



Year 18 (2005-2006)
Annual Report
For the
University of California Transportation Center

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ANNUAL REPORT

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University Transportation Centers Program
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OUR EIGHTEENTH YEAR: A RENEWED CENTER

The University of California Transportation Center (UCTC) is a multi-campus organization headquartered on the UC Berkeley campus. We carry out basic and applied research, publish it in journals and on the web, organize conferences and workshops to discuss our findings, work with international, national, state, regional and local agencies and private organizations to put our research into practice, offer fellowships to entice the best students into careers in transportation, support education programs of UC academic departments offering transportation degrees, and publish a magazine designed to communicate our work to a broad nontechnical audience. We are funded by the US Department of Transportation and the California Department of Transportation.

2005-6 was UCTC's 18th year as the Federal Region 9 University Transportation Center (UTC). As in previous years, our federal funding was matched by the California Department of Transportation (Caltrans), and the University waived overhead on the Caltrans portion of the funding. However, in a welcome departure from the last several years, when budget uncertainties necessitated severe austerities, in 2005-6 we were able to develop our program for the year and fund it – thanks to Congressional action reauthorizing the surface transportation program in SAFETEA-LU, which renewed and expanded the UTC program.

With the new legislation came several changes. First, another competition for designation as a regional UTC was set in motion. In June 2006, we submitted a proposal to the US Department of Transportation's Research and Innovative Technology Administration, requesting that UCTC again be designated the Region 9 UTC. In support of our application, Caltrans agreed to renew our grant that matches our federal funding dollar for dollar, and the University pledged to continue the overhead waiver on Caltrans funds. During the summer, we received excellent news: we again had been selected to serve as the Region 9 UTC. Under the new program the authorized funding doubles, restoring the Regional UTC's funding, in real terms, to nearly its original level.

As I write this report, we are in the process of renewing our Caltrans grant for the period ending in 2011. Once the new Caltrans agreement is in place, we will finally be able to fill staff positions left vacated for the past several years due to budget uncertainties, and to fund our most highly rated research proposals in the full amounts requested.

One large change has taken place due to SAFETEA-LU: the legislation included an earmark for UC Davis to receive a Tier 2 UTC. With its own Center, UC Davis will now fund its own research, fellowships, and educational events. This is therefore the last year that UC Davis will be included in UCTC research projects and other grants. However, Davis faculty and students will remain part of the UCTC community and will continue to participate in UCTC activities such as the annual student conference.

Fellowship, educational support, and tech transfer funds that would have gone to Davis will now be shared by two other campuses with new and growing transportation programs, UC Santa Barbara and UC Riverside. UCTC will continue to fund research on a competitive basis and faculty members from any of the nine campuses excluding UC Davis may apply.

The faculty of UC joins me in thanking USDOT and Caltrans for their continued support of our work. We are committed to continuing our search for improved transportation services, more cost-effective and efficient project delivery, better transportation - environmental performance, and 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. Equally importantly, UCTC's funding attracts the best and the brightest into transportation, helping us produce the leaders of the future.

-- Elizabeth Deakin

UCTC VISION AND THEME

Vision

UCTC's vision is excellence in transportation education, excellence in transportation research, and a vibrant network of transportation professionals who will put their education and research findings into practice. We recognize that the State of California, Region 9, and the nation face important transportation challenges, among them:

- adjusting transportation services to respond to changes in demographics and activity patterns and changing resource costs and prices
- introducing and accommodating new technologies
- managing our extensive transportation systems more efficiently
- improving the safety and security of transportation systems
- improving intermodal connections
- providing high quality freight transportation in the face of shifting patterns of production, consumption, and costs
- more effectively assessing, communicating, and managing the social, economic, and environmental consequences of transportation programs and projects
- reducing unwanted effects of transportation including congestion, pollution, and global warming
- improving the equity of transportation programs and projects
- assuring that the public health effects of transportation are positive
- moving toward sustainable transportation and land use
- designing better processes for the involvement of diverse public and private interests in transportation planning, decision making and deployment
- developing efficient and equitable mechanisms for transportation finance.

We believe these challenges confronting the transportation sector must be addressed through creative research, development, and deployment, education and tech transfer, all under a broadly scoped but strategically organized research agenda, or theme, that can make our vision a reality.

Theme

UTCs are asked to identify a "theme". UCTC's theme is *transportation systems analysis and policy*. This theme is at once broadly scoped and strategically focused, allowing us to conduct research that addresses the variety of challenges facing our nation, region and state and find ways to promote effective implementation, while complementing rather than duplicating other technology-oriented programs at UC such as PATH and the UC Pavement Center.

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.

OVERVIEW OF UCTC ACTIVITIES

In accordance with federal UTC program requirements, UCTC carries out an active program of research, educational support, and tech transfer – all made possible by strong institutional support from Caltrans and the University of California as well as USDOT.

Research

Research is a major focus of UCTC's activities. All UCTC research grants are awarded through a process that is framed by our theme of systems analysis and policy and guided by specific research priorities called out from time to time by the Executive Committee and our sponsors. Project selection relies on outside peer review. Project selection is highly competitive, as we usually can fund less than half the research proposals that we receive. To handle the difficult process of choosing new projects, we conduct a double-blind review of all proposals, and then appoint a panel of outside experts who serve much the same function as an editorial board, evaluating the reviews and advising the Director on the projects that appear most worthy of funding. The Director makes the final choices of projects. This process is a major undertaking, but we believe that it produces the best quality research possible.

Our usual procedure is to provide one year research grants with a report due at the end of the year. Multi-year projects can be proposed but must be structured to produce a publishable report every year, and a proposal must be submitted and evaluated for each additional year. For the last several years, however, delays in receipt of federal funds and incremental federal authorizations have required up to likewise fund projects incrementally. One result is that most projects have had to be extended for a second year. As a result, we have an unusually large number of ongoing projects at present. We hope to get back to projects designed to be funded and completed in about a year as soon as the new funding from USDOT and Caltrans is in place.

The UCTC's success in research relies upon a carefully managed solicitation and project selection process. For faculty research, the 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.

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 high demand for UCTC funding, 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.

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.

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. UCTC staff members also review 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 staff reviews in making the final selection of projects for funding. In making the final choices, the Director also 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.

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.

The academic value of our work is evidenced by:

- publication in peer-reviewed journals
- academic awards
- citations in the literature
- invitations to organize and participate in important conferences and meetings
- requests for guest lectures
- requests for collaborative research and exchanges.

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 (Congress, the state legislature, city councils, county boards of supervisors, transit boards)
- 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.

Education and Student Support

UCTC not only carries out research but also contributes to transportation education through fellowship programs, funding for course and curriculum development, 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.

Fellowships are offered only to students enrolled in formal transportation programs, but 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.

Course support is provided by application to the UCTC Director. Grants are typically under \$30,000. Eligible activities include (in order of priority) 1) the development of a new, permanent course or curriculum, 2) the major revamping of an existing course or course sequence to incorporate new materials or new teaching approaches, and 3) occasionally, special seminars taught by visiting scholars, leading practitioners, or other temporary appointees that offer especially valuable opportunities for students to be exposed to new ideas and approaches. To date, our focus has been primarily on graduate courses but we have funded several undergraduate courses in transportation at the various campuses.

Education Programs

Formal programs and concentrations in transportation are currently offered by departments at Berkeley, Davis, Irvine, UCLA, and UC Santa Barbara. Additional courses with significant transportation content are offered at other campuses of the UC system, including UC San Diego. Most UC transportation degree programs are in civil engineering or city planning. However, other departments including architecture, chemical engineering, computer science, economics, electrical engineering, energy resources, environmental studies, geography, landscape architecture, law, management, mechanical engineering, operations research, political science, public policy, sociology, and urban design now include transportation topics in one or more courses. The growth in transportation offerings in part reflects 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. The studio won an honorable mention in the EPA nationwide competition on student projects and was the only social science project to win an award.

--Graduate Programs

Formal degree graduate programs or concentrations in transportation are offered on several campuses in the UC system, including Berkeley, Irvine, UCLA, Santa Barbara and Riverside. The civil and environmental engineering departments at Berkeley and Irvine offer transportation engineering degrees. Programs in transportation planning and policy are offered at Berkeley, 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. 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 works on GIS applications and advanced modeling, and Riverside focuses on transportation and air pollution.

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 Global Metropolitan Studies (GMS) 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 and third will be in metropolitan social sciences and in infrastructure systems. A total of five new faculty members will be hired at Berkeley through the GMS program.

Both UC Santa Barbara and UC Riverside have added transportation content to degree programs and to courses over the past several years and are now offering formal transportation programs.

--Undergraduate 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.

--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.

Student Support

UCTC provides student support in the form of fellowships, graduate student researcher appointments, doctoral dissertation grants, and an annual student of the year award.

--Fellowships

US graduate students at all UC campuses with formal transportation programs (except Davis, which funds its programs through its own UTC) 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.

--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 (or 2 GSRs at 25%) during the academic year, with full time summer salary if funds allow. The Executive Committee has concluded that this limitation will continue to be imposed under the new grant unless actual funding allows a higher level of expenditure.

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 up to 10 (occasionally, 11) doctoral dissertation grants of \$15,000 (plus indirect costs if applicable). 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. 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. The applicant must have advanced to candidacy for the Ph.D. degree prior to the application deadline and must submit a brief synopsis of the 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. The dissertation grant abstracts are listed on our website along with faculty research projects and completed dissertations are published on the website as well.

--Student of the Year Award

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. The award acknowledges superior academic performance, commitment to transportation research and/or practice, and prospects for contributing to the transportation profession in the future.

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; conferences and symposia; policy advising and public service; and outreach efforts to business and community groups and the general public. Continuing education, discussed earlier, is also a tech transfer activity. Our ultimate objectives are to increase public understanding of transportation problems and opportunities for improvement, and to help transportation professionals to address transportation problems using the latest research findings and innovations.

--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 UCTC website. In addition, we produce the twice-yearly ACCESS Magazine, which summarizes UCTC-sponsored work in a style designed for a general audience. We distribute hard copies of ACCESS and also post it on our website, where readers can download the entire magazine or individual articles. 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.

Periodically we remind UCTC faculty affiliates to send us their papers produced in whole or in part with UCTC funding. We publish most of these papers or reprints on the UCTC website and provide links to others. UCTC publications and reprints of UCTC-funded journal articles are distributed free of charge. In addition, we post copies of the dissertations funded with UCTC's assistance (See www.uctc.net.)

--Conferences and Symposia

UCTC grant recipients are expected to participate in conferences and symposia to communicate their research findings to both academics and practitioners. 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.

The UCTC annually supports the Lake Arrowhead Conference on Transportation, Land Use and the Environment, as well as the UCTC Student Conference. The 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.

Travel to conferences is supported as part of research grants, and each campus is provided a travel fund so that faculty and students can participate in the Annual Transportation Research Board meeting. As funds allow and on a case by case basis, the UCTC also will fund travel to meetings of other learned societies and professional organizations such as the Institute of Transportation Engineers, the American Society of Civil Engineers, the American Planning Association, the Association of Academic Schools of Planning, the American Association of Geographers, the American Political Science Association, and the American Economic Association. In addition, faculty members are provided travel support when they serve on committees for federal, state and local agencies as well as independent organizations such as the National Academy of Sciences.

-- Policy Advising and Outreach

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.

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. The Executive Committee consists of the UCTC Director, the directors of the various campuses' Institutes of Transportation Studies or their representatives, the director of the Institute of Urban and Regional Development or his 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 2005-2006 were:

- **Robert Cervero**, Prof. of City & Regional Planning, Institute of Urban and Regional Development representative, UC Berkeley
- **Randall Crane**, 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
- **Kostas Goulias**, Prof. of Geography, UC Santa Barbara
- **Charles Lave**, Prof. Emeritus of Economics, UC Irvine
- **Samer Madanat**, Director, Institute of Transportation Studies, Prof. of Civil and Environmental Engineering, Berkeley
- **Will Recker**, Director, Institute of Transportation Studies, Prof. of Civil and Environmental Engineering, UC Irvine
- **Amelia Regan**, Assoc. Prof. of Computer Science Systems, UC Irvine
- **Jean Daniel Saphores**, Asst. Prof. of Policy, Planning and Design, UC Irvine
- **Brian Taylor**, Assoc. Prof. of Urban Planning, UC Los Angeles

The Executive Committee is responsible for 1) establishing the theme for the Center as set forth in the UCTC strategic plan, 2) advising and assisting the director in the development of the strategic plan, which establishes the allocation of funds among research, education, and technology transfer programs, 3) working with the Director in consultation with USDOT, Caltrans, and transportation advisors to identify and designate specific subject matter priorities for research funding in a particular year, 4) setting rules for allowable expenditures on research projects, consistent with USDOT and Caltrans requirements, and 5) conducting an annual review of the Center's overall

performance and resources, and redirecting funds and activities as necessary. Finally, 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.

Members of the UCTC Executive Committee meet in person at least once a year and transact business in the interim through telephone conference calls and e-mail.

The Executive Committee's time is donated.

Center Faculty

Faculty affiliates of the UCTC are 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, with full addresses, telephone and fax numbers, and email addresses.

Staff

Administration of research projects is an important UCTC function. However, because UCTC has been operating on contract/grant "extensions" for several years and our Caltrans matching funds must be renewed, we have not been able to hire permanent staff for many other functions. Instead, we "contract" for accounting and personnel support from the Institute of Urban and Regional Development.

The UCTC staff currently consists of the director (half time) plus one administrative staff member, a half-time staff editor, a student publication assistant, plus contracted support staff and an emeritus faculty member who is paid a nominal sum for his time as editor of ACCESS. The staff members in 2005-6 were:

- **Elizabeth Deakin**, Professor of City and Regional Planning, Director (half time plus summer salary)
- **Eunice Park**, Administrator. Ms. Park handles day-to-day administration for the Center and helps organize conferences and workshops.
- **Melanie Curry**, Editor (60% 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 and computer tech support including programming (consultant, variable up to 50% time as needed)
- **Angel Lu**, student assistant (25-50% time), publications requests
- **Other Student Assistants** – as needed for specific tasks.

Table 1. UCTC Faculty Affiliates			
First Name	Last Name	Address	City / Campus
Matthew J.	Barth	Ctr. for Environmental Research	Riverside
Evelyn	Blumenberg	Urban Planning	Los Angeles
Marlon G.	Boarnet	Urban and Regional Planning	Irvine
Peter C.	Bosselman	City & Regional Planning	Berkeley
David	Brownstone	Economics	Irvine
Michael J.	Cassidy	Civil & Environmental Engineering	Berkeley
Robert	Cervero	City & Regional Planning	Berkeley
Karen	Chapple	City & Regional Planning	Berkeley
Ted	Chira-Chavala	ITS Extension	Berkeley
Richard	Church	Geography	Santa Barbara
William A.V.	Clark	Geography	Los Angeles
Linda	Cohen	Economics	Irvine
Randall D.	Crane	Urban Planning	Los Angeles
Carlos	Daganzo	Civil & Environmental Engineering	Berkeley
Kristen	Day	Urban and Regional Planning	Irvine
Karen K.	De Valois	Psych., Vision Sci. & Optometry	Berkeley
Elizabeth A.	Deakin	City & Regional Planning	Berkeley
Joseph	DiMento	Urban and Regional Planning	Irvine
Michael	Disch	Psychology	Berkeley
Bryan	Ellickson	Economics	Los Angeles
J. Gordon	Fielding	Social Sciences	Irvine
William L.	Garrison	Civil & Environmental Engineering	Berkeley
David	Gillen	Institute of Transportation Studies	Berkeley
Amihai	Glazer	Economics	Irvine
Steven	Goldman	Economics	Berkeley
Reginald G.	Golledge	Geography	Santa Barbara
Thomas	Golob	Transportation Studies	Irvine
Kostas	Goulias	Geography	Santa Barbara
Michael	Hanemann	Agr. & Res. Econ.	Berkeley
Mark	Hansen	Civil & Environmental Engineering	Berkeley
Robert	Harley	Civil & Environmental Engineering	Berkeley
J. Karl	Hedrick	Mechanical Engineering	Berkeley
Wolfgang	Homburger	Institute of Transportation Studies	Berkeley
Arpad	Horvath	Civil & Environmental Engineering	Berkeley
Linda	Howe-Steiger	ITS Extension	Berkeley
Judith	Innes	City & Regional Planning	Berkeley

Table 1 cont.			
First Name	Last Name	Address	City / Campus
Allan B.	Jacobs	City & Regional Planning	Berkeley
R.	Jayakrishnan	Civil & Environ. Engineering	Irvine
Adib	Kanafani	Civil & Environmental Engineering	Berkeley
Daniel B.	Klein	Economics	Irvine
Jess	Kraus	Public Health-Epidemiology	Los Angeles
John	Landis	City & Regional Planning	Berkeley
Charles A.	Lave	Economics	Irvine
Robin	Liggett	Urban Planning	Los Angeles
Anastasia	Loukaitou-Sideris	Urban Planning	Los Angeles
John	Lysmer	Civil & Environmental Engineering	Berkeley
Elizabeth	Macdonald	City & Regional Planning	Berkeley
Samer	Madanat	Civil & Environmental Engineering	Berkeley
Michael G.	McNally	Civil & Environ. Engineering	Irvine
James A.	Misener	PATH	Berkeley
Raymond W.	Novaco	Social Ecology	Irvine
Paul	Ong	Urban Planning	Los Angeles
Christos	Papadimitriou	Computer Science	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 Architecture	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	Civil & Environ. Engineering	Irvine
Paul A.	Ruud	Economics	Berkeley
Jean Daniel	Saphores	Civil & Environ. Engineering	Irvine
Robert F.	Sawyer	Mechanical Engineering	Berkeley
Allen J.	Scott	Urban Planning	Los Angeles
Raja	Sengupta	Civil & Environmental Engineering	Berkeley
Steven	Shladover	PATH	Berkeley
Donald C.	Shoup	Urban Planning	Los Angeles
Alexander	Skabardonis	Civil & Environmental Engineering	Berkeley
Kenneth A.	Small	Economics	Irvine
Michael	Southworth	City & Regional Planning	Berkeley
Robert C.	Spear	Public Health	Berkeley
Aaron	Steinfeld	PATH	Berkeley

Table 1 cont.			
First Name	Last Name	Address	City / Campus
Michael A.	Stoll	Policy Studies	Los Angeles
Jayashankar	Swaminathan	Haas School of Business	Berkeley
Brian D.	Taylor	Urban Planning	Los Angeles
Karen	Valois	Psychology	Berkeley
Kurt	Van Dender	Economics	Irvine
Pravin	Varaiya	Electrical Eng. & Computer Science	Berkeley
Martin	Wachs	Institute of Transportation Studies	Berkeley
Melvin	Webber	UC Transportation Center	Berkeley
Margaret	Weir	Sociology	Berkeley
Arthur	Winer	Public Health	Los Angeles
Candace	Yano	IEOR	Berkeley
Carol	Zabin	Center for Labor Research and Education	Berkeley

In Memoriam:

We report with great sadness the loss of two of our colleagues to cancer: Judith Gruber in June 2005, and Ted Cohn in Spring 2006.

INSTITUTIONAL SUPPORT

UCTC's success depends on our strong working partnership with the California Department of Transportation (Caltrans), as well as on the broad support we receive from the University of California. The UC Office of the President, the administrations of the various campuses, the research institutes and departments of those campuses that offer transportation degrees, and the faculty who participate in UCTC activities all contribute to UCTC's activities. Because the UCTC can rely on this substantial institutional support, we are able to devote most of our funding to the direct costs of research, education, and technology transfer.

Caltrans Support of UCTC

As it has done since the UCTC's inauguration, Caltrans matched US Department of Transportation (US DOT) funds dollar-for-dollar in 2005-6. Further, Caltrans has committed to continue this match. 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 at the \$1 million level. With the passage of SAFETEA-LU, Caltrans began the process of amending that agreement to provide the full match at the higher levels Congress had authorized, and we expect to have that new agreement in place in 2006-2007.

UC Support

The substantial programmatic support we receive from the University of California has been a source of strength for the UCTC program. Since the creation of the Center, the UC Office of the President has waived overhead on the matching funds from Caltrans, recognizing the vital educational objectives of the UCTC program and noting that Caltrans funds UCTC's administration and participates in shaping, but does not control, the research agenda. The University again has agreed to waive overhead on Caltrans matching funds for the new grant currently being prepared. In addition, the University provides administrative services, but does not charge overhead on the portion of USDOT funds used for fellowships.

The University has made an even larger commitment to transportation research and education programs through its permanent financial support for faculty positions in transportation. The US DOT now requires a \$400,000 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 alone greatly exceed that amount.

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. 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 have provided major administrative assistance each year. In addition, as faculty at Riverside and Santa Barbara are increasingly involved in the UCTC, the **UCSB Dept. of Geography** and the UC Riverside **CE Center for Environmental Research and Technology (CE-CERT)** are taking on administrative tasks for UCTC grants.

UCTC faculty and students also benefit from their access to University computer, data, and library resources. 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. Each year UCTC sponsors a visit to each of the UCTC campuses by Librarian John Gallwey, as a way of introducing new students to library holdings and services.

Finally, faculty members' time commitments are a substantial source of support for 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. The UC-funded time on research multiplies the UCTC's salary support for research by a factor of three or four.

Participation in the governance of the UCTC is a second way that faculty time is donated. 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. All of this service is provided all free of charge to UCTC.

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. UCTC funding is amplified by the pairing with these other funding sources.

Research Partnerships

The UCTC coordinates its research with that of the ITS units on the various campuses and with IURD at Berkeley. In addition, the UCTC works closely with the following research centers headquartered or located at Berkeley, sometimes jointly funding research.

PATH

California Partners for Advanced Transit and Highways (PATH) is the nation's largest program for intelligent transportation research. PATH is a multi-disciplinary program headquartered at Berkeley with staff, faculty and students from universities statewide, and cooperative projects with private industry, state and local agencies, and non-profit institutions. PATH's mission is to develop solutions to surface transportation systems problems through cutting edge research and development in the fields of information technology, electrical engineering, mechanical engineering, economics, transportation policy and behavioral studies. Research is organized into program areas: Traffic Operations, Transit Operations, Transportation Safety, and Behavioral Studies.

CCIT

The California Center for Innovative Transportation (CCIT) was founded by the University of California and the California Department of Transportation to facilitate the development, commercialization and deployment of promising transportation technologies and systems. It is headquartered at UC Berkeley.

NEXTOR

The National Center of Excellence for Aviation Operations Research (NEXTOR) is a consortium sponsored by the Federal Aviation Administration (FAA), consisting of UC Berkeley, the Massachusetts Institute of Technology, the University of Maryland at College Park and Virginia Polytechnic and State University. Research areas addressed by NEXTOR include advanced air traffic management systems, air traffic safety and security, and the performance and productivity of the nation's aviation system.

Pavement Research Center

The Pavement Research Center (PRC) is an international authority on pavement structures, materials, and technologies. The PRC's core mission is to research questions for the California Department of Transportation

pertaining to the design, construction, rehabilitation and maintenance of the state's 75,000-lane-kilometer network of roads. PRC has branches at both UC Berkeley and UC Davis.

Safety Center

The Traffic Safety Center (TSC) is a joint venture of the Institute of Transportation Studies and the School of Public Health at UC Berkeley. Its goals are to reduce traffic fatalities and injuries through multi-disciplinary collaboration in education, research, and outreach, and to make traffic safety information widely available. The Center's fields of research include pedestrian safety, passenger safety, and safe mobility for older drivers, and cost-benefit analysis of traffic safety interventions.

Volvo Center

The UC Berkeley Volvo for Future Urban Transport was established in 2004 with funding from the Volvo Research and Educational Foundations after a competition involving a large field of international candidates. The Center's mission is to study the mutual interdependence of urban transportation policy and technology and use the understanding of that concept to devise sustainable transportation strategies for the world's cities. Faculty and students from engineering and City and Regional Planning are the core researchers.

Joint Center for Sustainable Transportation

The Joint Center for Sustainable Transportation is the newest transportation research initiative at Berkeley, jointly sponsored by UCTC, ITS, the Global Metropolitan Studies Center, the UC Energy Institute, and the UC Berkeley Energy and Resources Group. The joint center's mission is to find effective responses to the energy and environmental challenges facing transportation systems world-wide while also assuring that they are equitable, economic, and a significant contributor to the quality of life for all.

Other Partnerships

The UCTC benefits from additional partnerships with other UTCs located in California. Two other University Transportation Centers have successfully competed for UTC designation, 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. In addition, Congress designated two additional new centers in California, at UC Davis (as noted earlier) and at Cal State San Bernardino. Caltrans has agreed to provide matching funds to all five centers. 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. UCTC invites both faculty and students from the other centers to participate in the annual student transportation conference that we sponsor, to join us at conferences and symposia, and to exchange research results.

UCTC also benefits from the advice and participation of transportation professionals drawn from a variety of public and private organizations. Over 250 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

Looking back over 2005-6, we have many accomplishments to report:

- During 2005-6 UCTC researchers completed 21 projects. The final papers from these projects are published on the UCTC website or are under review for publication.
- Faculty members from five UC campuses and 10 academic departments submitted 27 proposals in response to the RFP for this grant cycle. 90 individuals served as reviewers, with 60 from universities, 8 from private firms, 2 from nonprofits, 15 from Caltrans, 3 from USDOT, and 2 from other government agencies.
- 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” plus the top two ranked very good. The new projects selected for awards in 2005-6 went to faculty on the Berkeley, Irvine, Los Angeles, and Santa Barbara campuses.
- The UCTC awarded dissertation grants to nine UC students from 15 applicants. Previous UCTC dissertation grant winners serve as the reviewers for these awards.
- The UCTC provided approximately \$704,500 in graduate student fellowships, dissertation grants, and in-state fees for GSRs. This accounted for about 45% of the total UCTC budget. Dissertation grants went to two students at Berkeley, one at Davis, three at Irvine, and three at Santa Barbara. 14 New Faculty projects were awarded.
- UCTC-affiliated transportation programs awarded 101 new Masters and PhD degrees, and increased undergraduate enrollments in transportation courses. The graduates of these transport programs have joined private transportation firms, universities, nonprofits, and federal, state, and local government agencies.
- The UCTC added 21 research papers to our website. Table 2 lists the publications added this year.
- The UCTC website received 36,072 web hits this year; 259,618 papers and reports were downloaded.
- We published two more editions of ACCESS, our transportation magazine, and distributed 20,000 copies to readers across the US and overseas. However, more readers obtained ACCESS electronically than in hard copy this year –ACCESS articles were downloaded from the web 48,918 times.
- UCTC supported the 10th Biennial Conference on Transportation Energy and Environmental Policy, held at Asilomar in August 2005. The conference, organized by UC Davis, focused on climate change. Over 200 people attended the conference.
- UCTC co-sponsored the annual Lake Arrowhead conference, organized by the UCLA Public Policy Extension. The October 2005 event explored the connections between transportation and public health.
- Faculty members and graduate students affiliated with UCTC presented nearly 150 papers at sessions of the annual meeting of the Transportation Research Board in January 2006.
- Dan Chatman was elected the University of California's Student of the Year for 2005-2006. Chatman, who received his PhD in June 2005 from UCLA, is now assistant professor of urban planning and public policy at Rutgers University and director of research for the Alan M. Voorhees Transportation Center. Chatman carries out research on transportation and land use policies.
- Graduate students from UC Berkeley organized the February 2006 UCTC Student Conference, with Sir Peter Hall, Professor Emeritus of UC Berkeley's Dept. of City and Regional Planning, serving as keynote speaker. William Lieberman of San Francisco Municipal Railway spoke at the conference luncheon.

- In March 2006, UCTC hosted the European Council of Ministers of Transport/Organisation for Economic Cooperation and Development Roundtable 37: Transportation, Urban Form, and the Environment – the first time an OECD Roundtable has been held in the US.
- UCTC faculty and colleagues from other universities around the world reviewed over 1500 abstracts for the World Conference on Transport Research, to be held in the US for the first time in 2007 with UC Berkeley as host.
- UCTC supported the new Global Metropolitan Studies Initiative on the Berkeley campus, co-sponsoring several lectures and visits from foreign transportation experts. The GMS initiative will hire five new faculty members and offer new educational programs (undergraduate degree in comparative metropolitan studies, graduate designated emphases in GMS and in infrastructure systems.)
- UCTC supported the UC Santa Barbara effort to establish a formal designated emphasis in transportation in its Geography program.
- Together with the Institute of Transportation Studies, the California Energy Institute, and the Global Metropolitan Studies Initiative, UCTC established the Joint Center for Sustainable Transportation, with Prof. Alex Ferrell as Center Director. The Joint Center will focus initially on transportation fuels.
- UCTC faculty members worked with members of the California Legislature as well as with state administrative agency staff on global warming issues and their interrelationships with transportation fuels, vehicles, operations, and demand levels.

Table 2. Research Papers 2005-6

Innes, Judith E., and Judith Gruber	Planning Styles in Conflict: The Metropolitan Transportation Commission	2005, Summer	736
Crabbe, Amber E., Rachel Hiatt, Susan D. Poliwka, and Martin Wachs	Local Transportation Sales Taxes: California's Experiment in Transportation Finance	2005, Summer	737
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	738
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	739
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	740
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	741
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	742
Cao, Xinyu, and Patricia L. Mokhtarian	The Intended and Actual Adoption of Online Purchasing: A Brief Review of Recent Literature	2005, Summer	743
Handy, Susan, Xinyu Cao, and Patricia L. Mokhtarian	Correlation or causality between the built environment and travel behavior? Evidence from Northern California	2005, Summer	744
Ory, David T., and Patricia L. Mokhtarian	Modeling the Joint Labor-Commute Engagement Decisions of San Francisco Bay Area Residents	2005, Summer	745
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	746
Pagès, Laia, R. Jayakrishnan, and Cristián E. Cortés	Real-Time Mass Passenger Transport Network Optimization Problems	2005, Summer	747
Jayakrishnan, R., and Laia Pagès	Mass Transport Vehicle Routing Problem (MTVRP) and the Associated Network Design Problem (MTNDP)	2005, Summer	748
Van Dender, Kurt	Duopoly Prices Under Congested Access	2005, Fall	749
De Borger, Bruno, and Kurt Van Dender	Prices, capacities and service quality in a congestible Bertrand duopoly	2005, Fall	750
Ishii, Jun, Kurt Van Dender, and Sunyoung Jun	Airport choice and airline choice in the market for air travel between the San Francisco Bay area and greater Los Angeles in 1995	2005, Fall	751
Blumenberg, Evelyn	Transportation Barriers to Employment: Southeast Asian Welfare Recipients in Los Angeles and Fresno Counties	2005, Fall	752
Mondschein, Andrew, Evelyn Blumenberg, and Brian D. Taylor	Cognitive Mapping, Travel Behavior, and Access to Opportunity	2005, Fall	753
Kuhn, Kenneth D., and Samer M. Madanat	Robust Maintenance Policies for Markovian Systems under Model Uncertainty	2005, Fall	754
Kuhn, Kenneth D., and Samer M. Madanat	Model Uncertainty and the Management of a System of Infrastructure Facilities	2005, Fall	755
Shoup, Donald C.	Reduce Demand Rather than Increase Supply	2005, Fall	756

RESEARCH PROJECT STATUS

While UCTC projects are designed to be one year in duration, extensions may be granted for good cause. 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.

In 2005-6 – UCTC’s Year 18 - five projects were carried over from Year 16 and 16 projects were carried over from Year 17. Tables 3 through 5 list the projects underway this year and their status. Following the tables are project status reports covering performance through July 31, 2005.

Table 3. Year 16 (2003-2004) Research Projects Completed in Year 17 (2004-5) (4 Projects)

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

Table 4. Year 17 (2004-2005) Research Projects Completed 2005-6 (16 Projects)

Principal Investigator	Campus	Research Project Title
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

Table 5. Year 18 (2005-6) Research Projects (NEW; end date July 31, 2008) (14 Projects)

Principal Investigator	Campus	Research Project Title
Cassidy, Michael	Berkeley	An Empirical and Theoretical Study of Freeway Weave Analysis
Cervero, Robert	Berkeley	Freeway Deconstruction and Urban Renewal: Land Market and Transportation Impacts
Clark, William	Los Angeles	How Much Do Low Income And Foreign-Born Households Use Public Transportation?
Crane, Randall	Los Angeles	Is the Gender Gap History? Revisiting Sex Differences in Driving using a National Panel, 1985 to 2005
Goulias, Konstadinos	Santa Barbara	A Spatial Analysis of Self-serving and Altruistic Travel Behavior
Harley, Robert	Berkeley	Emission and Air Quality Impacts of New Diesel Engine Control Technologies
Horvath, Arpad	Berkeley	Life-Cycle Environmental Assessment of Passenger Air and Rail Transportation
Kanafani, Adib	Berkeley	The Effect of In-Transit WiFi Internet Access on The Value of Travel Time Implications for Mode-Choice Models
Loukaitou-Sideris, Anastasia	Los Angeles	How Safe Is the Ride? Evaluation of Design and Policy Responses to Women's Fear of Victimization in Transportation Settings
Madanat, Samer	Berkeley	Bottom-up Bridge Management System
Recker, Wilfred	Irvine	A Model of Activity/Travel Scheduling/Rescheduling Decisions in an Uncertain Environment
Shoup, Donald	Los Angeles	The Political Calculus of Congestion Pricing
Winer, Arthur	Los Angeles	Estimating Potential Exposure to Diesel Truck Freeway Emissions in Southern California: A Methodology for Assessing Air Pollution Impacts of Goods Movement

RESEARCH STATUS REPORTS

Year 16 (2003-4) Projects Completed by 7/31/2006: 5 Projects

Amber Alert Policy: Laboratory Experiments to Improve a Policy

Principal Investigator:

Theodore Cohn

UC Berkeley

Email: tecohn@sensitivity.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: 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: Research completed.

Papers to Date:

Tammero, L.F. & Cohn, T.E., Optimizing the Amber Alert Message for Reading Speed and Driver Comprehension. *Paper under review.*

Conferences Attended:

TRB

Other Accomplishments:

None

Percent Complete: 100%

Direct Cost: \$56,275

Improved Developer Models for the Sacramento Region

Principal Investigator:

Robert Johnston
UC Davis

Email: rajohnston@ucdavis.edu

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

Abstract: 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: Research completed.

Papers to Date:

Michael J. Clay and R.A. Johnston, Large Real Estate Developments, Spatial Uncertainty, and Integrated Land Use And Transportation Modeling, *Paper under review*

Conferences Attended:

Transportation Research Board Annual Meeting, 2004, 2005

Other Accomplishments:

None

Percent Complete: 100%

Direct Cost: \$42,141

Auctions for the Procurement of Transportation Service Contracts

Principal Investigator:

Amelia Regan
UC Irvine

Email: aregan@uci.edu

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

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

Key Words: trucking, combinatorial auctions, algorithms

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

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

Milestones, Dates: Official start date Aug. 1, 2003, 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: Research completed.

Papers to Date:

Song, J., A.C. Regan and S. Nandiraju (2005), A Bid Analysis Model with Business Constraints for Transportation Procurement Auctions, Proceedings of the 84th meeting of the Transportation Research Board, *Paper under review*

Conferences Attended:

Transportation Research Board Annual Meeting, 2004, 2005, 2006

Other Accomplishments:

None to date

Percent Complete: 100%

Direct Cost: \$51,603

Identification and Measurement of Freeway Congestion

Principal Investigator:

Alexander Skabardonis
UC Berkeley

Email: skabardonis@ce.berkeley.edu

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

Abstract: The objective of 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: Research completed.

Papers to Date:

Alexander Skabardonis, Pravin P. Varaiya, And Karl F. Petty, Measuring Recurrent And Non-Recurrent Traffic Congestion, *Paper Under Review*

Jaimyoung Kwon, Michael Mauch, and Pravin Varaiya, Components of Congestion: Delay from Incidents, Special Events, Lane Closures, Weather, Potential Ramp Metering Gain, and Excess Demand; *Paper under review*

Conferences Attended:

Transportation Research Board Annual Meeting, 2004, 2005, 2006

Other Accomplishments:

None

Percent Complete: 100%

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: Research completed.

Papers to Date:

Weir, Margaret, Jane Rongerude, Christopher K. Ansell, Making Participation Matter Transportation Policy Development: Labor as a Missing Stakeholder, *Paper under review*

Conferences Attended:

None

Other Accomplishments:

None

Percent Complete: 100%

Direct Cost: \$41,698

Status Reports – Year 17 (2004-2005): Completed in 2004-5 (1 project)

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, *Paper under review*

Conferences Attended:

Transportation Research Board Conference 2005

Other Accomplishments:

None

Percent Complete: 100%

Direct Cost: \$47,450

Year 17 (2004-5) Projects Completed 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: Research completed.

Papers to Date:

Blumenberg, Evelyn, Transportation Barriers to Employment: Southeast Asian Welfare Recipients in Los Angeles and Fresno Counties. UCTC Paper 752, Fall 2005

Mondschein, Andrew, Evelyn Blumenberg, and Brian D. Taylor, Cognitive Mapping, Travel Behavior, and Access to Opportunity, UCTC Paper 753, Fall 2005

Conferences Attended:

TRB

Other Accomplishments:

None

Percent Complete: 100%

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: Research completed.

Papers to Date:

Cervero, Robert, Transit Oriented Development’s Ridership Bonus: A Product of Self-Selection and Public Policies, *Paper under review*

Cervero, Robert, and Michael Duncan, Balanced Growth, Travel Demand, and Physical Activity, *Paper under review*

Conferences Attended:

TRB 2004, 2005, ACSP 2004, 2005

Other Accomplishments:

None

Percent Complete: 100%

Direct Cost: \$49,425

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

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 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: Research completed.

Papers to Date:

Jan Whittington and David Dowall, Transaction-Cost Economic Analysis of Institutional Change toward Design-Build Contracts for Public Transportation, *Paper under review*

Conferences Attended:

ACSP

Other Accomplishments:

None

Percent Complete: 100%

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: Research completed.

Papers to Date:

Zhou, Jianyu (Jack), and Reginald Golledge, A Three-step General Map Matching Method in the GIS Environment: Travel/Transportation Study Perspective , *Paper under review*

Conferences Attended:

AAG. TRB

Other Accomplishments:

None

Percent Complete: 100%

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

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

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 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: Research completed.

Papers to Date:

Laia Pages and Thomas Golob, The Distinctive Distribution of Wet Pavement Accidents on California Highways, *Paper under review*

Conferences Attended:

None

Other Accomplishments:

None

Percent Complete: 100%

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: Research completed

Papers to Date:

Handy, Susan, Xinyu Cao, and Patricia L. Mokhtarian, Correlation or causality between the built environment and travel behavior? Evidence from Northern California, UCTC Paper 744, Summer 2005

Conferences Attended:

TRB

Other Accomplishments:

None

Percent Complete: 100%

Direct Cost: \$20,000

Testing Spatial Mismatch: A Structural Equations Modeling Approach

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: 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: Research completed.

Papers to Date:

Johnston, R.A., Testing Spatial Mismatch: A Structural Equations Modeling Approach, *Paper under review*

Conferences Attended:

TRB

Other Accomplishments:

None

Percent Complete: 100%

Direct Cost: \$38,756

Street Trees and Intersection Safety

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 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: Research completed.

Papers to Date:

Macdonald, Elizabeth, Alethea Harper, Jeff Williams, and Jason A. Hayter, Street Trees and Intersection Safety, *Paper under review*

Conferences Attended:

ACSP

Other Accomplishments:

None

Percent Complete: 100%

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: Research completed.

Papers to Date:

Kuhn, Kenneth D., and Samer M. Madanat, Robust Maintenance Policies for Markovian Systems under Model Uncertainty, UCTC Paper 754, Fall 2005

Kuhn, Kenneth D., and Samer M. Madanat, Model Uncertainty and the Management of a System of Infrastructure Facilities, UCTC Paper 755, Fall 2005

Conferences Attended:

TRB 2005, 2006

Other Accomplishments:

None

Percent Complete: 100%

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 2. Survey design, paper and Internet versions 3. Sample extraction and recruitment 4. Administer survey 5. Data entry and cleaning (paper surveys; 6. Initial descriptive analyse: 7. Write up findings

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: Research completed.

Papers to Date:

Brown, Colby, Prashant Balepur, and Patricia L. Mokhtarian, Communication Chains: A Methodology for Assessing the Effects of the Internet on Communication and Travel, UCTC Paper 740, Summer 2005

Cao, Xinyu, and Patricia L. Mokhtarian, How do individuals adapt their personal travel? A conceptual exploration of the consideration of travel-related strategies, UCTC Paper 741, Summer 2005

_____, How do individuals adapt their personal travel? Objective and subjective influences on the consideration of travel-related strategies for San Francisco Bay Area commuters, UCTC Paper 742, Summer 2005

_____, The Intended and Actual Adoption of Online Purchasing: A Brief Review of Recent Literature, UCTC Paper 743, Summer 2005

Handy, Susan, Xinyu Cao, and Patricia L. Mokhtarian, Correlation or causality between the built environment and travel behavior? Evidence from Northern California, UCTC Paper 744, Summer 2005

Ory, David T., and Patricia L. Mokhtarian, Modeling the Joint Labor-Commute Engagement Decisions of San Francisco Bay Area Residents, UCTC Paper 745, Fall 2005

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, UCTC Paper 746, Fall 2005

Conferences Attended:

TRB 2005

Other Accomplishments:

None

Percent Complete: 100%

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: This 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: Research completed.

Papers to Date:

Kable, Justin, Collecting Construction Equipment Activity Data from Caltrans Project Records, *Paper under review*

Conferences Attended:

TRB 2005

Other Accomplishments:

None

Percent Complete: 100%

Direct Cost: \$47,082

Modeling Car Ownership Rates, and Age and Value of Vehicles

Principal Investigator:

Paul Ong

UC Los Angeles

Email: pmong@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 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 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: Research completed.

Papers to Date:

Paul Ong, Spatial Pattern of Vehicle Ownership by Vintage, *Paper under review*

Conferences Attended:

None

Other Accomplishments:

None

Percent Complete: 100%

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 will develop useful planning tools and also provide insight into intermodal freight bottlenecks in the case study region.

Work Completed to Date: Research completed.

Papers to Date:

Nandiraju, S., and A.C. Regan (2005), Freight Transportation Electronic Marketplaces: A Survey of the Industry and Exploration of Important Research Issues, *Paper under review*

Conferences Attended:

TRB 2005

Other Accomplishments:

None to date

Percent Complete: 100%

Direct Cost: \$55,348

Cruising for Parking

Principal Investigator:

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

Abstract: Where 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: Research completed.

Papers to Date:

Shoup, Donald C., Reduce Demand Rather than Increase Supply, UCTC Paper 756, Fall 2005

Shoup, Donald C., The Practice of Parking Requirements , *Paper under review*

Conferences Attended:

Lake Arrowhead 2004, TRB 2005

Other Accomplishments:

None

Percent Complete: 100%

Direct Cost: \$53,978

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

Principal Investigator:

Michael Stoll
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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: Research completed.

Papers to Date:

M. Stoll, Why Do Inner City Residents Pay Higher Premiums? The Determinants of Automobile Insurance Premiums, *Paper under review*

Conferences Attended:

None to date

Other Accomplishments:

None to date

Percent Complete: 100%

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: Research completed.

Papers to Date:

Crabbe, Amber E., Rachel Hiatt, Susan D. Poliwka, and Martin Wachs, Local Transportation Sales Taxes: California's Experiment in Transportation Finance, UCTC Paper 737, Summer 2005

Wachs, Martin, Improving Efficiency and Equity in Transportation Finance, *Paper under review*

Conferences Attended:

Lake Arrowhead 2004, TRB 2004, 2005

Other Accomplishments:

None to date

Percent Complete: 100%

Direct Cost: \$20,000

2005-6 Projects

The following 14 projects were selected for funding in 2005-6. Because of late receipt of state funds, all projects were granted extensions and have an end date of July 31, 2008. None has a product yet, nor has there been any conference attendance; only the first task was underway at the time of this report. (All projects were approximately 15% complete.)

Congestion control for highway network systems

Principal Investigator:

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

Abstract: This project will build on available sensing technology used to monitor highway traffic, and on power computing for large scale simulations, in order to derive accurate congestion forecast strategies and efficient congestion control schemes for highway systems. The study will rely on a mathematical formulation of the physical laws responsible for highway congestion. We will build a mathematical analysis framework mapping the Lighthill-Whitham-Richards partial differential equation (traditionally used to model highway traffic) into a Hamilton-Jacobi equation, which is easier to analyze and control. Using the Hamilton-Jacobi equation, we will identify traffic flow patterns leading to congested situations, and devise control strategies to apply at the on-ramps of the highway in order to alleviate congestion. We will develop a simulation toolbox in order to validate our results against highway data available from the PeMS system. We will run test scenarios to assess the accuracy of our forecasts and the efficiency of the devised control schemes. The results will be available in the form of a report and software developed for simulation purposes. The report will include the scientific contributions of the project, as well as documentation of the software.

Key Words: sensing technology, large scale simulations, mathematical analysis framework, traffic flow patterns, simulation toolbox, PeMS system.

Objective: The goal of this project is to establish a mathematical and a computational framework for the forecast and control of congestion propagation in highway network systems.

Tasks:

1. Mathematically pose the problem of congestion propagation.
2. Generate software to solve the problems posed.
3. Use previous work in order to tune the models for relevant scenarios, using the PeMS system.
4. Run the software on specific California highway scenarios, using the PeMS system.
5. Document software and generate library of test cases.

Milestones, Dates: Official start date Aug. 1, 2005, end July 31, 2008

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 provide new analysis and computational tools to forecast highway congestion and control the propagation of congestion fronts on the highway.

Direct Cost: \$75,473

An Empirical and Theoretical Study of Freeway Weave Analysis

Principal Investigator:

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

Abstract: A major source of freeway bottlenecks is driver lane-changing activity at freeway weaving sections formed when an on-ramp is followed rather closely by an off-ramp. Current methods for analyzing traffic conditions on these types of sections have shown poor ability to reproduce empirical observations and have produced inconsistent results. More than half a century after the first publications, there is still no consensus on which, if any, of the existing weaving analysis methods is reliable.

This research proposes an alternative approach to study weaving phenomena based on recent empirical and theoretical findings. Recent field experiments uncovered mechanisms of driver lane change behavior that cause the reduction in freeway system capacity. Further, we have developed a parsimonious extension to the kinematic wave theory (the multilane hybrid model) that reproduces this behavior by explicitly incorporating the effects of lane-changing maneuvers. These findings suggest a parsimonious method can be devised for predicting weaving section capacity based on the cause and effect mechanisms that govern this type of bottleneck. We will collect high-fidelity observations at multiple (i.e., three or more) freeway sites to better understand the operations of weaving sections. The findings should lead to the development of a new method that will improve upon current methodologies.

Key Words: freeway bottlenecks, lane-changing, freeway weaving sections, field experiments, kinematic wave theory

Objective: To test a new theory for better understanding the operation of freeway weaving sections and develop a new method for analysis.

Tasks:

1. Literature review: further review the state of the art in weaving analysis. Fully document limitations and inconsistencies reported in the literature.
2. Data collection: site selection, data collection and processing of at least 3 freeway sites.
3. New method: a new method will be developed based on the team's recent findings on the connection between lane changes and traffic congestion.
4. Final report.

Milestones, Dates: Official start date Aug. 1, 2005, end July 31, 2008

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: first theory/method able to replicate real-world observations on weaving section operations.

Direct Cost: \$73,966

Freeway Deconstruction and Urban Renewal: Land Market and Transportation Impacts

Principal Investigator:

Robert Cervero

UC Berkeley

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

Abstract: Freeway “deconstruction” marks an abrupt shift in urban priorities in places like San Francisco, Portland, and Milwaukee. Priorities are shifting away from designing cities to enhance mobility toward promoting economic and environmental sustainability, livability, and social equity. This project will investigate the economic trade-offs and distributional implications of freeway demolitions, drawing from case-study experiences and quantitative analyses. Case-study work will probe the institutional and planning contexts of freeway removals based on experiences with the Park East Freeway in Milwaukee and the Central Freeway in San Francisco. The quantitative analyses will focus on San Francisco’s two notable yet different freeway demolitions – the Embarcadero Freeway and Central Freeway. For the Embarcadero corridor, matched-pair methods will be used to investigate pre- and post-changes in commercial real-estate market conditions, including vacancy rates and average rents relative to downtown comparison areas (beyond the freeway impact zone). For the Central Freeway corridor, matched-pair methods will be used to study changes in residential sales values between nearby neighborhoods and otherwise similar ones off the freeway corridor. Matched-pair comparisons will also be used to study changes in roadway levels of service, delays, and pedestrian accident rates for major streets and intersections impacted by the Central Freeway demolition.

Key Words: Freeway; Economic Development; Land Market Impacts; Safety; Level-of-Service; Hedonic Price Modeling; Matched-Pair Comparisons; Case Studies.

Objective: To evaluate the impacts of freeway demolitions on the land markets and economic standing on affected neighborhoods as well as traffic and safety conditions to gain an understanding of efficiency and distribution-equity trade-offs.

Tasks: conduct a literature review; conduct case studies in San Francisco and Milwaukee, using secondary sources and conducting interviews with stakeholders; obtain data on land-use changes in affected corridors; acquire residential and commercial real-estate market data; conduct matched-pair comparisons of change in property values and other real-estate market performance indicators between impacted neighborhoods and control sites; estimate hedonic price model that estimates sales prices as a function of proximity to former freeway corridor and other controls; compile traffic and accident data before and after freeway removals; measure impacts on highway levels of service, accident levels, and distribution shifts (by mode and route); synthesize the findings and address appropriate public-policy recommendations and responses; prepare article summarizing key research findings.

Milestones, Dates: Official start date Aug. 1, 2005, end July 31, 2008

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: Gauge the impacts of freeway removals on economic development and land markets of affected communities as well as traffic performance and safety levels, probing net efficiency versus distribution-equity implications.

Direct Cost: \$52,592

How Much Do Low Income and Foreign-Born Households Use Public Transportation?

Principal Investigator:

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Email: wclark@geog.ucla.edu

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

Abstract: At one level the answer to this question is an unqualified “a great deal” - of course low-income populations use public transportation. How else would many of these workers get to their jobs? And, there is an implicit, and often explicit, sense that cities need to provide increased public transit and access to that transportation for low-income populations. However, recent research and commentary has raised questions about the use of public transportation by low-income populations. Studies of mostly welfare population have suggested that while public transportation is not unimportant, the car is a much more critical factor in moving from welfare to work. This paper conducts research with a detailed geo-coded data set to examine the low-income population in general and the foreign born population in particular. How much do low-income households in the Los Angeles metropolitan area use public transportation in their journey to work, schools and other activities? Are the foreign-born population particularly intensive users of public transportation and can we determine the relative trade-off of public transit and car use by these households? The study will extend previous studies that were targeted to specific welfare populations, to the low-income population at large.

Key Words: journey to work, public transportation, low-income populations, foreign-born populations

Objective: To evaluate the relative role of transit and auto use by low-income populations.

Tasks: (1) Use logistic regression to estimate the probability of being employed or becoming employed as a function of car versus transit use for individual households, (2) evaluate the use of transit by residential location.

Milestones, Dates: Official start date Aug. 1, 2005, end July 31, 2008

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 study will generalize and confirm, or question, earlier studies which have suggested that transit use does not significantly benefit welfare to work transitions.

Direct Cost: \$52,119

Is the Gender Gap History? Revisiting Sex Differences in Driving using a National Panel, 1985 to 2005

Principal Investigator:

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

Abstract: Dozens of studies indicate that while women as a group drive more each year, and tend to take more trips than men, men still drive more overall. Explanations include women's rising labor force participation and their enduring disproportionate share of domestic and child-oriented responsibilities. As these two trends continue to evolve, much remains unclear about how they and other changes in key demographic, family, and economic factors translate into changing driving patterns. In 1990 San Francisco, working men reported driving more than working women in all age groups but 23-39. In 2000, by contrast, travel times were the same by sex for all age groups but one. Additionally, women traveled less in single, childless adult families in 1990, but more by 2000.

These trends have not been analyzed for individual-level, longitudinal national data containing rich detail on family structure. It is thus unknown whether the so-called gender gap is shrinking nationwide when using proper statistical controls. We will analyze the National sample from the American Housing Survey, comprising 11 waves from 1985 to 2005. The model specification conforms to urban form theory, the model estimation uses panel techniques, and the potential endogeneity of wages and land costs will be addressed statistically.

Key Words: Commute, Journey to Work, Sprawl, Decentralization, Suburbanization

Objective: An improved understanding of how sex influences travel outcomes.

Tasks:

1. Development of theoretical model of individual travel demand
2. Development of statistical model of household travel behavior and urban form, based on choice theories of home and job behaviors.

Milestones, Dates: Official start date Aug. 1, 2005, end July 31, 2008

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: Inform public policies aimed at influencing the determinants & impacts of urban development.

Direct Cost: \$44,565

A Spatial Analysis of Self-serving and Altruistic Travel Behavior

Principal Investigator:

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

Abstract: Formulation and specification of activity and travel analysis models require better understanding of time allocation behavior. This is particularly important when studying time allocation of persons in joint activities and travel. However, very little is known about the perceived selfish and altruistic behavior and how this relates to travel behavior in time and space. In this project we attempt to offer a first analysis using structural equations models and data from a special type of activity participation diaries. The data from these diaries are detailed lists of activities pursued, times spent in each activity, and travel information from activity to activity (including travel time, mode used, and so forth) linked to individual and household characteristics. We also use detailed information about the persons that were served by the activity of each participant. The analysis will identify the correlation structure underlying behavioral indicators such as amount of time and frequency of activity and travel episodes for family and friends as well as for self-serving reasons. Then, the temporal and spatial relationships with activity participation and travel with others and alone as well as modal split will also be studied and correlated with altruistic and self-serving behaviors.

Key Words: activity and travel behavior, egoistic and altruistic behavior, modal split

Objective: Create a model system that explains modal split as a function of altruistic and self-serving behavior.

Tasks:

1. Develop First Model Set
2. Develop Second Model Set
3. Write report and papers for publication

Milestones, Dates: Official start date Aug. 1, 2005, end July 31, 2008

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: Achieve better understanding of travel behavior to design better policies favoring environmentally friendly modes.

Direct Cost: \$64,447

Emission and Air Quality Impacts of New Diesel Engine Control Technologies

Principal Investigator:

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

Abstract: Diesel engines are now responsible for half or more of the total nitrogen oxide (NO_x) and exhaust particulate matter (PM) emissions from on-road vehicles nationally. There has been recent progress in developing control technologies such as selective catalytic reduction, lean NO_x traps, NO_x storage catalysts, and diesel particulate filters. Although these technologies have not yet been widely deployed in on-road vehicles, their use will soon be required due to new heavy-duty engine emissions standards that will take effect in the U.S. starting with the 2007 model year. In this research, we will review control technologies available for future use, assess control efficiency, cost, durability and robustness in service, and the potential for undesirable side-effects on exhaust emissions. Emissions estimates will be developed for historical, current and future year scenarios that span a 20-year time period. We will use a 3-D photochemical model to predict the effects of changes in vehicle emissions on air pollution levels in the Los Angeles area.

Key Words: air pollution, diesel, emission controls, nitrogen oxides, particulate matter

Objective: Assess changes in emissions and air quality likely to occur in the next 10 years due to new emission control requirements for diesel engines.

Tasks:

1. Review of new diesel exhaust control techniques
2. Estimate emissions for historical, current, and future year scenarios
3. Assess air quality impacts of changing emissions in the Los Angeles area

Milestones, Dates: Official start date Aug. 1, 2005, end July 31, 2008

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: Quantify expected improvements in air quality over the next decade as a result of major investments in diesel emission control technologies.

Direct Cost: \$44,834

Life-Cycle Environmental Assessment of Passenger Air and Rail Transportation

Principal Investigator:

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

Abstract: The heavy rail and air passenger transportation modes are critical systems relied upon for business and leisure. When considering their environmental effects, most studies focus on the fuel use of the vehicles, and ignore the energy and other resource inputs and environmental outputs from the life cycles of involved infrastructures, fuels, and vehicles. This project will develop comprehensive life-cycle assessment (LCA) models to quantify the energy inputs and emissions from heavy rail and air transportation in the U.S. associated with the entire life cycle (design, raw materials extraction, manufacturing, construction, operation, maintenance, end-of-life) of the infrastructures, fuels, and vehicles in these systems. A computer-based decision-support tool will be created to aid the decision-making process, assisting decision-makers in private and governmental organizations in making environmentally friendlier investment and other decisions. An analysis of the proposed high speed rail line connecting San Francisco and Los Angeles will provide an opportunity to apply the research results to a case study.

Key Words: air transportation, rail transportation, energy, emissions, environment, life-cycle assessment

Objective: Develop comprehensive life-cycle assessment (LCA) models to quantify the energy inputs and emissions from heavy rail and air transportation in the U.S. associated with the entire life cycle of the infrastructures, fuels, and vehicles involved in these systems.

Tasks:

1. *Literature research* -- composition of and data on the infrastructure serving air and heavy rail transportation, energy inputs, emissions data from each life-cycle phase, fuel use by these transportation modes, details of the fuel cycle, end-of-life treatment of infrastructure and vehicles.
2. *Develop LCA models* -- identification of processes to be analyzed by LCA for the infrastructures, fuels, and vehicles in heavy rail and air transportation; development of a hybrid LCA model for each of these modes.
3. *Collect data* -- Collect data from literature, air and rail transportation organizations, the Ecoinvent database, and EIO-LCA.
4. *Develop computer-based decision-support tool* -- Based on the theoretical models and the data collected, an MS Excel-based computer tool will be developed in order to aid environmental analysis and enable the comparison of air and rail transportation modes with different sets of data for various decision-makers. We will design this tool to be expandable to analysis of other transportation modes in the future.
5. *Case study* -- Apply the developed LCA model to a case study, most likely the proposed Los Angeles-San Francisco high-speed rail line compared to the existing air transportation mode in the same markets.

Milestones, Dates: Official start date Aug. 1, 2005, end July 31, 2008

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 decision-making on intercity travel

Direct Cost: \$47,444

The Effect of In-Transit WiFi Internet Access on The Value of Travel Time Implications for Mode-Choice Models

Principal Investigator:

Adib Kanafani

UC Berkeley

Email: kanafani@berkeley.edu

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

Abstract: This study explores the effect on valuation of passenger travel time (VOTT), of providing of wireless internet access (WiFi) on public transportation modes. Specifically, we aim to formulate a model of the effect of WiFi on trains on time value and eventually on market share.

VOTT is the amount that a passenger would pay to reduce travel time by unit quantity. Amenities that enhance possibility of other activities during travel reduces the disutility of travel time, subsequently reducing VOTT. For most work and leisure activities, of internet access during the commute enhances the quality and productivity of work and leisure activities performed during travel.

Utility maximizing mode choice models may be used for quantify the effect of WiFi on VOTT and on market share. In these models, the ratio of the Lagrangean multipliers of the travel time and income constraints results in the same value of VOTT as the ratio between marginal utilities of time & cost estimated as part of modal utility in a discrete travel choice model. Internet access can then be modeled as an attribute in attribute specific choice models. The extent of reduction of VOTT can be used as a guideline for pricing WiFi on trains.

Key Words: Information Technology, Value of Time, Mode Choice, WiFi on Trains

Objective: Evaluate the effect of internet access in public transportation modes on the value of travel time and on mode choice.

Tasks:

1. Theoretical Model Development
2. Data Assembly
3. Estimation of Time Values
4. Adapting Mode Choice Models for Internet Access Attributes

Milestones, Dates: Official start date Aug. 1, 2005, end July 31, 2008

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: Understanding feasible business models for the provision of WiFi services on public transportation systems, and estimating the effect of that on market share.

Direct Cost: \$52,969

How Safe Is the Ride? Evaluation of Design and Policy Responses to Women's Fear of Victimization in Transportation Settings

Principal Investigator:

Anastasia Loukaitou-Sideris

UC Los Angeles

Email: sideris@ucla.edu

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

Abstract: The relationship between women's fear and the built environment has been the subject of much research, with clear findings that women feel unsafe in many locations. Cities and municipalities around the world have addressed this issue by implementing different programs to assess and remedy safety gaps in the built environment. Some of these programs have looked at transportation settings, but little academic research has specifically focused on this aspect of women's safety. Regardless of travel mode, women's fear of transportation facilities – such as parking lots, buses, and bus stops – affects the way women engage in travel. This study will focus on the safety concerns and needs of women riders by reviewing the literature on women's fear in public settings, conducting interviews with representatives from feminist organizations and women's advocacy groups to ascertain their perceptions of women's safety issues in cities, surveying U.S. transit operators to document the programs and activities they have implemented to make their systems safer for women riders as well as their assessments of the efficacy of these programs, and documenting model programs targeting women's safety issues regarding transit.

Key Words: Women, safety, transit travel

Objective: identify the needs of women groups regarding transit safety; assess if these needs are met by transit operators; and identify model programs and best practices

Tasks:

1. *Literature review:* Compilation of literature on women's fears and concerns about safety in public environments with a particular emphasis on transit settings. Documentation of programs and creation of an inventory of municipal policies in the U.S., Canada, Great Britain, and Australia that have as their explicit focus the safety of women in cities.
2. *Interviews with representatives of women's groups in the U.S.,* such as the National Organization for Women, American Association of University Women, Center for Women Policy Studies, Coalition of Labor Union Women, Feminist Majority Foundation, League of Women Voters, National Council of Women's Organizations, etc.
3. *Web-based survey of transportation agencies:* The survey will target all 259 U.S. transit agencies that Administration operate at least 50 vehicles in peak period service.
4. *Case studies of model programs:* Selection of 3-5 case studies of programs targeting women's safety issues in transit environments for in-depth study.
5. *Report writing.* Discussion of findings and compilation of best practices for making transit safer for women.

Milestones, Dates: Official start date Aug. 1, 2005, end July 31, 2008

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: Development of policies and design recommendations for making transit travel safer for women

Direct Cost: \$43,095

Bottom-up Bridge Management System

Principal Investigator:

Samer Madanat
UC Berkeley

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

Abstract: Infrastructure Management Systems support agencies in developing efficient policies to monitor, maintain, and repair deteriorating facilities in transportation infrastructure networks. In the case of bridges, two approaches exist for the optimization of resource allocation: top-down and bottom-up. In the top-down approach, the optimization is done first at the network level, which does not provide bridge-specific recommendations. In the bottom-up approach, the optimization is done first at the facility level. Current systems using a bottom-up approach present a major limitation: the optimization is done on a portion of the life cycle, which is equivalent to a short planning horizon. Finally, current state-of-the-art systems use time-independent deterioration models, which may not be appropriate.

A Bridge Management System is proposed which would optimize the lifecycle maintenance while using time-dependent deterioration models and preserving bridge-specific details. A bottom-up approach can be used. Moreover, robust optimization techniques can be applied at the facility-level, in order to mitigate the epistemic uncertainty in the deterioration process. Recommendations for each component can be aggregated and selected to meet network-level constraints. The proposed approach will provide long-term maintenance costs savings, and improve long-term performance and mainstreamed maintenance management.

Key Words: Infrastructure Management Systems, Maintenance, Resource Allocation, Deterioration Models, Robust Optimization.

Objective: a Bridge Management System that accounts for facility-specific attributes and system-level considerations

Tasks:

1. *Literature Review:* An extensive literature review will be performed in two main directions, bridge component deterioration models and M&R optimization models
2. *Model formulation and solution:* This task is divided in three major subtasks: subtask 2a (general problem formulation), subtask 2b (deterioration model synthesis) and subtask 2c (optimization model development).
3. *Extensions:* Two extensions to the model are proposed: simultaneous optimization of inspection and maintenance decisions (to address inherent uncertainty) and robust optimization (to address epistemic uncertainty).
4. *Application Case-studies:* The methodology developed in the previous tasks of the research will then be implemented using data from existing bridges

Milestones, Dates: Official start date Aug. 1, 2005, end July 31, 2008

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 product of the project will provide state DOTs a prototype for the next generation of Bridge Management Systems, which goes beyond the constraints of current systems.

Direct Cost: \$44,360

A Model of Activity/Travel Scheduling/Rescheduling Decisions in an Uncertain Environment

Principal Investigator:

Wifred Recker

UC Irvine

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

Abstract: The activity-based approach to analysis of human interaction with the social and physical environments dates back to the original time-space geography works of Hägerstrand and his colleagues at the Lund School in 1970. Despite their obvious theoretical attractiveness, activity-based approaches to understanding and predicting travel behavior have suffered from the absence of an analytical framework that unifies the complex interactions among the resource allocation decisions made by households in conducting their daily affairs outside the home, while preserving the utility-maximizing principles presumed to guide such decisions. The objective of this research is to develop a computationally-tractable system, based on an extension and modification of some rather well-known network-based formulations in operations research, to model human dynamics in uncertain environments. The research will build on the mathematical programming formulation of the Household Activity Pattern Problem (HAPP) by embedding in the household activity schedule decision process a means of capturing uncertainty and preferences, and by introducing the dynamics of rescheduling. The proposed model will be estimated and validated using data derived from an on-line survey/diary of household members, documenting the scheduling and dynamic rescheduling of all (in- and out of- home) activities over the course of a one- week period.

Key Words: activity-based, human dynamics, uncertain environments, household schedule

Objective: The objective of this research is to develop a computationally-tractable modeling system that incorporates uncertainty factors within the dynamics of activity/travel rescheduling/adaptation.

Tasks:

1. Formulate “fuzzified” version of household activity/travel decision model
2. Develop framework for producing skeleton activity plans
3. Incorporate dynamic rescheduling based on similarity measures
4. Estimate and verify model using existing REACT! Data.

Milestones, Dates: Official start date Aug. 1, 2005, end July 31, 2008

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 resulting framework would greatly increase our ability to address the household activity scheduling problem.

Direct Cost: \$46,435

The Political Calculus of Congestion Pricing

Principal Investigator:

Donald Shoup
UC Los Angeles

Email: shoup@ucla.edu

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

Abstract: Although traffic congestion has worsened and tolling technology has improved, motorists and elected officials continue to oppose congestion tolls on crowded roads. While transportation economists have long recommended tolls as the most promising way to reduce traffic congestion, economic efficiency alone has been insufficient to galvanize public policy. The political viability and public acceptance of congestion pricing depends on creating legitimate claimants who will fight for the revenue, and logical claimants for freeway toll revenue are the cities through which the freeways pass. Distributing toll revenue to freeway cities will compensate these cities for bearing the local external costs of a regional system, and will also create well-organized claimants who support for the tolls. This research will explore how distributing toll revenue to cities can work. There are three aspects to this proposal: First, we will estimate the distribution of toll revenues to cities in Los Angeles County, and interview city officials to explore their attitudes towards congestion pricing if the revenues are returned to cities. Second, we will replicate our estimates of revenue distribution in other metro areas. Third, we will conduct a review of the health implications of freeways on adjacent communities.

Key Words: congestion, congestion pricing, distribution of toll revenue

Objective: To explore how distributing toll revenue to cities can work.

Tasks:

1. Estimate the distribution of toll revenues to cities in Los Angeles County, and interview city officials to explore their attitudes towards congestion pricing if the revenues are returned to cities.
2. Replicate estimates of revenue distribution in other metro areas.
3. Conduct a review of the health implications of freeways on adjacent communities.

Milestones, Dates: Official start date Aug. 1, 2005, end July 31, 2008

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 political viability and public acceptance of congestion pricing depends on creating legitimate claimants who will fight for the revenue, and logical claimants for freeway toll revenue are the cities through which the freeways pass. Distributing toll revenue to freeway cities will compensate these cities for bearing the local external costs of a regional system, and will also create well-organized claimants who support for the tolls.

Direct Cost: \$47,452

Estimating Potential Exposure to Diesel Truck Freeway Emissions in Southern California: A Methodology for Assessing Air Pollution Impacts of Goods Movement

Principal Investigator:

Arthur Winer

UC Los Angeles

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

Abstract: It is now well documented that air pollution and health impacts of diesel vehicle emissions are highly concentrated near major roadways. This study will develop a methodology to disaggregate the potential impacts of diesel truck traffic from all other traffic in order to characterize the geographic extent and magnitude of diesel pollutant impacts along freeways in Los Angeles County, with an emphasis on those freeways with a relatively large fraction of diesel truck traffic. Recognizing the potential benefits of expanding the goods movement capacity of the freeway system, this project will provide transportation planners and policy makers with a more comprehensive understanding of local pollutant impacts, and enhance their ability to develop informed and defensible strategies to avoid and mitigate adverse impacts of heavy-duty freight vehicles.

Key Words: air pollution, diesel truck traffic, emissions, goods movement, heavy-duty freight, local pollutant impacts

Objective: To develop a methodology to characterize the geographic extent and magnitude of diesel pollutant impacts along freeways that will inform strategies to avoid and mitigate adverse impacts of heavy-duty freight vehicles.

Tasks:

1. Review Existing Studies
2. Collect, Assess and Compile Truck Count Data
3. Assign Truck Counts to a GIS Freeway Map System
4. Identify and Characterize Potential Air Pollution Impacts

Milestones, Dates: Official start date Aug. 1, 2005, end July 31, 2008

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 aid transportation and air quality agencies in assessing and evaluating the potential local air quality impacts of heavy duty diesel truck emissions immediately adjacent to goods movement freeway corridors.

Direct Cost: \$37,094

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.

Table 6 shows the committed allocations of the budget for 2005-2006.

Table 6. University of California Transportation Center 2005-2006 (Year 17) Allocations

Note: \$780,000 USDOT and \$780,000 Caltrans funds

ITEM	BUDGET
Center Director Salary	75,000
Faculty Salaries	0
Administrative Staff Salaries	78,350
Other Staff Salaries	90,600
Student Salaries	275,000
Staff Benefits	57,469
SUBTOTAL SALARIES AND BENEFITS	576,419
Scholarships	704,500
Permanent Equipment	5,000
Expendable Property & Supplies	23,816
Domestic Travel	40,000
Foreign Travel	10,000
Other Direct Costs (Specify)	154,081
Total Direct Costs	937,397
Facilities & Admin. (Indirect) Costs	46,184
TOTAL COSTS	1,560,000
Federal Share	780,000
Matching Share	780,000
TOTAL AVAILABLE FUNDS	1,560,000

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 2005-2006 (Year 18).

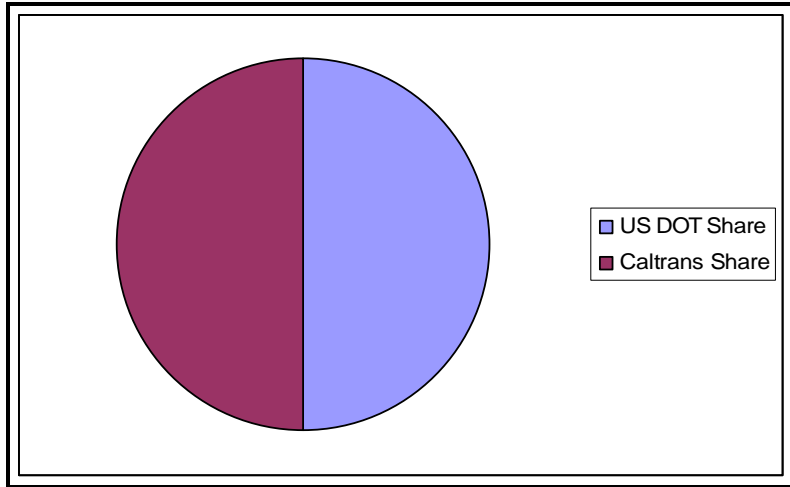


Figure 1. UCTC Revenues, Year 18 (2005-2006)

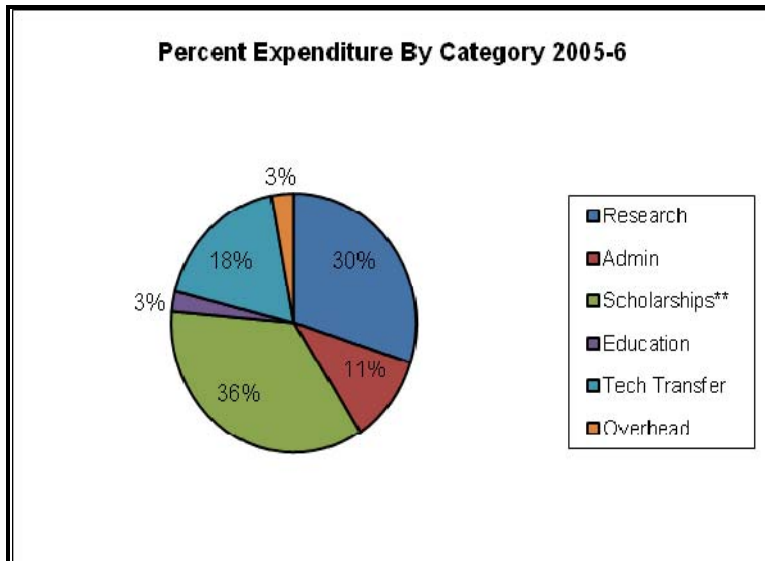


Figure 2. UCTC Expenditure Allocations, Year 18 (2005-2006)

APPENDIX 1. GLOSSARY

ACCESS - the research magazine published by the University of California
CAD- computer-aided design
CALTRANS- the California Department of Transportation
CCIT- California Center for Innovative Transportation located at UC Berkeley
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
GMS – Global Metropolitan Studies, an interdisciplinary initiative at UC Berkeley
GSR- graduate student researcher
IGS- the Institute of Governmental Studies at UC Berkeley
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
MINETA - Mineta Transportation Institute at San Jose State University
NEXTOR - National Center of Excellence for Aviation Operations Research headquartered at UC Berkeley
NRT – nonresident tuition
NSF- National Science Foundation
OECD- the Organization for Economic Cooperation and Development
PATH- Program for Advanced Transit and Highways headquartered at UC Berkeley
PI- Principal Investigator
RABA - Revenue Aligned Budget Authority
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
UCB - the Berkeley campus of the University of California
UCD - the Davis campus of the University of California
UCI - the Irvine campus of the University of California
UCLA- the Los Angeles campus of the University of California
UCR – the Riverside campus of the University of California
UCTC- the University of California Transportation Center
USCB – the Santa Barbara campus of the University of California
USC - the University of Southern California, a private university
US DOT- the US Department of Transportation
UTC Program- the University Transportation Centers Program
Volvo Center – the Center for Future Urban Transport, a Volvo Center of Excellence located at Berkeley

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 21st 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 UNDERWAY IN 2005-2006 (35 PROJECTS)

A-- STARTED YEAR 16 , COMPLETED 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

B-- STARTED YEAR 17, COMPLETED 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

C -- NEW in Year 18 - 2005-6 – Continued in 2006-7 (14 Projects)

Congestion control for Highway Network Systems

Alexandre Bayen, UC Berkeley

An Empirical and Theoretical Study of Freeway Weave Analysis

Michael Cassidy, UC Berkeley

Freeway Deconstruction and Urban Renewal Land Market and Transportation Impacts

Robert Cervero, UC Berkeley

How Much Do Low Income and Foreign-Born Households Use Public Transportation?

William Clark, UC Los Angeles

Is the Gender Gap History? Revisiting Sex Differences in Driving using a National Panel, 1985 to 2005

Randall Crane, UC Los Angeles

A Spatial Analysis of Self-serving and Altruistic Travel Behavior

Konstadinos Goulias, UC Santa Barbara

Emission and Air Quality Impacts of New Diesel Engine Control Technologies

Robert Harley, UC Berkeley

Life-Cycle Environmental Assessment of Passenger Air and Rail Transportation

Arpad Horvath, UC Berkeley

The Effect of In-Transit WiFi Internet Access on The Value of Travel Time Implications for Mode-Choice Models

Adib Kanafani, UC Berkeley

How Safe Is the Ride? Evaluation of Design and Policy Responses to Women's Fear of Victimization in Transportation Settings

Anastasia Loukaitou-Sideris, UC Los Angeles

Bottom-up Bridge Management System

Samer Madanat, UC Berkeley

A Model of Activity/Travel Scheduling/Rescheduling Decisions in an Uncertain Environment

Wifred Recker, UC Irvine

The Political Calculus of Congestion Pricing

Donald Shoup, UC Los Angeles

Estimating Potential Exposure to Diesel Truck Freeway Emissions in Southern California A Methodology for Assessing Air Pollution Impacts of Goods Movement

Arthur Winer, UC Los Angeles