Program Progress Performance Report (PPPR)
University Transportation Center-CM2

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Center Director:	Ming Zhang, zhangm@austin.utexas.edu, (512) 471-0139
Submitting Official:	Rachel Wimberley, rwimberley@austin.utexas.edu, (512) 471-1291
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1. ACCOMPLISHMENTS

1.1 What are the major goals of CM2?

We are committed to advance research, education, and technology transfer initiatives to improve mobility, promote equity, and enhance economic competitiveness of urban and rural communities in megaregions.

- We aim to become a leading Tier 1 center specialized in megaregion mobility research, offering advice on strategic transportation planning, smart infrastructure investments, and informed policy-making.
- We promote multimodality ranging from HSR to slow-moving transportation such as walking and bicycling for diverse populations and communities and facilitate public-private partnership for freight mobility planning and operation efficiency.
- We aim to provide high-quality transportation education and workforce development and to connect research with practical actions.

PLEASE SEE APPENDIX A FOR CM2 PRIORITIES AND TOPIC AREAS

1.2 What was accomplished under these goals?

A. The projects are scheduled to begin in the next reporting period. Major activities planned for this project include: 1) review of relevant literature relative to reentry methods used currently or in the past within the United States for a range of hazard conditions and locations within megaregions; (2) phone interviews and face-to-face interviews with evacuation personnel at all levels of government to gain knowledge on the decision-making process at the federal, state and local level; (3) documentation of results and report preparation; (4) base model development and coding of a selected area in the US using microscopic simulation; and (5) review and analysis of traffic model performance metric (LSU, PI Brian Wolshon)
B. Because of our delayed project selection process, we are only now just getting started. Anticipated tasks for the June-September 2017 period include: (i) Hiring two research assistants; (ii) planning MPO technical advisory committee meeting (scheduled for September 2017); (iii) combined NECM traffic analysis zone reconnaissance; and,(iv) initial VISSUM setup. (Penn, PI John Landis)
C. Because of our delayed project selection process, we are only now just getting started. Anticipated tasks for the June-September 2017 period include: (i) Hiring one research assistant; (ii) obtaining 2000 and 2012 travel demand survey data from the Delaware

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Valley Regional Planning Commission; and, (i) Initial investigation and descriptive analysis of survey data. (Penn, PI Erick Guerra)

D. Planning is currently on-going for the fall 2017 graduate seminar (Penn, PI Robert Yaro)

E. Professor Michael Oden has undertaken an analysis of the role of Metropolitan Planning Organizations(MPOs)in relationship to other multi-sector non-profit initiatives or Councils of Government (COGs)that engage transportation, land use planning and access issues at a regional, multijurisdictional scale. Oden and his research group are developing a survey of all MPOs that will be implemented in September with the support of Association of Metropolitan Planning Organizations, AMPO. The survey will ask, among other things, about the extent to which MPOs engage, collaborate, or cooperate with other MPOS in their state or at larger regional scales. The survey will provide useful baseline information about the barriers and opportunities for megaregional planning initiatives. (UT, PI Michael Oden)

F. The first research project has begun work on Assessing Changes to Federal and State Law for Megaregion Planning. A law student was hired and began work on the 22nd May. The law students reviewing various elements within federal law, to determine if megaregion planning can be conducted at the federal level. The project will also assess how the states and MPOs may also develop megaregion planning portfolios under existing law. (UT, PI Lisa Loftus-Otway)

G. Prior to receiving the announcement about the CM2 award, previous work led to a report of local distribution from the Dallas to Houston High Speed Rail line in November 2016. (TSU, PI Carol Lewis)

H. We are working on Task 1 of the project: Literature Review and Synthesis of the State of Practice. The research team will review existing freight datasets that are publically available and examine state-of-practice methods for measuring truck freight values on roadway links, including relevant papers from transportation journals, research papers from the proceedings of transportation conferences such as the Transportation Research Board (TRB) Annual Meetings, and technical reports from previous projects involving freight research. The team will seek to understand how freight analytical frameworks are developed. Operational freight models will be scrutinized.
This task has the following three subtasks:
1) Review existing studies of freight movement;
2) Identify freight datasets, including those publically available and ready-to-use datasets at different spatial levels; and
3) Examine existing analytical methods for estimating truck flows. The time required for this task will be 2 months (May 1 –June 30, 2017). Thus, it is an ongoing task that we are still working on. We have not summarized the significant results and key outcomes yet. (TSU, PI Qisheng Pan)

I. 1) Conducted a literature review on if and how older Americans use both home delivery of local purchases and new technology platforms to substitute for auto-based travel.
2) Structured and gave a graduate seminar in the University of Texas at Austin Community and Regional Planning Program to examine how to determine and measure the features of the built environment that facilitate walking by older people, focusing on differences in what they seek or need and the preferences of younger travelers.
3) Contacted representatives of Uber and Lyft to learn of their initiatives with transit

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operators and human service agencies to provide specialized transportation and related services to seniors and other travelers, whether paid directly by the rider or through third-party payers (public agencies, NGOs, adult children). (UT, PI Sandi Rosenbloom)

J. CM2 director Ming Zhang collaborated with Dr. Shima Hamidi of C-TED led by the University of Texas at Arlington proposing a special session at the annual meeting of the Association of Collegiate Schools of Planning (ACSP), October, 2017 in Denver. C-TED is a Tier-1 UTC awarded in 2016. The special session is titled "Leveraging Local & State Planning for Megaregional Transportation Needs". (UT, PI Ming Zhang)

1.3 How have the results been disseminated?

A. The Assessing Changes to Federal and State Law for Megaregion Planning Project has been listed on the UTC website and within TRID database.   (UT, PI Lisa Loftus-Otway)
B. *One transit desert paper has been published by the Journal of Transport and Land Use*
1.Jiao, J.2017. Identify Transit Desert in Major Texas Cities Where Demands Missed Supplies. Journal of Transport and Land Use.10(1), pp 529-540. (UT, PI Junfeng Jiao)
C. *One crowdsourcing paper was submitted for review*
2.Griffin, G. *and Jiao, J.(under review). Crowdsourcing Bike Share Station Location in Chicago and New York City: Empty Voices or Powerful Participation. Journal of American Planning Association. (UT, PI Junfeng Jiao)

1.4 What do you plan to do during the next reporting period to accomplish the goals?

A number of activities are planned for the next reporting period that will facilitate accomplishing the goals of CM2. These activities are:

A. The Assessing Changes to Federal and State Law for Megaregion Planning Project will review the commerce clause, federal preemption and spending powers, and look at the authority and structure of MPOs. The project will develop a project report, that includes policy and legal briefings which will be published on the UTC's website. This project will develop at least two law journal articles to be published in the Journal of Transportation Law, and another in a law journal that focuses on federalism issues.There has been, to date, no legal analysis at this level of megaregional legal authority. The project will also provide information for another consortium partner's project that will be conducting a survey of MPOs. A meeting between the two research teams will take place in early July. (UT, PI Lisa Loftus-Otway)
B. A session will be scheduled to present study finding to others in the regional, particularly Texas Central, the constructor of the Texas High Speed Rail line from Houston to Dallas. (TSU, PI Carol Lewis)
C. We will deliver the results of the first task: existing research and current practices will be reviewed and synthesized in a technical memorandum, which will be updated accordingly throughout the project as required. (TSU, PI Qisheng Pan)
D. We will also complete the second task and deliver the results, which include the data identified in existing freight databases or research reports and collected through national, state, and local freight data sources. They will be compiled to provide

necessary information for the freight database of Texas Triangle. Research results will be provided in a technical memoranda and a CD. (TSU, PI Qisheng Pan)

E. Have hired one GRA in the summer to collect the transit desert related data in Top 30 cities in the US. I hope we can finish the data collection and analysis by the end of the next reporting period. One GRA will start to work on the Crowdsourcing project in Sep 1, 2017. We hope to finish the data collected by the end of the next reporting period. (UT, PI Junfeng Jiao)

F. Interview agencies who have used Uber-Lyft type services for older people to learn the advantages and problems in doing so, considering whether they were provided transportation and/or delivery services and patterns in use by seniors.ii) Interview other platforms and service providers, both local and national, to learn about the demographics of their users and any differences they note in use by seniors. (UT, PI Sandi Rosenbloom)

G. Conduct focus groups with a cross section of older people in Austin, TX to understand how, when, and how often they use relevant platforms and delivery services. (UT, PI Sandi Rosenbloom)

H. Finalize course plan for a seminar "Planning for Megaregions" to be offered Spring of 2018 at the University of Texas at Austin. The course will have physical or virtual participation from researchers/faculty of CM2 partners as guest speakers. (UT, PI Ming Zhang)

2. PRODUCTS

2.1. Publications, conference papers, and presentations:

Publications, conference papers or presentations have not been produced during this reporting period.

2.1.1. Journal publications:

One transit desert paper has been published by the Journal of Transport and Land Use

A. Jiao, J.2017. Identify Transit Desert in Major Texas Cities Where Demands Missed Supplies. Journal of Transport and Land Use.10(1), pp 529-540. (UT, PI Junfeng Jiao)

One crowdsourcing paper was submitted for review

B. Griffin, G. *and Jiao, J.(under review). Crowdsourcing Bike Share Station Location in Chicago and New York City: Empty Voices or Powerful Participation. Journal of American Planning Association. (UT, PI Junfeng Jiao)

2.1.2. Books or other non-periodical, one-time publications

Nothing to report.

2.1.3. Other publications, conference papers and presentations

CM2 Director Ming Zhang gave a presentation by invitation to the TRB subcommittee on megaregions during the TRB 2017 conference. CM2 Director Ming Zhang was invited to present

to UT Austin School of Architecture Advisory Council on April 7, 2017 on CM2 key themes and work plans.

2.2 Website(s) or other Internet site(s)

Program activities and research results will be disseminated through the Gulf Coast Center for Evacuation and Transportation Resilience's website: http://www.evaccenter.lsu.edu/ (LSU, PI Brian Wolshon)

2.3. Technologies or techniques

The project has identified Autodesk Revit as the BIM software platform to use for this research. (UT, PI Danelle Briscoe)

2.4. Outreach activities

A. Outreach activities will be pursued in the next reporting period. These would include transportation-related lectures and hands-on activities for summer enrichment programs at LSU. (LSU, PI Brian Wolshon)
B. A Research Assistant posting has been administered. So far I have received applications from two very strong candidates. One is in the Graduate Architecture program while the other is in Community and Regional Planning. Both have valuable qualities that are necessary for this position. I will decide this week on which it will be. Autodesk discussion: An initial conversation with John Herridge, the AEC Technical Marketing Manager with Autodesk Education Experiences, allowed for an introduction to James Wedding <james.wedding@autodesk.com, who is supporting education initiatives for transportation and civil engineering programs for infrastructure. After that, Herridge sent contact information for Dr. Ram M. Pendyala, whose research focuses on multi-modal transportation engineering and digital applications. His profile can be found at http://rampendyala.weebly.com/and his research here http://www.mobilityanalytics.org/. His Mobility Analytics Research Group will provide essential feedback on the BIM generation modeling with the goal of "Smart, Sustainable, and Healthy Communities" (UT, PI Danelle Briscoe)
C. We worked with a variety of seniors in five focus groups in Austin, TX to learn how they viewed the walkability of their neighborhoods, the neighborhood attributes that they sought and avoided, and the ways in which their neighborhoods could be restructured to enhance walkability. (UT, PI Sandi Rosenbloom)
D. Worked with Georgetown, TX on bike issues and bike master plan for the city. A conversation is ongoing to extend the bike study next year. (UT, PI Ming Zhang)
E. CM2 PIs (Rosenbloom, Loftus-Otway, Sciara) and Rachel Wimberley have been active in Women's Transportation Seminar (WTS), including attendance of events in the spring of 2017. (UT, CM2 Administration)

2.5. Courses and workshops

A. Dr. Brian Wolshon led a three-hour workshop at the National Hurricane Conference, New Orleans on April 2017. (LSU, PI Brian Wolshon)

    B. Dr. Brian Wolshon was invited to give a presentation at the Women in Transportation Seminar (WTS), Louisiana Chapter on May 2017. His presentation was titled: "Evacuation and Resilience: Practice and Research" (LSU, PI Brian Wolshon)

    C. We conducted a graduate seminar in the Community and Regional Planning Program at the University of Texas which examined how the features of the built environment affected walking by seniors; created an instrument to be used instead of WalkScore and other indices which fail to accurately measures the features of the built environment that actually matter to older travelers. We will test this instrument later in the year. (UT, PI Sandi Rosenbloom)

    D. Dr. Ming Zhang has been working with CM2 Administration to guide a conference on Texas Megaregions, to be held by Federal Highway Administration (FHWA) and DOT officials in Texas in the fall of 2018. (UT, CM2 Administration)

2.6. Inventions, patent applications, and/or licenses

Nothing to report.

2.7. Other products

    A. Annotated Bibliography –PDF product for the "Megaregions" website (August 2017)

    B. Survey Instrument and Response Data posted in PDF form and accessible through the Megaregions website (October 2017)

    C. Conference paper to be presented at the Association of Collegiate School of Planning, Denver, Colorado (October 12-15, 2017) (UT, PI Michael Oden)

3. PARTICIPANTS AND COLLABORATING ORGANIZATIONS

3.1 What organizations have been involved as partners?

As part of some of the CM2 research projects, partners outside the 4 partner institutions have been brought in as research collaborators. These partners include:

- Organization Name: Stephenson Disaster Management Institute (SDMI) Location of Organization: Louisiana State University, Baton Rouge, Louisiana Partner's contribution to the project: Collaborative research
- For the High Speed Rail Distribution Study, Funding partners were as follows:
    - Houston Galveston Area Council 3555 Timmons, Houston, TX 77027
    - Uptown Houston Association 1980 Post Oak Boulevard, Suite 1700 Houston, TX 77056
    - Central Houston Improvement District 909 Fannin, Suite 1650 Houston, TX 77010 (TSU, PI Carol Lewis)

3.2 Have other collaborators or contacts been involved?

For the High Speed Rail Distribution Study (funded by others), Metropolitan Transit Authority and Gulf Coast Rail District staff sat on the Advisory Board. (TSU, PI Carol Lewis)

4. IMPACT

CM2 has just begun to work on implementing programs and many of the programs require time to have outcomes that are impactful. At this early stage of of the Center's operation it is difficult to estimate the impact on most of our activities.

4.1. What is the impact on the development of the principal discipline(s) of the program?

A. The analysis of the roles and specific activities of organizations, including MPOs that plan across urban jurisdictions will be delineated in a systematic way using contemporary literature and data. The survey of MPOs will add crucial and original data on current attitudes and practices of cooperation and collaboration between metro scale MPOS and/ or other regional organizations. The survey will provide important information on any current forms of "megaregional" planning activities. (UT, PI Michael Oden)

B. Analysis of the legal authority for megaregions has only briefly been covered by one of the consortium members at the federal level and this has not been disseminated in a public forum. Megaregion theory analysis has not conducted any critical legal analysis that is publically available on the legal structures that would be necessary for megaregions to begin megaregion work.
The Assessing Changes to Federal and State Law for Megaregion Planning Project will take a deep dive into critical constitutional law elements to determine the authority, for, and the challenges ahead in conducting megaregional planning without statutory support. For example, this will assist policy makers, planners, and private sector groups to construct programs or projects that can achieve megaregional planning goals without running afoul of federal preemption, or commerce clause issues. (UT, PI Lisa Loftus-Otway)

C. Transit desert research developed a new way to quantify and measure transit service in US cities. The PI also coined the term (transit desert). It has expanded people's perception and understanding of public transit service. It will help government make better investment decisions and located the resources to the most needed areas. Crowdsourcing project helps us understand how to better use information technology to understand citizens transportation requirement and how to use them for planning practice. (UT, PI Junfeng Jiao)

D. We seek to produce useful guidance to important regional planning organizations to both understand the impacts of Lyft-Uber type platforms and national and local delivery services on the mobility needs of seniors across a mega-region and to help develop appropriate mechanism to harness the power of these old-fashioned and innovative services for a range of seniors, including those who will need financial assistance. (UT, PI Sandi Rosenbloom)

4.2 What is the impact on other disciplines?

A critical analysis of the legal underpinnings that could support megaregional planning at the federal, state and local level will assist other disciplines in contextualizing their

recommendations to what is possible under current law, and what could be possible if laws are amended, or new laws are created. (UT, PI Lisa Loftus-Otway)

All our work is completely inter-disciplinary, building on and interacting with social work, geriatrics, civil engineering, freight logistics, local and regional transportation planning, law, geography, and traffic safety. (UT, PI Sandi Rosenbloom)

4.3 What is the impact on the development of transportation workforce development?

• Provide opportunities for research in transportation to graduate and undergraduate college students

• Provide exposure to transportation, science and technology to young people and other members of the public (LSU, PI Brian Wolshon)

4.4 What is the impact on physical, institutional, and information resources at the university or other partner institutions?

We expect to help a wide variety of academic programs better understand the mega-regional implications of an aging society and to respond appropriately to changes in technology and social interaction across spatial domains. (UT, PI Sandi Rosenbloom)

4.5 What is the impact on technology transfer?

Currently very few State DOT and MPOs staffers have an understanding of megaregion theory. The Assessing Changes to Federal and State Law for Megaregion Planning will provide them with a critical understanding of the legal underpinnings for megaregion, and provide a construct to develop planning materials, and cross-agency collaboration. (UT, PI Lisa Loftus-Otway)

4.6 What is the impact on society beyond science and technology?

● The world is rapidly urbanizing, and in the U.S. over half of U.S. residents live in 146 counties, that are all concentrated within the identified megaregions. Understanding how megaregion trends may impact transportation decisions and investments will be critical for the future development of the U.S. Network, and in effective allocation of scarce resources by legislators and policy makers. The U.S. has a mature transportation system that requires critical policy and investment decisions for maintenance, and for disruptive technologies that will change the way citizens move intra-and interstate, and through and between megaregions. (UT, PI Lisa Loftus-Otway)
● Transit deserts project was widely reported by newspapers, university press, and popular planning website. (UT, PI Junfeng Jiao)
● We expect to help a wide variety of professionals to make life better for aging Americans in ways that improve health, safety, and emotional well-being. (UT, PI Sandi Rosenbloom)

4.7 Additional impacts

● Improve decision-making for safer and more efficient post-disaster return-entry procedures in megaregions (LSU, PI Brian Wolshon)

- Improved processes, techniques and skills in addressing transportation issues has already been founded as I discuss this project with other colleagues in architecture
- Greater adoption of BIM technology as the process has begun on expanding how the BIM platform will be used in an innovative way (UT, PI Danelle Briscoe)

5.CHANGES/PROBLEMS

5.1 Changes in approach and reasons for change

There are no changes in the approach during this reporting period.

5.2 Actual or anticipated problems or delays and actions or plans to resolve them

Nothing to report

5.3 Changes that have a significant impact on expenditures

Nothing to report

5.4 Significant changes in use or care of human subjects, vertebrate animals, and/or biohazards

Nothing to report

5.5 Change of primary performance site location from that originally proposed

Nothing to report

5.6 Additional information regarding Products and Impacts

Nothing to report

6. SPECIAL REPORTING REQUIREMENTS

There are no special reporting requirements.

Appendix A – CM2 Chosen FAST Act Priority and Topic Areas

Priority 1. Improving mobility of people and goods

Topic Area 1: Regional planning and setting of transportation priorities

1.1 Establishing a legal framework for cooperative megaregion transportation planning

Developing recommendations for roles, requirements, and responsibilities for transportation planning agencies

Developing recommendations for changes to CFR 23

Developing recommendations for scaling up planning agencies

Reviewing impacts to air quality & conformity to air quality standards

1.2 Developing analytical framework targeting passenger mobility improvement in megaregions

Measuring long-term mobility demand

Identifying opportunities for high-speed mobility

Gauging the megaregional commute patterns

Understanding the implications of telecommuting and weekly travel decision behavior

1.3 Developing analytical framework targeting freight mobility improvement in megaregions

Developing mechanisms and methods to collect, track, and integrate local freight plans

Assessing the impacts of federal and state rules on freight mobility

Examining the role that autonomous trucks may play in megaregion freight delivery systems

Researching initiatives to reduce trucking emissions in delivery processes

Facilitating public-private partnerships for freight mobility planning and operation efficiency

Topic Area 2: Increase access to opportunities that promote equity in connecting regions and communities, including urban and rural communities.

2.1 Capitalizing on access-enabling spatial strategies

2.2 Promoting equity for disadvantaged groups in and around the megaregion, such as the elderly or rural populations

2.3 Creating environmental justice metrics in the megaregional context

2.4 Improving public participation at the megaregional scale

2.5 Improve effectiveness and efficiency of public transit and demand-responsive services to "transit deserts"

2.6 Empower underserved and underinvested populations and communities through an improved public engagement process with applications of new information and communications technologies (ICTs)

Topic Area 3: Innovations in multi-modal planning and modeling for high-growth regions

3.1 Optimizing multi-modality through the optimal combination and utilization of different modes for intra-megaregion travel

3.2 Optimizing inter-modality through research on the applications of technologies such as GeoDesign and Building Information Modeling (BIM) to improve multi-modal integration in transit hubs

3.3 Developing a GIS-based planning support system (PSS)

- Generate a GIS-based model platform that provides interface with external models such as MPOs' travel demand models, traffic simulation and emergency evacuation models, freight demand models, and statewide transportation planning models

- Model recent dynamics of neighborhood change across all major U.S. metropolitan areas

- Research regarding whether and how the deployment of autonomous and connected vehicles (ACVs, including private vehicles and public transit) may impact accessibility and mobility

3.4 Enhance preparedness, response, and resilience of underserved and underinvested communities in the event of hazards and emergencies

Priority 2. Reducing congestion (Integrated into Topic Area 2 above)

Urban logistics – last mile for both passengers and freight

Land use and transportation planning

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