

Road Shoulder-widths for Bicycle Trip Planning

This web map projects intends to allow a user to plan their bicycle trip by identifying roads with the largest shoulder widths. By choosing a bicycling route with larger shoulders the bicycling trip becomes safer and potentially more leisurely and fun.

The map is being made to provide bicycle users with an easy way to plan safe trips. The vast amount of road data as well as city, state, and federal regulations on shoulder-size allow us to create data sets estimating actual shoulder widths.

I am an amateur road cyclist and have observed the need for an easy to use map detailing safety levels of road ways. I heard of a little-known book written by a resident of northern California who detailed some of the shoulder-widths and other characteristics of local roads. I'd like to expand the idea to include larger areas as well as utilize new web map technology to improve and share to a broader audience. This map will test a smaller area, probably no more than the extent of a single county.

Map Use Example:

A cyclist has planned a bike route but has not traveled the roads before and is concerned about how safe they may be. They pull up the map, enter the city their roads of interest are around (Or potentially loads a file containing their route and overlays on the web map) and explores the roads for safety. Shoulder-width is the first consideration and purpose of this map, they will observe based on size/color symbology on the roads how wide the shoulders are along their bicycle route.

- User Searches/geo locates their area of interest
- Optionally: User inputs gps route data for the bicycle trip
- User observes shoulder width and potentially other safety characteristics
- User loads additional data such as Bicycle Shop Locations, Popular lunch spots/breweries, other bicycle related layers
- Potential improvement: User receives a Safety Score for the area of interest

Datasets:

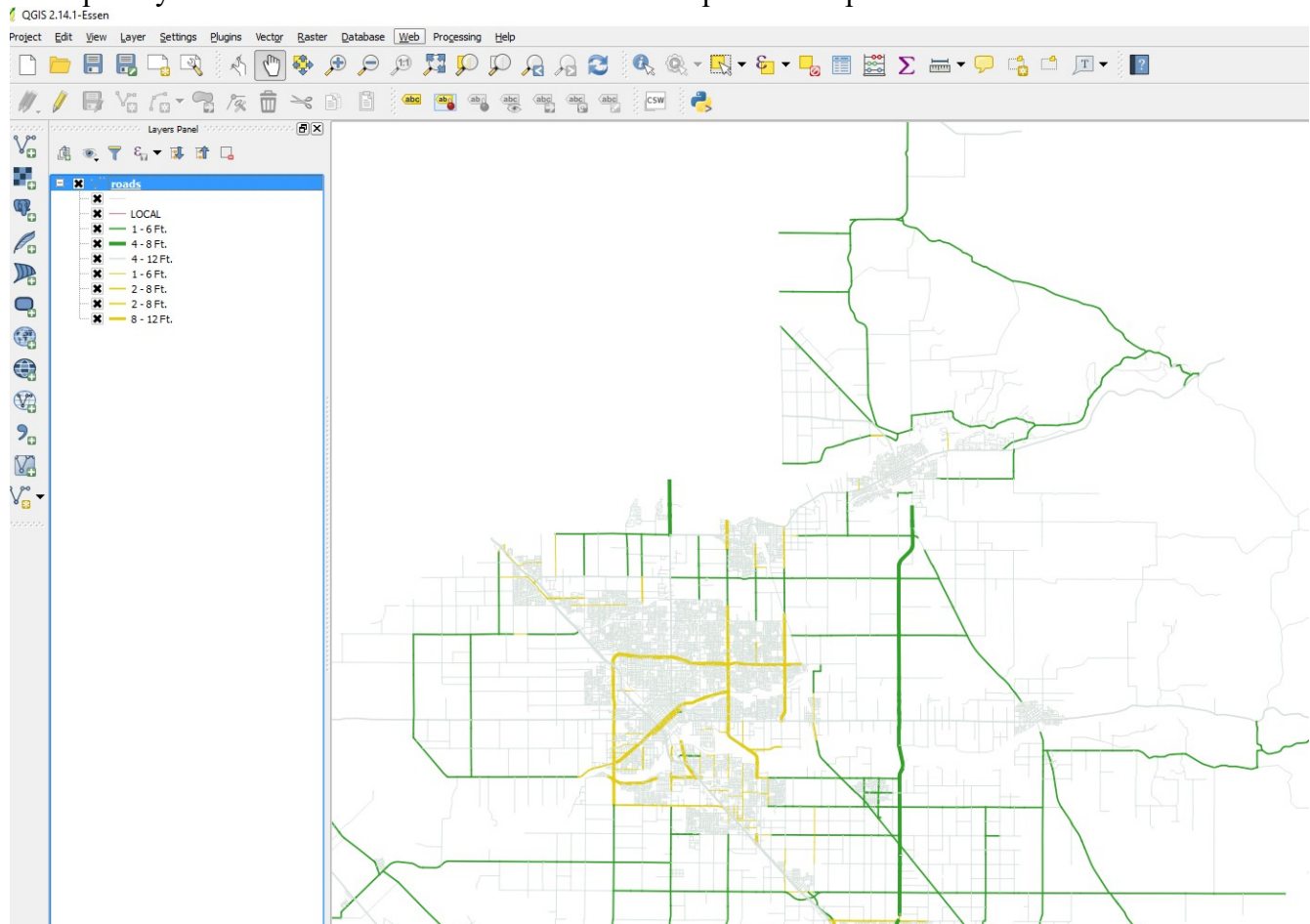
Stanislaus County Roads Layer

Technology Stack:

I will use Qgis to manipulate the dataset based on tables and traffic data sources. I have collected a lot so far but will need to find more. I plan to host my data on CartoDB and use Leaflet as a start. There will be a layer control to turn on and off various bicycle related layers. I will download Open Street map data to symbolize bicycle lane data. I use HTML and CSS to create an effective and attractive interface.

I'll use github pages to host the final map (as well as CartoDB is it makes sense to host my data there).

Example: Symbolized based on Road width and US Dept. of Transportation Tables



Example of one Table used:

Highway Functional Classification: Concepts, Criteria and Procedures

Table 3-5: VMT and Mileage Guidelines by Functional Classifications - Arterials

	Arterials			
	Interstate	Other Freeways & Expressway	Other Principal Arterial	Minor Arterial
Typical Characteristics				
Lane Width	12 feet	11 - 12 feet	11 - 12 feet	10 feet - 12 feet
Inside Shoulder Width	4 feet - 12 feet	0 feet - 6 feet	0 feet	0 feet
Outside Shoulder Width	10 feet - 12 feet	8 feet - 12 feet	8 feet - 12 feet	4 feet - 8 feet
AADT ¹ (Rural)	12,000 - 34,000	4,000 - 18,500 ²	2,000 - 8,500 ²	1,500 - 6,000
AADT ¹ (Urban)	35,000 - 129,000	13,000 - 55,000 ²	7,000 - 27,000 ²	3,000 - 14,000
Divided/Undivided	Divided	Undivided/Divided	Undivided/Divided	Undivided
Access	Fully Controlled	Partially/Fully Controlled	Partially/Uncontrolled	Uncontrolled

Sources

Stanislaus County Roads Layer:

<http://gis.stancounty.com/giscentral/public/downloads.jsp?main=4>

Shoulder Widths:

http://safety.fhwa.dot.gov/geometric/pubs/mitigationstrategies/chapter3/3_shoulderwidth.cfm

<http://wiki.openstreetmap.org/wiki/Key:cycleway>

<https://trid.trb.org/view/2009/M/896206>

Notes

May incorporate expected traffic data (or find a web service to use):

Usage (Annual Average Daily Traffic [AADT] Volumes and Vehicle Miles of Travel [VMT]): Arterials serve a high share of longer distance trips and daily vehicle miles of travel. In rural areas, Arterials typically account for approximately half of the daily vehicle miles of travel; in urban areas, this percentage is often higher. Collectors account for the next largest percentage of travel. Urban Area Collectors account for somewhat less (5 to 15 percent), while the percentage for Rural Area Collectors is typically in the 20 to 30 percent range. Lastly, by definition, Local Roads in rural areas typically serve very low density, dispersed developments with relatively low traffic volume. In contrast, the Urban Local Road network, with higher roadway centerline miles and higher density spacing, serves denser land uses and therefore accounts for a larger proportion of travel than its rural counterpart.