



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

**August 15, 2005**

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## **ANNUAL REPORT**

(August 1, 2004-July 31,2005)

University Transportation Centers Program  
**Region IX**

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## OUR SEVENTENTH YEAR

2004-5 was the University of California Transportation Center's 17<sup>th</sup> year. In some ways, it also was our most difficult year: as Congress debated reauthorization of surface transportation legislation, our funding came through in increments, leading to uncertainties and delays in research funding. Nevertheless we have many accomplishments to report:

- Faculty members completed 13 projects, continued their work on 10 more, and initiated another 16. The research covers a wide range of topics - from transportation for the elderly to traffic operations to road pricing – each a current problem of considerable importance.
- We awarded almost 100 new Masters and PhD degrees, and increased our undergraduate enrollments in transportation. These newly minted transportation specialists have joined private transportation firms, universities, nonprofits, and federal, state, and local government agencies.
- We added 108 papers to our website and converted most of our older papers to electronic format, allowing almost all of UCTC's 721 publications to be obtained over the internet. Keeping track of the downloads, we learned that nearly 100,000 papers were obtained through the Web this year – 100 times the number of hard copies we sent out.
- We published two more editions of ACCESS, our transportation magazine, and distributed 20,000 copies to readers across the US and overseas. An equal number of readers get ACCESS electronically.
- We supported the annual Lake Arrowhead retreat, organized a student-run conference at Irvine, and hosted a USDOT-sponsored modeling conference.

Like most other transportation centers in the US, we spent much of the year anticipating the reauthorization of the federal surface transportation program. Several of our faculty members, myself included, testified before Congressional committees and at staff workshops, arguing for increased investment in research. As I write this, we are still waiting for the new legislation and are uncertain what our budget will be in the next year. We have responded to the budget uncertainties by leaving vacated staff positions unfilled and trimming, once again, the research budgets for the year. However, we continue to be excited about the possibilities for improved transportation services, more cost-effective and efficient project delivery, better transportation - environmental performance, more equitable distribution of transportation benefits. Research on these topics can help us find new processes, new technologies, and new institutional designs that will pay off for all of us. We look forward to continuing to be a part of those efforts.

-- Elizabeth Deakin

## CENTER THEME AND ACTIVITIES

The University of California Transportation Center (UCTC) is the Federal Region IX University Transportation Center. UCTC is headquartered at UC's Berkeley campus, but researchers from any of the ten UC campuses are eligible to participate in UCTC, and researchers from other campuses outside the UC system may join us as research team members. In 2004-5 faculty and students from six of the ten campuses received funding and were active in UCTC events.

*Center Theme:* UCTC supports transportation research, education, and technology transfer designed to advance the state of the art and the state of the practice addressing the theme, *transportation systems analysis and policy*. The development of new methods and approaches for transportation forecasting and analysis, explorations of alternative policy approaches, and evaluations of existing policies and programs are examples of the kinds of projects that UCTC supports. Our researchers come from a variety of disciplines, including planning, engineering, economics, political science, policy studies, management, public health, environmental studies, geography, history, psychology, sociology, and the natural sciences. Increasingly, both our projects and the researchers themselves are multi-disciplinary. We emphasize surface transportation modes (highways, rail, etc.) rather than air or maritime transportation, but we support intermodal research involving the air and water modes if it has significant surface transportation components. Both passenger transport and freight transport topics are investigated through the UCTC.

*Institutional Support:* As it has done since the UCTC's inauguration, the California Department of Transportation (Caltrans) matched US Department of Transportation (US DOT) funds dollar-for-dollar. This year our federal funding, received in two increments, totaled \$952,000. Doubled by our Caltrans match, the resulting budget of \$1,904,000 allowed us to continue a vigorous program of research, education, and technical transfer activities. We thank our two sponsors for making our activities possible.

Because of ongoing extensions of the federal transportation program, our Caltrans agreement for matching funds for UCTC also had been extended repeatedly. During 2004-5 Caltrans and UCTC began discussions about a new funding agreement for future years. Not knowing what Congress would do in the transportation legislation made this effort somewhat speculative, but we proceeded anyway, and a new multi-year agreement for matching funds was signed in the summer of 2005.

The substantial programmatic support we receive from the University of California also has been a source of strength for the UCTC program. Permanent financial support comes from the University for transportation research and education programs. The US DOT requires a \$200,000 commitment in regularly budgeted institutional funds for a university to be eligible for Center designation; salaries and benefits for the full-time faculty members who conduct transportation research at Berkeley, Davis, Irvine and UCLA greatly exceed that amount. In addition, several permanently (separately) funded research institutes and academic departments administer individual UCTC research grants and fellowships. The Institutes of Transportation Studies at Berkeley, Davis, and Irvine, the Lewis Center / ITS at UCLA, and the Institute of Urban and Regional Development at Berkeley provide major assistance each year.

UCTC faculty and students also benefit from their access to University computer, data, and library resources. Of particular note is the Library of the Institute of Transportation Studies, which was established in 1948 and is supported with Caltrans funds allocated through a direct line item in the state budget. The resources of the library are available to faculty and students on all campuses. Each year UCTC sponsors a visit to each of the four main UCTC campuses by Librarian John Gallwey, as a way of introducing new students to library holdings and services. In 2004-5 the ITS Library received a number of upgrades, making it an even more convenient research facility.

*Research:* Research is a major focus of UCTC's activities. All UCTC research grants are awarded through a process that relies on outside peer review. The process is highly competitive. To handle the difficult process of project selection, we conduct a double-blind review of all proposals, then appoint a panel of outside experts who serve much the same function as an editorial board, advising the Director on the projects that appear most worthy of funding. The Director makes the final choices of projects with the advice of the Executive Committee. This process is a major undertaking, but we believe that it produces the best quality research possible.

Available funds were sufficient to cover less than one-third of the amounts requested for research projects in 2004-5. However, the bigger budget problem was the uncertainty about what the budget finally would be. Because the final budget was not authorized until the second term of the academic year had already begun, only seed grants – small projects in the \$15,000 to \$30,000 range – were initially awarded. (Seed grants allow faculty members to hire a graduate student to begin the research but do not cover faculty salaries and only cover minor research expenses.) Additional funding was provided to most faculty members during the spring of 2005, but by then the grad students not hired in the fall had made other arrangements to support themselves during the spring, and so gearing up for the larger project was not a simple matter. Nearly all faculty members had to wait until summer to hire additional students for their projects and therefore had to obtain extensions allowing them to complete their work in the following 2005-6 academic year.

Two-part funding also meant two-part grant awards, with double the paperwork for administrators both at UCTC and at the recipient campuses. Our staff members did an excellent job of handling this extra work.

The 17 faculty projects selected for awards in 2004-5 went to faculty on the Berkeley, Davis, Irvine, Los Angeles, and Santa Barbara campuses. In addition, UCTC awarded 11 dissertation grants in 2005-6, with winners at Berkeley, Davis, Irvine, and Riverside. Both faculty and graduate student researchers were active in conferences, symposia, and workshops across the US and abroad, where the findings from their research were shared with other researchers and with practitioners.

*Administration:* Administration of research projects is an important UCTC function. However, because in 2004-5 UCTC was operating on contract/grant “extensions” and there was considerable uncertainty over the future of the federal transportation centers program, we were not able to hire permanent staff for many other functions. Eunice Park joined UCTC to provide day-to-day support, but for accounting and personnel services UCTC “rented” staff from other campus units. We already use students and contractors for publication and website services, thus keeping our administrative costs to a minimum.

*Education:* UCTC not only carries out research but also contributes to transportation education through fellowship programs, funding for courses, our competitive PhD dissertation grant program, and the research assistantships offered as part of faculty research projects. Our objective is to help produce a vibrant network of transportation professionals who will put their education and research findings into practice.

In 2004-5, fellowships were provided to students at the four campuses that have formal transportation programs - Berkeley, Davis, Irvine, and UCLA. Students from any of the UC campuses may apply for a dissertation grant and may work on a transportation project awarded to faculty member on their campus. Together, student fellowships, dissertation grants, research appointments and related student expenses account for almost two-thirds of our total budget.

While the final 2004-5 budget was only 10% lower than our strategic plan had anticipated, the “missing” \$96,000 would have funded undergraduate programs. Plans for a summer transportation program for undergraduates were again delayed due to the budget shortfall.

*Technology Transfer:* The UCTC’s technology transfer programs are aimed at communicating research results to a broad audience. We distribute hard copies of our transportation magazine, ACCESS, which we publish twice a year. Many others read ACCESS in libraries and on the web. Editor in Chief Melvin Webber, who is Professor Emeritus of City and Regional Planning, has a talent for identifying topics that are timely and apt. Managing Editor Melanie Curry works closely with researchers to produce informative, readable articles, even on topics that are highly technical and specialized. ACCESS now has over 20,000 mail subscribers and another 21,000 web readers.

The UCTC web page provides information on our programs, summaries of our research, and electronic access to nearly all of our publications – books and films excepted. Our webmaster reports that in 2004-5 UCTC over 26,000 website "hits" a year, with over 29,000 ACCESS downloads and over 125,000 downloads of papers and reports in the past year.

## **MANAGEMENT STRUCTURE AND CENTER STAFF**

The University of California Transportation Center is headquartered on the Berkeley campus of the UC system. Center personnel include a half-time director who also is a faculty member, plus a small administrative and editorial staff. Direction for the UCTC comes from a faculty Executive Committee drawn from several campuses of the UC system. Coordination with other California Transportation Centers and with our Caltrans sponsor takes place through meetings held three times a year (once at each of the three California UTCs.) The UCTC also draws upon a variety of institutional resources at participating campuses, including the administrative services of researchers’ academic departments and research institutes, whose support is donated.

### **Center Director**

Professor Elizabeth Deakin of the Dept. of City and Regional Planning at UC Berkeley is the UCTC Director, a position she has held since March 1999. Prof. Deakin has been a member of the faculty at the University since 1985 and has had additional affiliations with the Civil Engineering, Urban Design, and Energy Resources groups for much of that time. Her interests include transportation and land use, transportation policy, and the social, economic, and environmental impacts of transportation. She has conducted research with ITS, PATH, and IURD as well as with the UC Energy Institute and the UC Policy Center. She has served on the UCTC Executive Committee since its inception and has served several times as a member of the ITS and IURD executive committees. She was acting director of the IURD in 1997-98. In addition to teaching at Berkeley, she taught for a year at UCLA in 1992-93. Her familiarity with the University and the UCTC’s partners facilitates her management of the UCTC.

### **Executive Committee**

The UCTC Executive Committee is a faculty committee that sets the overall policy direction for the Center and assures coordination with the major transportation research and education groups on the various campuses. Members of the UCTC Executive Committee volunteer significant amounts of time to the Center. They meet in person at least once a year, and transact business in the interim through telephone conference calls and e-mail.

The Executive Committee consists of the UCTC Director, the directors of the four Institutes of Transportation Studies or their representatives, the director of the Institute of Urban and Regional Development or her representative, and faculty representatives of the major transportation degree-granting programs in the UC system. This representative membership facilitates information exchange about education programs, recruiting, and other academic matters and aids in the coordination of research among the campuses and research units. Members of the Executive Committee for 2004-2005 were:

**Robert Cervero**, Prof. of City & Regional Planning, UC Berkeley  
**Randall Crane**, Assoc. Prof. of Urban Planning, UC Los Angeles  
**Carlos Daganzo**, Prof. of Civil & Environmental Engineering, UC Berkeley  
**Elizabeth Deakin**, UCTC Director, Prof. of City & Regional Planning, UC Berkeley  
**Susan Handy**, Assoc. Prof. of Environmental. Science & Policy, UC Davis  
**Charles Lave**, Prof. Emeritus of Economics, UC Irvine  
**Samer Madanat**, Director, Institute of Transportation Studies, Berkeley  
**Patricia Mokhtarian**, Prof. of Civil and Environmental Engineering, UC Davis  
**Will Recker**, Director, Institute of Transportation Studies, UC Irvine  
**Amelia Regan**, Assoc. Prof. of Computer Science Systems, UC Irvine  
**Jean Daniel Saphores**, Asst. Prof. of Policy, Planning and Design, , UC Irvine  
**Daniel Sperling**, Director, Institute of Transportation Studies, Davis  
**Brian Taylor**, Asst. Prof. of Urban Planning, UC Los Angeles

The Executive Committee is responsible for establishing the theme for the Center and reviewing it from time to time, allocating funds among research, education, and technology transfer programs, determining subject matter priorities for research funding, setting rules for allowable expenditures on research projects, and making final recommendations on research awards. In addition, the Executive Committee conducts an annual review of the Center's overall performance and resources, and redirects funds allocations and activities as necessary. When the Directorship of the UCTC becomes vacant, the Executive Committee conducts the search and recommends a Director to the Office of the President of the University, which so far has always acted favorably on the Executive Committee's recommendations.

The Executive Committee's time is donated.

## **Center Faculty**

Faculty affiliates of the UCTC include individuals throughout the UC system who participate in the research, teaching, and continuing education programs funded by the UCTC. We maintain contact with our faculty affiliates by inviting them to participate in our research, education, and technology transfer programs, by coordinating UCTC research with other research activities these faculty members are conducting, and by providing them with publications and other information services. Table 1 lists current faculty affiliates. The list is updated annually and is posted on the UCTC website, [www.uctc.net](http://www.uctc.net), with full addresses, telephone and fax numbers, and email addresses. Table 1 lists 2004-5 faculty.

We are saddened to report the passing of two UCTC affiliates in 2004-5, both at far too young an age: Youngbin Yim, a PATH researcher who earned her PhD in the CEE Department at Berkeley and worked on demand for new technologies, and Judith Gruber, Professor of Political Science, whose most recent UCTC work with Judith Innes was published shortly before her death: J. Innes and J. Gruber, "Planning Styles in Conflict: the Metropolitan Transportation Commission", Journal of the American Planning Association. Vol. 71, no. 2 (spring 2005) p. 177-188.

## **Staff**

The UCTC staff consists of the director (half time) plus one administrative staff member, a half-time staff editor, a student publication assistant, plus contract webmasters and accounting staff and an emeritus faculty member who is paid a nominal sum for his time as editor of ACCESS. The staff members in 2003-2004 were:

**Elizabeth Deakin**, Associate Professor of City and Regional Planning, Director (half time)

**Eunice Park**, Administrator. Ms. Park handles day-to-day administration for the Center and helps organize conferences and workshops.

**Melanie Curry**, Editor (half time). Ms. Curry is the managing editor responsible for ACCESS, UCTC's twice-yearly magazine.

**Melvin Webber**, Professor Emeritus of City and Regional Planning, UC Berkeley and former Director of UCTC. Prof. Webber was the creator of ACCESS magazine and recruits and reviews articles for ACCESS.

**Michael Harvey**, Webmaster (25-50% time as needed)

**Angel Lu**, student assistant (25-50% time), publications requests.

**Other Student Assistants** – as needed for specific tasks

**Accounting Staff** – as needed ( 1 FTE total, individuals vary; staff provided by Institute of Urban and Regional Development, UC Berkeley, under a memorandum of understanding)

**Table 1. UCTC Faculty Affiliates**

<b>First Name</b>	<b>Last Name</b>	<b>Address</b>	<b>City / Campus</b>
Matthew J.	Barth	Ctr. for Environmental Research	Riverside
Antonio M.	Bento	Donald Bren School of Env. Sci. & Mgmt.	Santa Barbara
Evelyn	Blumenberg	Urban Planning	Los Angeles
Marlon G.	Boarnet	Urban and Regional Planning	Irvine
Peter C.	Bosselman	Dept. of City & Regional Plan.	Berkeley
David	Brownstone	Economics	Irvine
David	Bunch	Management	Davis
Andrew F.	Burke	Transportation Studies	Davis
Michael J.	Cassidy	Civil & Environmental Engineering	Berkeley
Robert	Cervero	City & Regional Planning	Berkeley
Ted	Chang	Civil & Environmental Engineering, UC Davis	Davis
Karen	Chapple	City & Regional Planning	Berkeley
Ted	Chira-Chavala	ITS Extension - 452 RFS	Berkeley
Richard	Church	Geography	Santa Barbara
William A.V.	Clark	Geography-1255 Bunche Hall	Los Angeles
Linda	Cohen	Dept. of Economics	Irvine
Theodore E.	Cohn	Optometry	Berkeley
Randall D.	Crane	Lewis Ctr. for Regional Studies	Los Angeles
Carlos	Daganzo	Civil & Environmental Engr.	Berkeley
Joy	Dahlgren	PATH-RFS Bldg. 452	Richmond
Kristen	Day	Urban and Regional Planning	Irvine
Karen K.	De Valois	Psych., Vision Sci. & Optometry	Berkeley
Elizabeth A.	Deakin	City and Regional Planning	Berkeley
Mark A.	Delucchi	Environmental Studies	Davis
Joseph	DiMento	Urban and Regional Planning	Irvine
Michael	Disch	Psychology	Berkeley
Harry A.	Dwyer	Mechanical & Aeronautical Engineering, UC Davis	Davis
Bryan	Ellickson	Dept. of Economics	Los Angeles
Wm. Ronald	Fawcett	Chemistry, UC Davis	Davis
Robert	Feenstra	Economics, UC Davis	Davis
J. Gordon	Fielding	Social Sciences	Irvine
Mark	Francis	Environmental Design, UC Davis	Davis
Andrew	Frank	Mechanical & Aeronautical Engineering, UC Davis	Davis
William L.	Garrison	Civil & Environmental Engineering	Berkeley
Bruce C.	Gates	Chem. Engineering & Mtrl. Science, UC Davis	Davis
David	Gillen	Inst. of Transportation Studies	Berkeley
Amihai	Glazer	Economics	Irvine
Steven	Goldman	Economics	Berkeley
Reginald G.	Golledge	Geography	Santa Barbara
Thomas	Golob	Transportation Studies	Irvine
Costas	Goulias	Geography	Santa Barbara
Joanna R.	Groza	Chem. Engineering & Mtrl. Science, UC Davis	Davis
Peter	Hall	Urban and Regional Development	London
Susan	Handy	Environmental Science and Policy	Davis
Michael	Hanemann	Agr. & Res. Econ.	Berkeley

**Table 1 cont.**

Mark	Hansen	Civil Engineering	Berkeley
Robert	Harley	Civil Engineering	Berkeley
John	Harvey	Civil and Environmental Engineering	Davis
J. Karl	Hedrick	Mechanical Engineering	Berkeley
Wolfgang	Homburger	Inst. Transp. Studies	Berkeley
Arpad	Horvath	Civil & Env. Eng.	Berkeley
Linda	Howe-Steiger	ITS Extension - 452 RFS	Richmond
Judith	Innes	City and Regional Planning	Berkeley
Allan B.	Jacobs	City and Regional Planning	Berkeley
R.	Jayakrishnan	Civil Engineering	Irvine
Bryan M.	Jenkins	Bio. & Ag. Engineering, UC Davis	Davis
Robert A.	Johnston	One Shields Ave.	Davis
Adib	Kanafani	Chair, Civil & Environ. Engr.	Berkeley
Dean	Karnopp	Mechanical & Aeronaut. Engr.	Davis
Ryuichi	Kitamura	Transp. Engr., Davis (Prof., U Kyoto)	Davis
Michael	Kleeman	Civil & Environmental Engineering, UC Davis	Davis
Daniel B.	Klein	Dept. of Economics	Irvine
Jess	Kraus	Public Health-Epidemiology	Los Angeles
Kenneth	Kurani	Inst. Of Trans. Studies, Davis	Davis
John	Landis	City & Regional Planning	Berkeley
Charles A.	Lave	Dept. of Economics	Irvine
Robin	Liggett	Urban Planning	Los Angeles
Anastasia	Loukaitou-Sideris	Urban Planning	Los Angeles
John	Lysmer	Civil Engineering	Berkeley
Elizabeth	Macdonald	City and Regional Planning	Berkeley
Samer	Madanat	Civil & Environmental Engr.	Berkeley
Michael G.	McNally	Civil & Environ. Engineering	Irvine
James A.	Misener	PATH	Berkeley
Patricia	Mokhtarian	Civil & Environmental Engineering	Davis
Deb	Niemeier	Dept. of Civil & Environmental Engineering	Davis
Raymond W.	Novaco	Social Ecology	Irvine
Joan	Ogden	CEE	Davis
Paul	Ong	3250 Public Policy Bldg.	Los Angeles
Christos	Papadimitriou	Computer Science - 689 Soda Hall	Berkeley
Nadesan	Permaul	Parking and Transportation	Berkeley
Steven C.	Pitts	Center for Labor Research and Education	Berkeley
John M.	Quigley	Public Policy	Berkeley
John	Radke	Landscape Department	Berkeley
David R.	Ragland	Public Health	Berkeley
Steven	Raphael	Public Policy	Berkeley
Will	Recker	Institute of Transportation Studies	Irvine
Amelia	Regan	Computer Sciences	Irvine
Stephen G.	Ritchie	Chair, Civil & Environ. Engr.	Irvine
David M.	Rocke	Management	Davis
Paul A.	Ruud	Economics	Berkeley

**Table 1 cont.**

Paul	Sabatier	Environmental Studies	Davis
Jean Daniel	Saphores	Planning	Irvine
Robert F.	Sawyer	Dept. of Mech. Engr.	Berkeley
Raja	Sengupta	CEE	Berkeley
Allen J.	Scott	Urban Planning	Los Angeles
Steven	Shladover	Deputy Dir., PATH-RFS Bldg. 452	Richmond
Donald C.	Shoup	Institute of Transportation Studies	Los Angeles
Alexander	Skabardonis	Department of Civil Engineering	Berkeley
Kenneth A.	Small	Dept. of Economics	Irvine
Michael	Southworth	City and Regional Planning	Berkeley
Robert C.	Spear	Public Health –EHS	Berkeley
Daniel	Sperling	Institute of Transportation Studies	Davis
Aaron	Steinfeld	PATH	Berkeley
Michael A.	Stoll	Policy Studies	Berkeley
Jayashankar	Swaminathan	Haas School of Business	Berkeley
Brian D.	Taylor	Urban Planning	Los Angeles
Thomas	Turrentine	UC Davis – ITS	Aptos
Karen	Valois	Psychology	Berkeley
Kurt	Van Dender	Economics	Irvine
Pravin	Varaiya	EECS - 271M Cory Hall	Berkeley
Steven A.	Velinsky	Mech. & Aero. Engineering, UC Davis	Davis
Martin	Wachs	Institute of Transportation Studies	Berkeley
Melvin	Webber	UC Transportation Center	Berkeley
Margaret	Weir	Sociology	Berkeley
Anthony	Wexler	Mech. & Aero. Engineering, UC Davis	Davis
Arthur	Winer	Public Health	Los Angeles
Candace	Yano	Chair, Ind. Engr. & Oper. Res. (IEOR)	Berkeley
Carol	Zabin	Center for Labor Research and Education	Berkeley
H. Michael	Zhang	Civ. & Environ. Engr.	Davis

## **Institutional Support**

The UCTC depends upon the support of several academic departments and research institutes for most of its day-to-day operations. The departments and research institutes manage education grants, fellowship funds and research grants, and contribute the office and laboratory space, instructional facilities, computational equipment, accounting services and other administrative support needed to carry out these programs and activities. Most of this support is provided without charge. In addition, the University provides administrative services, but does not charge overhead on the portion of funds used for fellowships. Since the creation of the Center, the University also has waived overhead on matching funds from Caltrans, recognizing that Caltrans funds UCTC's administration and that Caltrans does not control the research agenda. The University again waived overhead in the new Caltrans funding agreement for future years that was signed this summer. It is only because the UCTC can rely on these university resources, and on Caltrans' substantial support, that we are able to devote most of our funding to the direct costs of research, education, and technology transfer.

The University also provides resources in the form of access to data centers, computer facilities, and libraries. The University is a federal data repository and has developed extensive capabilities to support the efficient retrieval and analysis of information from a variety of sources. A US Census Center at UC Berkeley makes this important data source far more accessible. Our computer facilities include advanced software for modeling, analysis, and data display. A major resource is the University of California library system. We are especially proud of the Harmer E. Davis Library of the Institute of Transportation Studies at Berkeley, which houses one of the largest collections of transportation materials in the world and provides a wide range of support services to UCTC faculty and student researchers on all campuses. ITS also provides publicity for UCTC events.

Faculty members' time commitments to research projects are another highly valuable resource provided to the UCTC. Faculty members typically hold nine-month (academic year) appointments that are fully funded by the University. They are expected to spend a substantial portion of this University time on research. Consequently, UCTC faculty grant recipients typically devote a third or more of their time during the academic year to their research projects. The UCTC itself funds only a portion of their summer salaries. For the past several years we have limited faculty payment on UCTC research to one summer month as a way of stretching our dollars and compensating, in part, for the RABA reductions in federal funds (and consequent loss of part of our state matching funds.) The UC-funded time on research multiplies the UCTC's salary support for research by a factor of three or four. Likewise, students with fellowships from the University, from NSF, and from a variety of other sources often participate in UCTC projects without being paid with UCTC funds.

Participation in the governance of the UCTC is a second way that faculty time is donated. Indeed, the willingness of faculty members and others to provide these services is critical to the Center's mode of operation. Faculty members serve on the Executive Committee, on committees that review fellowship applications and dissertation grant proposals, and on ad hoc committees formed to develop conferences, workshops, and other outreach activities.

## **California University Transportation Centers Coordinating Committee**

Two other University Transportation Centers have been established in California, the Norman Y. Mineta International Institute for Transportation Policy Studies (the Mineta Center) at California State University, San Jose, and METRANS - the Center for Metropolitan Transportation Studies at the University of Southern California in Los Angeles. These two centers, like UCTC, receive matching

support from Caltrans. To coordinate our efforts, the Center Directors and key administrators meet together with Caltrans staff three times a year, with the meeting location rotating among campuses.

### **Other Partners**

UCTC benefits from the advice and participation of transportation professionals drawn from a variety of public and private organizations. Over 200 individuals outside the UC system are on our reviewer list and over one-third of them participated in reviews during the 2004-2005 grant cycle. About half of the reviewers are from other universities; 20 percent are from federal, state and regional agencies, and thirty percent are from the private sector.

In addition, UCTC has received funding from several private firms to help support conferences and workshops.

## **ACCOMPLISHMENTS: EDUCATION, RESEARCH, TECH TRANSFER**

### **Education Programs**

Formal programs and concentrations in transportation are offered by the Berkeley, Davis, Irvine, and UCLA campuses' civil engineering, city and regional planning, economics, and public policy departments. Additional courses with significant transportation content are offered in other departments at these universities and at other campuses of the UC system, including Riverside, Santa Barbara, and San Diego. Computer science, energy resources, environmental studies, management, geography, political science, law, economics, sociology, mechanical engineering, electrical engineering, chemical engineering, operations research, architecture, landscape architecture, and urban design now include transportation topics in one or more courses, reflecting the increased faculty interest in transportation largely generated by the UCTC.

As a research unit, the UCTC does not itself offer courses, admit students, hire faculty, or award degrees; instead, we provide support to the academic departments and units that do carry out these functions in the UC system. This support is available both as direct funding for courses and through research opportunities, as many students receive course credit for participation in UCTC-funded faculty projects.

Course support may be requested by any campus offering a transportation degree or specialization. Faculty applications for course support are reviewed and approved by the Director, and may be for specialty courses, the development of a new course intended to become part of the curriculum, or the refinement or significant update of an existing course. Funds were provided to UCLA for course refinements and to UC Berkeley as matching funds for an EPA grant supporting a special year-long studio on San Pablo Avenue, conducted in cooperation with California Assemblywoman Loni Hancock and mayors from 15 cities in the East Bay.

### *Graduate Programs*

Ten formal degree graduate programs or concentrations in transportation are now offered in the UC system, with three each at Berkeley, Davis and Irvine, and one at UCLA. The civil and environmental engineering departments at Berkeley, Davis, and Irvine offer transportation engineering degrees. Programs in transportation planning and policy are offered at Berkeley, Davis, Irvine, and UCLA, and a concurrent degree program in transportation engineering and planning is also offered at Berkeley. At

Irvine, the Department of Economics administers an interdisciplinary doctoral program in transportation science. Davis has established an interdisciplinary program in Transportation Technology and Policy. The campuses have slightly different program emphases. The Davis transportation engineering program provides a focus on energy and air quality, and Irvine and Davis both emphasize demand analysis and travel behavior. Irvine also has an especially strong program in transportation economics. The Berkeley transportation program has strong offerings in traffic operations, logistics, systems analysis, and transportation science; Berkeley also has extensive offerings in transportation, land use, and urban design. UCLA is developing a specialty in equity and the transportation needs of low-income communities. Santa Barbara expects to work on GIS applications and advanced modeling.

Each of the campuses continues to maintain and improve their transportation programs, and to add new course offerings and programmatic specialties as opportunities arise. At Berkeley, a new, interdisciplinary Metropolitan Studies program is getting started. Its faculty are from planning, engineering, energy resources, public health, landscape architecture, environmental sciences, agricultural resource economics, geography, political science and sociology. Transportation education will be a significant focus of this new initiative. The first faculty hire will be in the area of environmental planning and policy and the second in infrastructure systems. Four additional new faculty hires will take place over the next several years.

While the other UC campuses do not have formal transportation programs, several campuses do offer courses and research opportunities in transportation. In particular, both UC Santa Barbara and UC Riverside have added transportation content to degree programs and to courses over the past several years. Santa Barbara has made hiring decisions that will position the campus to begin a formal transportation program in the near future.

In the Berkeley, Davis, Irvine and Los Angeles graduate programs, 101 students received degrees in 2004-5. Additional students received substantial training in transportation at these campuses while earning degrees in related fields. Many students also were trained in transportation at the Riverside and Santa Barbara campuses.

#### *Undergraduate Education Programs*

UCTC funding for undergraduate education at the various campuses has continued to be focused on the development of new transportation courses. Undergraduate transportation courses offered with UCTC sponsorship have been well subscribed and well received, and have helped to spark interest in careers in transportation. A number of the undergraduates from these courses enroll in graduate transportation programs at UC or other top transportation programs.

During 2004-5, the UCTC supported the refinement of an undergraduate transportation planning course at Berkeley and provided assistance to student recruitment efforts on all the campuses. The Berkeley campus's new undergraduate urban studies major includes three transportation courses, each of which attracted 30+ students. UCTC Director Deakin taught the undergraduate course to a (nearly) overwhelming enrollment of 80 students this year.

#### *Continuing Education*

Transportation courses and other education and training opportunities are offered through the ITS Extension (which operates statewide) and the Extension programs of the various campuses. These courses reach transportation professionals and others who need a better understanding of transportation to effectively carry out their work in fields such as air quality planning and land use planning. UCTC

research is frequently included in short courses offered by the University Extension. The UCTC actively encourages researchers to participate in these activities and provides support for them to do so, to the extent that resources permit.

### *Fellowships*

US graduate students in the Berkeley, Davis, Irvine and UCLA transportation programs are eligible for UCTC fellowships, which provide support for university fees and living expenses and may be combined with part-time research appointments. Academic departments nominate the students on the basis of grades, test scores, letters of recommendation, and record of accomplishments. Students must demonstrate that they have an exceptional record and outstanding potential for a career in surface transportation to receive a UCTC fellowship. Overall fellowship funding is coordinated through the departments in accordance with University and departmental rules to assure an equitable distribution of financial support for top students, so that a student who is offered a transportation fellowship from another program is generally not awarded full UCTC funding.

In 2004-2005, the UCTC provided approximately \$470,000 in graduate student fellowships at the Berkeley, Davis, Irvine, and UCLA campuses. This accounted for about 25% of the total UCTC budget. In addition, 11 students won UCTC dissertation grants. Finally, under UC rules Graduate Student Researcher fees are covered as part of their research appointments. Taking all of these items together, total fellowship and fee funding amounted to 43% of total expenditures.

### *Graduate Student Researcher (GSR) Appointments*

UCTC funds have been set at approximately \$1 million (minus RABA reductions) in Federal funds and an equal dollar amount in state funds for 18 years now. Salaries and other research expenses have not been likewise fixed, so each year UCTC funds are stretched a little thinner and budget limitations must be imposed. For several years now, faculty research project support for graduate students have been limited to one 49% GSR during the academic year, with full time summer salary if funds allow.

Graduate student research appointments, not including transportation fellowship appointments, accounted for almost 25% (salaries, benefits) of the total UCTC budget in 2004-2005. Because projects were carried over from the previous year and some students worked less than half time, we were able to support 47 students as GSRs.

GSRs are considered to be junior colleagues of the principal investigator and other faculty participants and often play a major role in the actual conduct of the research. Graduate student contributions to research projects are acknowledged in any publication resulting from research funded in whole or in part by the Center. The acknowledgment can range from a footnote recognizing the student's participation and assistance to full co-authorship of reports and articles, depending upon the nature and extent of student contributions.

### *Doctoral Dissertation Grants*

Each year, the UCTC offers ten (occasionally, 11) doctoral dissertation grants of \$15,000 (plus indirect costs if applicable). Applicants must be students at the University of California and must be carrying out dissertation research on transportation topics consonant with UCTC's theme of systems analysis and policy. Applicants must have advanced to candidacy for the Ph.D. degree prior to the application deadline

and must submit a brief synopsis of their dissertation proposal for review, along with a curriculum vita, graduate school transcripts, and a letter of nomination from the student's principal academic advisor. The pool of applications is reviewed by a committee of faculty and/or recent PhDs from several UC campuses, appointed by the UCTC Director. Grants are awarded on the basis of reviewers' assessments of the originality and significance of the research topic, the applicant's overall record of academic and professional accomplishment, and the relevance of the research topic to current issues in transportation policy. Applications for the grants are due April 1 for funding the next fall, and November 1 for funding in the winter/spring term. The RFP for dissertation grants is maintained on the UCTC website, and notices of impending due dates are sent to faculty associates for distribution.

The dissertation grant abstracts are listed on our website along with faculty research projects and completed dissertations are published on the website as well. In 2004-5 grants went to five students at Berkeley, three at Davis, and one each at Irvine and Riverside.

### *Student of the Year*

Each year UCTC Executive Committee members choose a Student of the Year, who is awarded \$1000 plus costs to attend the award ceremony held during the annual meeting of the Transportation Research Board (TRB) in Washington, DC each January.

Noreen McDonald of UC Berkeley's Dept. of City and Regional Planning won the UCTC's student of the year award for 2004-2005. Noreen also was a UCTC doctoral dissertation grant winner, an Eisenhower Fellowship recipient, and a Robert Wood Johnson dissertation grant winner. She is now an assistant professor of city and regional planning at Virginia Tech.

### **Research Programs**

A substantial portion of the UCTC's work is devoted to the solicitation of research proposals, proposal review, selection of projects, and performance monitoring. In Year 1 we again maintained a high level of interest in our program, as indicated by the 33 faculty proposals and 30 PhD dissertation grant applications received. We were able to fund less than half of these proposals.

The research funded by the UCTC must respond to the Center's theme, transportation systems analysis and policy. The UCTC Director and Executive Committee annually review our research selection procedures to evaluate their objectivity and fairness, and make adjustments as appropriate. We also meet to discuss our theme and the scope and mix of the projects we are funding, and from time to time issue special calls for research on particular topics to improve the overall balance and policy relevance of the UCTC research program or to respond to particular concerns of the state DOT or MPOs.

The UCTC's success in research relies upon a carefully managed solicitation and project selection process, designed to support creative and innovative work on a variety of topics relevant to current and emerging policy needs, and to communicate our results to a broad audience. The process for dissertation research grants was described under the educational programs. For faculty research, the general procedure for project awards is as follows.

### *Research Solicitation Process*

UCTC makes research project awards either to individuals or to teams of researchers. The Principal Investigator must be a faculty member within the UC System; researchers from universities outside the University of California may be included through a subcontract with the PI's campus.

The UCTC request for proposals (RFP) is maintained on our website. About two months before proposals are due, we send an email notification to faculty members on our associates list as well as to deans, department heads, and research directors for circulation to their faculty. The deadline for faculty proposals for this grant cycle was March 15.

Each proposal must be prepared in two parts. Part A is a description of the proposed research. Part B includes the vita of the principal investigator, a summary of accomplishments from the applicant's recent UCTC research grants (if any) including a list of working papers and other publications produced, and a statement identifying any research funding from other organizations for work on the topic of the proposal. (Multiple sponsors are encouraged, as they expand the feasible scope of the research that can be supported with UCTC funds.) An itemized budget is also included in Part B. Proposals are submitted by email and reviews also are completed electronically.

Due to funding limitations, budget restrictions have been in place since 1999-2000. Summer salary for faculty is limited to one month and most projects are limited to one graduate student researcher or undergraduate intern for the academic year. Costs of supplies, postage, computer expenses, travel, etc. are limited to \$1500 unless additional, itemized expenses were justified as necessary for the conduct of the research. Secretarial and clerical support services are not allowed

The proposals received in response to the RFP for this grant cycle came from six UC campuses and 11 academic departments.

### *Proposal Review Process*

All faculty research proposals undergo confidential external review by transportation experts - university researchers and practicing professionals. The UCTC Director selects three or four persons to review each proposal; three completed reviews are required for each proposal. Additional reviewers are sought if those initially contacted are unable to complete their reviews in a timely fashion.

Reviewers are chosen based on their expertise with the subject matter of the proposal. A reviewer list of over 200 individuals is maintained and includes experts from universities, government (the US DOT, other federal agencies, Caltrans, other state agencies, regional agencies, local government), nonprofits (research groups, foundations) and private for-profit organizations. This year 86 individuals served as reviewers with 48 from universities, 2 from private firms, 11 from nonprofits, 11 from Caltrans and 13 from other government agencies.

External reviewers are asked to rate the proposals excellent, very good, good, fair, or poor and to consider the following in their written evaluations:

- Extent to which the proposed research is original or creative and an important intellectual contribution to transportation scholarship
- Extent to which this research will advance professional practice or inform public opinion
- Appropriateness of the research methodology to the research question
- Appropriateness and feasibility of the data collection plan.
- Any other issues the reviewer deems important.

The Director and staff review the staffing plan and budget for compliance with UCTC rules, and consider the reasonableness of any special budget requests (e.g., additional direct expenses such as travel costs, survey costs, testing, etc.)

### *Project Selection Process*

Reviews are compiled and sorted into three categories: Definitely Fund, Consider Funding, and Do Not Fund. For proposals ranked in the middle category, additional reviews are conducted by a panel of three outside experts, who advise the Director on the ranking of these proposals. The Executive Committee is then given a preliminary list of proposals to be funded. Executive Committee members comment on each PI's past performance on UCTC-funded projects (if any) and evaluate the overall fit of the proposed work to the UCTC theme. The UCTC Director then uses the reviews, the outside experts' recommendations, and the Executive Committee's comments in making the final selection of projects for funding. In making the final choices, the Director takes into account the desirability of continuing an ongoing research project into a second phase, versus initiating research on a new topic of importance.

The Director may require changes on some proposals, for example, to fund selected tasks only or to seek revisions in response to reviewers' comments. Further, the Director may provide "seed funding" to proposals in the middle-ranked category. These small grants allow a researcher to begin the investigation of the research topic and further develop the ideas and approach, with the possibility of applying for additional funds in later years.

As in previous years, we received more highly rated proposals than available funds could support. Our outside reviewers rated all but three of the proposals as very good or excellent. However, we were able to fund or partly fund only 17 of the most highly ranked proposals – only those ranked "excellent". (See the Research Status Reports section for descriptions of these projects and the work to date.)

### *Research Performance Tracking*

The UCTC Director and administrator monitor research performance through periodic progress reports as well as through informal communications with researchers. We expect UCTC-funded researchers to publish their results, and consider their publication record in any subsequent applications for UCTC funding. We also provide funding for researchers to present their work at conferences and symposia, reprint papers sponsored by UCTC, and publish research in the form of working papers, and final reports, web page postings, and ACCESS magazine articles.

Our success in producing innovative, policy-relevant results is demonstrated by their use in practice. We count the following among the indicators of the success of our transportation research:

- adoption of UCTC-developed analysis methods
- use of UCTC-developed databases
- appointment of UCTC researchers to important policy-making and advisory positions
- invitations for UCTC researchers to testify before elected and appointed officials
- requests for UCTC researchers to participate in meetings, briefings, and other collaborative activities and exchanges
- requests for UCTC researchers to provide technical assistance to government or the private sector
- changes in federal, state, regional and local transportation policies following recommendations based on UCTC research.

Our research results also have proven useful to other researchers in academia, government, and the private sector, both here and abroad, as evidenced by academic awards, citations in the literature, invitations to organize and participate in important conferences and meetings, requests for guest lectures, and other collaborative activities and exchanges. Faculty members testify before Congress and the State Legislature, advise regional planning agencies, and assist private firms in improving their practices, drawing in each case upon their UCTC research.

### *Technology Transfer*

The UCTC's technology transfer aims for the availability of research results in a form that a variety of users can readily apply. We view technology transfer as including publications, both on the web and in hard copy; continuing education offerings; conferences and symposia; policy advising and public service; and outreach efforts to business and community groups and the general public. Our ultimate objectives are to increase public understanding of transportation problems and opportunities for improvement, and to produce a cadre of skilled, creative, connected transportation professionals who will effectively address these problems and develop innovations and improvements.

The UCTC encourages its researchers to engage in a variety of public service and professional activities, through which they communicate UCTC-funded research findings to a broad audience. These activities include appointments to committees and boards of federal, state, regional, and local transportation agencies; provision of expert testimony and advice to the Congress, State Legislatures, and regional and local bodies; technical assistance to public and private transportation organizations; and public service on transportation and related matters. When needed, the UCTC provides travel expenses or other support to enable faculty to provide these public services.

Our faculty and students regularly are asked to advise government and the private sector. The UCTC also provides information on transportation to the general public. We do this through faculty engagement in lectures, symposia and other events designed to inform the general public and through exchanges with the popular press designed to help educate a broader audience on transportation issues. We put special emphasis on our publication of working papers and our twice-yearly ACCESS magazine as ways of communicating our research results.

### *Publications*

The UCTC considers publications to be a vital way to communicate our research findings. Each project funded by the UCTC ordinarily produces several papers and reports, which we disseminate both in hard copy and increasingly, on the Web. In addition, we produce the twice-yearly ACCESS Magazine, which summarizes UCTC-sponsored work in a style designed for a general audience.

Periodically we remind UCTC faculty affiliates to send us their papers produced in whole or in part with UCTC funding. In 2004-2005, our faculty associates added 27 publications to our list, bringing the total to 768 papers and reports. Table 2 lists the added publications. (For a full listing of publications, see the UCTC website.) In addition, we now list a dozen books and three videos produced with UCTC support. Graduate students also completed several dissertations funded with UCTC's assistance, we now list 118 dissertations completed with UCTC support.

We distribute UCTC publications free of charge, and also make reprints of UCTC-funded journal articles available. Approximately 800 requests for hard copies of papers and articles were filled in 2004-2005. Now that almost all UCTC publications are available over the web, and many copies of our papers

and reports are obtained electronically. We received 26,372 web hits this year; 125,186 papers and reports were downloaded. In addition, we have over 20,000 hard-copy subscribers to ACCESS magazine; and ACCESS articles were downloaded from the web 29,175 times.

### *Conferences and Symposia*

In addition to publishing all work supported by the Center, UCTC grant recipients are expected to participate in occasional UCTC-sponsored conferences and symposia, including the annual student conference sponsored by the UCTC. We expect UCTC researchers to give public lectures and seminars in the ongoing events series held at the four campuses, as well as in national and international meetings on transportation research and practice. Travel to conferences is supported as part of research grants, and additional travel grants are made on a case-by-case basis when funds are available.

Numerous UCTC affiliates participate each year in the annual meeting of the Transportation Research Board in Washington, DC. 40 faculty members and graduate students affiliated with UCTC presented 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.

UCTC has been a major sponsor of two permanent conferences, the annual Lake Arrowhead Conference on the Transportation/Land Use/ Air Quality Connection and the biennial Asilomar Conference on Transportation and Energy Policy. These conferences bring together policy makers and opinion leaders in retreat settings to discuss critical policy issues facing the region. They have been widely cited as effective and influential. Several important pieces of transportation legislation, such as the California Employer Parking Cashout legislation and efforts to incorporate remote sensing of vehicular air pollutants into ongoing state pollution control programs, originated from discussions that have taken place at these conferences.

UCTC also helps faculty members to organize special research conferences and events as opportunities arise. Symposia organized by the Institute of Urban and Regional Development at UC Berkeley and research seminars organized by the Institute of Transportation Studies at UC Davis attract elected officials and public and private agency leaders as well as academics.

The two major UCTC sponsored conferences in 2004-5 were:

### **Linking Goods Movement to Economic Prosperity and Environmental Quality," UCLA Public Policy Extension, Lake Arrowhead, CA, October 24-26, 2004.**

This year, the Lake Arrowhead Symposium on the Transportation-Land Use-Environment Connection addressed goods movement with an explicit focus on the connections to land use and the environment. UCTC faculty affiliates participated in the conference along with experts from Caltrans, the Air Resources Board, the Energy Commission, a number of MPOs - SCAG, MTC, SANBAG, SANDAG - and a number of representatives of city and county agencies, private firms, and nonprofit organizations. 10 elected officials also were active participants in the conference.

**UCTC Student Conference, Irvine, California, Feb. 4-5, 2005.**

The UCTC student conference is an annual event of growing importance to the transportation community at the various campuses. Students at the UC Berkeley, Davis, Irvine and UCLA campuses take turns organizing the conference, which includes student presentations and poster sessions and allows transportation students and faculty from all of the UC campuses to meet and interact. Caltrans representatives also attend the conference and meet with students there. Students from the Mineta and METRANS transportation centers are invited to participate as well.

This year's UCTC student research conference took place Feb. 4-5 and was hosted by UC Irvine. Organized by students whose work is supported by UCTC grants, it drew transportation graduate students from around California, including the four UC campuses with transportation programs (Berkeley, Davis, Irvine and Los Angeles) and the University of Southern California. Alan M. Pisarski, transportation consultant and author of *Commuting in America*, presented the keynote speech.

**Table 2. UCTC Publications, Year 17 – 2004-2005**

722	Cassidy, Michael J., and Soyoung Ahn	Driver Turn-Taking Behavior in Congested Freeway Merges	2004, Fall
723	Cassidy, Michael J., and Jittichai Rudjanakanoknad	Increasing Capacity of an Isolated Merge by Metering its On-Ramp	2004, Fall
724	Clay, Michael J., and Patricia L. Mokhtarian	Personal Travel Management: The Adoption and Consideration of Travel-Related Strategies	2004, Fall
725	Liggett, Robin, Anastasia Loukaitou-Sideris, and Hiroyuki Iseki	Protecting Against Transit Crime: The Importance of the Built Environment	2004, Fall
726	Lee, Taihyeong, and Patricia L. Mokhtarian	An Input-Output Analysis of the Relationships Between Communications and Travel for Industry	2004, Fall
727	Shoup, Donald C.	Eco Passes: An Evaluation of Employer-Based Transit Programs	2004, Fall
728	Shoup, Donald C.	The Ideal Source of Local Public Revenue	2004, Fall
729	Loukaitou-Sideris, Anastasia, and Robert Gottlieb	A Road as a Route and Place: The Evolution and Transformation of the Arroyo Seco Parkway	2005, Spring
730	Loukaitou-Sideris, Anastasia, and Robert Gottlieb	The Day that People Filled the Freeway: Re-Envisioning the Arroyo Seco Parkway, and the Urban Environment in Los Angeles	2005, Spring
731	Kuhn, Kenneth, and Samer Madanat	Robust Maintenance Policies in Asset Management	2005, Spring
732	Schwanen, Tim, and Patricia L. Mokhtarian	What Affects Commute Mode Choice: Neighborhood Physical Structure or Preferences Toward Neighborhoods?	2005, Spring
733	Ory, David T., and Patricia L. Mokhtarian	An Empirical Analysis of Causality in the Relationship between Telecommuting and Residential and Job Relocation	2005, Spring
734	Schwanen, Tim, Patricia L. Mokhtarian	What if You Live in the Wrong Neighborhood? The Impact of Residential Neighborhood Type Dissonance on Distance Traveled	2005, Spring
735	Donald Shoup	Parking on a Smart Campus: Lessons for Universities and Cities	2005, Spring
736	Innes, Judith E., and Judith Gruber	Planning Styles in Conflict: The Metropolitan Transportation Commission	2005, Summer
737	Crabbe, Amber E., Rachel Hiatt, Susan D. Poliwka, and Martin Wachs	Local Transportation Sales Taxes: California's Experiment in Transportation Finance	2005, Summer
738	Loukaitou-Sideris, Anastasia, Robin Liggett, Hyun-Gun Sung, Marcelle Boudreaux, and Rebecca Ratzkin	Death on the Crosswalk: A Study of Pedestrian-Automobile Collisions in Los Angeles	2005, Summer
739	Decker, Annie	The Effects of Land Use on the Mobility of Elderly and Disabled and Their Homecare Workers, and the Effects of Care on Client Mobility: Findings from Contra Costa, California	2005, Summer
740	Brown, Colby, Prashant Balepur, and Patricia L. Mokhtarian	Communication Chains: A Methodology for Assessing the Effects of the Internet on Communication and Travel	2005, Summer
741	Cao, Xinyu, and Patricia L. Mokhtarian	How do individuals adapt their personal travel? A conceptual exploration of the consideration of travel-related strategies	2005, Summer
742	Cao, Xinyu, and Patricia L. Mokhtarian	How do individuals adapt their personal travel? Objective and subjective influences on the consideration of travel-related strategies for San Francisco Bay Area commuters	2005, Summer
743	Cao, Xinyu, and Patricia L. Mokhtarian	The Intended and Actual Adoption of Online Purchasing: A Brief Review of Recent Literature	2005, Summer
744	Handy, Susan, Xinyu Cao, and Patricia L. Mokhtarian	Correlation or causality between the built environment and travel behavior? Evidence from Northern California	2005, Summer
745	Ory, David T., and Patricia L. Mokhtarian	Modeling the Joint Labor-Commute Engagement Decisions of San Francisco Bay Area Residents	2005, Summer
746	Ory, David T., and Patricia L. Mokhtarian	Don't Work, Work at Home, or Commute? Discrete Choice Models of the Decision for San Francisco Bay Area Residents	2005, Summer
747	Pagès, Laia, R. Jayakrishnan, and Cristián E. Cortés	Real-Time Mass Passenger Transport Network Optimization Problems	2005, Summer
748	Jayakrishnan, R., and Laia Pagès	Mass Transport Vehicle Routing Problem (MTVRP) and the Associated Network Design Problem (MTNDP)	2005, Summer

## **RESEARCH PROJECT STATUS**

Twenty-three faculty research projects have been underway – 16 projects carried over from Year 16 and 17 new projects funded in Year 17. UCTC projects are funded by one year grants that can be extended upon request of the Principal Investigator for a second year. Most commonly, extensions are requested when funding reaches the UC campus after the school term has already begun, making it difficult to arrange student appointments until the following term. That has been the case for the last several years because of late or two-phase receipt of funding.

Eleven of the 16 projects carried over from Year 16 were completed this year. However, five required additional extensions because of late receipt of data or other delays, mostly related to the lateness of funding of these projects in Year 16. Further, because of late receipt of funds, all but one of the Year 17 projects were extended for a second year and are continuing in 2005-2006.

Table 3 lists the Year 16 (2003-4) projects completed this year or continuing into 2005-6. Table 4 lists the projects awarded this year (2004-5) and their status. Following the tables are project status reports for all of the faculty research projects underway at UCTC in 2004-5. The reports cover performance through July 31, 2005.

**Table 3. Year 16 (2003-2004) Research Projects**

**A - Completed in Year 17 (2004-5) (4 Projects)**

<b>Principal Investigator</b>	<b>Campus</b>	<b>Research Project Title</b>
Anastasia Loukaitou-Sideris	Los Angeles	Death on the Crosswalk: A Study of Pedestrian Accidents in Los Angeles:
Patricia Mokhtarian	Davis	Aggregate Structural Equations Modeling of the Relationships Between Consumer Expenditures on Communications and on Travel
Kurt Van Dender	Irvine	Capacity Provision and Pricing in Road Transport Networks in an Imperfectly Competitive Economy

**B - Extended into Year 18 (2005-6) (5 projects)**

<b>Principal Investigator</b>	<b>Campus</b>	<b>Research Project Title</b>
Ted Cohen	Berkeley	Amber Alert Policy: Laboratory Experiments
Robert Johnston	Davis	Improved Developer Models for the Sacramento Region
Amelia Regan	Irvine	Auctions for the Procurement of Transportation Service Contracts
Alexander Skabardonis	Berkeley	Identification and Measurement of Freeway Congestion
Margaret Weir	Berkeley	Transportation Policy Development: Labor as a Missing Stakeholder

**Table 4. Year 17 (2004-2005) Research Projects**

**A. Completed in 2005**

<b>Principal Investigator</b>	<b>Campus</b>	<b>Research Project Title</b>
Recker, Wilfred	Irvine	Similarity Analysis for Estimation of an Activity-based Travel Demand Model

**B. Extended to 7/31/06**

<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	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	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
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

## PROJECT STATUS REPORTS

### Status Reports - Year 16 (2003-2004) Projects Completed in Year 17 (2004-5) – 5 Projects

#### Experiments to Increase Freeway Merge Capacity

**Principal Investigator:**

Michael Cassidy  
UC Berkeley

**Email:** [cassidy@ce.berkeley.edu](mailto:cassidy@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:** Ramp metering strategies that increase the capacity of a freeway/on-ramp merge will be designed and experimentally tested. To these ends, we will build upon some preliminary studies of a merge in San Diego, California. Observations indicate that vehicle slowing and lane-changing maneuvers can diminish the capacity of this merge by 8 to 10 percent. The observations further show that these deleterious slowing and lane-changing effects occur when inflows to the merge (from the on-ramp and/or from the freeway) become too high. The research will explore how onramp metering might mitigate these deleterious effects. In this way, we expect to establish traffic management policies that reduce overall commuter delay at the merge. Further, the work will set the stage for future efforts to develop delay-saving policies that do not merely favor the major traffic stream (the freeway) to the detriment of the other (the on-ramp), but instead involve the management of both inflow streams in a more equitable manner. The work should also advance the theory of traffic flow at merges.

**Key Words:** freeway capacity, ramp metering, merges

**Objective:** develop strategies for managing merges on freeways

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

**Milestones, Dates:** Official start date Aug. 1, 2003, 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 traffic management strategies

**Work Completed to Date:** Completed Project

**Papers to Date:**

Cassidy, Michael J., and S. Ahn, Driver Turn-Taking Behavior in Congested Freeway Merges, UCTC Report 722

Cassidy, Michael J., and Ji, Rudjanakanoknad, Increasing Capacity of an Isolated Merge by Metering its On-Ramp, UCTC Report 723

**Conferences Attended:**

Transportation Research Board Annual Meeting, 2004, 2005

**Other Accomplishments:**

None to date

**Percent Complete:** 100%

**Direct Cost:** \$54,034

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

### **Principal Investigator:**

Anastasia Loukaitou-Sideris  
UC Los Angeles

**Email:** [loukaitou-sideris@ucla.edu](mailto:loukaitou-sideris@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 spatial distribution of pedestrian-automobile accidents in Los Angeles and analyzes the social and physical factors that affect the risk of getting involved in such accidents. The study investigates the influence of socio-demographic characteristics as well as the design of urban form on pedestrian accident rates, at the macro and micro level. We present an exploratory spatial and statistical analysis of pedestrian collision data in Los Angeles County and identify preliminary relationships between accident frequency and socio-demographic and land use characteristics of census tracts, identifying major concentrations (regional clusters) of pedestrian collisions. We conduct detailed quantitative analysis of specific intersections with high frequency of pedestrian-automobile accidents, using 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. **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, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

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

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

**Potential Benefits:** improve pedestrian safety

**Work Completed to Date:** Completed project

### **Papers to Date:**

Loukaitou-Sideris, Anastasia, R. Liggett, H. Sung, M. Boudreaux, and R. Ratzkin, Death on the Crosswalk: A Study of Pedestrian-Automobile Collisions in Los Angeles, UCTC Report 738

### **Conferences Attended:**

Transportation Research Board Annual Meeting, 2004, 2005

### **Other Accomplishments:**

None to date

**Percent Complete:** 100%

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

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

### **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:** 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 recent UCTC study replicates the Plaut industry analysis on US data, extending it across 1947-1997. This study applies the S&S consumer analysis to US data, and extends it to 2000. Taken together, the two studies provide complementary evidence on aggregate relationships between communications and travel for industry and consumers, controlling for spatial and temporal factors. The study also provides indications (through comparison to the S&S study) of how those relationships might be changing with advances in communication technology.

**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, end July 31, 2005

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications are being 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:** better understanding of the role of telecommunications in travel substitution, travel growth

**Work Completed to Date:** Work completed

### **Papers to Date:**

Lee, Taihyeong, and Patricia L. Mokhtarian, An Input-Output Analysis of the Relationships Between Communications and Travel for Industry , UCTC Report 726

### **Conferences Attended:**

Transportation Research Board Annual Meeting, 2004, 2005

### **Other Accomplishments:**

None

**Percent Complete:** 100%

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

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

### Principal Investigator:

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**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: a trip is undertaken for one or more purposes, and the prices related to these purposes are competitive. Thus a commute trip is undertaken to earn a competitive wage, and a shopping trip to pay a 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 assumption of perfect competition is not realistic and is at odds with developments in mainstream economics, where imperfect competition models have become the rule because of their higher degree of realism. 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. The work shows that congestion itself generates non-competitive market results. Empirical evidence is sought in order to determine which of the available models best approximates real conditions. Models will be constructed 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, prepare models, prepare reports.

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

**Student Involvement:** Graduate Student Researcher

**Technology Transfer Activities:** Publications are being 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:** more realistic models and estimates of the effects of pricing policies

**Work Completed to Date:** Project completed

### Papers to Date:

Van Dender, K., Duopoly Prices under Congested Access, UCTC Report 749

De Borger, B. and K. Van Dender, Prices, Capacity, and Service Quality in a Congested Bertrand Duopoly, UCTC Report 750

### Conferences Attended:

None

### Other Accomplishments:

None

**Percent Complete:** 100%

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

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

### **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 transportation research literature has noted 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 will 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 will comprise individuals in low-income brackets who provide care to an elderly family member. Finally, 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 our two communities. The relationship between land-use characteristics and travel remains an important question in the literature and practice.

**Key Words:** informal 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, 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:** more effective transportation policies and services for elderly adults

**Work Completed to Date:** Project completed

### **Papers to Date:**

Decker, A. & Wachs, M., The Effects of Land Use on the Mobility of Elderly and Disabled and their Home Care Workers, and the Effects of Care on Client Mobility.: Findings from Contra Costa CA, UCTC Report 757

### **Conferences Attended:**

Lake Arrowhead Conf, 2003,2004, 2005, TRB Annual Mtg. ,2003, 2004, 2005, ACSP Conf. 2003, 2004

### **Other Accomplishments:**

None

**Percent Complete:** 100%

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

## Status Reports: Year 16 (2003-4) Projects Extended to 7/31/2006: 5 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 conduct 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 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, end July 31, 2006

**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:** 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, designed the experiment, and begun its administration

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 90%

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

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

### **Principal Investigator:**

Robert Johnston

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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 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, end July 31, 2006

**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-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 have begun model design and specification as well as data assembly.

**Papers to Date:**

None to date

**Conferences Attended:**

Transportation Research Board Annual Meeting, 2004, 2005

**Other Accomplishments:**

None to date

**Percent Complete:** 90%

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

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

### **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:** 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, end July 31, 2006

**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:** 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. Model building is underway.

**Papers to Date:**

None to date

**Conferences Attended:**

Transportation Research Board Annual Meeting, 2004, 2005

**Other Accomplishments:**

None to date

**Percent Complete:** 90%

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

## Identification and Measurement of Freeway Congestion

### 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 objective of this 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 methodology calculates the average and the probability distribution of congestion delays by cause (recurrent, incident related, weather and other factors). The methodology also quantifies the congestion impacts on travel time and travel time variability. The 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, end July 31, 2006

**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 congestion management and delay estimation

**Work Completed to Date:** Data have been assembled and exploratory analyses have been conducted. Additional data sets and case studies are under development.

**Papers to Date:**

None to date

**Conferences Attended:**

Transportation Research Board Annual Meeting, 2004, 2005

**Other Accomplishments:**

None to date

**Percent Complete:** 90%

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

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

### **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:** 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 is 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:** new project

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

**Work Completed to Date:** The literature review and site visits are completed. Data are being analyzed.

**Papers to Date:** None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 70%

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

## Status Reports – Year 17 (2004-2005): Completed Projects (1)

### 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 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 employs 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 is 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 are being 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 establishes a mechanism for consistent estimation of the household activity scheduling problem.

**Work Completed to Date:** Project completed

**Papers to Date:**

Recker, W. W., Development of an Estimation Procedure for an Activity Based Travel Demand Model, UCTC Report No. Pending

**Conferences Attended:**

Transportation Research Board Conference 2005

**Other Accomplishments:**

None

**Percent Complete:** 100%

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

## Year 17 (2004-5) Projects Continuing in Year 18 (2005-2006) – 16 projects

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

#### **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 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 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 to our understanding of how mobility influences metropolitan residents' knowledge and perceptions of opportunities, goods, and services.

**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, 2006

**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 have begun our analyses.

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 50%

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

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

### **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:** Jobs-housing balance is 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 examines “housing-retail” balance as a potentially more effective land-use management strategy. Two hypotheses are 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 are used to determine 24-hour shop trip incidences, vehicle miles, and durations. Isochronic measures of retail accessibility and housing-retail diversity indices are measured using 2000 CTPP Part 2 based on two-digit retail job occupational codes. 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 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 yields motorized-travel-conserving and physical activity benefits, especially in relation to the strategy of jobs-housing balance.

**Tasks:** Compile travel data 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 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; analyze case findings; examine public policy considerations that are informed by the research results; prepare research report

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2006

**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 effects of of retail-housing balance to identify new policy options

**Work Completed to Date:** We have reviewed previous work on the topic, have assembled data, and have begun analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 60%

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

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

### **Principal Investigator:**

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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, 5. Final Report

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2006

**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:** 60%

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

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

### **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 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 gives the transport researchers a unique research means to identify the temporal-spatial decision making structure embedded in activity scheduling and study the linkage between activity decision-making and associated actual activity execution. This research will 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; identify a unified conceptual ontology to explore and explain the dynamics and interaction of activity scheduling and execution, and 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, 2006

**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 (missed by surveys and post-hoc interviews)

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

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 40%

**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

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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 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:** better process for identifying projects that improve 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

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2006

**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 have begun data assembly and analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 60%

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

## The Davis Bicycle Studies

### 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:** 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, 2006

**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:** 30% (started 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 critique past studies of the Spatial Mismatch Hypothesis and then apply three structural equations models to data for the Sacramento, California region. We estimate both cross-sectional and dynamic models and 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, 2006

**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 have critiqued it. We have begun model specification and estimation.

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 60%

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

## Street Trees and Intersection Safety

### Principal Investigator:

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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 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 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 investigates standards in California communities to see how they interpret engineering guidelines on tree placement at intersections, and uses new three-dimensional computer modeling, drive through animation techniques, and Geographic Information Systems tools to model and analyze a variety of typical urban intersections. We conduct controlled experiments to ascertain what drivers notice at intersections.

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

**Objective:** 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; 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. 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. 5: Conduct controlled experiments in which participants view the drive-through simulations and indicate when they notice approaching cars; analyze the data. 6: Gather accident data for the city of Oakland, CA, and analyze correlation between high accident rates and intersection street trees. 7: Prepare a final report

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2006

**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:** Better policies on street trees at intersections; better methods for studying the topic.

**Work Completed to Date:** We have reviewed previous work on the topic, assembled data, and begun to develop simulations.

**Papers to Date:**

None to date

**Conferences Attended:**

None to date

**Other Accomplishments:**

None to date

**Percent Complete:** 60%

**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, 2006

**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 have done most data assembly; analysis is underway.

**Papers to Date:**

None to date

**Conferences Attended:**

TRB 2005

**Other Accomplishments:**

None to date

**Percent Complete:** 60%

**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, 2006

**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:** 60%

**Direct Cost:** \$81,379

## **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, 2006

**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:** 60%

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

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

### **Principal Investigator:**

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UC Los Angeles

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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 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. This 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:** Assemble data, analyze the data, write up the results..

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2006

**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:** 60%

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

## 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, 2006

**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:** 60%

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

## **Cruising for Parking**

### **Principal Investigator:**

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UC Los Angeles

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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 curbside parking is cheaper than off-street parking but all curbside spaces are occupied, drivers who want to park their cars are presented with a choice: they can spend time cruising for curbside parking or spend money to park off-street. Since curbside parking is under priced, drivers have an incentive to search for curbside 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 curbside parking. We will measure the time it takes to find a curbside 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 curbside parking. To accomplish these objectives, we will examine the following: 1) the average cruising time before finding a vacant curbside space, 2) driver's strategies in cruising for parking 3) the average parking duration at curbside 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 curbside parking.

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

**Objective:** To quantify the effect of under priced curbside 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, 2006

**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 curbside parking

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

**Papers to Date:**

None to date

**Conferences Attended:**

Lake Arrowhead 2004, TRB 2005

**Other Accomplishments:**

None to date

**Percent Complete:** 60%

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

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

### **Principal Investigator:**

Michael Stoll

UC Los Angeles

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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 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. Here we 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 study uses multivariate econometric models to test these hypotheses, after accounting for other relevant factors. The analysis examines 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 report

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2006

**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:** 60%

**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 data available previously. This study uses the NHTS 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:** study how vehicle fuel prices and household fuel expenditures affect household transportation choices and costs and identify policy implications

**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; 4. discussion of policy alternatives, including a motor fuel tax increase, and effects on fuel consumption, vehicle acquisitions and travel among California households.

**Milestones, Dates:** Official start date Aug. 1, 2004, end July 31, 2006

**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, assembled the data, and begun our analysis.

**Papers to Date:**

None to date

**Conferences Attended:**

Lake Arrowhead 2004, TRB 2005

**Other Accomplishments:**

None to date

**Percent Complete:** 55%

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

**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. Occasionally funds are not fully expended in the year they are allocated, and in such cases the funds 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 program allotments commit all funds approved by USDOT and Caltrans at the start of the grant cycle. Table 5 shows the allocations for 2004-2005

**Table 5. University of California Transportation Center 2004-2005 (Year 17) Allocations**

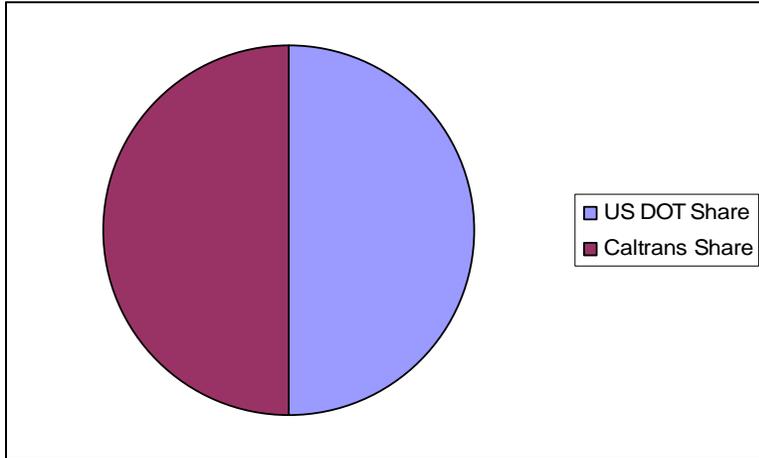
**UCTC BUDGET FOR 2004-2005**  
**\$952,000 FEDERAL FUNDS PLUS \$952,000 MATCH FROM**  
**CALTRANS (REVISED AMOUNTS)**  
 University Transportation Centers Program  
 Grantee: University of California  
 Grant Year: Aug. 1, 2004 - July 31, 2005 (Year 17)

ITEM	BUDGET	PERCENT
Center Director Salary	72,043	4%
Faculty Salaries	21,517	1%
Administrative Staff Salaries	96,200	5%
Other Staff Salaries	76,000	4%
Student Salaries	416,186	22%
Staff Benefits	62,792	3%
SUBTOTAL SALARIES AND BENEFITS	744,738	39%
Scholarships (incl. req'd in-state fees)	818,348	43%
Permanent Equipment	5,000	0%
Expendable Property & Supplies	47,800	3%
Domestic Travel	40,784	2%
Foreign Travel	6,000	0%
Other Direct Costs (Specify)	138,000	7%
TOTAL DIRECT COSTS	1,800,670	95%
Facilities & Admin. (Indirect) Costs	103,330	5%
<b>TOTAL COSTS</b>	<b>1,904,000</b>	<b>100%</b>
Federal Share	952,000	50%
Matching Share	952,000	50%
<b>TOTAL AVAILABLE FUNDS YR. 17 (REVISED)</b>	<b>1,904,000</b>	<b>100%</b>

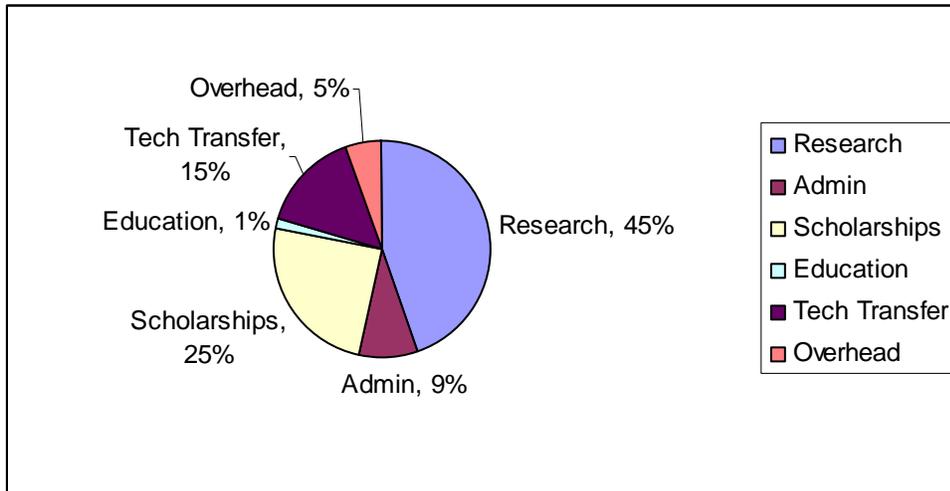
### C. FUNDING SOURCES AND EXPENDITURES

Revenues for UCTC came in equal amounts from US DOT and Caltrans. Expenditures were made in accordance with the submitted budget. All funds were allocated to budgeted categories during 2004-2005.

Figure 1 illustrates revenues and Figure 2 illustrates direct expenditures (committed amounts by allocation category) for UCTC in 2004-2005 (Year 17).



**Figure 1. UCTC Revenues, Year 17 (2004-2005)**



**Figure 2. UCTC Expenditure Allocations, Year 17 (2004-2005)**

## **APPENDIX 1. GLOSSARY**

ACCESS - the research magazine published by the University of California  
CAD- computer-aided design  
CALTRANS- the California Department of Transportation  
CMA- Congestion Management Agency, special-purpose county-level organizations in California  
CUTC - Council of University Transportation Centers  
EPA- the Environmental Protection Agency  
FHWA- the Federal Highway Administration of the US Department of Transportation  
FTA- the Federal Transit Administration of the US Department of Transportation  
FTE- full-time equivalent (a measure of staffing levels)  
GIS- geographic information science / geographic information systems  
GSR- graduate student researcher  
IGS- the Institute of Governmental Studies at UC Berkeley  
IITPS- the Norman Y. Mineta International Institute for Transportation Policy Studies at San Jose State University  
ISTEA- the Intermodal Surface Transportation Efficiency Act  
ITS - the Institute of Transportation Studies at the UC Berkeley, UC Davis, UC Irvine, and UCLA  
IURD - the Institute of Urban and Regional Development at UC Berkeley  
METTRANS- the Center for Metropolitan Transportation Studies at the University of Southern California  
MPO- Metropolitan Planning Organization  
NSF- National Science Foundation  
OECD- the Organization for Economic Cooperation and Development  
PATH- Program for Advanced Transit and Highways  
PI- Principal Investigator  
TEA 21- the Transportation Efficiency Act for the 21st Century  
TRB- the Transportation Research Board  
UC- the University of California, a nine-campus public institution  
UC BERKELEY- the Berkeley campus of the University of California  
UC DAVIS- the Davis campus of the University of California  
UC IRVINE- the Irvine campus of the University of California  
UCLA- the Los Angeles campus of the University of California  
UCTC- the University of California Transportation Center  
USC - the University of Southern California, a private university  
US DOT- the US Department of Transportation  
UTC Program- the University Transportation Centers Program

## **APPENDIX 2. PROJECTS COMPLETED SINCE START OF CURRENT FEDERAL GRANT AND REPORTED PREVIOUSLY**

(UCTC Years 12 - 17– 73 Projects)

### **YEAR 12 (1999-2000) COMPLETED 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

**YEAR 13 (2000-2001) COMPLETED 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, ITS, UC Irvine

**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) COMPLETED RESEARCH PROJECTS (15 PROJECTS)**

**How Does Travel Behavior Change When Households Change Jobs?**  
William Clark, Geography, UCLA

**Design of Vehicle Routes and Driver Shifts for Systems with Uncertain Demand**  
Carlos Daganzo, Civil and Environmental Engineering, UC Berkeley

**Effect of Driving Mode on Light-Duty Vehicle Emissions Measured On-Road**  
Robert Harley, Civil and Environmental Engineering, UC Berkeley

**Using the Spatial Configuration of Cities to Estimate The Impact of Commuting Time on Hours of Work**  
Antonio Bento, Geography, UC Santa Barbara

**Evaluation of the California Safe Routes to School Program**  
Marlon Boarnet and Kristen Day, City and Regional Planning, 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, City and Regional Planning, UC Berkeley

**Real-time Travel Data Collection System Augmented with Speech Interface**  
Reginald Golledge, Geography, UC Santa Barbara

**Life -Cycle Environmental and Economic Assessment of Using Recycled Materials for Asphalt Pavements**  
Arpad Horvath, Civil and Environmental Engineering, UC Berkeley

**Reinforcement Learning in Transportation Infrastructure Management**  
Samer Madanat, Civil and Environmental Engineering, UC Berkeley

**Dissonance between Desired and Current Residential Neighborhood Type: Relationships to Travel-Related Attitudes and Behavior**  
Patricia Mokhtarian and Ilan Salomon, ITS, UC Davis

**Optimal Control Policies for Urban Corridor Management**

Wilfred Recker, ITS, UC Irvine

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

Jean Daniel Saphores, ITS, UC Irvine

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

Anastasia Loukaitou-Sideris, Urban Planning, UCLA

**Equity and Environmental Justice in Transportation**

Martin Wachs, ITS, UC Berkeley

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

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

Marlon Boarnet, Kristen Day, and Craig Anderson, City and Regional Planning, UC Irvine

**Verifying Regularities in Queued Freeway Traffic**

Michael Cassidy, Civil and Environmental Engineering, UC Berkeley

**Commuter Rail, Land Use and Travel Behavior**

Robert Cervero, City and Regional Planning, UC Berkeley

**Comparing White and Minority Household Commuter Behavior**

William Clark, Geography, UC Berkeley

**Storage System Dynamics and Management Policies**

Carlos Daganzo, Civil and Environmental Engineering, UC Berkeley

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

Karen K. De Valois, Psychology, UC Berkeley

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

Thomas Golob and Amelia Regan, ITS, UC Irvine

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

R. Jayakrishnan, ITS, UC Irvine

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

Samer Madanat, Civil and Environmental Engineering, UC Berkeley

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

Michael McNally, ITS, UC Irvine

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

Patricia Mokhtarian, Civil and Environmental Engineering, UC Davis

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

Paul Ong, Urban Planning, UCLA

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

John Quigley and Stephen Rafael, Public Policy, UC Berkeley

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

Donald Shoup, Urban Planning, UCLA

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

Brian Taylor, Urban Planning, UCLA, and Martin Wachs, ITS, UC Berkeley

Exploring the Marketability of Fuel-Cell Electric Vehicles

Thomas Turrentine, ITS, UC Davis

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

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

**YEAR 16 (2003-2004) COMPLETED RESEARCH PROJECTS (5 PROJECTS)**

**Experiments to Increase Freeway Merge Capacity**

Michael Cassidy, Civil and Environmental Engineering, UC Berkeley

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

Anastasia Loukaitou-Sideris, Urban Planning, UCLA

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

Patricia Mokhtarian, ITS, UC Davis

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

Kurt Van Dender, ITS, UC Irvine

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

Martin Wachs and Annie Decker, ITS, UC Berkeley

**YEAR 17 (2005-2006) COMPLETED RESEARCH PROJECTS (1 PROJECT)**

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

Will Recker, ITS, UC Irvine

**Appendix 3. PROJECTS CONTINUING IN 2005-2006 (21 PROJECTS)**

**-- STARTED YEAR 16 , CONTINUING YEAR 18 (5 PROJECTS)**

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

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

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

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

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

**-- STARTED YEAR 17, CONTINUING YEAR 18 ( 16 PROJECTS)**

**Auto-mobility, Spatial Isolation, and the Poor**  
Evelyn Blumenberg, Urban Planning, UC Los Angeles

**Housing-Retail Balance, Travel Demand, and Physical Activity**  
Robert Cervero, City and Regional Planning, UC Berkeley

**Transaction-Cost Economic Analysis of Institutional Change toward Design-Build Contracts for Public Transportation**  
David Dowall, Institute of Urban and Regional Development, UC Berkeley

**Activity-Oriented Scheduling/Activity Survey and Analysis Via a Unified Real-time Data Collection Framework**  
Reginald Golledge, Geography ,UC Santa Barbara

**Wet Pavement Accidents on California Highways: Causes, Concentrations, and Potential Means for Reduction**  
Thomas Golob, ITS, UC Irvine

**The UC Davis Bicycle Studies**  
Susan Handy, Transportation Technology and Policy, UC Davis

**Testing Spatial Mismatch: A Structural Equations Modeling Approach**  
Robert Johnston, Environmental Sciences, UC Davis

**Street Trees and Intersection Safety**  
Elizabeth Macdonald, City and Regional Planning, UC Berkeley

**Robust Optimal Maintenance and Rehabilitation Policies in Asset Management**  
Samer Madanat, ITS, UC Berkeley

**Modeling the Adoption of Teleshopping**

Patricia Mokhtarian, Civil and Environmental Engineering, UC Davis

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

Debbie Niemeier, Civil and Environmental Engineering, UC Davis

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

Paul Ong, Urban Studies, UC Los Angeles

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

Amelia Regan, ITS, UC Irvine

**Cruising for Parking**

Donald Shoup, Urban Studies, UC Los Angeles

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

Michael Stoll, Urban Studies, UC Los Angeles

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

Martin Wachs, ITS, UC Berkeley