

Undergraduate Thesis Prospectus

Postman Collection Integration: Enhance Customer Experiences with Postman

(technical research project in Computer Science)

Biking Advocacy in U.S. Cities

(sociotechnical research project)

by

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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General research problem

How can the lives of people become more efficient?

The U.S. Bureau of Labor Statistics defines productivity as “increase output without increasing inputs,” which apart from an economical sense can be applied to any complex problem that exists today (BLS, n.d.). Therefore, time savings can yield productivity gains.

Postman Collection Integration: Enhance Customer Experiences with Postman

How can incorporating Postman, an Application Programming Interface platform, in a software integration platform enhance customers' experiences?

This project is a capstone on a past internship project for a software engineering company that facilitates integration between cloud-based enterprise applications. The goal was to reduce customer development overhead and attract a greater customer base by integrating Postman into the services we provide. Therefore, customers could utilize this feature to create more robust integrations in less time, providing an enhanced experience to their software. Subramanian et al. (2014) empirically shows the benefits of cloud integration for Chinese small businesses and the great economics of scale. This was a solo project and is under the Department of Computer Science, whose advisor is Briana Morrison.

Biking Advocacy in U.S. Cities

How do advocates of biking advance their agendas in three major U.S. cities: Chicago, New York, and Portland?

According to Ritchie (2020), a person who foregoes driving to ride a bicycle can reduce personal travel emissions by 75 percent. On U.S. roads and streets, however, cycling can be

stressful and dangerous. Accommodations such as “on-street painted bicycle lanes, off-street trails, separated bicycle paths, and neighbourhood bikeways” (Branion-Calles et al., 2019) can protect cyclists and thereby promote cycling. Wherever motor vehicle traffic predominates, cycling accommodations that separate cyclists from larger motor vehicles (those with four or more wheels) protect cyclists best (Branion-Calles et al., 2019). In U.S. cities, such accommodations are rare. Often state officials introduce accommodations only in response to so-called “demonstrated demand” (one or more traffic deaths), or to continuous pressure (Levin, 2020). Winters et al. (2012) explain that perceptions of biking desirability generally correlate with safety conditions. Even where potential cycling demand is high, hazardous conditions can suppress actual demand, which may then be misinterpreted as low potential demand.

Researchers have investigated the safety, economic impact, and individual perceptions of biking in cities. Oliveira et al. (2021) describe the problem of route planning, as bikers in cities may not know the safest path to their destination. They propose an “Internet of Bikes”: a bikeshare system in which bikes equipped with smart sensors transmit and receive real-time data about road conditions and traffic, supporting dynamic planning of safer and more expeditious routes. Although a protocol for this communication has been developed, the practicality of implementation is still in question. Cicchino et al. (2020) called for city planners to minimize conflict points in bike lanes: areas where there can be confrontation from a bike accident.

Bullock et al. (2017) contend that by improving access, public bikeshare systems increase retail trade. Cycling also improves cardiovascular health (Bullock et al., 2017).

Park and Akar (2019) concluded that bicyclists will move to areas with good bicycle facilities and prefer high-density neighborhoods over suburban areas. According to the Pew Research Center, working-age adults (ages 25 to 44) are increasingly moving to urban areas over

suburban in the U.S, citing the labor market, income, housing, and education as the major factors (Fry, 2020). This influx of people could increase demand for bikes; the question remains how advocates of biking will utilize a greater population size to their advantage.

According to Brown et al. (2009), since the mid twentieth century, state highway engineers have prioritized motorists, striving for maximum motor vehicle throughput and thereby contributing to the car domination that became typical of U.S. cities. Biking advocates therefore face a status quo that is antagonistic to cycling.

In the U.S., most cycling advocacy is local and urban. Advocates demand safer and more accessible cycling accommodations. Responding to pressure from local advocacies such as Transportation Alternatives (TA), in the last 20 years, New York introduced the first protected bike lanes in the U.S. and the largest speed camera program (TA, n.d.). TA uses local outreach to change public policy and to promote acceptance of cycling. It argues that “streets should serve the needs of all New Yorkers. If we convert one-quarter of current car space into space for people, every New Yorker could live within a quarter-mile of a protected bus lane, protected bike lane” (TA, n.d.). TA deploys a rhetoric of social justice in its bid to challenge a car-first status quo.

Better Streets Chicago (BSC) is a transit advocacy in Chicago that calls for better bike infrastructure and open streets. A BSC email campaign “resulted in more than 200 letters being sent to CDOT [Chicago Department of Transportation] and local aldermen Andre Vazquez (40th) and Harry Osterman (48th), asking them to fix the lanes” (Cobbs, 2021). On its website, BSC calls for “transforming some ... spaces into open streets,” so that “Chicagoans of all ages can better enjoy their neighborhoods” (BSC, n.d.).

The New York Bicycling Coalition (NYBC) seeks public support for efforts to improve bike safety. NYBC wants a state law that would require motorists who pass a cyclist to keep their vehicles at least three feet from the bike. NYBC urges people to “write to Assemblyman William B. Magnarelli, Chair of the NYS Assembly Transportation Committee, requesting that he allow a vote on the bill” (NYBC, n.d.).

In Portland, Oregon, The Street Trust advocacy wants a greater share of state transportation funds to support cycling. In 2021, it organized a coalition called Safe Routes for All, which called for “increasing the share of state highway funds invested in walking and biking from 1% to 5%” (Street Trust, n.d.). To build public support, The Street Trust unites local groups that demand better accommodations for pedestrians, cyclists, and transit riders.

The Portland Bicycling Club promotes recreational cycling, offering “up to two dozen rides” each week. It “welcomes riders of all abilities” (PCB, n.d.).

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