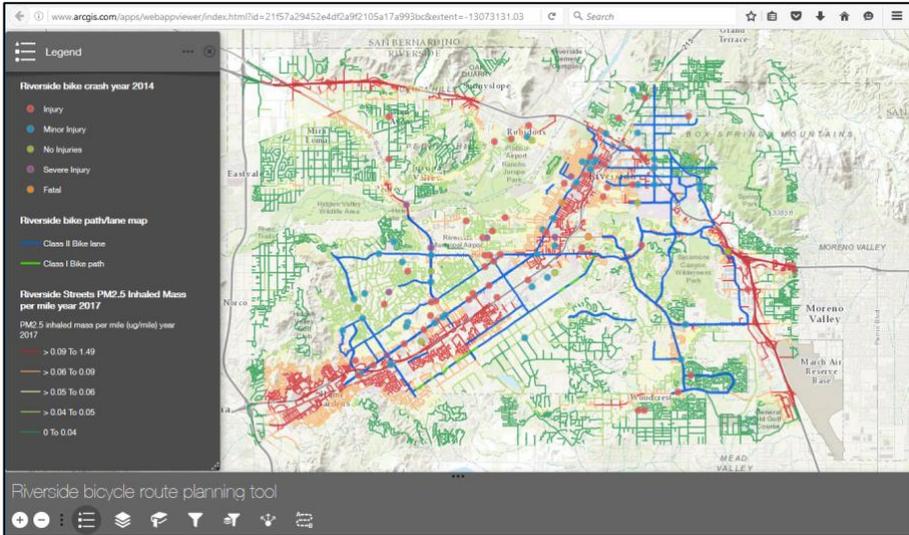


PROJECT INFORMATION FORM

Project Title	Biking in Fresh Air: Consideration of Exposure to Traffic-Related Air Pollution in Bicycle Route Planning
University	University of California, Riverside
Principal Investigator	Kanok Boriboonsomsin
PI Contact Information	(951) 781-5792 kanok@cert.ucr.edu
Funding Source(s) and Amounts Provided (by each agency and organization)	CALTRANS \$92,799.92
Total Project Cost	\$92,799.92
Agency ID or Contract Number	DTRT13-G-UTC29 Caltrans 65A0527 TO 023
Start and End Dates	12/23/2015 – 1/31/2017
Brief Description of Research Project	<p>Active transportation modes such as walking and biking are key elements of sustainable transportation systems. In order to promote biking as an alternative form of transportation, a holistic approach to improving the quality of the biking experience is needed. Local, regional, and state agencies in California are making efforts to increase bicycle infrastructure in the State in order to promote sustainable and multi-modal transportation. In most areas, bicycle routes are a subset of vehicle routes and new bicycle infrastructure is created by adding bicycle lane(s) to existing rights-of-way. The planning of bicycle routes typically takes into consideration available right-of-way, existing roadway infrastructure, vehicular traffic volume, safety concern, and built environment, among others. Exposure to traffic-related air pollution, on the other hand, is rarely considered in route planning, despite bicyclists being vulnerable to the harmful air pollution due to their direct exposure to vehicular exhaust and increased breathing rate during biking. Traffic volume alone is not a sufficient surrogate for the level of air pollution on the road, though; it also depends on traffic speed, fleet mix, meteorology condition (e.g., wind speed and wind direction), and terrain.</p> <p>The goal of this research was to incorporate reduced exposure to traffic-related air pollution as another consideration in improving the quality of the biking experience. Specific objectives of this research included: 1) creating a streamlined process for estimating the level of near-road air pollution concentration; 2) developing a novel bicycle route planning tool that allows planners and engineers to compare the exposure of bicyclists to traffic-related air pollution among different bicycle routes; and 3) demonstrating</p>

	<p>the method for considering bicyclists' exposure to traffic-related air pollution in bicycle route planning.</p>
<p>Implementation of Research Outcomes (or why not implemented) (Attach any photos)</p>	<p>This research has developed a method for incorporating exposure to traffic-related air pollution as another consideration in the bicycle route planning process and has demonstrated how to apply the method through two case studies. Planners and engineers may elect to adopt the presented method or use the information about exposure to traffic-related air pollution differently. For instance, both the order and the weight of importance for the different factors can be changed, which may affect the ranking results. Planners/engineers and stakeholders may jointly determine how important the different factors, including exposure to traffic-related air pollution, are relative to one another. Other factors that should be taken into consideration for a specific corridor or area may also be included.</p>  <p><i>Bicycle route planning support tool</i></p>
<p>Impacts/ Benefits of Implementation (actual, not anticipated)</p>	<p>The City of Riverside has incorporated the results from this research in the update of the city's Active Transportation Plan.</p>
<p>Web Links</p> <ul style="list-style-type: none"> • Reports • Project website 	<p>https://ncst.ucdavis.edu/project/biking-in-fresh-air-consideration-of-exposure-to-traffic-related-air-pollution-in-bicycle-route-planning-2/</p>