traveling by bicycle. According to the Alliance for Walking and Biking (2012), in the United States 1% of all trips are made by bike, yet 1.8% of all traffic fatalities involve bicyclists. The number of people commuting by bicycle to work in the nation increased by 57% from 2000 to 2009 (Pucher, Buehler, & Seinin, 2011), and research suggests that as cycling rates have increased, injury rates have decreased (Jacobsen, 2003) and that the health benefits of cycling far outweigh the risks from traffic injuries (Pucher, Dill, & Handy, 2010).

***Bicycle Commuting and Fatality Rates**

Location	Total workers commuting by bike	Percent commuting by bike	3-year average 2007-2009 traffic fatalities	3 year average 2007-2009 bicycle fatalities	Bike as % of total fatalities
United States	765,703	0.55%	37,497	683	1.82 %
California	158,477	0.98%	3,503	106	3.02 %

*Data from the 2012 Bicycling and Walking Benchmark report available at

<http://www.peoplepoweredmovement.org/Benchmarking>

When compared to other counties in California bases on population, Santa Cruz County was ranked fifth for the number of bicyclists injured or killed in 2010 (most recent federal fiscal year ranking available), according to the California Office of Traffic Safety (OTS). Although Santa Cruz County tends to receive a high ranking for bicyclists injured and killed, the number of those bicycling in Santa Cruz is also known to be higher than most other counties. The U.S. Census Bureau's 2011 American Community Survey (ACS) reported that 0.6% of workers over age 16 commuted to work by bicycle nationwide. The top ten metro areas for commuting to work by bike in the U.S. had rates ranging from 3.0 to 9.3% for 2009. The following table presents data on Santa Cruz County and five other California counties for comparison of bicycle commuters and injury rates.

Injuries and Fatalities Among Bicycle Commuters in Select California Counties

County	Population ¹	Total Bicycle Collisions ²	Injured ²	Fatalities ²	Injury/fatality rate per 100,000 population	Workers 16 years and over commuting to work ³	Percentage commuting to work by bicycle ³	Number commuting to work by bicycle	Bicycle injuries/fatalities as a percentage of bicycle commuters
Santa Cruz	264,961	135	121	1	46	123,591	3.0	3,708	3.3 %
Alameda	1,531,626	625	553	5	36	691,531	1.6	11,064	5.0 %
Butte	220,188	76	68	0	31	85,189	3.0	2,556	2.7 %
San Luis Obispo	271,345	97	80	1	30	119,136	2.6	3,098	2.6 %
Santa Barbara	426,101	201	178	0	42	191,238	3.8	7,267	2.4 %
Yolo	202,191	128	104	1	52	88,195	8.0	7,056	1.5 %

Sources:

- 1) 2011 estimate from <http://factfinder2.census.gov/>
- 2) 2011 SWITRS summary reports of *Collisions and Victims for Motor Vehicle Involved* by county
- 3) 2007-2011 American Community Survey 5-year estimate from <http://factfinder2.census.gov/>

The Santa Cruz County bicycle commuter rate was estimated at 3.0% according to the 2007-2011 American Community Survey. It is important to note that these estimates only reflect commuting to work by those 16 years of age and over and do not include other trips made by bike. The 2009 National Household Travel Survey

reports on travel for all trip purposes, and the bike share of trips was estimated to be 0.9% for the country. Trips for recreation, exercise or sports accounted for 49% of bike trips, and trips for utilitarian purposes such as getting to school, work, shopping, visiting friends or accessing public transportation accounted for 51% of bike trips (Pucher, Buehler, Merom, & Bauman, 2011).

The first annual observation survey of cyclists in Santa Cruz County conducted in 2003 observed 2,067 riders at 34 sites throughout the county. In 2008, there were 2,583 riders at 38 sites. The 2013 survey recorded 3,047 riders at 47 sites. Removing the school sites that were added over this 11 year period indicates that the number of cyclists observed has increased from 954 to 2,548 riders, an increase of 167% from 2003 to 2013. The Santa Cruz County May 2012 Bike and Pedestrian Count Report estimated a bicycle mode share average of 2.7%, with a high of 10.9% when examining 10 intersections. Continuing to try to estimate the number of cyclists, miles ridden, and trips made by bike would be helpful to more accurately calculate risks to cyclists. The 2010 Santa Cruz County Regional Transportation Plan seeks to increase bicycle use to 20% of all work trips and to increase bicycle trips to 5% of all trips by the year 2035 while reducing bicycle collisions and conflict with motor vehicles.

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Production of this report was a collaborative effort funded in part by the Santa Cruz County Regional Transportation Commission through the Community Traffic Safety Coalition and a grant from the California Office of Traffic Safety, through the National Highway Traffic Safety Administration. For more information, please contact the Community Traffic Safety Coalition c/o the Chronic Disease and Injury Prevention Unit of the County of Santa Cruz Health Services Agency (HSA) at 1070 Emeline Avenue, Santa Cruz, CA 95060, (831) 454-4312. HSA staff wishes to acknowledge Rebecca Sox, MSN, CPNP, MPH Candidate, for significant contributions to this report.

MEMO

Date: Monday, August 05, 2013 2:54 AM

To: RTC Bicycle Committee

From: Brenden Fant
Student Environmental Center: Transportation Campaign
IDEASS: Bicycle Transit Planning Team
Transportation Advisory Committee

Over the past year Ross Clark Climate Action Manager for City of Santa Cruz and Cheryl Schmitt Transportation Planner for the City of Santa Cruz have collaborated with the Bicycle Transit Planning Team (BTPT) consisting of three Environmental Studies undergraduates from UCSC with the goal of prioritizing major routes to and from UCSC that are in need of infrastructure improvements. The increasing level of safety and connectivity will encourage members of our community to commute more frequently on their bicycles.

To accomplish this we designed a cycling survey for UCSC affiliates to indicate routes with the highest frequency of cyclists, document the existing level of infrastructure using a Bicycle Environmental Quality Index, and cross-reference these indicators to a bicycle collision report over the past ten years.

Our results indicate the following as top priorities:

- **Laurel Street:** *High volume of vehicles and very high frequency collisions*
 - Intersection improvements
 - Increased bicycle route signage
 - Bicycle lane or bicycle path separation
 - Vehicle parking management
 - Pavement repairs
- **Bay Drive:** *Very high volume of high-speed vehicles*
 - Intersection improvements
 - Lighting Improvements
 - Increased bicycle route signage
 - Bicycle lane or bicycle path separation
 - Pavement repairs
- **Bay Street:** *High volume of vehicles and high frequency of collisions*
 - Intersection improvements
 - Increased bicycle route signage
 - Bicycle lane or bicycle path separation
 - Vehicle parking management
 - Pavement repairs
- **King Street:** *Primary alternate arterial route that parallels Mission Street*
 - Official designation as a bike boulevard
 - Pavement repairs

- Intersection improvements at Bay Street and Laurel Street
 - Increased bicycle route signage directing cyclists toward and along King Street
 - Designated bicycle lane or path on the road
- **Western Drive:** *Very poor infrastructure, underutilized despite the direct connection to facilities used by the university (Long Marine Lab)*
 - Pavement repairs
 - Bicycle lane implementation
 - Lighting improvements
 - Increased bicycle route signage
 - Vehicle speed monitoring and parking management

For more detail and explanation of methodology please refer to the Bicycle Transit Planning Report IDEASS attached.

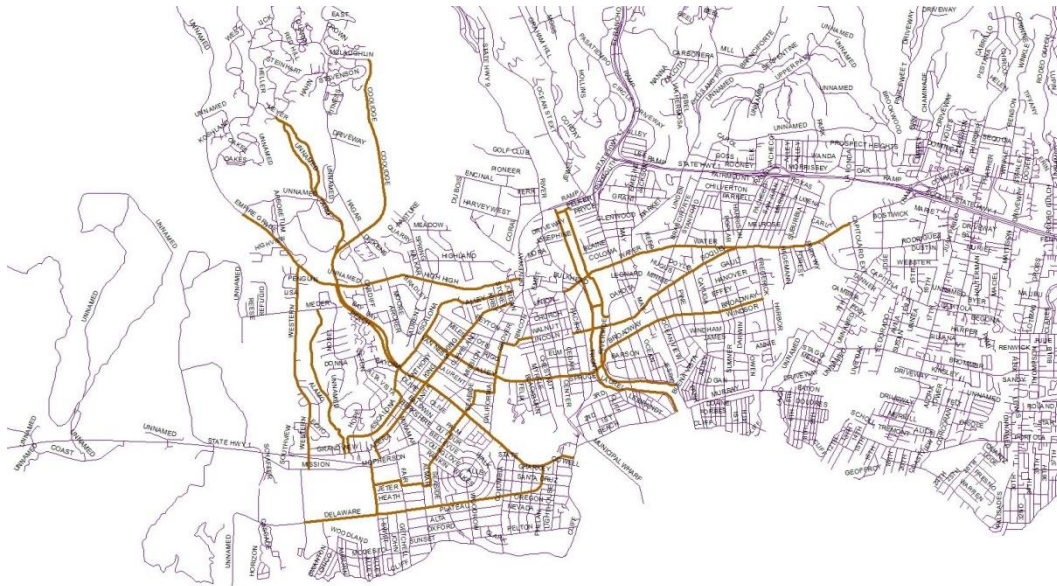
We ask that the Santa Cruz County Regional Transportation Commission further promote sustainable modes of transportation through the implementation of projects that improve safety and connectivity of key corridors. I am looking forward to the upcoming Bicycle Committee meeting where we can discuss this in further detail. If you have any questions or comments please contact me at brenfant@gmail.com

Thank you very much,

Brenden Fant
Student Environmental Center: Transportation Campaign
IDEASS: Bicycle Transit Planning Team
Transportation Advisory Committee

UCSC & Westside Santa Cruz Bicycle Transit Study

Prioritization of Road Improvements for the City of Santa Cruz



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Impact Designs: Engineering & Sustainability through Student Service

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TABLE OF CONTENTS

1. Introduction	4
a. Abstract	4
b. Benefits of Bicycle Transit	4
c. Relationship to Other Plans	5
2. Results	6
a. Top Priorities	6
b. Justification for Priorities	7
3. Methodology	7
a. UC Santa Cruz Cycling Survey 2013	7
i. <i>Survey Results</i>	8
ii. <i>Tradeoffs and Limitations</i>	12
b. Bicycle Environmental Quality Index	12
i. <i>BEQI Results</i>	13
ii. <i>Tradeoffs and Limitations</i>	13
c. Collision Report	14
i. <i>Tradeoffs and Limitations</i>	15
d. Data Analysis	17
i. <i>Lighting</i>	17
ii. <i>Motorists</i>	17
iii. <i>Pavement</i>	18
iv. <i>BEQI</i>	18
4. Appendix	
a. Bay Drive	20
b. Bay Street	20
c. King Street	22
d. Laurel Street	23
e. Western Drive	24
f. Summary of Road Results	25
5. Conclusion	26
6. Resources	27

1. INTRODUCTION

“A key outcome for the bicycle network is to serve all cyclists, ranging from the active commuter on arterial streets to recreational riders and new riders who seek convenience, safety and comfort.” - Santa Cruz Master Transportation Plan (SCMTP)

ABSTRACT

To help the City of Santa Cruz meet the needs of current and future cyclists through its bicycle infrastructure, an isolated study of transit to and from the University of California, Santa Cruz (UCSC) campus has been conducted by the Bicycle Transit Planning Team, students in the Impact Designs: Engineering & Sustainability through Student Service (IDEASS) internship program. This study was conducted to identify specific improvements and corridors of concern for cycling safety on the Westside of Santa Cruz. The team surveyed nearly 450 members of the UCSC community to identify the most-utilized streets during transit to the campus in addition to other feedback. The team then quality tested these roads with a Bicycle Environmental Quality Index (BEQI) that surveyed the safety and usability of roadways for cycling. Finally, the team combined this data with a report of documented cycling collisions with motor vehicles from the City of Santa Cruz over the past 10 years. After compiling the three sources of data, the team identified a number of recommendations to improve infrastructure of frequently used, high collision history areas. The improvement of these roadways will allow for the City of Santa Cruz to promote cycling with the assurance that community members and visitors riding on city streets will be on roads that provide a higher level of safety than present conditions.

BENEFITS OF BICYCLE TRANSIT

According to the U.S. Department of Transportation, “the transportation sector directly accounted for about 28 percent of total U.S. GHG [greenhouse gas] emissions in 2006, making it the second largest source of GHG emissions, behind only electricity generation (34 percent). Nearly 97 percent of transportation GHG emissions came through direct combustion of fossil fuels.” These transportation emissions come from methods that require the burning of fossil fuels, such as cars, buses, trucks, and trains. Bicycles are one aspect of this sector that does not contribute to greenhouse gas emissions. Cycling is the most efficient mode of transportation in terms of calories of fuel burned (Spadaccini), but due to our automobile-centric culture, the quality of the bicycle infrastructure has had far less investment than the driving infrastructure. Improvements to a bicycle network can increase the safety and quality of each cycling experience and further promote bicycle commuting and use. Replacing more automobile trips with cycling trips can directly reduce greenhouse gas emissions, meaning that efforts to make cycling easier and safer and more attractive than driving can, on a large scale, lead to substantial climate emission reductions.

RELATIONSHIP TO OTHER PLANS

Both the City of Santa Cruz and the University of California, Santa Cruz strive to increase bicycle ridership within city streets as well as to and from the “city on the hill.” This objective is primarily driven by the need to reduce carbon emissions. The City of Santa Cruz Climate Action Plan (2012) includes a measure to “Double bike ridership...by 2020” (p. 41), and the City’s Master Transportation Study (2003) states that “The Santa Cruz network of bicycle routes and paths contain gaps along key corridors and connections between areas of the City. Closing these gaps and improving the safety, comfort and convenience of bicycling can make bicycle travel an even more attractive mode for citywide transportation” (p. 107).

In addition to goals supported by City of Santa Cruz plans and studies, UCSC has guiding documents and plans that identify increased cycling as a goal for sustainability. For example, the UCSC Climate Action Plan (2011) identifies a greenhouse gas reduction strategy to “Improv[e] Bike Infrastructure” through “Additional...routes and safety programs” (p. 12). This would directly support the attainment of UC-wide and UCSC carbon reduction goals and commitments, as outlined in the Executive Summary of the UC Santa Cruz Climate Action Plan.

There are many other plans whose goals align with the focus of this study, including:

- City of Santa Cruz Bicycle Transportation Plan (2008)
- Santa Cruz County Bicycle Plan (2011)
- UC Santa Cruz Bicycle Plan (2008)
- UC Santa Cruz Blueprint for a Sustainable Campus (2012)
- UC Santa Cruz Campus Sustainability Plan (2013)

Though the emphasis on cycling improvements tends to be supported by the need to reduce greenhouse gas emissions, investing more time and resources in the cycling networks and infrastructure of Santa Cruz will have many other benefits. Increasing the safety and accessibility of bicycle routes can lead to lowered healthcare costs for families, less automobile traffic congestion and air pollution, more space for infrastructure other than automobile parking lots, and potentially a stronger local economy (Blue). With community, UC, and City interest in these benefits, the City of Santa Cruz is an ideal candidate for more improvements to the safety and accessibility of its roadways for cyclists, both now and in the future.

2. RESULTS

To identify priority improvements to frequently used bicycle roadways near the UCSC campus, the BTPT used three sources of data: UCSC-affiliated cyclist survey input, BEQI of roads on the Westside, and cycling collisions. All improvements are guided towards creating an accessible and safe cycling infrastructure for commuters of all levels and needs. Prioritization is based on those improvements that accumulated the most attention throughout all three sources of data.

Top Priorities

- Laurel Street and Bay Drive/Street¹
 - Intersection improvements
 - Increased bicycle route signage
 - Bicycle lane or bicycle path separation
 - Vehicle parking management
 - Pavement repairs.
- King Street
 - Official designation as a bike boulevard²
 - Pavement repairs
 - Intersection improvements at Bay Street and Laurel Street
 - Increased bicycle route signage directing cyclists toward and along King Street
 - Designated bicycle lane or path on the road
- Western Drive
 - Pavement repairs
 - Bicycle lane repairs
 - Light improvements
 - Increased bicycle route signage

Justification for Top Priorities

For more information on the following prioritized roads, please refer to the Appendix.

Laurel Street and Bay Street. These roads provide direct routes between downtown Santa Cruz and UCSC, and while they ranked fairly high on the BEQI, improvements are still needed given the combination of high cyclist usage and cyclist collision history on these streets.

King Street. As a major parallel arterial road to Mission Street, King Street would be the best alternative route for cyclists heading downtown if the mentioned improvements were implemented because it accesses the main roads, has features that would enable it to become a bike boulevard (though “current volumes” of cars “are much too high for bicycle boulevard

¹There is a distinction between Bay Drive and Bay Street, though they are connected. Bay Drive is between High Street and Escalona Drive. Bay Street is between Escalona Drive and West Cliff Drive.

² A “bicycle boulevard” is a road “designed” to “enhance bicycle safety and convenience...where bicycles and cars can equally share the road” (Berkeley Transportation Division). Typically, this includes sharrows, signage, and features to reduce traffic speed.

operation on weekdays” and “Volumes are substantially lower on Saturdays and even lower on Sundays, though still high for boulevard operation” (Bicycle Solutions, p.12)), and it is a less trafficked road than Mission Street.

Western Drive. This road is a gateway to the Westside of Santa Cruz that is underutilized by cyclists due to its low BEQI score. Suggested improvements could greatly improve the safety and bicycle accessibility on Western Drive and locations nearby, such Delaware Avenue, UCSC Long Marine Lab, and businesses south of Mission Street and west of Almar Avenue.

3. METHODOLOGY

UC Santa Cruz Cycling Survey 2013

For this study, cyclists who ride to and from the UC Santa Cruz campus were the target audience for identifying roadway use within this assessment. In order to involve as many bicycle riders as possible and gather their opinions, the team surveyed students, staff, faculty, and community members who showed interest in cycling (carrying a helmet, riding or locking a bike, etc.) at on-campus locations, such as Quarry Plaza and outside McHenry Library, using iPads. The survey was hosted online at www.surveymonkey.com/s/UCSC_CyclingSurvey2013. The survey was titled the “UCSC Cycling Survey 2013,” which likely attracted a higher proportion of people who identify with the cycling community. It was emailed to the nearly 2,000 recipients of the UCSC Sustainability Office newsletter as well as forwarded to many campus sustainability organizations and individuals. The team also promoted the survey at Earth Day Santa Cruz in April. With the support of students and campus organizations, it was also advertised frequently on social media sites, like Facebook and Twitter. There were a total of 443 responders to the survey between January and May 2013. Of all the data we collected for this project, the cycling survey combines the widest range of input from the cycling community.

The six-question survey was designed to give participants an opportunity to comment on their cycling experience around Santa Cruz, in addition to answering the questions outlined below. In analyzing data, the team focused mostly on route usage due to its correlations with the BEQI and the collision report.

Survey Results

For the full summary of Cycling Survey Results, see the Survey Response column under the Road Results section.

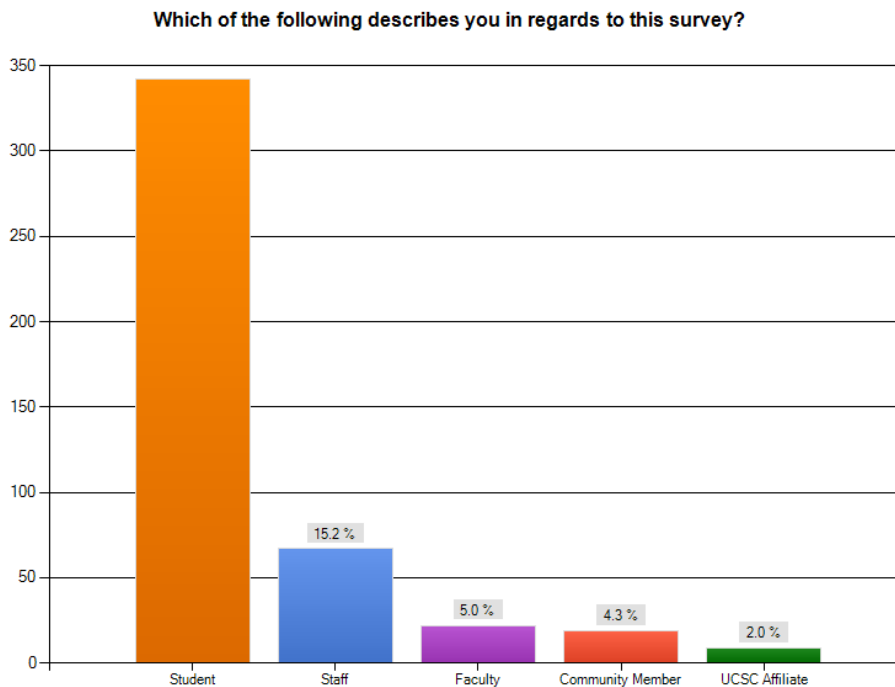


Figure 1. 78% of respondents to the Cycling Survey were students, a large majority of the total respondents.

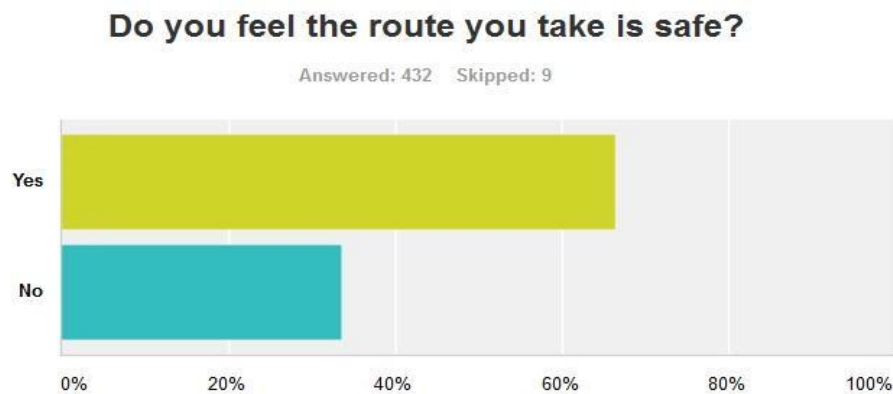


Figure 2: This chart illustrates cyclists' sense of safety when cycling on the route that they take to campus. Following this question was a question that asked, "If no, why? (lighting, road surface, steep grade). Where do you feel the least safe along your route? Some hazards." This provided an optional space for a free response about what in particular makes cyclists feel unsafe. User comments from the UCSC Cycling Survey helped the team identify details for key corridors that commuters believe need the most improvements.

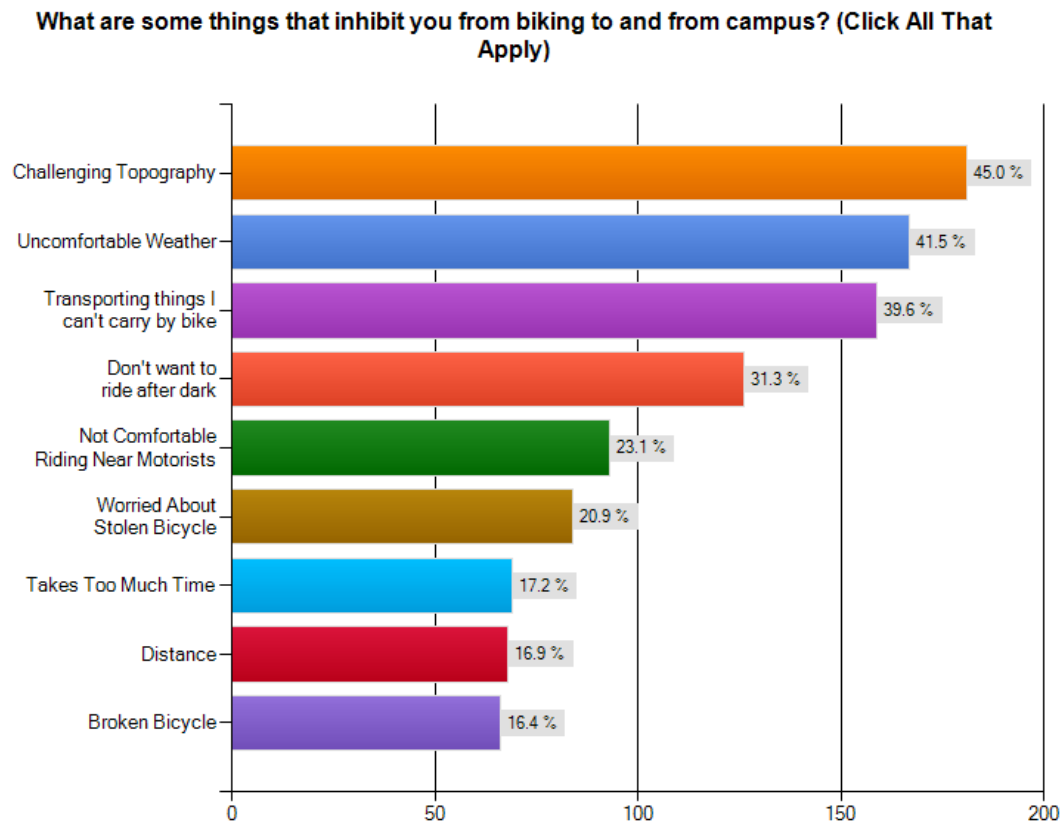


Figure 3. This graph shows the responses by percentage to a question about what inhibits cyclists from bike commuting to campus.

Solutions to Inhibitors Identified by Survey Responders

Order of Response Frequency	Inhibiting Factor	Possible Solutions
1	Challenging Topography	Increased UCSC Bike Shuttle investments/additional racks on Metro buses.
2	Uncomfortable Weather	Promote biking in spring & summer times through school systems. Offering classes on how to safely cycle in wet weather without getting drenched with rain. Organized trips to ride in the rain to practice safe bicycle handling.
3	Transporting things I can't carry on my Bike	Offering extra UCSC Bike Shuttle transportation uphill toward campus.
4	I don't want to ride after dark	Increased lighting at designated roadways for riders. More education on bicycle lights and workshops that give away free or low-cost, effective bicycle lights.
5	Not comfortable riding near motorists	Separate roads for those with high ridership, particularly Bay Street and Drive and Laurel Street. Wider bicycle lanes.
6	Worried about stolen bicycle	Educational program on proper locking techniques. Bicycle lockers on campus.
7	Takes too much time	Offer extra UCSC Bike Shuttle services up to campus during main hours of operation.
8	Distance	Add additional UCSC Bike Shuttle pick-up sites.
9	Broken Bicycle	Better promote available resources to repair equipment through campus and community outlets, such as UCSC Orientation, residential advisors, newsletters, and social media.

Figure 4. This table identifies potential solutions to the inhibitors to cycling, which were identified by respondents to the UCSC Cycling Survey (see Figure 3).

Commuter Road Usage

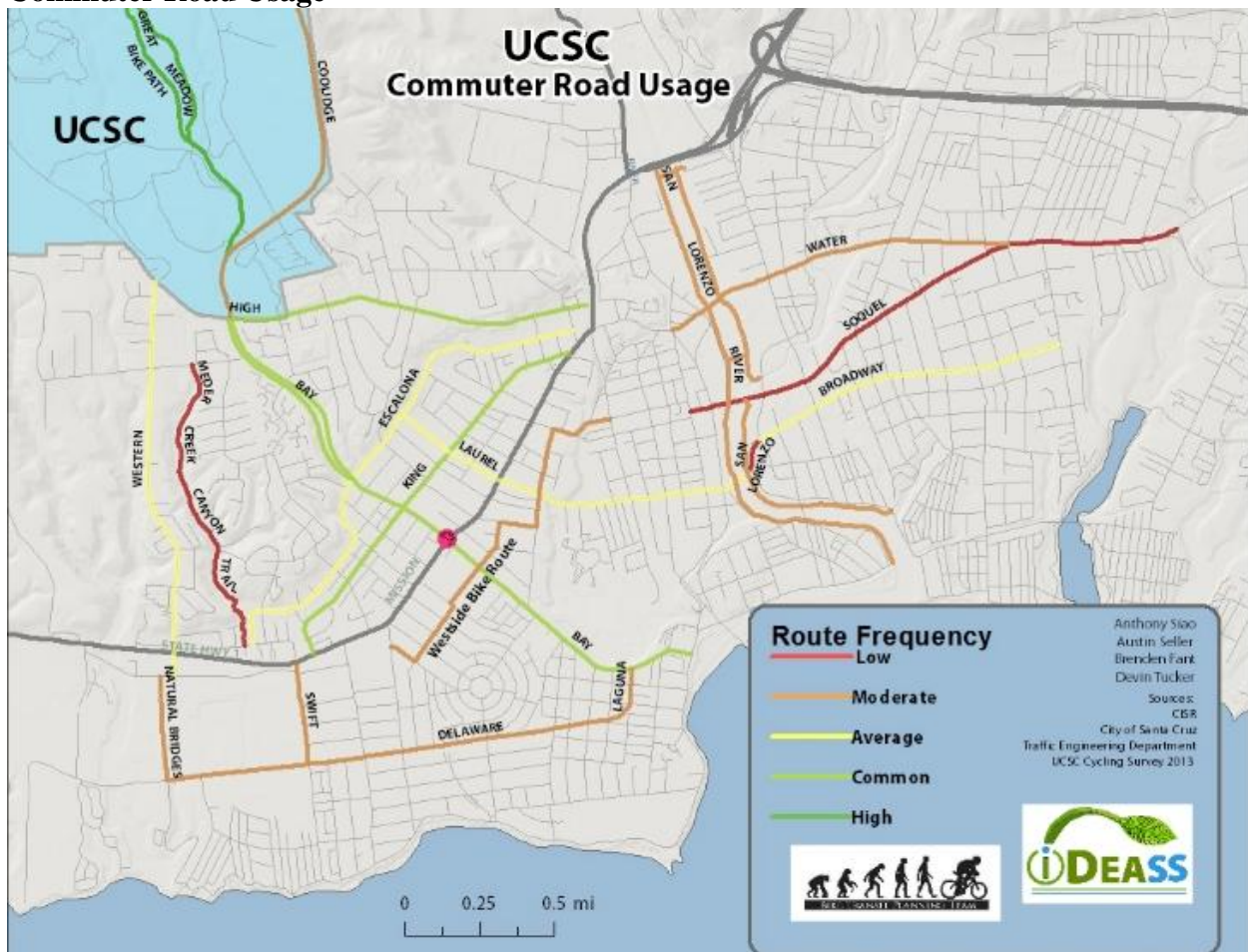


Figure 5. Results from the UCSC Cycling Survey indicate the routes which are most frequently used by cyclists commuting to UCSC.

Tradeoffs and Limitations

Given more time and resources, it would have been beneficial to research the distribution of housing and employment locations for the UCSC commuters. This would help determine the potential corridors that would be utilized if the roads were improved.

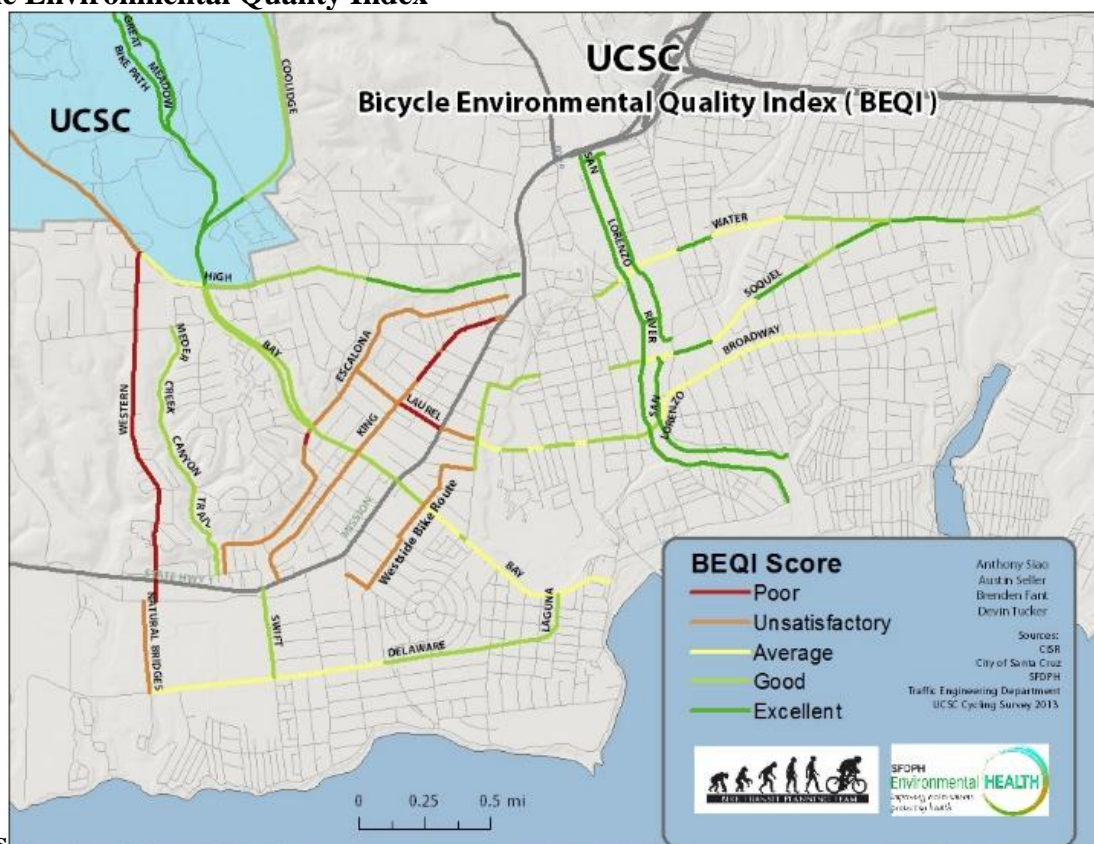
Our team recognizes the importance of surveying non-cyclists to understand why they do not currently bike. Future surveys of community members beyond those who identify as cyclists are recommended to identify other inhibitors to commuting by bicycle to campus. For this project, the focus was on community members who do cycle to and from UCSC so that most popular roadways could be identified and improvements recommended for these roads. Though we do not have a quantifiable count for how many survey responders identify as bicycle commuters, as opposed to people who rarely or never ride their bike, our methods targeted cyclists. Thus, most of the respondents likely fall into the Portland Bureau of Transportation's category of "Enthusied and Confident" riders. A survey of the entire community, cyclists and non-cyclists alike, would provide data on people who identify with "Interested by Concerned" or "No Way No How." Safety for all riders, including beginners, is important. As the Portland Bureau of Transportation states, "No person should have to be 'brave' to ride a bicycle; unfortunately, this is a sentiment commonly expressed to those who regularly ride bicycles by those who do not."

Bicycle Environmental Quality Index

The road quality is determined by the Bicycle Environmental Quality Index (BEQI) system, which assesses all standing bicycle infrastructure of a road.

The BEQI developed by the City of San Francisco is a tool used to rank the quality of bicycle routes and identify key gaps that exist within bicycle networks. A BEQI assessment of Santa Cruz bicycle routes provides data characterizing current infrastructure that will enable the City to prioritize projects in order to create high quality routes from residential areas to schools and to business districts. The BEQI also enables the City to track success and report periodically to the community on the combined value of projects related to road quality. Within this study, the BEQI was used upon roads identified through the UCSC Cycling Survey. The BEQI included assessing such factors as the speed of vehicle traffic, the width of the bicycle lane, parallel parking, quality of the pavement surface, traffic calming features (street signs reminding drivers and cyclists that bicycles may take the lane, sharrows, etc.), bicycle parking, and other factors.

For a full summary of BEQI scores with every roadway, see the Road Results section.
Bicycle Environmental Quality Index



Scores

Figure 6. This is a visual display of the BEQI score of each road segment. Segments consist of major intersections and are colored to represent their quality.

Tradeoffs and Limitations

One limitation of the BEQI is that it was designed for the City of San Francisco, a heavily urbanized region. Santa Cruz, however, has much more diverse land use, making the use of the BEQI as it was formulated in San Francisco less accurate when used in Santa Cruz. Some conditions in the BEQI were not present within Santa Cruz; for example, there are no left turn bicycle lanes, dashed intersection bicycle lanes, or turn-on-red signs. The absence of these features in Santa Cruz made data collection difficult and chance for inaccuracy greater. Due to time constraints and limited resources, the team was not able to account for two categories: traffic volume and percentage of heavy vehicles, though these are contributing factors to the BEQI rating system. Their scores were not taken into account for the total score for each road and maximum available points were scaled accordingly.

Additionally, because this is a student-initiated project through an internship program, we had limited time and resources available to us, and as a result we were not properly trained with the BEQI system, leading to a potential for subjective error.

UCSC & Westside Santa Cruz Bicycle Transit Study (2013)

Collision Report

The City of Santa Cruz Traffic Engineering Department generously provided the team with data consisting of 669 documented cycling collisions with motor vehicles in the city from 2003-2012. The roads the team surveyed account for 67% of all reported collisions, so attention is directed towards these roads.

The collision data was all plotted utilizing GIS software. Prioritizing the most accident-prone roads is one effective method to address the issue of cycling safety. We examined the distribution of collisions in relation to route frequency of cyclists and BEQI scores. There is a correlation between roads with the high volumes of traffic and many collisions. However, this is subject to variability when considering that High Street and Bay Drive have significant volumes of traffic and few collisions.

Commuter Road Usage and Number of Injuries

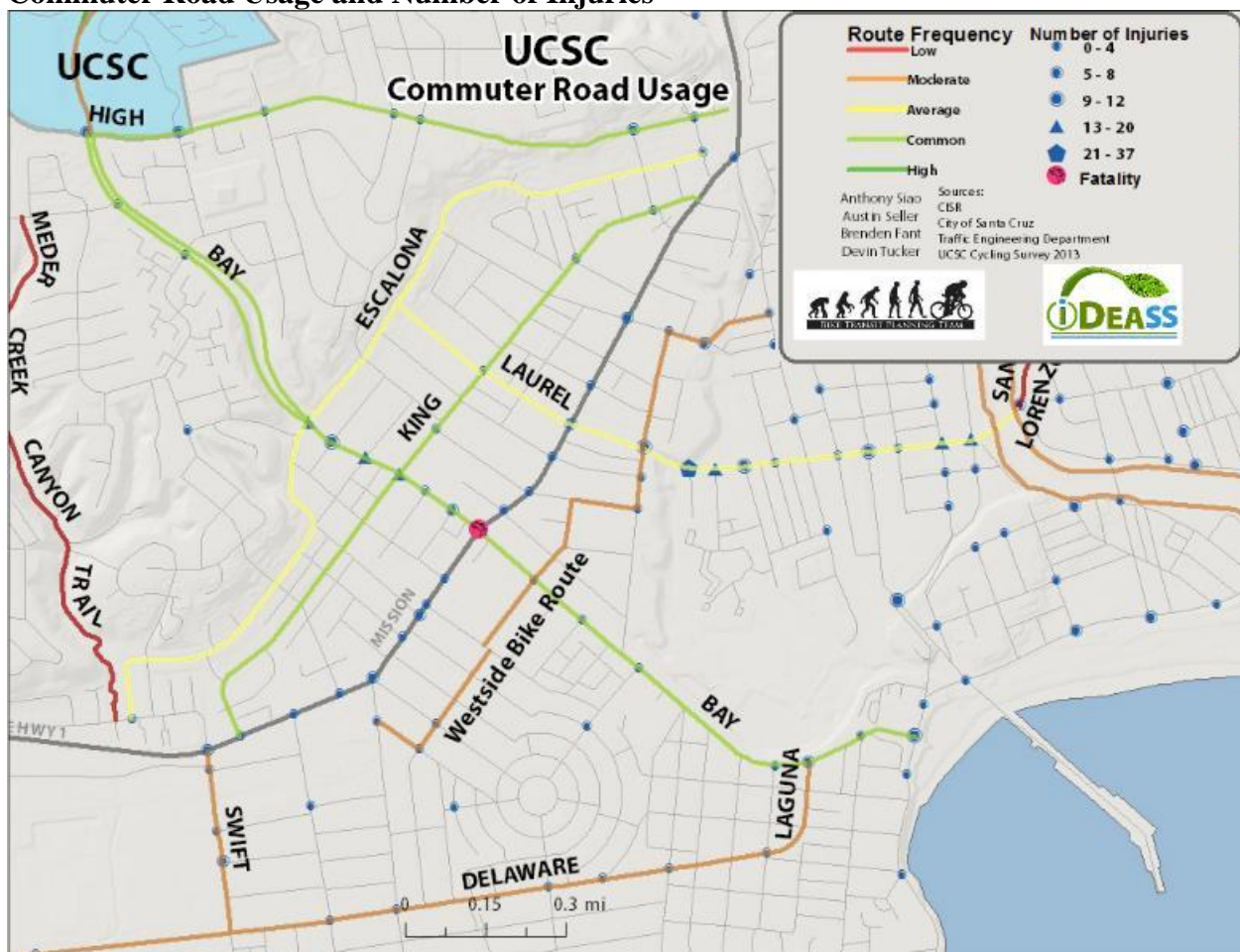


Figure 7. This map shows the route frequency of commuter roads with the number and location of injuries.

A Note on BEQI and Indications of Safe Roadways: Comparing the distribution of collisions in relation to the BEQI score, it becomes apparent that roads such as Western Drive and Escalona Drive have poor infrastructure yet have few collisions. The BEQI does not necessarily reflect that roads are safe. It only reflects that it has the infrastructure that allows it to have the *potential*

to be safe. Collision data comes closest to indicating the safety of roads, at least in the context of this report, though solo falls unreported to the police happen often and are not reflected by this data.

BEQI & Collision Correlations

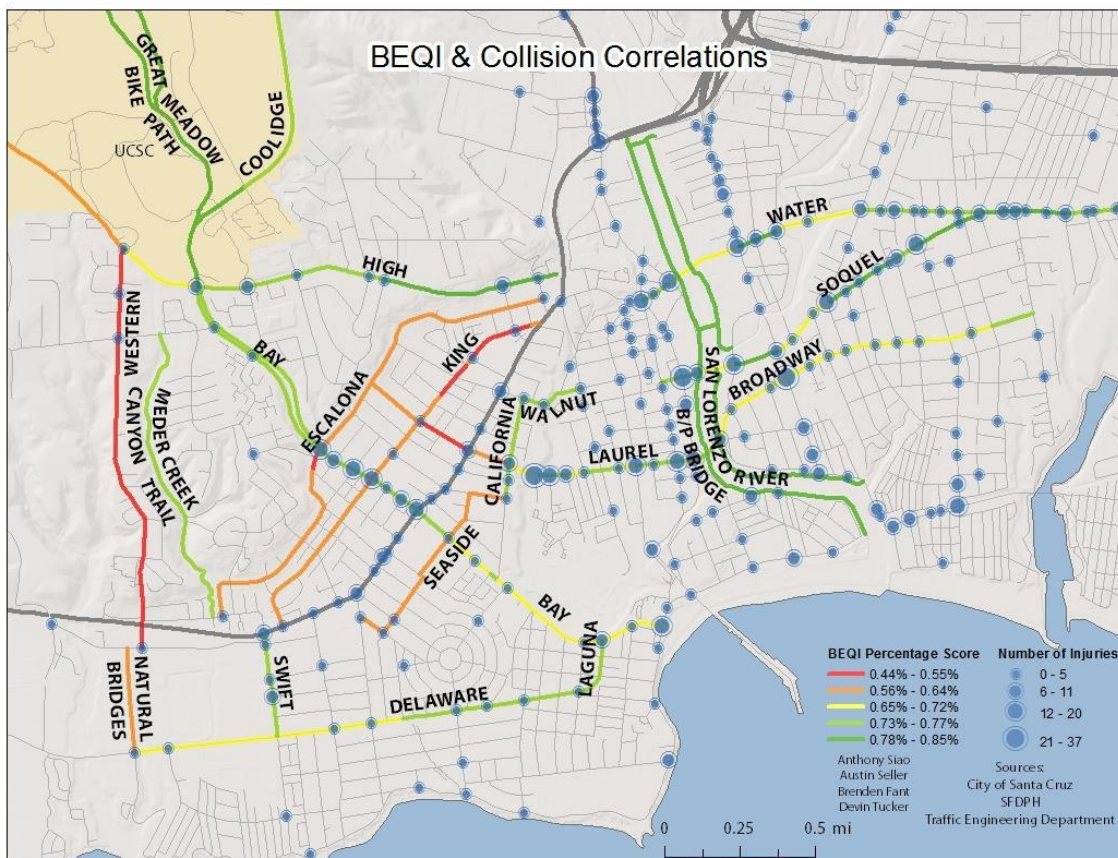


Figure 8. The map above displays both BEQI scores and collision points.

Tradeoffs and Limitations

The collision points plotted at the nearest intersection can be misleading because the majority of collisions are in close proximity to intersections. This visually works out, but is misleading at road segments with large intervals in between intersections.

This report's injury data comes from reported collisions with motorists, so it does not have data regarding "solo falls," which are cycling accidents that do not involve motor vehicles. These types of accidents account for a large portion of all cycling related crashes and can be very hard to track due to lack of reporting (Jed).

For more information about collisions, please refer to the Appendix.

Collision Data

Most Hazardous Intersections 2003-2012	Injuries	Deaths	Total Accidents
Laurel Street & Walti Street	37	0	19
Ocean Street & Broadway	28	0	15
Front Street & Soquel Avenue	24	0	13
Soquel Avenue & Capitola Road Extension	23	0	12
Ocean Street & Water Street	20	0	11
Mission Street & Bay Street	18	2	11
River Street & Water Street	18	0	10
Soquel Avenue & Dakota Avenue	18	0	10
Laurel Street & Pacific Avenue	16	0	13
River Street & CA 1	19	0	9
Bay Street & Anthony Street	16	0	8
Murray Street & Seabright Avenue	16	0	7
Front Street & Laurel Street	14	0	8
Laurel Street & Felix Street	14	0	8
Mission Street & Pacific Avenue	14	0	8
Bay Drive & Escalona Drive	14	0	7
Soquel Avenue & Seabright Avenue	13	0	7
Laurel Street & Center Street	12	0	6
W Cliff Drive & Bay Street	12	0	6
N Branciforte Avenue & Soquel Avenue	12	0	5
Water Street & Benito Avenue	11	0	5
Laurel Street & California Street	10	0	6

Morrissey Boulevard & Soquel Avenue	10	0	6
N Branciforte Avenue & Water Street	10	0	6
Bay Street & Kenneth Street	10	0	5
Laurel Street & Blackburn Street	10	0	5
May Avenue & Water Street	10	0	5
Soquel Avenue & Frederick Street	10	0	5
W Cliff Drive & Pacific Avenue	10	0	5

Figure 9. This table shows the most hazardous intersections in Santa Cruz from 2003-2012.

Data Analysis

Lighting

The top five routes that had lighting problems are the Campus Bicycle Path, Bay Drive, Bay Street, Escalona Drive, and King Street. To calculate the potential increase in BEQI score for these roads from an improvement in lighting, the team measured them with current lighting conditions, which scored poorly, and then with recommended lighting improvements. With lighting improvements, the potential BEQI score could be 5-10% higher. Results from the UCSC Cycling Survey show 31.7% of the respondents indicating that they “Don’t want to ride after dark.” In addition, written feedback from the survey supported lighting improvements; for example, one respondent wrote: “no street lights at night (countless bike accidents are caused by this).” Based on the reported collision report data, 17% of accidents happened at nighttime, so the fear of accidents at night is based in fact. Certainly, there are already many commuters who ride their bicycles in the dark, even on roads where lighting is poor, but this presents a risk that could be reduced by improving light quality.

Motorists

The top five routes that people were concerned with because of motorists was Bay Drive, Western Drive, High Street, King Street, and Bay Street. Approximately one out of four survey respondents from UCSC Cycling Survey indicated that they are inhibited from riding to UCSC because they are “Not Comfortable Riding Near Motorists.” In the written comments section, many people were concerned about being too close to vehicles while riding. A lot of riders also discussed their past experiences of being part of a collision with a vehicle and how that holds them back from riding that route. There were many complaints of those top five streets because riders felt there is not enough space. There was also a serious concern of cyclists being afraid of bad drivers who are unaware of cyclists. One solution would be to isolate the bike lanes from vehicle traffic, minimizing the amount of cyclist and vehicle interactions.

Pavement

The top five routes with poor pavement conditions are Western Drive, King Street, Escalona Drive, Laurel Street, and Soquel Avenue. The pavement on these five roads needs to be improved because they are main road that cyclists use often. In the survey, there are many complaints of the pavement conditions on Western Drive because the street is full of potholes, which are hazardous to cyclist tires and can cause accidents.

BEQI

BEQI Focus on Alternative Mission Routes

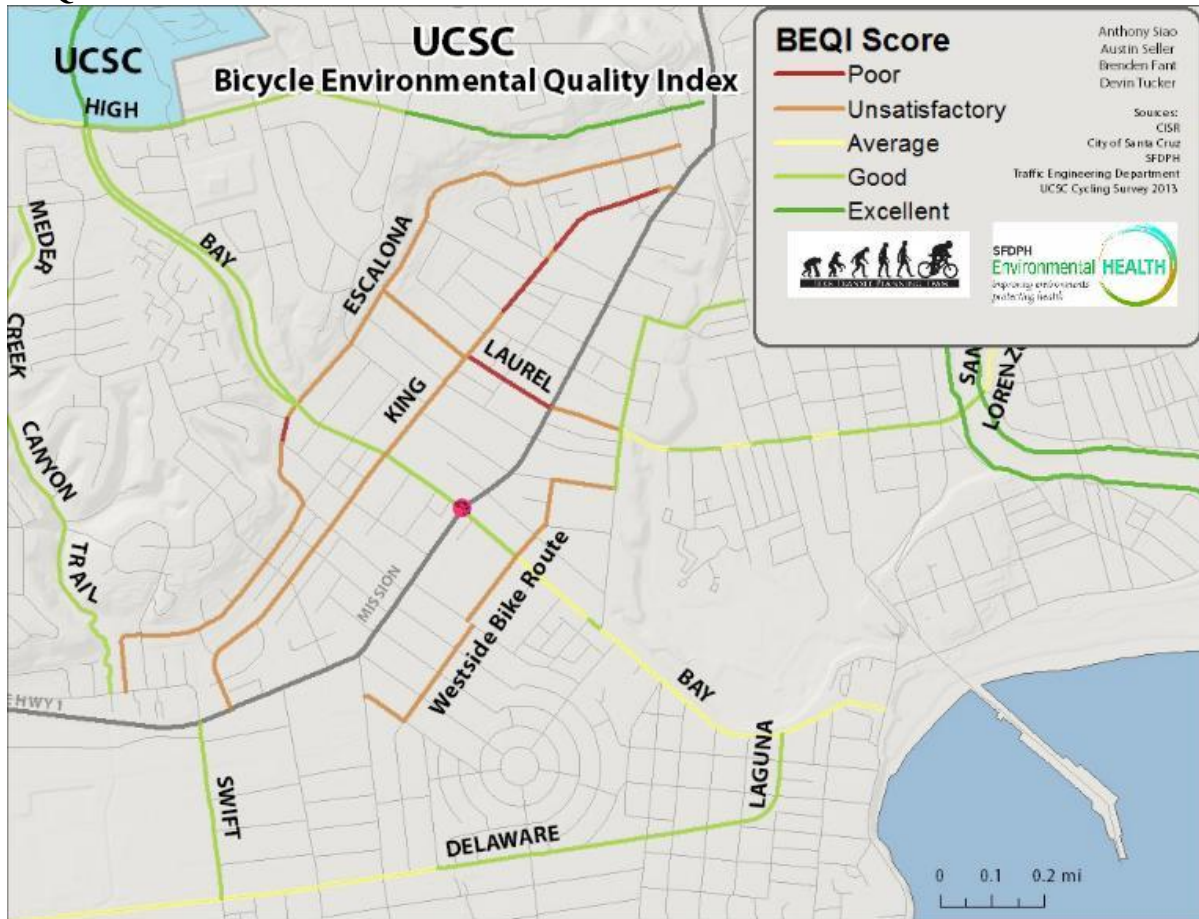


Figure 10. This figure shows BEQI scores by segment and deems all alternative routes to Mission Street of low BEQI quality. Mission Street contains 10% of all collisions from the collision data used in this report, making it an extremely dangerous road. It is also a segment of Highway 1, so it has a lot of traffic on it throughout the day. To encourage cyclists to avoid Mission Street, parallel routes that are in close proximity such as Escalona Drive, King Street, and the Westside Bike Route are potentially safer routes. Road improvements would be needed make the routes even safer.

Pavement and Lighting Improvement Capabilities:

On specific topics of pavement quality and lighting availability, the BEQI score on certain roads would benefit greatly from investment of these bicycle resources. In the following chart, we have displayed the before and after BEQI score increases that would reflect investment in the identified corridor:

<u>BEQI Pavement</u>	<u>Current</u>	<u>Improved</u>
Western Drive	50	55.1
King Street	53.1	60.7
Laurel Street	61.2	67.3
Bay Drive	75.5	77.5
Broadway	78.5	81.3
San Lorenzo Bicycle Path	83.4	86.3

<u>BEQI Lighting</u>	<u>Current</u>	<u>Improved</u>
King Street	53.1	58.9
Escalona Drive	59.7	62.3
Bay Street	70.3	72
Bay Drive	75.5	78.3
Campus Bicycle Path	83.5	87.7

4. APPENDIX

Bay Drive

#1



Evening out the bicycle lane

Currently from Meder Street/Bay Drive intersection down to 150 meters before the Escalona Drive intersection the bicycle path has two different pavements. While this may not be a problem for experienced riders or cyclists with a wide tire width, cyclists with narrow tires are put at danger with this offsetting pavement, especially at high speeds. This part is the fastest section of Bay Street downhill biking.

#2



Monitoring cyclists

Many cyclists (especially new ones) could use reminders at high speed locations with upcoming intersections to warn them of potential hazards, like cars, in the roadway. Bicycle slow signs would be beneficial for this purpose before the Escalona Drive intersection and before the Kenneth Turn previously mentioned.

Bay Street

#1

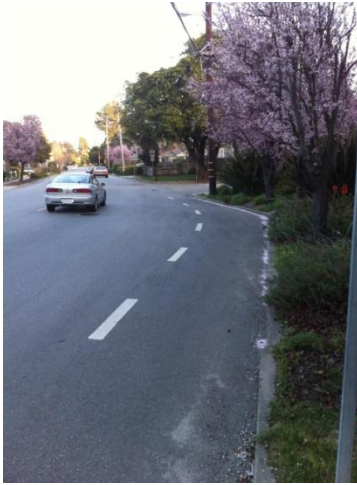


Bay/Mission Intersection Disruptor

During high intensity transportation hours, cars tend to line up for the Mission Street intersection lights. In order to gain safe passage across the intersection, cyclists pass along to the front of the line. Disrupting easy passage to the right side of the road is an outshoot that could be removed and benefit cyclists' safety. *(Possible intersection which could benefit from having a bicycle-only section in between the stop line for motorists and pedestrian pathway)*

Findings conclude that the most used road for UCSC riders is Bay Drive/Street. Concerns about the downhill safety of the road through intersections, and dark night trips suggest Bay Drive/Street conversion into a bicycle boulevard.

#2



The fast thin turn before Kenneth Boulevard

After passing down the hill, a left turn right before Kenneth Boulevard has come to be a problem for many cyclists. This part of the bicycle lane should be considered for widening to provide incentive for all cyclists to stay within their bicycle lane.

In order to adequately inform commuters as to the most direct designated bike route to arrive at popular destinations when traveling from UCSC on Bay Street, more notification is required.

- Bay Street and Escalona Drive
- Bay Street and King Street
 - Connects to Laurel Street which accesses the southern portion of downtown
 - Mission Hill Middle School is located on King Street
- Bay Street and Mission Street
 - Mission Street is a business district with many businesses on and near it
- Bay Street and California Avenue
 - Connects to Westside Bicycle Route South of Mission Street

Cycling Traffic:

On our survey of 443 responders, 219 (50.8%) of responses indicated they travelled on Bay Street to or from their trip to the UCSC campus. Also, of the 443 responders, 129 (29.9%) of respondents indicated that they road on Bay Street (Past Escalona Drive).

Riders Concerns:

In a free response question, the highest noted concern from cyclists was acknowledgement of bay's lack of lights, with a total of 31. This was the most noted response out of all. Also, the high speeds resulted in much concern over motorists for cyclists, indicating a separation of the bicycle lane would improve road safety.

Accident Numbers 2003-2013:

Within the last 10 years, the city has a recorded 64 cycling and motorist accidents on Bay St, 45 of which were in between High Street and Mission Street. Between those 45 accidents down to mission from campus, 26 of them were between 6 am-5:30 p.m. The other 19 accidents occurred after 5:30 p.m.

King Street

King Street has had a lot of attention given to it throughout the past years in regards to turning it into a bicycle boulevard. The many specifics of improvements that could be made to make the road more bike friendly can be found in the King Street Bikeway Concept Plan by Bicycle Solutions, the major qualities that our study found need attention are briefly overviewed as follows:

#1



Intersection Improvements

The Bay Street intersection at King Street and the King Street-Laurel Street intersections should be given high priority to promote the Bay Street-King Street-Laurel Street pathway downtown from the campus. One solution is an intersection like the one shown to the left, or something like a bicycle box could also be an improvement.

#2



Pavement

Pavement improvements to King Street would greatly increase the BEQI score and the accessibility of the bicycle boulevard. Poor pavement quality was found in all corridors.

#3



Biker Guidance to King St

Bicycle path signage leading towards King Street should be improved by adding bicycle paths and extra signage at both ends of King Street and at both Bay Street and Laurel Street intersections.

Rider Specifics:

27.25% of all respondents said they commuted on King Street

BEQI Summary:

Total Average score of 55.7%

Lowest areas between: Hollywood, Walnut, and Miles

Lowest scoring sections: Pavement, Shared road, Lighting and Parallel Parking

Collision History: 17 total Collisions recorded, totaling in 2.5% of all accidents. This low number suggests that the residential speeds and traffic calming features have made King Street a safe route.

Laurel Street

According to the collision data, Laurel Street is the most dangerous street (see page 27 for Laurel Street collision data), and it is the most common route used to link UCSC to downtown Santa Cruz. Ways to improve the BEQI score of this road are a bicycle lane connection from California Avenue until Escalona Drive, pavement improvements almost entirely along its length with an evened bicycle lane (an improvement proposal for this was written by the Santa Cruz County Regional Transportation Commission in 2012). Lastly, intersection bicycle lanes and bicycle sensors through its intersections starting at King and ending at Broadway would greatly benefit the BEQI score of this road.



- Laurel and Chestnut
- Laurel and Front St
- Laurel and Pacific St

#1

Christchurch cycling – Copenhagen style (2013). This image shows a Copenhagen intersection, with green paint for bicycle lanes. An improvement based on this would be beneficial on Laurel Street, or something like a bicycle box.

- Laurel and California (Part of the Westside Bicycle Route)
- Laurel and Myrtle

Laurel Street should have a dedicated bicycle Path from California to Front Street. The bicycle path should be connected with a lane from Escalona Drive to California Avenue.

#2

UCSC & Westside Santa Cruz Bicycle Transit Study (2013)



Monitor cyclists

Many cyclists (especially new ones) could use reminders at high speed locations with upcoming intersections to warn them of changing terrain. Additional “Bikers Be Safe” signs at the California Avenue intersection heading towards downtown could provide extra warning to cyclists of the dangers of high speeds around traffic. Bicycle slow signs should be put at the California intersection and before the Felix intersection and turn.

Rider Specifics:

22.27% of respondents said they commuted on Laurel St

BEQI Summary:

Total Average score: 61.5%

Lowest areas between: California, Mission, Cleveland and King St

Lowest scoring sections: Intersections, lack of bicycle signage, steep grade

Collision History:

8% of all bicycle accidents were on Laurel St. Most of those accidents happened in between Mission Blvd and Front St, with Laurel/Walti and Laurel/Pacific intersections having the most.

Western Drive

#1



Pavement

Western Drive is an underutilized and currently unsafe pathway for the UCSC Campus and West Entrance. This pathway is a very long, slightly graded, dark, and pot hole filled road that links the Westside of the UCSC campus to many students down Western Drive in the residential areas west of Bay Street, and students on Western Drive itself. This road needs a dedicated bike lane and pavement improvements, along with lighting ideally through its dark lengths.

Rider Specifics:

16.11% of all survey respondents said they commuted on Western Drive

BEQI Summary:

Overall score of 61.4%

Lowest section between Flower St and Mission St with a combined 56.8

Lowest scoring sections: Lighting, Pavement, No designated bicycle lane

Collision History:

Low reported collision numbers for Western Drive

Summary of Road Results

Figure 9. This table shows a summary of the road results, compiling data from all three sources.

Road	BEQI Score	Priority	Notes	Input from UCSC cycling Survey
	Survey Riders			
	Collision Report			
Laurel Street	68.4% 22.27% 8%	Pavement, Lane labeling	Laurel above Bay Street, and going down past California Avenue need the most attention	Survey respondents said road pavement has a lot of cracks and potholes
Water Street	73.3% 9.72% 5.6%	Intersections Pavement, Parallel parking	High motorist road, Intersection would reduce the high collision numbers	Survey respondents said cyclists need more space to ride, too close to vehicles
Bay Street	71.4% 29.8% 8%	Intersection fixing, separation	High speeds for cyclists and cars, tight corridors, high traffic	Survey respondents said there are uneven pavements, better lighting
Bay Drive	75.5% 50.8% 8%	Lighting, Signage, Separation	Most used road for UCSC Commuters, High speeds, high traffic	Survey respondents said there is a lot of vehicle traffic, needs better lighting
Western Drive	49.4% 16.1% 0.4%	Pavement, Lighting, Signage	Underutilized pathway to lower Westside (2nd highest residential area - survey), needs a bicycle lane	Pavement road needs to be fixed, vehicle traffic, lighting, steep hill, no bicycle lane,
Delaware Avenue	71.9% 8.5% 0.8%	Lane Fixing	Lack of bicycle signage, number of driveway cuts	Needs more bicycle lane signs
High Street	77.1% 27.96% 2.5%	Signage, Parallel parking, lighting	Trash can and bicycle path issues (Wednesdays),	Needs better lighting, vehicle traffic
Soquel Avenue	75.6% 6.16% 11.2%	Separation, Signage, Steep grade road, intersections and number of lanes	High Motorist numbers, separation could reduce collision numbers	Harbor High School is a point of interest for improving safety
Broadway	69.8%	Pavement, Signage,	Trash can and bicycle	(Located in highest

UCSC & Westside Santa Cruz Bicycle Transit Study (2013)

	15.6% 2.7%	Separation, Intersection, Parallel Parking	lane issues, Big pathway into downtown for many residential areas	residential area from survey)
Glen Coolidge Drive	77.5% 12.3% N/A	Downhill speed, lighting	-	Most survey respondents indicated using the Campus Bicycle Path
King Street	57.7% 27.25% 2.5%	Pavement, Bicycle lane/path, more directions toward King Street	Most used alternate Mission Street route. Has potential to be very safe bicycle boulevard with dedicated lane and signage	Survey respondents mentioned that the pavement has a lot of cracks
Escalona Drive	58.8% 19.7% 1.5%	Signage, sharrow, Lighting and parallel parking	Big intersection with Bay Street that should be improved, intersection with Laurel Street should be improved	Survey respondents commonly mentioned desires of dedicated bicycle lane
Meder Bicycle Path	75.7% 5.7% N/A			
San Lorenzo Bicycle Path	83.3% 9.5% N/A	Lighting	Better lighting under bridges	
UCSC Bike Path	82.1% 58.1% N/A	Lighting, Two way path near farm is high speed and dangerous	Reflective border for nighttime use, Separation of directional traffic at the bottom	Most used road in the survey, most comments were about darkness (passes through Nature Reserve)

5. CONCLUSION

This report was designed to prioritize bicycle infrastructure improvements for the City of Santa Cruz, supporting numerous City, County, and University goals for increased cycling and accessibility of roadways. The Bicycle Transit Planning Team wrote this report both for the benefit of the City of Santa Cruz bicycle infrastructure, as well a tribute the ever-strong bicycle community. Let this report be, at any time, useful and available for desired bicycle improvements and promotion for any institution that may find it beneficial.

Whenever I see an adult on a bicycle, I have hope for the human race. -- H.G. Wells

6. RESOURCES

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