Preliminary Investigation

Caltrans Division of Research, Innovation and System Information

Coordinated Transportation Services
for Seniors and People with Disabilities

Requested by
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Executive Summary

Background

Caltrans is responsible for administering Federal Transit Administration (FTA) funds for the Section 5310 program, Enhanced Mobility of Seniors and Individuals with Disabilities. Caltrans is also responsible for the administration of FTA Sections 5311 and 5311(b) funds, the Formula Grants for Rural Areas program and Rural Transit Assistance Program, respectively. The 5311 programs provide funding for transit agencies in nonurbanized areas for design, implementation, training and technical assistance.

Caltrans is interested in identifying best practices that can assist transit agencies, particularly those in rural and suburban areas, in improving their transit, paratransit and coordinated transportation services for seniors and people with disabilities.

To assist with this information-gathering effort, CTC & Associates examined recently published research and in-process efforts, federal grant programs, and recent relevant activities at the national, state and local levels with these topic areas in mind:

- Centralizing small, local transit services at the county level.

- Augmenting a primarily volunteer local workforce with paid professional staff members.

- Using technology to improve outreach capabilities.

Summary of Findings

Below is a summary of some of the key resources we identified that may inform transit agency efforts to provide or enhance coordinated transportation services for seniors and people with disabilities. Refer to the **Detailed Findings** section of this report for additional citations.

Coordinated Transportation: Guidance, Plans and Practices

National Guidance and Related Resources

An FTA web site managed by the Coordinating Council on Access and Mobility provides a wealth of resources that can assist communities interested in coordinating transportation services. Recent publications from the National Aging and Disability Transportation Center describe mobility challenges and opportunities with case studies that illustrate effective cooperative practices, and an FTA-developed assessment tool that can help those wishing to move toward more effective coordination. This tool provides guidance with "how to develop elements of a plan, such as identifying the needs of targeted populations, assessing gaps and duplication in services, and developing strategies to meet needs and coordinate services."

In other guidance, a 2014 report prepared by the U.S. Government Accountability Office highlights the results of site visits to transit agencies in Florida, Oregon, Pennsylvania and Texas, with a particular focus on the challenges associated with providing and coordinating services.

State Plans and Practices

This section of the report highlights coordinated transportation plans and practices associated with 12 states—California, Colorado, Indiana, Iowa, Minnesota, New Hampshire, North

Carolina, Ohio, Oregon, South Carolina, Texas and Wisconsin. A few of these resources are highlighted below:

- A 2011 conference paper describes a rural transportation survey toolkit developed by San Diego Association of Governments to aid in the development of a coordinated plan.

- A June 2011 publication provides case studies describing Minnesota-based local transit agencies that illustrate the benefits of strategies such as contracts between agencies, coordination of agency schedules and dispatch, and hiring a mobility manager.

- An Ohio Department of Transportation (DOT) web site, Coordinated Plan Tool Box, provides checklists, templates, worksheets, tips and resources "for lead agencies and coordinated plan planning committees to use to assist in the development of coordinated plans."

The plans and related resources included in this Preliminary Investigation are a small sampling of the coordinated plans prepared by state, regional and local agencies responsible for providing transportation services. The National Center for Mobility Management's web site (http://web1.ctaa.org/webmodules/webarticles/anmviewer.asp?a=384&z=39) provides links for many more coordinated transportation plans.

Mobility Management

United We Ride, an FTA initiative that helps states and local communities coordinate across various federal programs associated with human services transportation, defines mobility management as "an innovative approach for managing and delivering coordinated transportation services to customers, including older adults, people with disabilities and individuals with lower incomes."

National Resources

A 2014 U.S. DOT study developed and applied an evaluation method "that can be used in communities across the country to examine the effectiveness of their mobility management and coordination programs." A Mobility Management Information Practices database, developed by the National Center for Mobility Management, serves as "a repository of promising mobility management practices."

State Practices

The Massachusetts Mobility Management Center "assists in capacity development so that communities can design and build innovative mobility solutions that fit local demand." A 2016 New York state study sought to "identify promising practices or models that utilize natural supports, shared-ride and/or other resources to address the transportation needs (and especially the employment-related and community inclusion transportation needs) of individuals with developmental, mental or physical disabilities." A comprehensive 2015 assessment of mobility management practices in Wisconsin includes a discussion of the barriers to coordination and other challenges associated with mobility management.

Contracting and the Use of Volunteers

Staffing challenges faced by transit agencies are addressed in national guidance on the use of contracting to provide transportation services and in a selection of state practices that address the use of volunteers to provide transportation services. We found no recent guidance or best practices on how agencies can increase the number of paid staff members to supplement

volunteer resources. However, a review of the role of the mobility manager may be of interest to transit agencies with staffing-related concerns.

Data and Technology

<u>National Resources</u>

National resources describing the data and technology associated with the delivery of coordinated transportation services include the following:

- A Transit Cooperative Research Program (TCRP) research project in progress is expected to develop technical specifications for transactional data for entities involved in the provision of demand-responsive transportation.

- A 2013 TCRP project examined the types of data used in technologies that are part of mobility management systems, and the environment in which these software systems function.

- A 2012 Transit IDEA project developed low-cost management protocols and software for mobility management call centers. The software can be used to organize, coordinate, schedule, dispatch and monitor service programs.

- The Community Transportation Association developed a one-call/one-click online toolkit for communities and agencies wishing to collaborate to develop this type of service. A one-call/one-click service is described as "a single point of contact to learn about available transportation resources."

<u>State Practices and Related Resources</u>

We highlight state practices that illustrate the use of data and technology to expedite or enhance coordinated transportation services in California (OC ACCESS, a shared-ride service), Florida (application of performance measures to assess the impact of applying technologies in paratransit), Illinois (one-click transportation resource center) and New Jersey (arrival notification system for paratransit passengers with disabilities).

Transportation Network Companies

Transportation network companies (TNCs) provide ride-sourcing services that operate much like traditional taxis. These companies typically employ a software application to process the request, charge the fare and generate a receipt. GPS is used to navigate to the pickup and drop-off locations.

A TCRP project in process will examine the legal considerations for transit agencies seeking to establish relationships with ride-sourcing service providers, or TNCs. A 2017 National Aging and Disability Transportation Center report that examines shared-ride services recommends partnering with local area agencies on aging and establishing an in-house TNC navigator, as well as initiating outreach to medical facilities to provide transportation for discharged patients.

Transportation and Health Care

Some transportation agencies have partnered with health care providers to offer transportation services to seniors and people with disabilities. We highlight a few projects illustrating this type of partnership and sources for more information about this type of collaboration.

Gaps in Findings

While we noted apparent widespread interest in coordinating transportation services, and resources are widely available to assist agencies interested in forging collaborative relationships, we identified no substantive recommendations for adding more paid staff to supplement volunteer programs. However, some publications recommend the use of a mobility manager to increase efficiencies in service delivery. The funding constraints identified in some publications could contribute to the apparent dearth of advice on beefing up the number of paid staff members.

The use of mobility managers, while not new, may still be untested in some areas, and it is perhaps too soon to know how the incorporation of external services, such as those provided by TNCs, will impact a transit agency's model of service delivery for seniors and people with disabilities.

Next Steps

Moving forward, Caltrans could consider:

- Reviewing a wide range of the coordinated plans, guidebooks and toolkits cited in this report to identify common practices that might be applied by California transit agencies.

- Examining the barriers and challenges described in publications included in this report to identify how these barriers and challenges could be overcome.

- Learning more about mobility management practices and considering how they might be applied to improve coordinated transportation services for seniors and people with disabilities.

- Consulting with selected transportation agencies about the technology used to enhance service delivery (Illinois DOT and the transit agencies interviewed for the May 2016 Preliminary Investigation on mobility management technology).

- Evaluating the use of external resources (for example, contracting, TNCs and volunteer resources) to enhance service delivery to seniors and people with disabilities.

Detailed Findings

A literature search uncovered a wealth of information that describes coordinated transportation services and how transportation agencies can provide those services to seniors and people with disabilities. The publications highlighted in this Preliminary Investigation represent a sampling of recent guidance, practices and related resources that can inform development of effective coordinated transportation services for these populations.

Publications are organized in the following categories:

- Coordinated Transportation: Guidance, Plans and Practices.
- Mobility Management.
- Contracting and the Use of Volunteers.
- Data and Technology.
- Transportation Network Companies.
- Transportation and Health Care.

Coordinated Transportation: Guidance, Plans and Practices

This section presents publications that address the general topic of coordinated transportation in the following categories:

- National Guidance and Related Resources.
- State Plans and Practices.
- Anticipated Research.

National Guidance and Related Resources

Resources Overview, Coordinating Council on Access and Mobility, Federal Transit Administration, updated July 2016.
https://www.transit.dot.gov/ccam/resources
This web site provides a wealth of resources associated with coordinating transportation services. The site also provides brief descriptions and links to organizations providing technical assistance to communities, including:

- Intelligent Transportation Systems (ITS) Joint Program Office: ITS Peer-to-Peer Program (https://www.pcb.its.dot.gov/p2p.aspx).
- National Aging and Disability Transportation Center (http://www.nadtc.org/).
- National Center for Mobility Management (http://nationalcenterformobilitymanagement.org/).
- National Conference of State Legislatures: Access and Mobility (http://www.ncsl.org/research/transportation/access-and-mobility.aspx).
- National Rural Transit Assistance Program (http://nationalrtap.org/).
- National Transit Institute (https://www.ntionline.com/).

- Rides to Wellness Initiative (https://www.transit.dot.gov/ccam/about/initiatives).

- Transit Cooperative Research Program (http://www.trb.org/TCRP/TCRP.aspx).

2016 Transportation Trends: A Look at the Year's Top Mobility Challenges and Opportunities, *NADTC Trends Report*, National Aging and Disability Transportation Center, February 2017.
http://www.nadtc.org/wp-content/uploads/NADTC-Trends-Report-Mar-2017-FINAL.pdf
This report addresses significant issues in providing accessible transportation to older adults and people with disabilities. Challenges and opportunities related to each issue are also presented along with case studies, best practices and additional resources. The specific issues and topics related to each are:

- **Americans with Disabilities Act.** Topics discussed are reasonable modification, service animals and customer service/passenger assistance.

- **Accessible bikeshare.** Topics discussed are types of accessible bikes, such as handcycles and electric bicycles (e-bikes), and bicycle attachments.

- **Crossing jurisdictional boundaries.** Case studies illustrate opportunities for improved services through better coordination and communication among transportation providers, support services and government agencies.

- **First mile/last mile.** These issues affect travelers' ability to connect to public transportation, specifically getting travelers from their original location to public transportation, and from public transportation to their final destination. The report provides four approaches to these gaps in service: improved pedestrian access to transit; alternate transportation modes such as bike-share, taxi or ride-share through transportation network companies (TNCs); apps, mobile reservations and other technology; and coordination and partnerships between public transportation agencies and private providers.

- **Safety.** Solutions include educating these populations through training about available transportation resources and trip planning.

- **Section 5310.** (Section 5310 funding provided through the Federal Transit Administration (FTA) helps local agencies provide transportation to elderly people and those with disabilities.) The report highlights a one-call/one-click platform as a mobility management function that might be funded with Section 5310 dollars. With the typical one-call/one-click service, users call a single telephone number and receive assistance from a trained specialist or use a web site to compare different travel options and costs, including specialized services targeted to older adults, people with disabilities and veterans.

- **Shared-ride services and transportation network companies.** A TNC connects paying passengers with drivers who provide transportation in their own noncommercial vehicles. Solutions include an in-house TNC navigator and outreach to medical facilities to provide transportation for discharged patients.

Coordinated Transportation Planning: Requirements, Strategies and Tools for Meaningful Engagement for Older Adults and People with Disabilities, *NADTC Information Brief*, National Aging and Disability Transportation Center, October 2016.
http://www.nadtc.org/wp-content/uploads/Coordinated-Transportation-Planning-Strategies-for-Older-Adults-and-People-with-Disabilities-10.26.16.pdf
This document outlines tools and strategies to develop coordinated transportation plans. Page 5 of the document includes a discussion of an FTA-developed self-assessment tool that "helps stakeholders realize a shared perspective and build a roadmap for moving forward together. The self-assessment tool focuses on a series of core elements that are represented in categories of simple diagnostic questions to help groups in states and communities assess their progress toward transportation coordination based on standards of excellence. A Facilitator's Guide that is included offers detailed advice on how to choose an existing group or construct an ad hoc group. In addition, it describes how to develop elements of a plan, such as identifying the needs of targeted populations, assessing gaps and duplication in services, and developing strategies to meet needs and coordinate services."

State Human Service Transportation Coordinating Councils: An Overview and State Profiles; 2014 Update, National Conference of State Legislatures, 2015.
http://www.ncsl.org/Portals/1/Documents/transportation/SCC_transportation_final02.pdf
This review examining the effectiveness of state-level coordinating councils can inform coordination efforts at the regional and local levels. Challenges to state-level coordination, which may also apply to a more regional approach, are competing systems, no mandate to coordinate resources, lack of funding, agency attitudes, lack of understanding and cultural differences. Factors contributing to success include getting buy-in from key decision-makers, keeping members on track and building on past successes.

Transportation for Older Adults: Measuring Results Could Help Determine If Coordination Efforts Improve Mobility, Report to Congressional Committees, U.S. Government Accountability Office, December 2014.
http://www.gao.gov/assets/670/667375.pdf
Researchers conducted site visits in four states—Florida, Oregon, Pennsylvania and Texas—to discuss the coordination of transportation services between transportation agencies and aging network organizations, with a particular focus on the challenges associated with providing and coordinating services, and on any gaps in the current services provided. Site visits were made to metropolitan areas that provided transportation services to older adults in both urban and rural portions of the states.

See Table 2, Types of State and Local Transportation Coordination Efforts GAO Identified (beginning on page 20 of the report, page 24 of the PDF), for a summary of the coordination activities used by the four states selected for analysis.

Transportation-Disadvantaged Populations: Coordination Efforts are Underway but Challenges Continue, Statement for the Record, To the Special Committee on Aging, U.S. Senate, U.S. Government Accountability Office, November 2013.
http://www.gao.gov/assets/660/658766.pdf
Among the challenges highlighted in this Government Accountability Office (GAO) report are:

- Limited financial resources and growing unmet needs—both now and in the future.

- Demand for Americans with Disabilities Act of 1990 (ADA) paratransit, a service often used by transportation-disadvantaged populations, including the elderly, has increased because of the growing older population. However, ADA paratransit trips are much more

costly to provide than fixed-route trips because they may, for example, provide door-to-door service.

- Difficulty raising funds, even when the amount needed is a modest local match for grants. State and local match requirements may preclude some entities from applying for federal funds.

The report's authors conclude that additional information is needed on:

- The current extent of transportation services and funding available for older adults.

- Efforts to coordinate services, including with the private sector and at the federal, state and local levels.

State Plans and Practices

Below we highlight coordinated transportation plans and practices associated with 12 states—California, Colorado, Indiana, Iowa, Minnesota, New Hampshire, North Carolina, Ohio, Oregon, South Carolina, Texas and Wisconsin. These documents are a small sampling of the plans prepared by state, regional and local agencies responsible for providing transportation services. The National Center for Mobility Management web site (http://web1.ctaa.org/webmodules/webarticles/anmviewer.asp?a=384&z=39) provides links to many more coordinated transportation plans developed by state departments of transportation (DOTs) and other local and regional agencies.

California

Coordinated Public Transit—Human Services Transportation Plan Update for the San Francisco Bay Area, Metropolitan Transportation Commission, March 2013.
http://mtc.ca.gov/sites/default/files/Coord_Plan_Update.pdf
This coordinated transportation plan update for the San Francisco Bay Area provides "a range of strategies intended to promote and advance local efforts to improve transportation for persons with disabilities, older adults and persons with low incomes."

Chapter 6 (beginning on page 6-1 of the report, page 97 of the PDF) summarizes the gaps in service for seniors and people with disabilities in the region. Chapter 7 (beginning on page 7-1 of the report, page102 of the PDF) provides a comprehensive look at potential solutions to address those gaps. Chapter 8 (beginning on page 8-1 of the report, page 120 of the PDF) discusses strategies to enhance coordination of transportation services.

Note: The Metropolitan Transportation Commission will release the Draft 2017 Coordinated Public Transit—Human Services Transportation Plan Update for public review in November 2017. Please visit https://mtc.ca.gov/coordinated-plan for further details.

"Rural Transportation Survey Toolkit for the Coordinated Plan: SANDAG's 2010 Rural Transportation Survey Design Toolkit for Determining Unmet Transportation Needs of Hard-to-Reach Rural Communities," Dillon Miner, *TRB 90th Annual Meeting Compendium of Papers DVD*, Paper #11-3824, 2011.
Citation at https://trid.trb.org/view.aspx?id=1093257
From the abstract: [T]his paper reviews the creation and findings of SANDAG's [San Diego Association of Governments'] 2010 Rural Transportation Survey, and then refines the survey using the recommendations of rural transportation providers and mobility managers. Through

this process, this study presents an unmet transportation needs survey design toolkit that MPOs [metropolitan planning organizations] can customize and use to understand their rural, transportation-disadvantaged communities.

Colorado

Handbook for Creating Local Transportation Coordinating Councils in Colorado, The Colorado Interagency Coordinating Council for Transportation Access and Mobility, December 2008.
http://web1.ctaa.org/webmodules/webarticles//articlefiles/UnitedWeRideRegion8Handbook_200 90217.pdf
This handbook includes chapters on the following topics:

- Understanding coordination.

- Coordinating at the local level. (The handbook uses the term "local" to include the boundaries chosen at the local level, which could be a single county or more than one county.)

- Getting started.

- Moving your council forward.

Each chapter includes a series of frequently asked questions. The appendices contain fact sheets on individual funding programs, resources to obtain additional information and coordination policies.

Indiana

2017 Strategic Plan: Central Indiana Regional Transportation Authority (CIRTA), Central Indiana Regional Transportation Authority, May 2017.
https://www.cirta.us/wp-content/uploads/2017/07/StratPlanWriteupAPPROVED6.23.17.docx
This plan prepared by the regional transit entity in central Indiana describes County Connect, "a collective impact mobility management initiative" that "regularly convenes the rural transportation providers in the service area. The objectives of this coordination are to harmonize the efforts of all the stakeholders, identify projects of mutual interest and enhance advocacy issues."

New opportunities associated with County Connect are described on page 3 of the plan:

This category anticipates new opportunities arising out of emergent activities to realize deliberative goals. For example, the proposal (outlined below) of offering software to all County Connect stakeholders for scheduling on-demand service (an emergent strategy) could, following its initial implementation, be expanded to centralize scheduling for cross-county (and cross-service area) trips (a hybrid strategy), and eventually lead to centralized scheduling of all on-demand trips within the region (a deliberative strategy). In this way, hybrid strategies identify specific steps that bridge emergent and deliberative courses of action.

Iowa

Transportation Coordination in Iowa, Report to the Iowa General Assembly and Governor Terry E. Branstad, Iowa Department of Transportation, December 2016.
https://iowadot.gov/transit/regulations/Transportation_Coordination_2016.pdf
See page 10 of the report (page 12 of the PDF) for recommendations to improve transportation coordination, including this "promising example of coordination":

> A promising example of coordination occurring right now is the Iowa DOT/IDA [Iowa Department on Aging]/IDVA [Iowa Department of Veterans Affairs] No Wrong Door project explained above. These three state agencies cooperating and coordinating their respective projects to make one easy to use system for the consumer with a central toll-free telephone number and website is a huge undertaking. Funding sources for building of the system have been secured, however, a funding source for the sustainability of the system must be found.

Minnesota

Successful Local Transportation Coordination Case Studies, Minnesota Council on Transportation Access, June 2011.
http://www.coordinatemntransit.org/MCOTA/documents/LocalCoordCaseStudies_MCOTA_Jun2011.pdf
This publication provides case studies that illustrate the benefits of the following strategies:

- Contract between agencies.

- Coordinate agency schedules.

- Contract with common carrier.

- Coordinate dispatch.

- Share resources.

- Establish/enhance volunteer driver programs.

- Hire mobility manager.

- Offer customer travel training.

New Hampshire

State Coordinating Council for Community Transportation, New Hampshire Department of Transportation, undated.
https://www.nh.gov/dot/programs/scc/
This web site provides a brief description of the coordinated transportation structure employed in New Hampshire and resources for those interested in funding, volunteering and participating in the Regional Coordinating Councils (RCCs). As the site indicates, the state has sought to coordinate the various community transportation services offered in New Hampshire to reduce duplication, increase the availability of services and make scarce resources go further as the need for transportation increases with an aging and growing population.

Related Resource:

2016 New Hampshire Statewide Coordination of Community Transportation Services Plan, New Hampshire Department of Transportation, January 2017.
https://www.nh.gov/dot/programs/scc/documents/nh_final_20170131.pdf
New Hampshire's current regional coordinated transportation structure includes the State Coordinating Council (SCC) and nine RCCs. The RCCs are "comprised of local transportation providers, agencies serving transportation consumers and the consumer themselves. … The main responsibility for the RCCs is to solicit and select projects to be funded through the NHDOT Section 5310 Program, which targets elderly and disabled populations."

The 2016 transportation plan provides goals and strategies that build upon statewide program successes (beginning on page 89 of the report, page 90 of the PDF).

North Carolina and South Carolina

"Uncover the Impacts of Coordinating Human Services Transportation—One Study, Two Locations and Three What-If Coordination Scenarios," Carolina Burnier, Amy Jacobi, Gwo-Wei Torng and Yehuda Gross, *TRB 93rd Annual Meeting Compendium of Papers,* Paper #14-3940, 2014.
Citation at https://trid.trb.org/view/1289107
From the abstract: [T]he authors collected and analyzed actual service data from two rural transit providers in North Carolina and South Carolina and ran multiple simulations based on different coordination scenarios. The objective of the study was to simulate and compare potential impacts of coordination on system performance and individual travelers under different coordination scenarios. This study revealed that coordination leads to enhanced system efficiency. Consistently in both case study areas, a higher degree of coordination, meaning a larger pool of trips with shared resources, results in improved overall system performance. The results show a reduction in both total revenue distance and total revenue hours ranging from 7 to 13% when comparing "some" coordination to "full" coordination. Additionally, the average number of passengers per revenue hour increased by approximately 10%. The study results also suggested that the impacts of coordination on individual travelers are inconclusive. The average trip time showed some variation in either direction moving from some coordination to full coordination scenarios.

Ohio

Coordinated Plan Tool Box, Office of Transit, Ohio Department of Transportation, undated.
http://www.dot.state.oh.us/Divisions/Planning/Transit/Pages/Coordinated-Plan-Tool-Box.aspx
This web site provides a range of resources, including checklists, templates, worksheets, tips and resources "for lead agencies and coordinated plan planning committees to use to assist in the development of coordinated plans. These tools are meant to be used in conjunction with the coordinated plan template and guidance."

Oregon

Coordinated Transportation Plan for Elderly and People with Disabilities, TriMet, October 2012.
https://trimet.org/pdfs/publications/elderly-and-disabled-plan.pdf
TriMet operates mass transit in the Portland, Oregon, metropolitan area. This coordinated transportation plan includes a series of recommendations for coordinated planning and operations (beginning on page 5-6 of the report, page 45 of the PDF), among them expanding partner capacity, expanding accessible vehicle-sharing and volunteer drivers, and grouping medical trips. Intraregional strategies include coordinating with the private sector, coordinating the scheduling of rides, developing a system of centralized network information and coordinating with medical facilities.

South Carolina

Barriers and Catalysts for Statewide Coordination of Transportation Services, South Carolina Department of Transportation, June 2007.
http://www.scdot.scltap.org/wp-content/uploads/2017/05/SPR-663.pdf
This publication provides extensive guidance for developing regional coordination of transit services. A regional transit toolkit includes sample objectives, coordination strategies, strategies to avoid, and near- and long-term considerations. Recommendations for future research suggest an examination of the demand side (public opinion and how the riding and nonriding public feels about current service provision and unmet needs), effects of coordination on rural mobility and the impact of a brokerage system that centralizes the administration of Medicaid transportation in the state.

Regional Transit and Coordination Plan: Central Midlands Region, South Carolina Multimodal Transportation Plan, South Carolina Department of Transportation, November 2014.
http://www.dot.state.sc.us/Multimodal/pdf/SC_MTP_Regional_Transit_Plan_CentralMidlands_FINAL.pdf
This transit plan provides an overview of human services transportation in the region, including needs and barriers, and outlines strategies for increased coordination of services to meet those needs. Section 3.6, Coordinated Strategies and Actions (beginning on page 35 of the report, page 40 of the PDF) highlights opportunities to collaborate, identifies coordination strategies and prioritizes future planning efforts.

Texas

Regional Transit Coordination Guidebook, Texas Department of Transportation and Federal Highway Administration, January 2009.
https://static.tti.tamu.edu/tti.tamu.edu/documents/0-5345-P1.pdf
From the guidebook objective:

> The guidebook reflects the most recent thinking as reported in literature, surveys and telephone interviews of communities across America who are addressing provision of better coordinated, seamless public transportation for super regions. The guidebook contains conditions that should trigger consideration to improve coordination between public transportation providers, as well as tools, strategies and organizational structures that are working in communities across America.

Included in the report are case studies that describe coordination efforts in Arizona, Georgia and Texas. Also included are a prototype service coordination agreement and regional service barrier and constraint forms.

Wisconsin

Wisconsin Human Service Transportation Coordination Model: Final Report, Wisconsin Department of Transportation, July 2008.
http://wisconsindot.gov/Documents/doing-bus/local-gov/astnce-pgms/transit/coordination/model-coord.pdf
As this report's introduction indicates, "[k]ey goals for this research are to collect data, assess needs and recommend actions towards a state model of transportation coordination with prioritized implementation strategies."

Service organization and delivery are examined beginning on page 4-3 of the report (page 25 of the PDF). Field work conducted for the report led to a series of observations, among them:

- Few services straddle county boundaries despite an obvious need for such services. Constraints on transportation funding limit how transportation services can be provided. An ongoing challenge for many transportation providers is providing intercity and interregional services. In many cases, it is also difficult to travel between communities within a single county.

- The coordinated services that do exist are typically led by county human service/aging departments. In several counties, county departments have worked together so that all (or most) county-funded transportation services are coordinated through a single department or individual. Frequently, this organization model is successful, increasing the quality and quantity of service.

- Few county-led coordination programs involve public transit operators, Medicaid NEMT [Non-Emergency Medical Transportation] providers and transportation services associated with workforce development efforts. Thus, even when county services are well-coordinated, service fragmentation persists.

- In areas where public transit operators are actively involved in community transportation services and coordination efforts, community transportation services are more comprehensive and better coordinated. It was in these types of places where we observed joint-purchasing of ADA complementary paratransit and nonambulatory NEMT services, as well as flexible public transit services.

- Medicaid NEMT is typically provided by private operators and tends to operate independently from other public and specialized programs. Medicaid transportation providers are typically not active in local coordination efforts. Moreover, in many counties, there is little or no attempt to assign trips to carriers in a strategic fashion that encourage ridesharing or comingling of clients. Indeed Medicaid funding, especially funding for SMV [specialized medical vehicle] travel, discourages operators from carrying multiple passengers.

- Coordination requirements set out in state grant application have not been consistently enforced. By enforcing existing (and future) coordination requirements, agencies that receive funding from the 5310, 5316 and/or 5317 programs can be encouraged to participate in coordination discussions and efforts. 85.21 funding also requires semiannual meetings among stakeholders but this requirement is not always checked or

enforced. [85.21 funding is funding for the specialized transportation assistance program for counties as specified in state statute.]

The authors continue with a discussion of regional resources and tools and techniques to develop coordinated transportation services. *From page 4-5 of the report (page 27 of the PDF)*:

Our experience in the field shows that the single most effective tool at promoting and developing coordinated transportation services is an active coordination committee that meets regularly, has an active, comprehensive membership, and is charged with a clear mission.

Anticipated Research

Anticipated Research: Opportunities for State DOTs (and Others) to Encourage Shared Use Mobility Practices in Rural Areas, NCHRP Project 20-65/Task 76; anticipated in 2017.
Project description at http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4331
From the project description: This research will determine if there are emerging SUM [shared-use mobility] practices applicable in rural areas to augment traditional rural transit service or enable transformation of existing rural mobility service models and what role [s]tate departments of transportation (DOTs) will need to play to make use of those practices to supplement traditional rural transit. The objective of this research is to generate information that [s]tate DOTs and others, including rural transit, planning and/or economic development agencies, could make use of to advance selected shared use mobility practices as a method to extend the reach or capacity of small urban and rural transit services, with a significant focus on rural areas.

Anticipated Research: Best Practices and Tools for Addressing Transportation Needs and Public Transit Demands to Support the Integration of the Olmstead Population in Community Settings, NCHRP Project 20-65/Task 74; anticipated in 2017.
Project description at http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4329
From the project description: The objective of this research is to generate a portfolio of case studies and tools that [s]tate DOTs and other social service agencies, such as Health and Human Services, Education, Labor, Housing and Urban Development, and the Social Security Administration, could use to address the transportation needs and public transit demands to support the integration of the Olmstead population [individuals with disabilities, including seniors] in community settings.

Mobility Management

United We Ride, an FTA initiative that helps states and local communities coordinate across various federal programs associated with human services transportation, defines mobility management as an innovative approach for managing and delivering coordinated transportation services to customers, including older adults, people with disabilities and individuals with lower incomes (https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/Mobility_Mgmt_brochure.doc).

The resources highlighted below assess mobility management practices, identify challenges and offer recommendations. Citations are organized in two categories:

- National Resources.
- State Practices.

National Resources

Evaluating the State of Mobility Management and Human Service Transportation Coordination, U.S. Department of Transportation, October 2014.
https://www.nctr.usf.edu/wp-content/uploads/2015/08/77060_NCTR_NDSU05.pdf
This study developed and applied an evaluation method "that can be used in communities across the country to examine the effectiveness of their mobility management and coordination programs." Portions of the report that may be of particular interest include:

- Obstacles toward achieving objectives (beginning on page 11 of the report, page 23 of the PDF). The report addresses obstacles from the perspective of the system, user and provider, followed by success stories that illustrate how to overcome these obstacles.

- Appendix F, Detailed Stakeholder Survey Responses (beginning on page 76 of the report, page 88 of the PDF). The stakeholder feedback highlighted in this appendix offers practitioners' recommendations specific to coordination efforts, barriers and how agencies addressed them, coordination programs that should be pursued, and mobility management activities and challenges associated with implementing a mobility management program.

Mobility Management Information Practices Database, National Center for Mobility Management and Federal Transit Administration, 2014.
http://mmip.easterseals.com/SpotfireWeb/ViewAnalysis.aspx?file=/MMIPDashboard&waid=DiV NceLovkWb0kbTOpJfQ-1912254e8bJ2aV
This database serves as "a repository of promising mobility management practices." Users can search by FTA region, political jurisdiction, type of practice and community demographic. Transit agencies can submit practice descriptions for inclusion in the database. Each description includes these characteristics:

- Innovative features of the practice.
- Context under which the practice was implemented.
- Stakeholder engagement in creating the practice.
- How the practice has increased the efficiency of delivering services (e.g., costs, operations).
- How the agency is monitoring and evaluating the practice.
- The impact the practice has had on the agency's community.

Related Resource:

> **Share Your Practices**, National Center for Mobility Management and Federal Transit Administration, 2014.
> http://nationalcenterformobilitymanagement.org/share-your-practices/
> This web site provides information about the Mobility Management Information Practices database and allows practitioners to submit a practice description.

State Practices

Massachusetts

Massachusetts Mobility Management Center, Rail and Transit Division, Massachusetts Department of Transportation, 2017.
http://www.massdot.state.ma.us/transit/MobilityManagementCenter.aspx
From the web site: The Center assists in capacity development so that communities can design and build innovative mobility solutions that fit local demand. The Center provides the following services to any organization concerned with transportation access and mobility barriers:

- Expert advice in coalition building.

- Project-based technical assistance.

- Information dissemination in the form of toolkits, practice briefs and policy updates.

- Peer networking.

We operate within the MassDOT Transit Unit, leveraging and strengthening the resources that MassDOT and its partner agencies offer in mobility management and coordination.

Related Resource:

> **Coordinating Senior Transportation among Multiple Councils on Aging**, *Practice Brief Series,* Massachusetts Mobility Management Center, April 2017.
> http://www.massdot.state.ma.us/Portals/12/docs/communityTransit/COA_Coordination0417.pdf
> This publication offers brief case studies and other guidance on the benefits and challenges of coordinating senior transportation, and closes with this advice:
>
> > If a town decides to change its transportation program structure—either a shift into a coordinated partnership, or away from one—making the change gradually can help seniors adjust and fully understand the new system. In addition to public meetings and private conversations with seniors, COAs [Councils on Aging] should also communicate clearly with COA staff, drivers and any other stakeholders about the changes.

New York

Study to Design a Mobility Management Program: Best Practice Research, New York State Office for People With Developmental Disabilities, October 2016.
https://opwdd.ny.gov/sites/default/files/documents/NY_OPWDD_Mobility_Management_Best_Practice_Research_FINAL_Feb_2017.pdf
From the project background:

> The primary goal of the project is to identify promising practices or models that utilize natural supports, shared-ride and/or other resources to address the transportation needs (and

especially the employment-related and community inclusion transportation needs) of individuals with developmental, mental or physical disabilities who receive services from the Office for People With Developmental Disabilities (OPWDD), Office of Mental Health (OMH), and/or Department of Health (DOH), noting that DOH/Medicaid-sponsored nonemergency medical transportation is outside the scope of this project.

The report includes a literature review, state-level coordination case studies, mobility management strategies, and home- and community-based services waivers and transportation.

Texas

Performance Measures for Public Transit Mobility Management, Texas Department of Transportation, December 2011.
https://static.tti.tamu.edu/tti.tamu.edu/documents/0-6633-1.pdf
From the abstract: This research looks at the state of mobility management practice throughout Texas, as well as national best practices in mobility management. Additionally, this research provides an overview of the varying roles of state departments of transportation in public transit mobility management efforts. The research also presents applied mobility management for agencies seeking to implement mobility management programs as well as a menu of performance measures that can be utilized based on the type and level of program implemented.

Wisconsin

Mobility Management Practices in Wisconsin, Bureau of Transit, Local Roads, Railroads and Harbors, Wisconsin Department of Transportation, July 2015.
http://wisconsindot.gov/Documents/doing-bus/local-gov/astnce-pgms/transit/mob-prac.pdf
This report of best practices defines mobility management (see page 3 of the report, page 4 of the PDF):

Mobility management is an innovative approach for managing and delivering coordinated transportation services to customers. These customers include, but are not limited to the transportation disadvantaged such as seniors, individuals with disabilities and individuals with lower incomes. Mobility management focuses on meeting individual customer needs through a wide range of transportation options and service providers. It also focuses on coordinating these services and providers in an effort to achieve a more efficient transportation delivery system.

The report includes a discussion of the barriers to coordination (beginning on page 22 of the report, page 23 of the PDF):

There are a number of issues that contribute to a lack of coordination and collaboration, a significant barrier to improved mobility management. The increased competition for funding can make collaboration difficult. Organizations that could be partners are instead competing for funding which can create animosity. There is also a lack of coordination between organizations on what the role of a mobility manager should be. For example, there is a difference in mobility management rules for those who operate in a nonprofit compared to those who work for counties. This can create confusion for both mobility managers and customers. The siloed view of transportation is a large hurdle to creating better coordination and collaboration. Many transportation programs have different ride requirements and cannot or choose not to serve people outside their dedicated populations. Certain

transportation services may only be used for a specific population even when they are not at capacity.

Other challenges associated with mobility management:

- The issue of insurance is a large hurdle to increased collaboration. The assumption of insurance or risk liability contributes to organizations not wanting to transport people from other organizations since insurance won't cover them.

- It can also be difficult for organizations to work together since many are using different types of software to manage services. Using the same software can increase coordination and efficiency.

- The inability to provide services across service area and jurisdictional boundaries is a significant barrier to creating a comprehensive mobility management network.

- Many transportation services and mobility managers are restricted from working across county lines. For individuals who are between two service areas, they may not get the benefit of having a mobility manager, even though there is one close by, because of boundary restrictions.

Contracting and the Use of Volunteers

Staffing challenges faced by transit agencies are addressed in the resources cited below, including national guidance on the use of contracting to provide transportation services and state practices that address the use of volunteers to provide transportation services.

We found no recent guidance or best practices on how agencies can increase the number of paid staff members to supplement volunteer resources. However, a review of the role of the mobility manager may be of interest to transportation agencies with staffing-related concerns. See page 16 of this Preliminary Investigation for resources related to mobility management.

National Guidance

Public Transit: Transit Agencies' Use of Contracting to Provide Service, Report to Congressional Committees, U.S. Government Accountability Office, September 2013.
http://www.gao.gov/assets/660/658171.pdf
From the purpose statement: Some transit agencies have found that they can save money by contracting out some or all of their services with private providers, while others have found it more beneficial to use their own staff to provide services. … Contracting is a prevalent means of providing transit services. About 61 percent of the 463 transit agencies responding to GAO's survey reported they contract out some or all operations and services, while the rest reported that they do not contract out at all. According to GAO's survey, paratransit (services for the disabled), demand response (also known as dial-a-ride), and commuter rail service are most often contracted out, and fixed-route bus, heavy rail and light rail service are most often operated by the transit agency.

State Practices

Florida

Programs That Match Seniors with Volunteer Drivers: Practical Recommendations for Organizations and Policy Makers, Sara J. Hendricks, Michael J. Audino, Peter O. Okin and Ashley Biernacki, Florida Department of Transportation, October 2008.
http://www.nctr.usf.edu/pdf/77717.pdf
From the abstract: This research project had three objectives: to identify and explore the challenges of developing and operating a volunteer senior mobility driving service; to propose solutions to establish successful programs; and to provide guidance on best practices that could be used by a variety of audiences, including transit agencies, paratransit agencies, nonprofit programs, social service agencies, volunteer driving programs and policy makers. This report provides recommendations to volunteer driving programs on how to enhance risk management and recruit volunteers. Recommendations are offered to public transit agencies and commuter assistance programs on how to coordinate with volunteer driving programs. Recommendations are provided for raising public awareness and legislative remedies to enact liability reforms.

Michigan

Shiawassee Area Transportation Agency: Volunteer Service Among a Menu of Transportation Solutions, Cost Reduction Toolkit: Management Strategies, Office of Passenger Transportation, Michigan Department of Transportation, 2015.
https://www.michigan.gov/documents/mdot/VolunteerServiceAmongMenuOf_Transp_Solutions_SATA_Michigan_409378_7.pdf
This case study describes how a regional transportation agency uses volunteers to provide needed services. The approaches described in the study are recommended for communities with a need for out-of-county medical trips, transit agencies with a high demand for special transportation services, and organizations with staff availability and expertise to manage a team of volunteers.

Washington

Volunteer Drivers Guide: A Guide to Best Practices, Washington State Department of Transportation, 2013.
http://www.wsdot.wa.gov/NR/rdonlyres/F3F1CABB-DB56-4E53-ABBB-4B8E41F39B59/0/Volunteer_Drivers_Manua_2013.pdf
From the introduction: This guide will assist organizations that provide passenger transportation services to persons with special transportation needs and help them develop and maintain a volunteer driver program. … In addition, the guide contains recommendations, best practices, and sample forms as well as informational attachments and resources.

Data and Technology

The following presents a sampling of the research and related resources that consider how data and technology might be used to assist a transportation agency in managing its services for seniors and people with disabilities. Citations are organized in two categories:

- National Resources.

- State Practices and Related Resources.

National Resources

Research in Progress: Development of Transactional Data Specifications for Demand-Responsive Transportation, TCRP Project G-16, start date: November 2016; expected completion date: May 2018.
Project description at http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4120
From the project description: The objective of this research is to develop technical specifications for transactional data for entities involved in the provision of demand-responsive transportation. The technical specifications should build on the framework presented in Table 2 of *TCRP Web-Only Doc 62: Standardizing Data for Mobility Management*, http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_w62.pdf, but should recognize changes that have occurred since the completion of this research and emerging trends. This research should be a collaborative effort that engages stakeholders, including public, private and nonprofit entities; software developers; and academics. The research should:

- Develop specifications that may evolve, at some future time, to standards for transactional data.

- Consider privacy and security in the transmission and storage of transactional data.

- Identify key strategies to encourage adoption of the proposed specifications.

- Propose and carry out an approach for testing the specifications.

- Create an open source tool for data producers to validate their data against the specifications.

- Create and convene a forum for consensus-based refinement of the technical specifications. This forum should have the potential to continue following the completion of this research project to support implementation of the research results.

TCRP Web-Only Document 62: Standardizing Data for Mobility Management, Suzanne M. O'Neill and Roger F. Teal, November 2013.
http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_w62.pdf
From the project description: This research examined the types of data that are used in technologies that are part of mobility management systems as well as the environment in which these software systems function. The recommendations address:

- Where data standards will provide value for mobility managers;

- The specific data and related protocols needed for improved functionality; and,

- Guidelines for procurement specifications for agencies purchasing new technology for mobility management.

This report presents the research findings and conclusions. It includes a survey of both private vendors of scheduling and dispatch software and a range of transportation agencies considered to be on the advance edge of standardized data and/or are Veterans Transportation and Community Living Initiative (VTCLI) grantees.

Developing Regional Mobility Management Centers, Jon E. Burkhardt, Transit IDEA (Innovations Deserving Exploratory Analysis) Project 50, October 2012.
http://onlinepubs.trb.org/Onlinepubs/IDEA/FinalReports/Transit/Transit50.pdf
From the product overview: The purpose of this Transit IDEA project was to carry out the initial phase of what the authors propose to be a multiphase program to develop innovative low-cost management protocols and software that mobility management call centers can use to better organize, coordinate, schedule, dispatch and monitor service programs which use transportation as one component of their service delivery strategy. … The innovation that is the focus of this project is the development of management protocols and software packages that make transit and paratransit services more attractive to other partners, including health care providers, in coordinated community transportation operations. This project examined the potential of the organization and coordination of these activities to be accomplished through a unified regional mobility management call center that accepts customer service requests and efficiently assigns transportation or other resources to meet those requests.

One Call-One Click Toolkit, Community Transportation Association, undated.
http://web1.ctaa.org/webmodules/webarticles/anmviewer.asp?a=2428
From the web site:

> This Toolkit provides information for communities interested in working together—whether locally, regionally or statewide—to develop a one-call or one-click service for transportation. Communities can choose to start small, follow one of a number of different models, and develop technologically and functionally from information and referral to reservations, dispatching and more. The Toolkit will empower communities to select the right fit for their own circumstances.
>
> The Toolkit is a set of online tools, including:
>
> - A guide for beginning one call-one click transportation services,
>
> - Results from a survey of existing one-call services,
>
> - Advice from the one-call services field,
>
> - Local profiles and videos, and
>
> - Factsheets, a glossary and links to more information.

One of the toolkit's fact sheets describes a one-call/one-click transportation service as "a single point of contact to learn about available transportation resources."

State Practices and Related Resources

California

OC ACCESS Service, Orange County Transportation Authority, 2017.
http://www.octa.net/Getting-Around/Bus/Access-Service/Overview/
From the web site:

> OC ACCESS, formally known as OCTA ACCESS, is [a] shared-ride service for people who are unable to use the regular, fixed-route OC Bus service because of functional limitations caused by a disability. These passengers must be certified by OCTA to use the OC ACCESS system by meeting the Americans with Disabilities Act (ADA) eligibility criteria.

OCTA offers same-day taxi service and a subscription service to reserve rides. A mobile app for booking same-day taxi rides is in testing.

Mobility Management Technology, *Preliminary Investigation*, California Department of Transportation, May 2016.
http://www.dot.ca.gov/newtech/researchreports/preliminary_investigations/docs/mobility_management_technology_preliminary_investigation.pdf
This document presents the results of a literature review and consultation with representatives of local agencies regarding their experiences using mobility management software. Little was found in the literature that spoke to the relative merits of different vendors for mobility management technologies, and the individuals interviewed for the project "could not always speak directly or comprehensively to the challenges and benefits of mobility management technologies, especially in comparison to other systems." The report also noted the significance of standardization of data, which is addressed in the TCRP projects cited on page 21 of this Preliminary Investigation.

Florida

"Improving Performance and Productivity: Technology Impacts on Paratransit Services in Florida," Nevine Labib Georggi, *TRB 95th Annual Meeting Compendium of Papers,* Paper #16-4207, 2016.
Citation at https://trid.trb.org/view/1393577
From the abstract: This paper discusses the impacts of various technologies applied to paratransit services to increase operational efficiencies to provide quality transit service, even with funding limitations and increasing demand for paratransit. This paper defines paratransit services as complementary Americans with Disabilities Act services and door-to-door services including those provided by Community Transportation Coordinators. This paper summarizes the findings of an online survey conducted in February 2015 as part of a study that investigated the impacts of applying technologies in paratransit, in particular: reservation, scheduling and dispatching software, mobile data terminals, global positioning systems, automatic vehicle location, advanced telephone systems, and vehicle security cameras.

Illinois

The Illinois One-Click Transportation Resource Center: Final Report, Lise Dirks, P.S. Sriraj, Joseph Irwin Harris and Shreya Ghosh, Illinois Department of Transportation, September 2016.
https://utc.uic.edu/wp-content/uploads/One-Click-Final-Report__1_reduced.pdf
From the abstract: The goal of this initiative was to address the transportation needs of veterans and their families by promoting coordinated transportation services and disseminating

information about them. The program funded "One-Click/One-Call" centers to connect veterans and their families with all available transportation options. … The Illinois Department of Transportation (IDOT) was awarded a Veterans Transportation and Community Livability Initiative grant with the Urban Transportation Center (UTC) at the University of Illinois Chicago as sub-recipient. They used this grant to create a "One-Click Transportation Resource Center" to inform Illinois veterans and their families about existing transportation services throughout Illinois.

"Developing an Information Management System for Public and Specialized Transportation Providers of Illinois: A Web-Based, Interactive System," P.S. Sriraj, Lise Dirks and Hersh Singh, *Transportation Research Record 2145*, pages 91-99, 2010.
Citation at http://trrjournalonline.trb.org/doi/10.3141/2145-11
From the abstract: The Urban Transportation Center at the University of Illinois at Chicago is developing a web-based interactive IMS [information management system] (TRANPRO) for the public and specialized transportation services in Illinois; the IMS features a provider inventory and other service-related information along with the requisite demographic information. The TRANPRO IMS includes public and specialized transportation data in the form of projects funded by Sections 5307, 5311, and 5310; the Downstate Operating Assistance Program; Job Access and Reverse Commute; New Freedom grants; and Title IIIB and Title XX programs for seniors as well as other known human-service transportation providers operating within the state. This paper explains the development of the IMS, the data assimilated, and the various uses of the system to facilitate coordinated planning, mobility management, and help with the grant application process. TRANPRO will benefit different stakeholder groups, including the administrators of funding programs (for example, the department of transportation), human-service transportation coordinators, mobility managers, and other stakeholders in coordination of services.

New Jersey

Develop and Pilot Test Smart Phone/Tablet App for Paratransit Demand-Response Passenger Pick-Up Alerts to Assist Passengers with Disabilities and Reduce No-Shows and Dwell Times, Cecelia Feeley, Lazar Spasovic, Branislav Dimitrijevic, Jo Young Lee, Slobadon Gutesa and Yuchuan Zhang, Center for Advanced Infrastructure and Transportation, Rutgers University, December 2016.
https://cait.rutgers.edu/files/CAIT-UTC-069-Final_0.pdf
From the abstract: The arrival notification system presented in this study delivers an automated voice call to a registered user once the paratransit vehicle is in the near proximity to the pick-up location. The system utilizes Google Traffic API for the vehicle arrival estimation. Unlike other vehicle arrival notification systems in the state-of-the-practice, the proposed system is compact and does not require additional equipment such as radio transmitting and positioning devices. Using consumer mobile devices with Android or iOS platform, the proposed system is designed to exploit commercial cellular network service (i.e., 3G and 4G-LTE). In addition to the passenger notification, the proposed system provides paratransit drivers with real-time route guidance information developed through Google Maps API. … The passenger waiting time was reduced by 15 to 20 minutes. In addition, accuracy of the notification system was tested: during the test, in almost all cases, [the] vehicle arrived 1 minute earlier from the proposed arrival time.

Transportation Network Companies

An August 2016 report (https://policy.tti.tamu.edu/wp-content/uploads/2016/08/TTI-PRC-HtransTNC-083016a.pdf) of testimony before the Texas House Committee on Transportation describes how transportation network company (TNC) services work:

> TNCs provide ride-sourcing services that operate much like traditional taxis: a traveler requests a ride and pays for a driver who provides that service. Potential passengers must download a TNC's application (typically for free) to a smartphone, tablet, or computer and register with a valid credit card. The TNC's software application (see the example in Figure 1) facilitates the ride request, connects passengers to a driver, uses global positioning systems (GPS) to navigate to the pick-up and drop-off locations, and shares the vehicle's progress and estimated arrival with both driver and passenger. After the trip is complete, the application automatically charges the fare to the linked credit card, logs the trip and generates a receipt.

Below is a limited sampling of research in process and publications that address the use of TNCs to provide transportation services to communities that may be underserved by public transportation.

Research in Progress: Legal Considerations in Relationships Between Transit Agencies and Ride-Sourcing Service Providers, TCRP J-05/Topic 17-03, start date: December 2016; expected completion date: November 2017.
Project description at http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4304
From the project description: The report will address the following issues:

- Ride-sourcing services in the United States and what they do.

- State or municipal legislative or regulatory schemes that affect a ride-sourcing service's potential relationship with a transit agency.

- Which transit agencies in the United States have relationships with ride-sourcing services and a description of those relationships.

- Necessary provisions in any contract between a ride-sourcing service and a public transit agency.

- Whether there have been agreements or discussions between ride-sourcing services and transit agencies to offer paratransit services.

- Measures that have been taken by municipalities or transit agencies to prevent ride-sourcing services from blocking bus stops or taxi stands.

- Potential legal and risk management issues stemming from potential relationships between ride-sourcing services and transit agencies.

Shared Ride Services and Transportation Network Companies, *Topic Spotlight from the NADTC 2016 Transportation Trends Report*, National Aging and Disability Transportation Center, May 2017.
http://www.nadtc.org/wp-content/uploads/NADTC-Trends-Report-Shared-Ride-Topic-Spotlight-May-2017.docx
From the report's conclusion: More can be done in terms of outreach to older adults and people with disabilities. Partnering with local Area Agencies on Aging and establishing an in-house TNC navigator could be a solution. In addition, outreach to medical facilities to provide transportation for discharged patients can be an introduction to the service that Transportation

Network Companies provide. Finally, as part of AARP's Life Reimagined Campaign, Uber is partnering with AARP to encourage retirees to become Uber drivers as a way to earn extra income.

"Which Barriers Prevent Seniors from Accessing Transportation Network Company (TNC) Services? Identifying Ways Forward for a Gendered Policy Approach," Manish Shirgaokar, *TRB 96th Annual Meeting Compendium of Papers*, Paper #17-04921, 2017.
http://docs.trb.org/prp/17-04921.pdf
From the abstract: This paper investigates if Transportation Network Company (TNC) services present a viable alternative for seniors' mobility. … The findings indicate two principal barriers: ambiguity and risk averseness about TNC services and financial transactions, and technology challenges for online hailing. Older women are more likely to seek training and try TNC services than older men. Both genders express greater willingness for riding incumbent services including transit, taxis and paratransit when mobility issues increase. Stated responses analyzed across seasons indicate self-censoring of driving and fewer trips during winter months, suggesting the need for higher supply of mobility tools for colder seasons and locations. This investigation indicates a need for outreach and seniors' training at the local level. TNC providers can overcome barriers with senior-specific operator training, visually identifiable branding, and partnering with public/private agencies working with seniors.

NYPTA White Paper on Transportation Network Company (TNC) Issues, New York Public Transit Association, Inc., undated.
https://nytransit.org/images/NYPTA_TNC_issues_White_Paper.pdf
From the report's purpose: This white paper includes:

- A brief review of the experience of some other transit systems nationally.

- Results of a NYPTA survey of NYS [New York State] transit systems on their expectations.

- A list of issues and concerns for NYS transit systems dealing with TNCs.

- Opportunities to coordinate and partner with TNCs.

- Potential barriers to achieving coordination with TNCs.

- Recommended principles and practices to improve the success of transit/TNC coordination.

<u>Transportation and Health Care</u>

Some transportation agencies have partnered with health care providers to offer transportation services to seniors and people with disabilities. The publications below highlight a few projects illustrating this type of partnership and sources for more information about this type of collaboration.

<u>Guidance and Practices</u>

Anticipated Research: Guidebook and Research Plan to Help Communities Improve Transportation to Health Care Services, TCRP Project H-55; proposals have been received and a selection decision was scheduled to be made in August 2017.
Project description at http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4295
From the project description: The objectives of this research are to[:]

1. Develop a guidebook to help communities improve transportation to health care. The guidebook should serve three important audiences—the health care sector, the transportation sector and other stakeholders—and help them lay the foundation for building effective relationships to improve customer-focused mobility services. The guidebook should[:]

    - Make the case for building relationships and forming partnerships to improve transportation to health care services;

    - Analyze examples of strategies that seek to develop transportation and health care sector relationships to improve patient experience in traveling to and from health care services, patient access to health care services, and health outcomes in communities of different sizes and locations;

    - Develop and recommend collaborative processes to design and implement solutions that include health care sector, transportation sector and other stakeholders; and

    - Address emerging opportunities and challenges that may affect transportation for health care services.

2. Develop a research plan that outlines future research priorities, such as[:]

    - How transportation barriers affect patient health outcomes and the delivery of health care services;

    - Technology to facilitate transportation access to health care services;

    - Funding for health care transportation; and

    - Meaningful, cross-cutting performance metrics that can be used to monitor and evaluate patient experience in traveling to and from health care services, patient's access to health care services, and health outcomes.

FY 2016 Rides to Wellness Demonstration and Innovative Coordinated Access and Mobility Grants, Federal Transit Administration, May 2017.
https://www.transit.dot.gov/funding/grants/fy-2016-rides-wellness-demonstration-and-innovative-coordinated-access-and-mobility
This web site describes grants associated with FTA's Rides to Wellness Initiative, which was launched "to increase partnerships between health and transportation providers and show the

positive financial benefit to such partnerships." Two of the highlighted projects address coordinated transportation:

- The Flint Mass Transportation Authority is developing a mobility management program, including coordinated nonemergency medical transportation, trip planning and training.

- The Research Triangle Regional Public Transportation Authority received funding to expand the GoTriangle Regional Call Center to improve coordinated transit planning and application assistance for paratransit riders who are low-income, uninsured or have mental health special needs.

Rides to Wellness Community Scan Project, Health Outreach Partners, Spring 2017.
https://outreach-partners.org/wp-content/uploads/2017/06/FTA-Comm-Profiles-2.pdf
From the introduction: In May 2016, Health Outreach Partners (HOP) launched the Rides to Wellness Community Scan Project. Funded by the Federal Transit Administration (FTA), the purpose of the project was twofold: to determine the impact of transportation barriers on health care costs and to highlight existing patient-centered transportation solutions. The project consisted of two elements, the results of which are summarized in this report:

- **National survey:** Implementation of a national survey of health centers and private providers to identify the impact of lack of transportation on missed medical appointments and associated health care costs.

- **Community profiles:** Development of profiles illustrating communities that are adopting patient-centered transportation solutions that show promising opportunities for return on investment.

Exploring Data and Metrics of Value at the Intersection of Health Care and Transportation: Proceedings of a Workshop, National Academies of Sciences, Engineering and Medicine, November 2016.
Citation at https://www.nap.edu/catalog/23638/exploring-data-and-metrics-of-value-at-the-intersection-of-health-care-and-transportation
From the abstract: In June 2016 the National Academies of Sciences, Engineering and Medicine held a joint workshop to explore partnerships, data and measurement at the intersection of the health care and transportation sectors. This publication summarizes the presentations and discussions from the workshop.

Missouri Rides to Wellness: Executive Summit Summary, Missouri Rural Health Association, November 2015.
https://www.morha.org/wp-content/uploads/2016/04/R2W-Report_Dec-1_2015.pdf
This report provides highlights of a 2015 summit of national leaders in health, transportation, social service and aging to discuss the significance of transportation to health. Among the topics addressed is Missouri's HealthTran, which began as a pilot project funded by the Missouri Foundation for Health. The pilot project served nine Missouri counties (now expanded to 10 counties). *From page 7 of the report*:

> HealthTran employs HealthTran Coordinators to coordinate the most appropriate transportation option for individuals in need of health care and subsidizes the cost of transportation for those who have a health need and no resources for transportation. HealthTran works with community health centers, hospitals, public transportation providers, ambulance districts and private healthcare and transportation providers to maximize local resources to improve healthcare access.

Related Resource:

HealthTran…Then and Now, Missouri Rides to Wellness and Missouri Rural Health Association, April 2016.
https://www.morha.org/wp-content/uploads/2016/05/HealthTran-2016.pdf
This publication provides the background, history and next steps expected for Health Tran, a transportation service "primarily directed to individuals unable to access transportation through other channels. Patients with access to Medicaid nonemergency medical transportation, veterans' transportation assistance, or others who have access or can afford transportation, are generally considered ineligible for the service at this time due to limited funding." HealthTran's program manager considers the agency "the last resort for transportation."

Related Resources

Health Care and Transportation, National Center for Mobility Management, Federal Transit Administration, 2016.
http://nationalcenterformobilitymanagement.org/by-topic-health/
This web site offers a wealth of resources addressing collaboration between the health care and transportation sectors.

Rural Health Information Hub, Health Resources and Services Administration, U.S. Department of Health and Human Services, 2017.
https://www.ruralhealthinfo.org
The Rural Health Information Hub "is funded by the Federal Office of Rural Health Policy to be a national clearinghouse on rural health issues." The web site offers the Rural Transportation Toolkit (https://www.ruralhealthinfo.org/community-health/transportation), which "compiles promising models and resources to support organizations implementing transportation programs in rural communities across the United States. The modules in the toolkit contain resources and information focused on developing, implementing, evaluating, and sustaining rural transportation programs. There are more resources on general community health strategies available in the Rural Community Health Toolkit."