



**Year 17 (2004-2005)**  
**Semi-Annual Progress Report**  
**For the**  
**University of California Transportation Center**

**March 2005**

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## **Table of Contents**

<b>A. Success Stories</b>	3
Research into Practice	3
Conferences and Symposia	3
Awards and Honors	4
New Academic Courses and Programs	5
Publications	5
<b>B. Research Project Status</b>	10
Status Reports - Year 17 (2004-2005)	26
Status Reports – Year 16 (2003-2004)	
<b>C. Program Financial Status</b>	36
<b>List of Tables</b>	
Table 1 New UCTC Publications - Fall 2004	6
Table 2 Year 17 (2004-2005) Research Projects	8
Table 3 Year 16 (2003-2004) Research Projects Continuing in 2004-2005	9
Table 4 Allocated Amounts as of February 2004	36
<b>Appendix. Completed Projects Since Start of Grant</b>	37

## **A. Success Stories**

The University of California Transportation Center receives equal funding from the US Department of Transportation (for whom we are the designated Region IX University Transportation Center) and the California Department of Transportation. We use these funds to sponsor faculty research and contribute to conferences, symposia, and other technology transfer activities. We also underwrite education, especially for graduate students, through fellowships, grants, and research appointments, and support for new educational initiatives. We are always pleased when our efforts pay off – when our research is put into practice, our faculty members are invited to advise government, our conferences and symposia are well attended, our faculty and students win awards. The following examples document some of our results to date in the first half of the UCTC’s 2004-2005 grant year – Year 17 of the UC Transportation Center.

### **Research into Practice**

#### **Advising Congress on TEA-21 Reauthorization.**

Professors Martin Wachs of UC Berkeley, Elizabeth Deakin of UC Berkeley, and Daniel Sperling of UC Davis have been invited to comment on drafts of pending TEA-21 legislation and offer recommendations to House and Senate committees and their staffs..

### **Conferences and Symposia**

#### **Lake Arrowhead Conference, October 2004**

This year, the UCLA Lake Arrowhead Symposium on the Transportation-Land Use-Environment Connection addressed goods movement. While the movement of goods has received attention from both policy makers and analysts in recent years, the topic has rarely been addressed with an explicit focus on the connections to land use and the environment. The symposium filled that gap by examining the links between goods movement, the economy, the environment, and questions of equity. Presentations and discussions examined truck, rail, water port, and airport issues.

## **Transportation Research Board Annual Meeting, January 2005**

Faculty members and graduate students affiliated with UCTC presented nearly 200 papers at sessions of the annual meeting of the Transportation Research Board this January in Washington, DC. In addition, the UC Transportation Center jointly hosted a reception at TRB with its ITS partners from the Berkeley, Irvine, Davis, and LA campuses, the UC PATH program, the UC Center for Traffic Safety, and the National Center of Excellence for Aviation Operations Research. Over 300 faculty and students from all UC campuses, alumni of the UC transportation programs and UCTC, and friends from many other transportation centers and research groups joined us at this event reuniting alumni, faculty, and colleagues.

## **World Conference on Transportation Research Society (WCRTS) 2007 Conference:**

The University of California Transportation Center and its ITS partners at Berkeley, Davis, Irvine, and Los Angeles were chosen to host the 11th World Conference on Transportation Research (WCTR), a gathering that attracts more than 1,000 leading transportation professionals from around the globe. This is the first time the WCTR Society has chosen to convene a meeting in the United States since its inception in 1973.

The 11th World Conference will be held in the summer of 2007. The conference focuses on a range of themes, including transportation planning, systems analysis, economics, operations and management. The WCTR Society, which has more than 500 members, is composed of transportation researchers, managers, policy makers and educators from around the world. The society's world conferences allow these professionals to gather every three years to exchange ideas and learn from one another.

## **Awards and Honors**

### **Student of the Year**

Berkeley Dept. of City and Regional Planning PhD student Noreen McDonald was voted UCTC's Student of the Year. Noreen is a graduate of Harvard University and holds the MCP and MS degrees from the UC Berkeley Joint Program in Transportation. She is currently completing her dissertation on children's travel.

### **Robert Wood Johnson Award**

PhD student Noreen McDonald won a Robert Wood Johnson Award to support her dissertation on children's travel.

### **Chester Rapkin Award**

A paper by UCLA alumni Jeff Brown and Hess and ULCA planning professor Donald Shoup, "Fare-free transit at universities", was selected for the Chester Rapkin Award by the Journal of Planning Education and Research. The paper was based on UCTC research and appeared in JPER Volume 23, no. 1.

## **2005 CUTC Transportation Awards**

Prof. David Levinson of the University of Minnesota, a graduate of UC Berkeley and a UCTC alumnus, was named the outstanding new faculty member at the 2005 Council of University Transportation Centers (CUTC) Annual Meeting. UCLA transportation graduate student Camille Fink won the award for best non-thesis masters project in policy and planning.

## **New Academic Courses and Programs**

### **Urban Studies Undergraduate Major in 2d Year**

A new undergraduate major in Urban Studies is in its second year at UC Berkeley. This major is sponsored by the Dept. of City and Regional Planning in cooperation with several social sciences departments, including Political Science, Sociology, and Economics. Course offerings for this new major include the undergraduate courses in transportation planning previously supported by UCTC. In addition, most of the core courses in the major have transportation content.

### **Metropolitan Studies Initiative**

Berkeley transportation faculty are part of a new campus initiative in Metropolitan Studies, which will support the hiring over the next few years of 4-5 new faculty members with interdisciplinary interests.

## **Publications**

UCTC helps put research into practice by making our publications available free of charge. All final reports and an increasing number of other UCTC publications can be directly downloaded from the web; others are mailed to anyone who requests a copy. Our publications are listed on our web page, where we are now receiving 6,000-7,000 downloads a month.

We also publish ACCESS, a twice-yearly magazine designed to bring UCTC research findings to the general public. ACCESS is distributed free of charge to about 20,000 subscribers in hard copy, and another 17,000 downloads of ACCESS from the web add to its readership.

Publications stemming directly from research projects include final summary reports – brief statements of the work performed on each completed UCTC project, designed to allow the busy professional to learn about the major findings of the research without delving into the details. In addition, all UCTC projects produce at least one other, full-length product – a technical report, a working paper, a journal article, a monograph, or even a book or film. Many researchers produce two or three papers in the course of their work on a project, hence our publication list is several times longer than our number of research projects.

With few exceptions, UCTC papers are now available on the web. New papers added the past six months are shown in Table 1.

**Table 1 New UCTC Publications, Fall 2004**

Cassidy, Michael J., and Soyoung Ahn	<a href="#">Driver Turn-Taking Behavior in Congested Freeway Merges</a>	2004, Fall	722
Cassidy, Michael J., and Jittichai Rudjanakanoknad	<a href="#">Increasing Capacity of an Isolated Merge by Metering its On-Ramp</a>	2004, Fall	723
Clay, Michael J., and Patricia L. Mokhtarian	<a href="#">Personal Travel Management: The Adoption and Consideration of Travel-Related Strategies</a>	2004, Fall	724
Liggett, Robin, Anastasia Loukaitou-Sideris, and Hiroyuki Iseki	<a href="#">Protecting Against Transit Crime: The Importance of the Built Environment</a>	2004, Fall	725
Lee, Taihyeong, and Patricia L. Mokhtarian	<a href="#">An Input-Output Analysis of the Relationships Between Communications and Travel for Industry</a>	2004, Fall	726
Shoup, Donald C.	<a href="#">Eco Passes: An Evaluation of Employer-Based Transit Programs</a>	2004, Fall	727
Shoup, Donald C.	<a href="#">The Ideal Source of Local Public Revenue</a>	2004, Fall	728

## **B. Research Project Status**

The UCTC currently has 26 active research projects: 9 Year 16 projects and 17 new, Year 17 projects.

The 17 projects selected for funding with 2004-2005 grants were initiated this fall, once both USDOT and Caltrans funds were received and had been transferred to the project PIs' home campuses. These projects have an end date of July 31, 2004, with an option for a one-year extension. Because funding is being received in installments this year, we provided each project with an initial funding increment and will augment these funds as additional funding is received.

The nine projects awarded in Year 16 (2003-2004) and continued into Year 17 also have a completion date of July 31, 2004. The extensions were granted because delay in receipt of state funds meant that many of the projects could not commence until the January/February academic term. The projects are on target for completion by the end of this grant cycle.

Ongoing projects for each year are listed in Tables 2 and 3. Please note that all UCTC projects ordinarily include funding for one or two graduate student research positions and for one or two faculty summer months. This year, because of the installment funding of the UTC program, the first increment of faculty project funding is earmarked for graduate students only. Faculty time during the academic year is donated, so this will not affect project advancement. However, if funds are not received in time for the start of summer term, delays may be incurred as some faculty may need to make other arrangements for summer salary.

The California Department of Transportation and the US DOT jointly sponsor all projects, although funding may be primarily from one funding source or the other. The External Project Contact is Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440. Caltrans' dollar-for-dollar match of federal funds for UCTC has been critical to our success.

Following the tables are brief reports that present the status of each faculty research project underway at UCTC in 2004-5. The reports cover performance through January 2005.

Projects funded since the start of the current USDOT grant (Year 12) but completed in previous years are listed in the Appendix to this report.

**Table 2 Year 17 (2004-2005) Research Projects**

<b>Principal Investigator</b>	<b>Campus:</b>	<b>Research Project Title:</b>
Blumenberg, Evelyn	Los Angeles	Auto-mobility, Spatial Isolation, and the Poor
Cervero, Robert	Berkeley	Housing-Retail Balance, Travel Demand, and Physical Activity
Dowall, David	Berkeley	Transaction-Cost Economic Analysis of Institutional Change toward Design-Build Contracts for Public Transportation
Golledge, Reginald G.	Santa Barbara	Activity-Oriented Scheduling/Activity Survey and Analysis Via a Unified Real-time Data Collection Framework
Golob, Thomas F.	Irvine	Wet Pavement Accidents on California Highways: Causes, Concentrations, and Potential Means for Reduction
Handy, Susan	Davis	The Davis Bicycle Studies
Johnston, Robert A.	Davis	Testing Spatial Mismatch: A Structural Equations Modeling Approach
Macdonald, Elizabeth	Berkeley	Street Trees and Intersection Safety
Madanat, Samer	Berkeley	Robust Optimal Maintenance and Rehabilitation Policies in Asset Management
Mokhtarian, Patricia L.	Davis	Modeling the Adoption of Teleshopping
Niemeier, Debbie	Davis	Estimating Activity Rates and Emissions from Heavy-Duty Construction Equipment
Ong, Paul M.	Los Angeles	Modeling Car Ownership Rates, and Age and Value of Vehicles
Recker, Wilfred	Irvine	Similarity Analysis for Estimation of an Activity-based Travel Demand Model
Regan, Amelia C.	Irvine	Capacity Modeling for Large Scale Urban Multimodal Freight Transportation Systems
Shoup, Donald	Los Angeles	Cruising for Parking
Stoll, Michael A.	Los Angeles	Why Do Inner City Residents Pay Higher Premiums? The Determinants of Automobile Insurance Premiums
Wachs, Martin	Berkeley	Motor Fuel Price and Expenditure Effects on Vehicle Use in California

**Table 3 Year 16 (2003-2004) Research Projects Continuing in 2004-2005  
( 9 Projects)**

**Amber Alert Policy: Laboratory Experiments to Improve a Policy**  
Theodore Cohn, UC Berkeley

**Improved Developer Models for the Sacramento Region**  
Robert Johnston, UC Davis

**Death on the Crosswalk: A Study of Pedestrian Accidents in Los Angeles:**  
Anastasia Loukaitou-Sideris, UCLA

**Aggregate Structural Equations Modeling of the Relationships Between Consumer Expenditures on Communications and on Travel**  
Patricia Mokhtarian, UC Davis

**Auctions for the Procurement of Transportation Service Contracts**  
Amelia Regan, UC Irvine

**Identification and Measurement of Freeway Congestion**  
Alexander Skabardonis, UC Berkeley

**Capacity Provision and Pricing in Road Transport Networks in an Imperfectly Competitive Economy**  
Kurt Van Dender, UC Irvine

**Family Caregivers, the Elderly, and Land-Use: An Evaluation of Transportation in Two California Communities**  
Martin Wachs, UC Berkeley

**Transportation Policy Development: Labor as a Missing Stakeholder**  
Margaret Weir, UC Berkeley

**Status Reports – Year 17 (2004-2005)  
(New Projects this Year)**

**NOTE: COSTS SHOWN ARE FULL COSTS OF PROJECT: BECAUSE FUNDS ARE BEING PROVIDED IN SEVERAL ALLOTMENTS, TO DATE ALL PROJECTS HAVE RECEIVED ONLY \$20,000.00.**

**Automobility, Spatial Isolation, and the Poor**

**Principal Investigator:**

Evelyn Blumenberg  
UC Los Angeles

**Email:** [eblumenb@ucla.edu](mailto:eblumenb@ucla.edu)

**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** This research examines the role of transportation access in explaining the spatial isolation of metropolitan residents. Numerous studies suggest that low-income households tend to be concentrated in resource-poor, central-city neighborhoods, isolated from employment opportunities, consumer goods, services. Surprisingly, only a small sub-set of this spatial isolation research examines how automobile availability and transit service quality affect knowledge of and access to opportunities, goods, and services.

To examine this issue, we will draw on the literature on cognitive models of geographic space to examine how access to automobiles and high-quality transit service affect peoples' (1) knowledge of their city and (2) the physical boundaries of their daily activity spaces. Specifically, this research focuses on three questions: First, are low-income households with automobiles less spatially constrained than transit-dependent low-income households? Second, are low-income households more spatially constrained than higher income households, controlling for access to household vehicles? And, third, does living in a job- and/or transit-rich neighborhood diminish spatial isolation among those dependent on public transit?

This research will contribute importantly to our understanding of how mobility influences metropolitan residents' knowledge and perceptions of opportunities, goods, and services. Such understanding is important to the development of both transportation and economic policy.

**Key Words:** low-income, spatial isolation, automobile availability, cognitive models

**Objective:** develop strategies for understanding of how mobility influences metropolitan residents

**Tasks:** Review previous work on the topic, assemble data, analyze data, and prepare reports.

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** improved transportation and economic policies

**Work Completed to Date:** We have reviewed previous work on the topic and begin data assembly and analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 25%

**Direct Cost:** \$39,339

## Housing-Retail Balance, Travel Demand, and Physical Activity

### Principal Investigator:

Robert Cervero

UC Berkeley

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** Jobs-housing balance is today being actively pursued as a land-use strategy for reducing vehicle miles of travel. Since travel for shopping and personal services usually accounts for over twice as many motorized trips as journeys-to-work, this research will examine “housing-retail” balance as a potentially more effective land-use management strategy. Two hypotheses will be tested. One holds that retail-housing balance significantly reduces VMT for shopping and consumer services, with the largest benefits accruing for convenience and non-durable good purchases. The second holds that retail-housing balance increases non-motorized travel, providing physical activity benefits. Using data from BATS 2000, daily activity records will be used to specify 24-hour shop trip incidences, vehicle miles, and durations. Isochronic measures of retail accessibility and housing-retail diversity indices will be measured using 2000 CTPP Part 2 based on two-digit retail job occupational codes. Introducing various statistical controls, nested logit and multiple regression models will be used to test hypotheses, generate travel/land-use elasticities, and provide order-of-magnitude comparisons to findings on VMT reductions associated with jobs-housing balance strategies. Qualitative case work involving interviews of neighborhood residents will elicit attitudinal responses regarding the desirability and design aspects of community retail activities and their influences on travel choices and physical activities.

**Key Words:** Housing-Retail Balance; Accessibility; Mode Choice; New Urbanism; Smart Growth; Logit Analysis; Case Studies.

**Objective:** To measure the degree to which housing-retail balance, as embodied in New Urbanism community designs and smart-growth planning, yields motorized-travel-conserving and physical activity benefits, especially in relation to the more widely embraced strategy of jobs-housing balance.

**Tasks:** Compile travel data for Bay Area sampled households from BATS 2000; obtain place of employment data on stratified retail jobs from 2000 CTPP Part 2; using GIS and statistical tools, develop isochronic measures of retail-services accessibility and housing-jobs balance indices; compile necessary control variables; test hypotheses by estimating nested logit and multiple regression models; screen candidate neighborhoods for case-based research; select cases and conduct intercept surveys of residents, shoppers, and merchants; review and digest case findings; examine public policy considerations that are informed by the research results; prepare research report and journal articles.

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC’s Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** Measure motorized-travel-conserving and physical activity benefits of retail-housing balance for various shopping functions, and provide order-of-magnitude insights of benefits relative to jobs-housing balance strategies.

**Work Completed to Date:** We have reviewed previous work on the topic and begin data assembly and analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 25%

**Direct Cost:** \$49,425

## **Transaction-Cost Economic Analysis of Institutional Change toward Design-Build Contracts for Public Transportation**

### **Principal Investigator:**

David Dowall

UC Berkeley

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** This research is a transaction-cost economic analysis of recently completed transportation projects, informing a comparative evaluation of the institutional change in public contracting from design-bid-build to design-build project delivery. Design-build, in which design and construction services are bundled together, is an alternative form of public contract recently adopted by transportation departments in 24 states. With this method, lower production costs may be obtained by beginning construction before design is complete. Such savings, however, may come at the expense of organized labor and public participation, and could reflect higher transaction costs than traditional methods. At issue is the question of whether or not California's Department of Transportation should also engage in design-build contracting. This research will produce pair-wise case studies and a quantitative database explaining the benefits and cautions of these two modes of delivery. Research techniques will include semi-structured interviews, the review of documents and archival records, and mining online legal and news sources. Analysis will proceed by triangulating evidence to validate or refute propositions from transaction cost economics against rival theoretical interpretations of institutional change.

**Key Words:** transaction-cost economics, public contracting, project delivery, design-build

**Objective:** Comparative evaluation of recently completed surface transportation projects developed according to design-bid-build and design-build methods, assessing actual transaction and production costs as well as relative impacts to organized labor and public participation, with reference to the question of whether or not the State of California should pursue a policy of programmatic design-build contracting.

**Tasks:** 1. Case Selection 2. Develop Case Study Protocol 3. Data Collection 4. Analysis and Writing

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** Results should provide decision-makers in California with plausible explanations of the benefits and cautions of design-build contracting while enriching academic discourse on the topic of project delivery with the theoretical depth available from the literature of new institutional economics.

**Work Completed to Date:** We have reviewed previous work on the topic and begin data assembly and analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 25%

**Direct Cost:** \$78,272

## **Activity-Oriented Scheduling/Activity Survey and Analysis Via a Unified Real-time Data Collection Framework**

### **Principal Investigator:**

Reginald Golledge

UC Santa Barbara

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** In the previous research, we have developed a conceptual model of real-time activity scheduling/implementation data collection system. It is operationalized as a wearable computer complete with GPS recorder and wireless WAN card. The wearable computer features with real-time activity decisions tracking and activity pursuit recording in field. It empowered the transport researchers a unique research means to 1) identify the temporal-spatial decision making structure embedded in activity scheduling 2) the linkage between activity decision-making and associated actual activity execution. The goals of this research are: (i) to further improve the real-time system that incorporates the extraction of activity scheduling and execution information within one unified data collection framework with an up-to-date equipment and system functions; (ii) identify a unified conceptual ontology to explore and explain the dynamics and interaction of activity scheduling and execution; and (iii) most importantly, explicitly define the mechanism in which the formulation of people's activity schedules are subject to the influence of the social-demographic and temporal-spatial constraints that gradually lead to the activity-travel patterns detailed by passive, observing survey methods.

**Key Words:** Real-Time Data Collection; Wearable Computer; Activity Behavior

**Objective:** To test and evaluate the potential for use of a real time wearable data collection system developed in a previous UCTC funded project.

**Tasks:** 1. To develop additional Pocket PC-based real time data collection devices 2. Collect data for 40 participants (in real time) of one week's daily activity patterns and to analyze the data.

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** Should reduce or eliminate data loss usually missed by surveys and post-hoc interviews.

**Work Completed to Date:** We have reviewed previous work on the topic and begin data assembly and analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 15%

**Direct Cost:** \$20,000 (seed funding)

## **Wet Pavement Accidents on California Highways: Causes, Concentrations, and Potential Means for Reduction**

### **Principal Investigator:**

Thomas Golob

UC Irvine

Email: [tgolob@uci.edu](mailto:tgolob@uci.edu)

**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** The proposed research involves an a statistical analysis of accidents that have recently occurred on California Highways during inclement weather. There are well-known countermeasures for reducing the number and severity of wet pavement accidents, and the key is to identify where to apply each countermeasure to achieve maximum benefit. Caltrans already has processes in place for identifying treatment projects, and this research begins by becoming familiar with these procedures and their supporting data. Working together with Caltrans, a sample of roadway segments of the California State Highway System will be chosen, and an historical dataset will be developed by combining accident data with detailed roadway characteristics, weather conditions, and traffic. The analysis phase will then focus on determining how the propensity for accidents (by type and severity) is related to roadway geometrics, pavement factors, and the weather and traffic conditions prevailing at the time of each crash. The final phase of the project will focus on means of integrating the new results into performance monitoring and planning procedures.

**Key Words:** Traffic accidents, highway safety, wet pavement, accident reduction

**Objective:** The objective is to improve the process for identifying projects that improvement roadway safety under conditions of wet-pavements.

**Tasks:** Process Review; Select a Sample of Roadway Sections; Gather Data on Roadway Characteristics and Weather Conditions; Match with Accident Data; Analyze Relationships Among Accidents, Weather, Roadway Characteristics and Traffic Flow; Compare Notes with Caltrans Personnel to Interpret Results in a Planning Context

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge.

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** This project is intended to aid Caltrans and other State Federal and State Agencies in identifying problems related to traffic safety during wet weather conditions and it is intended to provide guidelines for designing countermeasures to reduce the number and severity of traffic accidents.

**Work Completed to Date:** We have reviewed previous work on the topic and begin data assembly and analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 25%

**Direct Cost:** \$66,814

## The Davis Bicycle Studies

### Principal Investigator:

Susan Handy

UC Davis

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** As a means of transportation and as a form of physical activity, bicycling generates benefits to the bicyclist as well as to the community as a whole. Bicycling now accounts for less than 1 percent of all trips for all purposes in the U.S., but evidence from other western countries suggests that under the right conditions, bicycling levels can be significantly higher. The experience of Davis, California suggests that it is possible to create conditions conducive to higher levels of bicycling in the U.S. However, the extent to which public policies have contributed to bicycling levels in Davis has not been rigorously assessed. This project aims to fill that gap through a quasi-experimental study of bicycling behavior in Davis and comparison communities designed to determine the influence of bicycle infrastructure and mixed land-use patterns relative to individual preferences, community culture, and other factors. To provide a policy context for the behavioral analysis, the project will document the history of bicycle policy in Davis and compare bicycle infrastructure in Davis to other bicycle-oriented college towns. This project is planned as the first in a series of complementary studies of bicycling behavior focused on Davis.

**Key Words:** bicycling, bicycling behavior, bicycle policy, bicycle infrastructure, mixed land use patterns, preferences, culture

**Objective:** The objective of this project is to rigorously assess the extent to which public policies have contributed to bicycling levels in Davis using a quasi-experimental design.

### Tasks:

1. Literature review
2. Development of the survey instrument
3. Development of sample
4. Implementation of survey
5. Analysis of survey data
6. Historical review of Davis policies
7. Inventory of infrastructure and policies
8. Final report

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** This project will contribute to a stronger empirical basis for policy decisions about bicycle infrastructure.

**Work Completed to Date:** This project will begin in March 2005.

### Papers to Date:

None to date

### Conferences Attended:

None to date

### Other Accomplishments:

None to date

**Percent Complete:** 0% (starts March 2005)

**Direct Cost:** \$20,000

## Testing Spatial Mismatch: A Structural Equations Modeling Approach

### Principal Investigator:

Robert Johnston

UC Davis

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** We will critique past studies of the Spatial Mismatch Hypothesis and then apply three structural equations models to data for the Sacramento, California region. We will estimate both cross-sectional and dynamic models and we will use a network-based travel model to measure accessibility to jobs.

**Key Words:** Spatial Mismatch, structural equations models, cross-sectional and dynamic models, accessibility to jobs.

**Objective:** The objectives of this study are to: 1. examine the relations between employment, auto ownership, income, job accessibility, and other variables using structural equations models; 2. to test whether simultaneity exists; and 3. to determine if simultaneity results in biased estimates, by comparing these results to those from multiple regression models.

**Tasks:** 1. Develop two multiple regression models by using pooled data, whites only, and blacks only, on 1990 and 2000 datasets as comparison bases. 2. Develop separate cross-sectional structural equations models for 1990 and 2000 for pooled data, whites only, and blacks only. 3. Compare the models developed in Task 1 and Task 2. 4. Develop unconditional change-score structural equations models for pooled data, whites only, and blacks only. 5. Develop two-wave structural equations models for pool, whites only and blacks only.

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** To our best knowledge, we will be the first researchers to use a dynamic nonrecursive structural equations model to test spatial mismatch.

**Work Completed to Date:** We have reviewed previous work on the topic and begin data assembly and analysis.

### Papers to Date:

None to date

### Conferences Attended:

None to date

### Other Accomplishments:

None to date

**Percent Complete:** 25%

**Direct Cost:** \$38,756

## Street Trees and Intersection Safety

### Principal Investigator:

Elizabeth Macdonald  
UC Berkeley

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** For at least 250 years, the finest of streets the world over have been associated with trees. Elm or oak-shaded residential and commercial main streets remain as memories, but seldom as realities, of the best American urbanism. In the automobile age, a real concern with safety has resulted in tree spacing standards in the United States that dictate long setbacks from intersections, ostensibly geared to achieving unobstructed sight lines for drivers. This research proposal starts with a premise that sidewalk street trees should not be restricted unless it can be shown unequivocally that they create unsafe environments. The research will: investigate standards in California communities to see how they interpret engineering guidelines on tree placement at intersections; use new three-dimensional computer modeling and drive through animation techniques and Geographic Information Systems tools to model and analyze a variety of typical urban intersections to determine the impacts of trees and other intersection paraphernalia (e.g. newsracks and parked autos) on drivers' ability to see approaching cars; conduct controlled experiments to ascertain what drivers notice at intersections; and explore available data on tree-related accidents at intersections. Findings and conclusions will be published in an Institute of Urban and Regional Development Working Paper.

**Key Words:** Intersection design, street standards, street trees

**Objective:** To use three-dimensional modeling techniques and GIS spatial analysis tools to test whether street trees near intersections significantly block a driver's visibility of approaching vehicles.

**Tasks:** 1: Gather street design standards from California cities, analyze restrictions on street trees and other objects at intersections, and compile the data in tabular form.

2: Create three-dimensional computer models of typical urban intersections where a minor road intersects with a major road. For each typical intersection, create versions without and without street trees, with and without parked cars, and combinations of each. 3: Create snapshot images of what a driver on the minor road would see when stopped at each simulated intersection, looking to the left and to the right. Import these images into a GIS spatial database, and calculate areas of visibility. 4: For each modeled intersection, create a drive-through simulation that represents what a driver would see when moving along the minor road, stopping at the intersection, and scanning the roadway to look for approaching vehicles. 5: Conduct controlled experiments in which participants (a minimum of 100) are asked to view the drive-through simulations and indicate when they notice approaching cars, and analyze the data. 6: Gather accident data for the city of Oakland, California, and analyze whether or not there is any correlation between high accident rates and intersection street trees. 7: Prepare a final report outlining the study findings, including proposals for revised policy recommendations.

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge.

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** The research will result in revised policy advises regarding street trees at intersections, new three-dimensional methods for modeling and testing intersection design, and new objective GIS measures for calculating areas of visibility.

**Work Completed to Date:** We have reviewed previous work on the topic and begin data assembly and analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 25%

**Direct Cost:** \$47,113

## **Robust Optimal Maintenance and Rehabilitation Policies in Asset Management**

### **Principal Investigator:**

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** Robust optimization is a modeling methodology to solve optimization problems in which the data are uncertain and only known to belong to some uncertainty set. The proposed research will use this modeling methodology to obtain robust maintenance and rehabilitation (M&R) policies for individual infrastructure assets. Using field and laboratory data, alternative methods will be used to characterize the uncertainty with regards to infrastructure facility deterioration. By considering the defined uncertainty set, a robust counterpart of the original infrastructure maintenance problem will be created. Efficient solution algorithms will be developed to solve the robust counterpart or good approximations thereof. Finally, case studies will be performed to evaluate the usefulness of the proposed approach in reducing M&R expenditures. The proposed research is the first adaptation of robust optimization methods to asset management. The research will also contribute to the literature on robust dynamic programming in the context of Markov decision processes. The results of this research will improve the confidence of public works agencies in asset management systems and thus facilitate the acceptance and deployment of these systems.

**Key Words:** Robust optimization, uncertainty set, maintenance and rehabilitation, infrastructure assets, asset management, Markov Decision Process.

**Objective:** The objective of this research is to develop a prototype of an asset management system that uses robust optimization to produce M&R policies that are less sensitive to the input data.

**Tasks:** Literature review; Infrastructure facility uncertainty modeling (for highway pavements); Investigation of alternative uncertainty models; Formulation and solution of robust optimization problem; Extension to infinite horizon problems

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge.

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** The proposed research has the potential to reduce the costs associated with errors in modeling deterioration rates while managing infrastructure assets, which will help realize the full potential of asset management systems and thus facilitate the acceptance and deployment of these systems by public agencies.

**Work Completed to Date:** We have reviewed previous work on the topic and begin data assembly and analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

TRB 2005

**Other Accomplishments:**

None to date

**Percent Complete:** 25%

**Direct Cost:** \$42,735

## Modeling the Adoption of Teleshopping

### Principal Investigator:

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** Fully understanding the potential transportation impacts of new and old shopping alternatives requires investigating the adoption of the various alternatives. This multi-year study proposes to design, administer, and analyze an original survey of shopping attitudes and behavior, leading to a model of shopping mode choice. To reduce the heterogeneity of shopping behavior, we focus on one or two frequently-purchased product classes. We define alternatives in terms of the dimensions of pre-purchase behavior (with store, catalog, and Internet modes) and transaction behavior (store, phone, mail, and Internet modes, distinguishing auction sites from conventional e-tailers). Research questions include: (1) For the selected product class(es), what are the advantages and disadvantages of each shopping mode? (2) Can market segments with different propensities to use alternative modes be identified? (3) To what extent are there perceived to be viable alternative modes for a given shopping occasion? (4) Are the various shopping modes substitutes, or complements? Offering the option of paper or web-based surveys, we plan to obtain about 2,000 responses. The first year of the study is mostly devoted to survey design, data collection, and cleaning, with some preliminary descriptive analyses. Future years will involve various multivariate statistical analyses and multidimensional discrete choice modeling.

**Key Words:** shopping mode choice, teleshopping, e-shopping adoption, B2C e-commerce

**Objective:** To better understand the circumstances under which the alternative shopping modes of store, catalog, and Internet are chosen, which has implications for the future transportation impacts of teleshopping.

**Tasks:** 1. Literature review: ongoing; 2. Survey design, paper and Internet versions: August 04 – January 05; 3. Sample extraction and recruitment: November 04 – January 05; 4. Administer survey: February 05; 5. Data entry and cleaning (paper surveys): March – April 05; 6. Initial descriptive analyses: May – June 05; 7. Write up findings: July 05

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** Increased insight into individual responses to ICT-based shopping alternatives, having direct travel and indirect urban form implications.

**Work Completed to Date:** We have reviewed previous work on the topic and begin data assembly and analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

TRB 2005

**Other Accomplishments:**

None to date

**Percent Complete:** 25%

**Direct Cost:** \$81,379.30

## Estimating Activity Rates and Emissions from Heavy-Duty Construction Equipment

**Principal Investigator:**

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** The proposed research will help Caltrans estimate emissions from transportation project construction activities. The research will expand upon existing work at UC Davis (UCD) to develop a construction emissions spreadsheet tool. Using construction diaries created by Caltrans, the research team will estimate a range of construction equipment activity for six project types representative of virtually all of the transportation projects completed by Caltrans. In addition, the research team will synthesize existing literature regarding estimating construction activity, and provide guidance for project analysts charged with estimating emissions from specific projects. The work products will illustrate how to use construction equipment activity data to estimate emissions, using a new construction emissions spreadsheet tool developed by UCD under Caltrans sponsorship. Air quality management districts recognize the growing importance of non-road mobile source emissions, and are increasingly asking Caltrans to estimate emissions from non-road equipment. The research will enable Caltrans to respond to these information requests, and to test the sensitivity of emissions estimates to various project elements.

**Key Words:** non-road activity, construction emissions, non-road inventory

**Objective:** To estimate a range of construction equipment activity for six project types representative of virtually all of the transportation projects completed by Caltrans.

**Tasks:** 1) Interview Caltrans staff & identify representative projects; 2) Define projects to be evaluated; 3) Obtain and evaluate construction diaries; 4) Analyze and evaluate construction activities; 5) Summarize existing resources; 6) Update construction emissions modeling spreadsheet; and 7) Prepare guidance document

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** The project work products will, for the first time, document the range of equipment activities associated with transportation construction projects undertaken in California.

**Work Completed to Date:** We have reviewed previous work on the topic and begin data assembly and analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

TRB 2005

**Other Accomplishments:**

None to date

**Percent Complete:** 25%

**Direct Cost:** \$47,082

## **Modeling Car Ownership Rates, and Age and Value of Vehicles**

### **Principal Investigator:**

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** The proposed study develops new approaches to modeling car ownership rates, and the age profile and average value of the automobile stock using aggregated data for small geographic units (census tracts or zip-code areas). This type of information is critical to large-scale urban transportation models and models of air pollution from mobile sources. Ideally, these models should be based on understanding the underlying causal factors that determine the number and characteristics of household vehicles. Current models using census data are limited to ownership rates without the ability to examine age and value, and the current analytical approach has a serious econometric problem with the endogeneity of household income as a dependent variable. The proposed study overcomes these limitations by combining census data with non-census data, and by using an instrumental variable approach to examine variations across tracts or zip-code areas in Los Angeles County. Socioeconomic and demographic characteristics come from the 2000 census, the exogenous cost of car ownership comes from insurance quotes, and the age and value information is based on a special tabulation of data from the Department of Motor Vehicles.

**Key Words:** car ownership, age and value of cars, instrumental-variable approach

**Objective:** The research objective of the proposed study is to estimate three equations using an instrumental-variable approach – automobile ownership rate, the proportion of the vehicle stock over ten years old, and the average value of the vehicle stock.

**Tasks:** The project will have three major tasks. The first is assembling the required data, which will be done primarily by a graduate student under my supervision. The second task is analyzing the data, which will be done by me with assistance from the graduate student. The third task is writing up the results, which will be done by me. If the graduate student is interested and capable, she or he will be invited to co-author a paper.

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** This research will provide develop insights that will ultimately enhance key components of transportation and pollution models, and will enable policy analysts better able to examine what factors can be influence to enhance transportation resources for households.

**Work Completed to Date:** We have reviewed previous work on the topic and begin data assembly and analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 25%

**Direct Cost:** \$49,748

## Similarity Analysis for Estimation of an Activity-based Travel Demand Model

### Principal Investigator:

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** In this research, we propose to develop an estimation procedure for a particular mathematical programming activity-based model in order to estimate the relative importance of factors associated with spatial and temporal interrelationships among the out-of-home activities that motivate a household's need or desire to travel. The method will employ a genetic algorithm to estimate coefficient values of the utility function, based on a particular multidimensional sequence alignment method to deal with the nominal, discrete, attributes of the activity/travel pattern (e.g., which household member performs which activity, which vehicle is used, sequencing of activities), and a time sequence alignment method employing an inner product metric to handle temporal attributes of the activity pattern (e.g., starting and ending time of each activity and/or travel). The estimation procedure will be tested on data drawn from a well-know activity/travel survey.

**Key Words:** activity-based, estimation, sequence alignment, activity pattern

**Objective:** This research will establish a consistent metric and develop a procedure for activity-based travel demand model estimation.

**Tasks:** 1) Adaptation of existing sequence alignment techniques to examine similarity among the Activity, Person, and Vehicle dimensions; 2) Development of Activity Sequence (or Order) similarity indices; 3) Development of indices measuring the overlap in time spent on out-of-home activities without respect to specific activity-person and/or specific activity-vehicle linkages; 4) Development of inner product metric for temporal similarity; 5) Testing of similarity results under various weight scorings to determine the critical weights for general cases; 6) Estimation and validation on a sample drawn from households in the "so-called" Portland Activity data set.

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** The research will establish a mechanism for operationalizing consistent estimation household activity scheduling problem.

**Work Completed to Date:** We have reviewed previous work on the topic and begin data assembly and analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 25%

**Direct Cost:** \$47,450

## Capacity Modeling for Large Scale Urban Multimodal Freight Transportation Systems

**Principal Investigator:**

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** This research is designed to develop an analysis tool that can estimate the capacity of multimodal freight transportation systems. Lack of sufficient capacity for freight transportation is increasingly becoming a major issue in metropolitan areas throughout the United States, particularly in Southern California. In supporting economic expansion goals, it is important to consider how transportation investments can sustain the continued growth of the economy. Traditional approaches to capacity preservation and expansion, especially in urban areas, have proven to be inadequate, mainly due to the high cost of land use, environmental concerns, physical barriers, and opposition from local communities. There is broad recognition of the need for comprehensive multimodal approaches that leverage the competitive advantages of each mode. Existing methods for capacity analysis, however, do not adequately address the distinct features of multimodal systems. Because of the complexity relevant to multimodal plans and projects, new methods to evaluate current usage and potential capacity of multimodal systems are desired to be developed. The model we intend to develop would assist transportation planners and infrastructure managers in making the most efficient use of existing capacity and in improving their decision-making related to transportation planning and investment.

**Key Words:** Intermodal Freight Transportation System, Capacity Modeling, Multiple Commodity Network Flow Problems

**Objective:** To develop new capacity modeling tools.

**Tasks:** 1) A comprehensive literature survey and gap analysis will be conducted with the relevant references and guidance materials in order to improve our knowledge baseline on multimodal freight transportation systems and capacity analysis. 2) A mathematical formulation and algorithm will be developed in the second phase 3) The reasonableness and applicability of the developed model will be tested and assessed.

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** This research could develop useful planning tools and also provide insight into intermodal freight bottlenecks in the case study region.

**Work Completed to Date:** We have reviewed previous work on the topic and begin data assembly and analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

TRB 2005

**Other Accomplishments:**

None to date

**Percent Complete:** 25%

**Direct Cost:** \$55,348

## **Cruising for Parking**

### **Principal Investigator:**

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** Where curb parking is cheaper than off-street parking but all curb spaces are occupied, drivers who want to park their cars are presented with a choice: they can spend time cruising for curb parking or spend money to park off-street. Since curb parking is under priced, drivers have an incentive to search for curb spaces. Cruising is individually rational but collectively harmful because it increases traffic congestion, air pollution, fuel consumption, and accidents. In the proposed research, we will study the effects of cruising for under priced curb parking. We will measure the time it takes to find a curb space in Westwood Village, a commercial district adjacent to the UCLA campus, and estimate the share of traffic that is cruising for parking. From these findings we will measure the congestion effects directly related to under priced curb parking. To accomplish these objectives, we will examine the following: 1) the average cruising time before finding a vacant curb space, 2) driver's strategies in cruising for parking 3) the average parking duration at curb spaces, 4) the share of traffic that is cruising for parking, and 5) the transportation improvements that would occur if cruising were reduced by correctly pricing curb parking.

**Key Words:** parking, cruising, congestion

**Objective:** To quantify the effect of under priced curb parking..

**Tasks:** Review previous work on the topic, assemble data, analyze data, and prepare reports.

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** improved understanding of driver behavior when parking - greater understanding of the dynamics of curb parking

**Work Completed to Date:** We have reviewed previous work on the topic and begin data assembly and analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

Lake Arrowhead 2004, TRB 2005

**Other Accomplishments:**

None to date

**Percent Complete:** 25%

**Direct Cost:** \$53,978

## **Why Do Inner City Residents Pay Higher Premiums? The Determinants of Automobile Insurance Premiums**

### **Principal Investigator:**

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** The proposed study examines the relationship between traffic density, vehicular accident and automobile insurance premiums across sub-metropolitan areas. It is widely known that inner city residents pay higher premiums, holding car characteristics constant, than others, but there is very little systematic research to explain why. We propose to disentangle two competing explanations for these higher premiums: the higher rates are the product of racial discrimination ("red lining"), and the higher rates are due to a higher cost for insuring inner-city residents as a result of their greater risk. We will examine whether inner city residents are exposed to greater vehicle risks and whether these greater risks can account for their higher premiums. These risks include greater exposure to automobile accidents because metro area vehicle traffic is much more dense there than elsewhere, and greater exposure to high crime neighborhoods (higher car theft risks), among other factors. The proposed study will use multivariate econometric models to test these hypotheses, after accounting for other relevant factors. The analysis will examine variations across small geographic areas within Los Angeles City using both census and non-census data. This topic is important because the recent literature has shown that higher insurance premiums adversely impact inner city residents' ability to purchase and maintain cars, which in turn has been shown to have an important influence on their ability to gain employment.

**Key Words:** Auto Insurance, Redlining, Vehicle Accidents, Inner city residents

**Objective:** To improve understanding of the factors that account for the higher auto insurance premiums paid by inner city residents.

**Tasks:** assemble and geocode data, analyze data, prepare research article

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** This research will provide greater insight into the potential barriers to car ownership of inner city residents, which in turn could improve their employment opportunities

**Work Completed to Date:** We have reviewed previous work on the topic and begin data assembly and analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 20%

**Direct Cost:** \$47,305

## Motor Fuel Price and Expenditure Effects on Vehicle Use in California

### Principal Investigator:

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** Motor vehicle fuel costs lie at the intersection of several national transportation policy debates. Transportation efficiency and equity concerns are a common thread in these debates. They include how best to reduce gasoline consumption; how to understand rising personal mobility costs and burdens on low income households; and how to address the quiet revolution in the nation's transportation finance system, shifting from user fees to general taxes and borrowing to support investment. A clear understanding of how vehicle fuel prices and household fuel expenditures affect household transportation choices and costs would shed needed light on these discussions and related policy choices. New data collected by the 2001 National Household Travel Survey (NHTS) provide far better estimates of household vehicle fuel economy, annual fuel expenditures, and vehicle miles traveled (VMT) than available previously. These NHTS data, together with the debates outlined, motivate this effort. This study will use the data to: 1. identify variation in fuel prices and annual household fuel expenditures; 2. estimate the value of specific household trip types; 3. model the price sensitivity of demand for fuel among California households; and 4. suggest how different policy alternatives, including a potential motor fuel tax increase, could affect fuel consumption, vehicle acquisitions and travel among California households.

**Key Words:** National Household Travel Survey, Fuel Price, Fuel Expenditure, Motor Fuel Tax, Equity

**Objective:** Using newly available NHTS data, this study will study how vehicle fuel prices and household fuel expenditures affect household transportation choices and costs and consider the implications for policy choices that address transportation finance concerns.

**Tasks:** Applying standard statistical analysis and modeling techniques to the NHTS data, this study will address the following tasks:

1. Analysis of Variation in Fuel Prices and Household Fuel Expenditures;
2. Estimation of Trip Costs and Value of Specific Trip Types;
3. Model of Price Sensitivity of Demand for Fuel; and
4. Discussion of Policy Alternatives, including a motor fuel tax increase, could affect fuel consumption, vehicle acquisitions and travel among California households.

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** new project

**Potential Benefits:** The project would provide a far more reliable picture of variation in household fuel expenditures and fuel prices than previously available. Comparing fuel expenditures with household and driver demographic information as well as with trip characteristics will allow for a nuanced view of how different households and drivers value different trips and of the price elasticity of demand for trips and travel in the face of fuel price increases.

**Work Completed to Date:** We have reviewed previous work on the topic and begin data assembly and analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

Lake Arrowhead 2004, TRB 2005

**Other Accomplishments:**

None to date

**Percent Complete:** 25%

**Direct Cost:** \$20,000

**Status Reports - Year 16 (2003-2004)  
(Projects Continued To July 31, 2005 – 9 Projects)**

**Amber Alert Policy: Laboratory Experiments to Improve a Policy**

**Principal Investigator:**

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** In 2002, California adopted the communication protocol known as the Amber Alert (AA) which is now becoming a nationwide effort. The purpose is to alert the driving public to emerging events such as child abduction. The AA structure employs Variable Message Signs (VMS) on California highways. Policy is jointly developed by the CHP, the agency that initiates the alert, and Caltrans, the agency that implements it on VMS signs. CHP would like more information conveyed, to improve the odds of success. Caltrans would like less information conveyed so as to minimize congestion that signs have been observed to cause. We propose a laboratory study to examine the ability of drivers to acquire the message without the need to slow while passing by. Abbreviations, compacting of text, optimization of presentations that require two screens of information, are a few of the many possible strategies that we can study. The outlines of a field operational test of what the lab study reveals will be developed.

**Key Words:** amber alert, variable message signs, congestion management

**Objective:** study ability of drivers to acquire a message without slowing

**Tasks:** Review previous work on the topic, assemble data, analyze data, and prepare reports.

**Milestones, Dates:** Official start date Aug. 1, 2003, extended to July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** continuing from Year 16

**Potential Benefits:** develop sign strategies that better meet objectives of both Caltrans and the California Highway Patrol

**Work Completed to Date:** We have reviewed previous work on message acquisition and signage and have designed an experiment which is now underway.

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 65%

**Direct Cost:** \$56,275

## **Improved Developer Models for the Sacramento Region**

### **Principal Investigator:**

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** Urban models have advanced greatly in the last 20 years. Recent models represent the floor space developer explicitly, increasing the behavioral validity of the land markets in the models. We believe, however, that there is a need to separately represent the developers of large projects on the urban edge, as these projects can strongly affect subsequent development patterns. We propose to estimate and test such a model, and to apply it within an advanced urban model set for the Sacramento region.

**Key Words:** land use models, developer behavior

**Objective:** develop a model of large developer behavior at the urban fringe

**Tasks:** Review previous work on the topic, assemble data, analyze data, and prepare reports.

**Milestones, Dates:** Official start date Aug. 1, 2003, extended to July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** continuing from Year 16

**Potential Benefits:** improved transportation-land use modeling and analysis

**Work Completed to Date:** We have reviewed previous work on the topic and have discussed the issues with modelers. We designed model improvements and are estimating and testing models.

### **Papers to Date:**

None to date

### **Conferences Attended:**

Transportation Research Board Annual Meeting, 2004, 2005

### **Other Accomplishments:**

None to date

**Percent Complete:** 70%

**Direct Cost:** \$42,141

## **Death on the Crosswalk: A Study of Pedestrian Accidents in Los Angeles**

### **Principal Investigator:**

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**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** This research proposes to explore the spatial distribution of pedestrian-automobile accidents in Los Angeles and to analyze the social and physical factors that affect the risk of getting involved in such accidents. More specifically, the proposed study will investigate the influence of socio-demographic characteristics as well as the design of urban form on pedestrian accident rates. This study will involve research both at the macro and micro level. We will first provide an exploratory spatial and statistical analysis of pedestrian collision data in Los Angeles County to identify preliminary relationships between accident frequency and socio-demographic and land use characteristics of census tracts. This analysis will also help us identify major concentrations (regional clusters) of pedestrian collision data. More qualitative and detailed analysis will follow of specific case studies of intersections with high frequency of pedestrian-automobile accidents. The study will use pedestrian accident data provided by the California Highway Patrol, traffic volume data provided by Caltrans, socio-demographic data from the U.S. Census 2000, and pedestrian volume and built environment data from fieldwork research.

**Key Words:** pedestrian accidents, social factors, demographic factors

**Objective:** identify socio-demographic characteristics of pedestrian accident victims; identify intersections with high pedestrian accident rates

**Tasks:** Review previous work on the topic, assemble data, analyze data, and prepare reports.

**Milestones, Dates:** Official start date Aug. 1, 2003, extended to July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** continuing from Year 16

**Potential Benefits:** improve pedestrian safety

**Work Completed to Date:** We have completed a review of previous work on the topic and are assembling and analyzing our data.

### **Papers to Date:**

None to date

### **Conferences Attended:**

Transportation Research Board Annual Meeting, 2004

### **Other Accomplishments:**

None to date

**Percent Complete:** 70%

**Direct Cost:** \$37,163

## **Aggregate Structural Equations Modeling of the Relationships Between Consumer Expenditures on Communications and on Travel**

### **Principal Investigator:**

Patricia Mokhtarian  
UC Davis

**Email:** [plmokhtarian@ucdavis.edu](mailto:plmokhtarian@ucdavis.edu)

**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** Two aggregate studies of the relationships between communications and travel found apparently contradictory results: An input-output (I-O) analysis of relationships between transportation and communication input intensities across industries in Europe (1980) found complementarity (Plaut, 1997), while simultaneous equation models of aggregate consumer expenditures in Australia and the UK (1960- 1986) found pairwise substitution among private transportation, public transportation, and communication (Selvanathan and Selvanathan (S&S), 1994). Given technological advances such as mobile telephony and the Internet, it is possible that consumer relationships between communications and travel have changed substantially in the 17 years since the most recent data used in the latter study. A previously-funded UCTC study replicated the Plaut industry analysis on US data, and extended it across 1947-1997. This study applies the S&S consumer analysis to US data, extending to at least the year 2000. Taken together, the two studies will provide complementary evidence on aggregate relationships between communications and travel for industry and consumers, controlling for spatial and temporal factors. This study in particular will provide at least suggestive indications (through comparison to the S&S study) of how those relationships for consumers might be changing with advances in communication technology. The result will be a more informed view of the extent to which it is realistic to expect telecommunications to substitute for travel, especially in the consumer context.

**Key Words:** telecommunications, travel substitution

**Objective:** model and compare telecommunications and travel I/O relationships and consumer consumption of telecommunications and travel using US data

**Tasks:** Review previous work on the topic, assemble data, analyze data, and prepare reports.

**Milestones, Dates:** Official start date Aug. 1, 2003, extended to July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** continuing from Year 16

**Potential Benefits:** better understanding of the role of telecommunications in travel substitution, travel growth

**Work Completed to Date:** We have completed the literature review and evaluation and are assembling and analyzing data.

### **Papers to Date:**

None to date

### **Conferences Attended:**

Transportation Research Board Annual Meeting, 2004, 2005

### **Other Accomplishments:**

None to date

**Percent Complete:** 70%

**Direct Cost:** \$56,498

## **Auctions for the Procurement of Transportation Service Contracts**

### **Principal Investigator:**

Amelia Regan

UC Irvine

**Email:** [aregan@uci.edu](mailto:aregan@uci.edu)

**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** Large shippers have moved from lane by lane negotiation for trucking services to combinatorial auctions, in which several lanes are put out to bid together and trucking companies may bid for more than one package of services. The bid construction and valuation problem is a difficult one involving NP-hard sub problems. This research develops tractable approximation methods for solving these problems and identifies ways that smaller carriers can work together to capture the benefits available to larger carriers.

**Key Words:** trucking, combinatorial auctions, algorithms

**Objective:** develop tractable approximation methods for freight service bid construction and valuation

**Tasks:** Review previous work on the topic, assemble data, analyze data, and prepare reports.

**Milestones, Dates:** Official start date Aug. 1, 2003, extended to July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** continuing from Year 16

**Potential Benefits:** improve health of trucking industry by supporting more effective bidding

**Work Completed to Date:** A literature review has been carried out, exploratory analyses have been conducted, and methodological approaches are being designed.

### **Papers to Date:**

None to date

### **Conferences Attended:**

Transportation Research Board Annual Meeting, 2004, 2005

### **Other Accomplishments:**

None to date

**Percent Complete:** 70%

**Direct Cost:** \$51,603

## **Identification and Measurement of Freeway Congestion**

### **Principal Investigator:**

Alexander Skabardonis  
UC Berkeley

**Email:** [skabardonis@ce.berkeley.edu](mailto:skabardonis@ce.berkeley.edu)

**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** The objective of the proposed research is to develop a methodology to identify and measure total, recurrent, and non-recurrent congestion delay on urban freeways. The methodology will be applicable to urban freeways that are instrumented with loop detectors or other surveillance systems. The proposed methodology calculates the average and the probability distribution of congestion delays by cause (recurrent, incident related, weather and other factors). The methodology also will quantify the congestion impacts on travel time and travel time variability. The proposed work is based on recent research by the investigator. The findings to-date indicate that reliable measurement of congestion should provide measures of uncertainty in congestion. In applications on two real-life corridors, incident-related delay is found to be between 13 to 30 percent of the total congestion delay during peak periods.

**Key Words:** recurrent, congestion delay, freeways, surveillance, incident travel time, measurements

**Objective:** develop methods for measuring freeway delay using surveillance devices estimate uncertainty in delay estimates and delay due to incidents and recurrent congestion

**Tasks:** Review previous work on the topic, assemble data, analyze data, and prepare reports.

**Milestones, Dates:** Official start date Aug. 1, 2003, extended to July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** continuing from Year 16

**Potential Benefits:** improved congestion management and delay estimation

**Work Completed to Date:** Data have been assembled and exploratory analyses have been conducted. More detailed analyses are underway now.

### **Papers to Date:**

None to date

### **Conferences Attended:**

Transportation Research Board Annual Meeting, 2004, 2005

### **Other Accomplishments:**

None to date

**Percent Complete:** 70%

**Direct Cost:** \$38,281

## Capacity Provision and Pricing in Road Transport Networks in an Imperfectly Competitive Economy

### Principal Investigator:

Kurt Van Dender

UC Irvine

**Email:** [kvandend@uci.edu](mailto:kvandend@uci.edu)

**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** The standard economic prescription for managing network congestion relies heavily on the internalization, through tolls, of the congestion externality. Two basic insights are that (a) charging appropriate tolls reduces congestion to—in principle optimal levels, and (b) decisions on infrastructure expansion or contraction are less likely to be misguided when tolls are present. These basic principles rely on the assumption that markets are perfectly competitive. More precisely, a trip is undertaken for one or more purposes, and the prices related to these purposes are competitive. That is, a commuting trip is undertaken to earn a competitive wage, and a shopping trip involves paying the competitive price for purchased goods. This project will assess the impact of accounting for imperfect competition on the economic prescriptions for road infrastructure pricing and its provision. The motivation is that the assumption of perfect competition is not realistic. It also is at odds with developments in mainstream economics, where imperfect competition models become the rule rather than the exception, precisely because of their higher degree of realism. First, a model of the interactions between transport network management and competitive conditions in the economy is required. Preliminary work indicates that even small departures from the perfect competition assumption have major effects on policy prescriptions. In fact, it shows that congestion itself generates non-competitive market results. Second, empirical evidence is sought in order to determine which of the available models best approximates real conditions. The data will be used to construct numerical models for policy analysis.

**Key Words:** imperfect information, road pricing

**Objective:** account for the effect of imperfect information on road pricing and infrastructure provision

**Tasks:** Review previous work on the topic, assemble data, analyze data, and prepare reports.

**Milestones, Dates:** Official start date Aug. 1, 2003, extended to July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** continuing from Year 16

**Potential Benefits:** more realistic models and estimates of the effects of pricing policies

**Work Completed to Date:** A review of the current literature and emergent theory has been completed, as has data assembly. Analysis in underway.

### Papers to Date:

None to date

### Conferences Attended:

None to date

### Other Accomplishments:

None to date

**Percent Complete:** 70%

**Direct Cost:** \$51,409

## **Family Caregivers, the Elderly, and Land-Use: An Evaluation of Transportation in Two California Communities**

### **Principal Investigator:**

Martin Wachs  
UC Berkeley

**Email:** [mwachs@uclink.berkeley.edu](mailto:mwachs@uclink.berkeley.edu)

**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** The transportation research literature has paid increasing attention to the importance of informal caregiving networks for maintaining the mobility of senior citizens who have lost the ability to drive. Still, significant gaps exist in the identification of the travel patterns and needs of both the seniors who are reliant upon caregivers and those providing the caregiving services. We conduct a transportation needs assessment of caregivers and seniors in two communities in the suburban California county of Contra Costa using quantitative and qualitative measures. Our study population of caregivers is comprised of individuals in low-income brackets who provide care to an elderly family member. Only seniors who have gone through driving cessation (and their associated caregivers), but who are not entirely homebound (making at least one trip per week) will be in the study population. Of the two study communities to be chosen for this research, one will have relatively high-density development and be composed of mixed land uses and the other will be characterized by lower density and with more segregated land uses. Our second goal is to identify whether, controlling for other variables, these land-use differences affect the travel behavior and experiences of seniors and caregivers in the two communities.

**Key Words:** informal caregiving networks, mobility, senior citizens, Contra Costa, low-income, driving cessation, land-use

**Objective:** identify travel needs of caregivers and the elderly adults they attend

**Tasks:** Review previous work on the topic, assemble data, analyze data, and prepare reports.

**Milestones, Dates:** Official start date Aug. 1, 2003, extended to July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** continuing from Year 16

**Potential Benefits:** more effective transportation policies and services for elderly adults

**Work Completed to Date:** Literature review, survey design and administration, and survey coding and analysis are completed The paper is currently being drafted.

### **Papers to Date:**

None to date

### **Conferences Attended:**

Lake Arrowhead Conference, 2003  
Transportation Research Board Annual Meeting, 2004, 2005  
ACSP 2003, 2004

### **Other Accomplishments:**

None to date

**Percent Complete:** 90%

**Direct Cost:** \$33,075

## **Transportation Policy Development: Labor as a Missing Stakeholder**

### **Principal Investigator:**

Margaret Weir  
UC Berkeley

**Email:** [mweir@socrates.berkeley.edu](mailto:mweir@socrates.berkeley.edu)

**External Project Contact:** All UCTC projects are co-sponsored by Caltrans. Contact Sallybeth Scott, Caltrans, 1120 N St., Sacramento, CA 94305, tel. 916 324-2440

**Abstract:** For over a decade, federal transportation policy has sought to open regional transportation decision-making to new voices and to facilitate the use of transportation funds on an expanded array of transportation modes. Much of the impetus for these changes in federal legislation came from environmentalists and advocates for low-income communities, who believed that existing decision-making processes advantaged developers and highway interests. However, these processes have rarely engaged labor unions. This research project seeks to understand the role of labor in the development of transportation policy. The research takes a two-pronged approach: first, it examines the processes of coalition building in which labor has engaged as it seeks to participate in transportation policymaking. Second, the research analyzes the problems of consensus building around transportation policy within the labor movement, where institutional complexity, the potentially divergent interests of different unions, and a culture organized around the immediate goals of collective bargaining make it difficult for labor to engage effectively. The research will be conducted in two states: Illinois, where transit unions have launched a statewide coalition to increase state spending on public transit; and California, (both Los Angeles and the Bay Area), where central labor councils have taken the lead in bringing labor into transportation policymaking.

**Key Words:** transit labor, coalition-building

**Objective:** document and analyze coalition-building strategies used by labor to influence transportation policy

**Tasks:** Review previous work on the topic, assemble data, analyze data, and prepare reports.

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications will be posted on UCTC's Website and distributed in hard copy, in most instances free of charge. .

**Relationship to Other UCTC Research:** continuing from Year 16

**Potential Benefits:** improved understanding of labor issues and concerns; more effective policies

**Work Completed to Date:** Literature review and site visits are completed.

### **Papers to Date:**

None to date

### **Conferences Attended:**

None to date

### **Other Accomplishments:**

None to date

**Percent Complete:** 60%

**Direct Cost:** \$41,698

### C. Project Financial Status

It is the UCTC's longstanding policy to commit all funds authorized by our sponsors, the US Department of Transportation and the California Department of Transportation, in the year that they are authorized. Funds that are not fully expended in the year they allocated may be carried over into the next fiscal year with the permission of the UCTC Director. Carry-over funds remain committed to the categories to which they were initially allotted, except for Headquarters funds, which differ in some cases from amounts initially budgeted because of changes in salaries or expense items, or reallocations of administrative budget amounts to research and technology transfer accounts.

Our Year 17 - 2004-2005 program allotments commit all funds approved by USDOT and Caltrans at the start of the Year 17) grant cycle. Since funds were received as a first installment with a second installment expected in Winter or Spring 2005, we first allocated funds to cover administrative costs that cannot be reduced without staff layoffs, and then provided an initial allotment to research projects. Subsequent allotments will be directed primarily toward research.

**Table 4. Allocated Amounts as of Jan. 31, 2005**

**UCTC YEAR 17- 2004-2005  
BUDGET BASED ON PARTIAL FEDERAL  
AUTHORIZATIONS  
TOTALLING \$680,000 PLUS \$680,000 MATCH  
Grantee: University of California  
Grant Year: Aug. 1, 2004 - July 31, 2005 (Year 17)**

ITEM	BUDGET
Center Director Salary	65,000
Faculty Salaries	0
Administrative Staff Salaries	75,000
Other Staff Salaries	50,000
Student Salaries	156,500
Staff Benefits	37,500
<b>SUBTOTAL SALARIES AND BENEFITS</b>	<b>384,000</b>
Scholarships	833,750
Permanent Equipment	5,000
Expendable Property & Supplies	12,250
Domestic Travel	25,000
Foreign Travel	0
Other Direct Costs (Specify)	100,000
Total Direct Costs	1,360,000
Facilities & Admin. (Indirect) Costs	0
<b>TOTAL COSTS</b>	<b>1,360,000</b>
Federal Share	680,000
Matching Share	680,000
<b>TOTAL AVAILABLE FUNDS YR. 17 (PRELIM.)</b>	<b>1,360,000</b>

## Appendix. Completed Projects Since Start of Grant

### YEAR 12 (1999-2000) PROJECTS (20 PROJECTS)

#### **Induced Travel Demand: A Systems Analysis of Longer Term Impacts of Road Expansion**

Robert Cervero, City and Regional Planning, Berkeley

#### **Measuring the Impact of the Internet on the Trucking Industry**

Carlos Daganzo, Civil & Environmental Engineering, Berkeley

#### **Roadway Tunnel Measurements of Carbon and Nitrogen-Containing Air Pollutants**

Robert Harley, Civil & Environmental Engineering, Berkeley

#### **Estimation of Latent Pavement Properties Using Condition Survey Data**

Samer M. Madanat, Civil and Environmental Engineering, Berkeley

#### **Online Versus Rolling Horizon Algorithms for Dynamic Service Fleet Operations**

Amelia Regan and Sandra Irani, Civil & Environmental Engineering

#### **Regional Transportation Infrastructure Finance in the U.S.**

Martin Wachs, Institute of Transportation Studies, Berkeley

#### **Estimating Freeway Traffic Stream Modal Activities for Air Quality Modeling**

H. Michael Zhang, Civil and Environmental Engineering, Davis

#### **The Transportation Behavior and Needs of Welfare Recipients**

Evelyn Blumenberg, Public Policy and Social Research, Los Angeles

#### **New Highways and Urban Growth Patterns: Using Locally Weighted Regression to Measure the Development Impacts of the Orange County Toll Roads**

Marlon Boarnet, Urban & Regional Planning, Irvine

#### **GPS-Based Data Handling for Activity Based Modeling**

Reginald G. Golledge, Department of Geography, Santa Barbara

#### **Impacts of Shipping Changes on the Efficiency of the Freight Transportation Network**

Tom Golob and Amelia Regan, Institute of Transportation Studies, Irvine

#### **The Effects of Urban Land Use Patterns on Household Trip-Making Behavior: An Empirical Analysis**

John D. Landis, City & Regional Planning, Berkeley

#### **Putting Behavior in Household Travel Behavior Data: An Interactive GIS-based Survey Via the Internet**

Michael G. McNally, Institute of Transportation Studies, Berkeley

#### **Measuring the Role of Transportation in Facilitating the Welfare-to-Work Transition**

Paul M. Ong, Public Policy and Social Research, Los Angeles

#### **Development of Estimation Procedures for Activity-Based Model Forecasting**

Will Recker, Institute of Transportation Studies, Irvine

#### **Evaluating a University Transit Pass Program**

Donald Shoup, Institute of Transportation Studies, Los Angeles

#### **Journeys to Crime: Documentation and Evaluation of Crime Incidence on and around Railway Stations in Los Angeles**

Anastasia Loukaitou-Sideris, Urban Planning, Los Angeles

#### **The Viability of Value Pricing Demonstrations**

Kenneth Small, Institute of Transportation Studies, Irvine

#### **Greenhouse Gas Emissions Trading and the Transport Sector**

Daniel Sperling, Institute of Transportation Studies, Davis

#### **Driving for Dollars: How the Politics of Finance Has Shaped the California Highway System**

Brian D. Taylor, Urban Planning, Los Angeles

#### **University of California Transportation Center 3/05**

**YEAR 13 (2000-2001) RESEARCH PROJECTS (15 PROJECTS)**

**Does Commuting Distance Matter? Commuting Tolerance and Residential Change**

William A.V. Clark, Geography, UCLA

**An Evaluation of Local Option Transportation Taxes in California**

Professor Martin Wachs, Institute of Transportation Studies, UC Berkeley

**Stationary Traffic Models and Freeway Geometry**

Michael Cassidy, Civil and Environmental Engineering, UC Berkeley

**E-Commerce and the Efficiency of the California Freight Network: Perspectives of Shippers, Carriers and Third Party Logistics and Information Services Providers**

Thomas F. Golob and Amelia C. Regan

**Assessing the Influence of Residential Location Changes on Travel Behavior**

Michael G. McNally, Civil and Environmental Engineering, UC Irvine

**The Impact of Attitudes toward Mobility, Adoption of Previous Strategies, and Demographic Characteristics on Responses to Congestion**

Patricia L. Mokhtarian, Civil and Environmental Engineering, UC Davis

**Measuring the Role of Transportation in Facilitating the Welfare-to-Work Transition (Third Year)**

Paul Ong, Urban Planning, UCLA

**Systematic Transport Access and Policies for Low Wage Labor Markets**

John M. Quigley, Public Policy, UC Berkeley

**Activity-Based Forecasting Model for Planning Applications**

Will Recker, Institute of Transportation Studies, UC Irvine

**Inventory Theoretic Models of Freight Demand: Revisiting the Past in Light of the New Economy**

Amelia Regan, Civil Engineering, and Charles Lave and Amihai Glazer, Economics, UC Irvine

**The Environment - Transit Crime Connection: Continuing Study of the Metro Green Line and its Vicinity**

Anastasia Loukaitou-Sideris, Urban Planning, UCLA

**Has Parking Cashout Failed in California?**

Don Shoup, Public Policy and Social Research, UCLA

**Reconsidering the Effects of Fare Reductions on Transit Ridership**

Brian D. Taylor, Urban Planning, UCLA

**Planes, Trains, or Camionetas (little buses)? A Baseline Study of an Informal Travel Mode**

Abel Valenzuela Jr., Public Policy and Social Research, UCLA

**Understanding and Modeling Driver Behavior in Dense Traffic Flow**

H. Michael Zhang, Civil and Environmental Engineering, UC Davis

**YEAR 14 (2001- 2002) RESEARCH PROJECTS (15 PROJECTS)**

**How Does Travel Behavior Change When Households Change Jobs?**

William Clark, UCLA

**Design of Vehicle Routes and Driver Shifts for Systems with Uncertain Demand**

Carlos Daganzo, UC Berkeley

**Effect of Driving Mode on Light-Duty Vehicle Emissions Measured On-Road**

Robert Harley, UC Berkeley

**Using the Spatial Configuration of Cities to Estimate The Impact of Commuting Time on Hours of Work**

Antonio Bento, UC Santa Barbara

**Evaluation of the California Safe Routes to School Program**

Marlon Boarnet and Kristen Day, UC Irvine

**Forecasting Demand and Values of Travel Time Savings for Freeway HOV, Toll and HOT Facilities:  
Incorporating Attitudes and Perceptions into Commuter Choice Models**

David Brownstone and Thomas Golob, UC Irvine

**Transit-Based Housing: Residential Sorting and Its Influence on Mode Choice**

Robert Cervero, UC Berkeley

**Real-time Travel Data Collection System Augmented with Speech Interface**

Reginald Golledge, UC Santa Barbara

**Life -Cycle Environmental and Economic Assessment of Using Recycled Materials for Asphalt Pavements**

Arpad Horvath, UC Berkeley

**Reinforcement Learning in Transportation Infrastructure Management**

Samer Madanat, UC Berkeley

**Dissonance between Desired and Current Residential Neighborhood Type: Relationships to Travel-Related Attitudes and Behavior**

Patricia Mokhtarian and Ilan Salomon, UC Davis

**Optimal Control Policies for Urban Corridor Management**

Wilfred Recker, UC Irvine

**The Impact of Motor Vehicle Transportation on Water Quality**

Jean Daniel Saphores, UC Irvine

**Putting Back the Pleasure in the Drive: Reclaiming Urban Parkways for the 21<sup>st</sup> Century**

Anastasia Loukaitou-Sideris, UCLA

**Equity and Environmental Justice in Transportation**

Martin Wachs, UC Berkeley

**YEAR 15 (2002-2003) RESEARCH PROJECTS (17 PROJECTS)**

**Expanded Evaluation of the California Safe Routes to School Program**

Marlon Boarnet, Kristen Day, and Kenneth Anderson, UC Irvine

**Verifying Regularities in Queued Freeway Traffic**

Michael Cassidy, UC Berkeley

**Neighborhood Design, Physical Activity, and Travel**

Robert Cervero, UC Berkeley

**Comparing White and Minority Household Commuter Behavior**

William Clark, UCLA

**Storage System Dynamics and Management Policies**

Carlos Daganzo, UC Berkeley

**Judging the Speed of Pedestrians and Bicycles at Night**

Karen DeValois, UC Berkeley

**Safer and More Efficient Truck Operations on Urban Freeways**

Thomas Golob and Amelia Regan, UC Irvine

**High-Coverage Point-to-Point Transit**

R. Jayakrishnan and T. Golob, UC Irvine

**Incorporating Seismic Risk Considerations in Transportation Infrastructure Management**

Samer Madanat, UC Berkeley

**Handheld Travel Survey Technology to Supplement Vehicle Tracking**

Michael McNally, UC Irvine

**I/O Analysis of Communications and Travel for Industry**

Patricia Mokhtarian, UC Davis

**Car Ownership, Insurance Premiums and Employment Outcomes**

Paul Ong, UCLA

**Public Transit and Residential Location Choices of Minorities and Transit Dependents**

John Quigley and Steven Raphael, UC Berkeley

**An Evaluation of Employer-Based Transit Programs**

Donald Shoup, UCLA

**Effects of Contracting on Fixed-Route Bus Cost-Efficiency**

Brian Taylor, UCLA and Martin Wachs, UC Berkeley

**Exploring the Marketability of Fuel-Cell Electric Vehicles**

Thomas Turrentine and Kenneth Kurani, UC Davis

**Experimental and Theoretical Investigations of Traffic Flow at Highway Merges**

Michael Zhang, UC Davis

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**YEAR 16 (2003-2004) RESEARCH PROJECTS (COMPLETED PROJECTS ONLY)**

**Experiments to Increase Freeway Merge Capacity**

Michael Cassidy, UC Berkeley