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Presentation Title: Analyzing Factors That Influence Bicycle Commuting Behavior In The 50 Largest U.S. Cities

Abstract: As a nation, we must move towards non-emitting modes of transportation to rapidly slow climate change. Reductions in air pollution and carbon emissions can be achieved by replacing vehicle miles traveled with bicycle trips, yet only 1% of commuting trips are taken by bicycle in the United States. This percentage is low compared to European countries like Denmark where bicycle mode share is greater than 40%. Considering success in other regions of the world, how can the U.S. facilitate bicycle commuting behavior? The socioecological model offers a solution for long-term behavior change by placing individual behavior within the larger context of the built environment and public policy. In keeping with this model for behavior change, our study investigates built environment and policy variables most predictive of bicycle commuting across the fifty largest cities in the U.S. We gathered data for twelve policy and built environment variables from resources provided by the League of American Bicyclists, People for Bikes, and Smart Growth America. We used a k-fold cross-validation procedure in combination with principal components analysis to develop a predictive regression model. Our model included eighteen variables in total, and three of these variables emerged as most predictive of bicycle commuting: accessibility to public transit, number of city staff working on bicycle issues per capita, and the annual average number of bicyclist fatalities. These three variables explained 70% of the variation in bicycle commuting across the fifty largest U.S. cities. To leap towards greater bicycle commuting in the U.S., city transportation plans and policies must 1) prioritize projects that increase links between bicycle networks and public transit stops, 2) invest in a bicycle workforce, and 3) create safer environments for all road users.