

Theses and Professional Projects Abstracts

Master of City and Regional Planning

City and Regional Planning Department, Cal Poly San Luis Obispo

For fulfillment of the MCRP degree, the CRP department offers the student a choice between a final comprehensive planning studio, a thesis, or a professional project. The following abstracts represent master's theses and projects approved during the 2014/2015 academic year. The complete works are available from Cal Poly's Kennedy Library at <http://digitalcommons.calpoly.edu/theses>.

Using Archived Transit Data to Analyze the Effect of Rainfall on Transit Performance at the Route Level.

Nicholas F. Bleich

An investigation on the effect of rainfall on transit performance measured at the route level in the Puget Sound region of Washington State. Transit agencies are required to report certain performance metrics to the Federal Transit Administration (FTA), but performance measures can also be used to evaluate service and provide customers with information regarding the transit system. Using a three-year sample of archived automatic vehicle location (AVL) and hydrologic data the relationships between ridership, travel time, delay, and rainfall were investigated. The analysis of daily ridership and rainfall resulted in no statistically significant results, however, the results are supported by the existing research in this field. There was a generally negative trend in ridership with respect to rainfall. The analysis of delay and rainfall shows that the impact of rainfall on delay is more complex than assumed. The delay during dry trips was different than the delay during light and moderate rain, but during heavy rain the statistical difference disappeared. These results, implications for transit operators, and future research opportunities are discussed.

<http://digitalcommons.calpoly.edu/theses/1396>

Investigating the Correlation between Freeway Service Levels and Freeway Service Patrol Assists.

Nora Chin

The Bay Area Metropolitan Transportation Commission's (MTC) Freeway Service Patrol's highway motorist response service is reporting a reduction in their service levels. We analyze the relationship between the reduction in the Bay Area Freeway Service Patrol's (FSP) motorist assists and changes in vehicle miles traveled (VMT), California Highway Patrol (CHP) reported incidents, and cover research on the impact of new and old vehicle fleet turnover. VMT and CHP incidents have differential effects on FSP assists. Although incidents occurring on freeways with high traffic flows tend to cause more congestion, the trend in local VMT along Bay Area freeway corridors does not share a strong correlation with FSP assists. By analyzing VMT, CHP reported in-

cidents and research around new vehicle fleet turnover affecting FSP assisted-incidents, Metropolitan Transportation Commission staff can systematically improve the FSP operational model; strategize ways to improve service on needier freeway corridors, while reducing unnecessary service in other regions.

<http://digitalcommons.calpoly.edu/theses/1453/>

Measuring the Influence of Components on Pedestrian Route Choice in Activated Alleys.

Samuel Hirsher Gross

This thesis explores how cities have integrated formal planning into improving public space starting from an investigation of how the potential that design has to renovate narrow streets and alleys. An assessment of various plans and programs, identifies the common themes and components used by planners, architects, and engineers to improve the pedestrian urban environment. Based on this information, a pilot study was created to measure the influence of the most common components on pedestrian route choice. The results are compared to the information gathered from the assessed plans and programs. Suggestions for expanding the pilot study and other recommendations are presented.

<http://digitalcommons.calpoly.edu/theses/1460/>

The City of Milpitas Historic Gateway: Background Report and Design Guidelines.

Jaime Marie Jaramillo

The goal of this professional project report is to contribute to the City of Milpitas, CA planning process with recommendations for a gateway development at the city's historic core. The study draws on several sources for place-making as well as on a thorough SWOT analysis. The city's proximity to the Silicon Valley suggests a strong potential to accommodate a walkable attractive gateway-related development with hotels, restaurants, a convention center and related land-uses. Recommendations are provided as design guidelines.

<http://digitalcommons.calpoly.edu/theses/1468/>

Bicycle Tourism Plan for Economic Development: A Template for Rural Agricultural Towns and a Case Study for the City of Winters, CA.

Marisa Rene Lee

Bicycling for tourism is healthy, non-invasive, environmentally responsible, and economically sustainable. It allows freedom, mobility, and sightseeing potential that is not made possible by other modes of transit. The increasing popularity of bicycle tourism, among domestic and international travelers, have a great potential to bring positive economic impacts to local communities, particularly to rural and agricultural communities who do not normally experience the benefits of tourism. Infrastructure projects to this effect, such as development of a town or regional trail system, wayfinding features, or other resources come with benefits for visitors and locals in the form of recreation, public health, mobility, and access to food, drink, amenities, scenic areas, jobs and commerce. Through careful planning of the touristic components of the destination, rural communities can achieve multifaceted economic benefits of diverse and versatile tourism amenities.

<http://digitalcommons.calpoly.edu/theses/1383/>

Utility Scale Solar Projects in California: An Initial Survey.

Meaghan Mroz-Barrett

The lack of a comprehensive database for photovoltaic utility-scale solar power projects, those with a generation capacity of greater than 50 MW, hinders the ability of researchers and policy makers to examine the state of solar development in California. This research seeks to fill this gap in understanding by creating a database of proposed and developed projects in order to examine trends in proposals, process time, approvals, and construction starts. Existing literature was evaluated to determine potential factors for project success in approval and construction. The project database was developed through publicly available data and extensive internet searches of planning documents, industry releases, and articles on existing and proposed projects. The completed database, containing eighty projects, was analyzed to provide an initial look at the overall state of solar project development in California. The analysis indicates that, while California has a high amount of proposed projects and generation capacity, many projects do not reach the end of the public approval process and fewer still enter construction and operation.

<http://digitalcommons.calpoly.edu/theses/1430/>

Evaluating Urban Design Strategies for Climate Change Adaptation in Los Angeles.

Kerby Andrew Olsen

With the negative impacts of greenhouse gasses (GHGs) increased temperatures may be especially acute in mid-latitude cities that currently enjoy a mild climate, such as Los Angeles (LA), which are projected to warm to a point that will

significantly affect human health and well being. This study evaluates six urban design strategies for reducing temperatures and therefore adapting to increased heat in LA: cool roofs, cool pavements, solar panels, tree planting, structural shading and green roofs. The methods include a cost-effectiveness analysis, key stakeholder interviews, and case studies from other cities in the US. Findings indicate that cool roofs are the most cost-effective strategy for urban heat island mitigation, with cool pavements and tree planting also cost-effective. Findings from stakeholder interviews indicate that political feasibility is high for all strategies except structural shading, which was thought to be costly and difficult to implement. However, significant political barriers were also identified for tree planting and green roofs. Findings from four case studies indicate that climate adaptation policies should emphasize co-benefits, include flexible design standards, and provide financial or performance-based incentives for property owners or developers. Specific recommendations for implementing climate adaptation measures are provided for urban planners, policy makers, urban designers and architects in Los Angeles.

<http://digitalcommons.calpoly.edu/theses/1427/>

California Coastal Commission Lower Cost Overnight Visitor-Service Accommodations Mitigation.

David Pierucci

Section 30213 of California Coastal Act requires the California Coastal Commission ("CCC") to protect, encourage, and, where feasible, provide for lower cost overnight visitor accommodations ("LCOVA") along the State's coast. As mitigation measure consistent with this charge, the CCC imposes a \$30,000 fee for 25 percent for rooms of new hotel developments determined to be higher cost (the "\$30,000/25% fee"), in-lieu of LCOVA facility provision. Generally, the CCC applies this fee in two circumstances: (1) As an ad hoc fee for developers upon CCC review of coastal development permit ("CDP") applications, and (2) as a legislatively imposed fee to be adopted by coastal jurisdictions upon CCC review of a local coastal program ("LCP") or related policy. This paper explores the policy and legal implications of the \$30,000/25% fee. The findings of this paper show that the \$30,000/25% fee likely fails the applicable Federal California legal tests governing monetary exactions.

URL: <http://digitalcommons.calpoly.edu/theses/1417>

Does Scenic Make Cents?

Sara Ann Sanders

The stretch of California Route One (Highway 1) from the City of San Luis Obispo to the Monterey County line is one of the most scenic drives in the United States. A destination in its own right, the San Luis Obispo North Coast Scenic Byway is federally designated as an All-American Road, the highest scenic designation of any road or highway in the nation. Although federal funding for the preservation and enhancement of these roads

was removed in 2012, the San Luis Obispo Council of Governments (SLOCOG) continues to recognize the importance of the corridor in attracting valuable tourism revenue and commissioned an update and economic analysis through this master's project. It was found that visitor spending in the byway region increased by 23% from over \$500 million in 2006 to almost \$656 million in 2012 when visitor spending associated with scenic recognition and enhancement projects along the corridor was about \$217,000 in direct revenue. As a result of this research, outreach, and data analysis, this project did conclude that being scenic does make "cents."

<http://digitalcommons.calpoly.edu/theses/1361/>

Barriers to Implementation of a Health, Hygiene and Sanitation Program: Chennai, India.

Kelsey A. Steffen

The societal and environmental conditions in India, as in many other developing countries, stand as barriers to facilitate changes in sanitation behavior. Efforts made to improve hygiene have faced opposing forces including major gaps between the supply and demand of sanitation. This thesis focuses on a pilot program conducted in Chennai, India over the summer of 2014. This program was designed to teach school children safe sanitation and hygienic habits by providing a guiding tool to teachers. The study analyzed qualitative observational data collected over the seven-week pilot program period to identify the barriers to implementation. The results indicate that the school administration was the greatest barrier to implementation in this case study. The results also highlight the contextual sensitivity of each of the barriers and their relationships to one another. The findings suggest that depending on the context of implementation of a health, hygiene, and sanitation program these barriers may be re-ordered in hierarchy to work towards achieving sustainable programs.

<http://digitalcommons.calpoly.edu/theses/1457/>

Conservation Through Limited Development: An Approach for Land Conservancies

Catherine Joy Tarone

The Land Conservancy of San Luis Obispo County is interested in determining the approach to take if it decides to pursue conservation and limited development as a strategy to preserve land. To put this in practice and still maintain its core values the Conservancy needs to develop intensely-collaborative conservation tools and inform itself about development, conservation, collaboration and financing, in order to meet multiple community needs. This thesis concludes that the most important decision that a conservancy must make when pursuing conservation and limiting development, is determining the level of involvement appropriate for its conservation mission, resources, expertise, and role in realizing project goals. Two case studies drawing upon telephone interviews with professionals provide a view of the contrasting

levels of involvement that each project's conservancy assumed. Since this work was requested by the Land Conservancy of San Luis Obispo County, it addresses some concerns and realities particular to the county; however, most recommendations are generally applicable to other land conservancies.

<http://digitalcommons.calpoly.edu/theses/1364/>

Understanding and Incentivizing Workforce Housing: A Professional Project for the City of San Luis Obispo.

Jennifer Wiseman

Adding workforce housing to the City of San Luis Obispo Zoning Regulation is a needed component to successfully begin, and promote, the development of housing to those making between 121 and 160% of the Area Median Income. This professional project provides initial step to the development of a workforce housing ordinance in the City of San Luis Obispo. It examines case studies of jurisdictions throughout the County and discusses the need for workforce housing in both an economic and health and safety need. Outreach was conducted with local stakeholders to understand barriers, opportunities and recommendations and how the city policy could benefit or harm the community. The thesis concludes with recommendations to overcome barriers for workforce housing in San Luis Obispo.

URL: <http://digitalcommons.calpoly.edu/theses/1429>