

# **Project 190-FT1: Cost Allocation Technology for Non-Emergency Medical Transportation Final Report**

June 2020

Prepared for:

**Federal Transit Administration (FTA)  
Small Business Innovation Research (SBIR) Program &  
U.S. Department of Transportation (U.S. DOT)  
Office of the Assistant Secretary for Research and Technology**

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# Table of Contents

<b>Introduction .....</b>	<b>1</b>
Project Background.....	1
SBIR Program Objectives.....	3
Project Objectives .....	3
<b>Literature Review .....</b>	<b>4</b>
Lack of Cost Allocation Methodology as a Barrier to Transportation Coordination.....	4
Instructional Resources on Cost Allocation .....	6
Medicaid Non-Emergency Medical Transportation .....	7
Mobility Management Software for Cost Allocation .....	11
Summary .....	14
<b>Considerations in Developing a Cost Allocation Model .....</b>	<b>15</b>
Cost Accounting Issues .....	15
Type of Human Services Transportation .....	16
Different Market Segments Providing Community Transportation .....	18
Cost Guidance Applicable to the NEMT Market Segments .....	18
Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards .....	18
Federal Acquisition Regulation (FAR) System .....	20
Uniform Administrative Requirements, Cost Principles, and Audit Requirements for HHS Awards .....	21
Recommendations on Principles for Incorporation into the Cost Allocation Model.....	21
Composition of Costs .....	22
Basic Considerations in Determining the Allowability of Costs .....	23
CCAM Statement on Cost Principles .....	23
Policy Statement .....	23
CCAM Principles .....	24
CCAM Cost Sharing Principles: Impacts on the Cost Allocation Model Structure .....	25
Selected Items of Cost .....	30
TAG Input on Selected Items of Costs.....	37
Uniform Account Structure .....	37
<b>Service Metrics .....</b>	<b>40</b>
Concepts of Cost, Price, and Billing Units .....	40
Transportation Costs.....	40
Transportation Price .....	41
Pricing Transportation.....	42
Pricing Complexities.....	43

Fixed Route .....	43
Demand Response .....	44
Complexities Created by the CCAM Cost Sharing Principles .....	45
Cost of an Attendant .....	46
Payment for Loaded Miles .....	46
Least Distance Path Payment of Loaded Miles.....	49
Comparative Analysis of Pricing Units .....	53
<b>Lessons Learned from the Demonstration Site.....</b>	<b>56</b>
Ohio's Mobility Transformation Initiative .....	56
OMEGA Pilot Project .....	57
Pilot Project Objectives and Timeline .....	58
Lessons Learned.....	60
Recognize Differences in Sophistication in Finance and Account Structures Among Providers .	60
Refinement of Purchased Transportation Object Class is Required.....	60
User Manuals .....	60
Education and Training.....	61
Consistent Pricing.....	61
<b>Cost Allocation Model Parameters and Structure.....</b>	<b>62</b>
General Model Overview.....	62
Cost Allocation and Pricing Functionality .....	62
Web-Based Platform .....	63
Error and Validity Checks .....	63
Depreciation .....	63
Elements of the Model.....	63
Identification Module .....	63
Modes of Service Module .....	64
Service Parameters Module .....	64
Financial Parameters Module.....	65
Certification Module .....	66
Depreciation Module .....	67
Costing Module .....	67
Pricing Module.....	69
<b>Recommendations/Assessment .....</b>	<b>70</b>
Recommendations for Inclusion in the Cost Model .....	70
Additions to the Model.....	70
Add New Functionality to Pricing Module .....	71
Profit and Capital Cost of Contracting .....	72
Profit.....	72
Capital Cost of Contracting .....	72
Assessment of Commercialization Potential .....	73
Managed Care Organizations .....	73
Existing Scheduling and Dispatch Technology Firms.....	74

Other Considerations.....	74
Market Potential .....	75
Commercialization Strategy .....	75
Development.....	75
Deployment .....	76
Schedule.....	76
Other Options .....	77
<b>Appendix A: Coordinating Council on Access and Mobility Cost-Sharing Policy Statement.....</b>	<b>78</b>
<b>Appendix B: Technical Advisory Group Conference Call Minutes.....</b>	<b>82</b>

## *Acknowledgements*

The author wishes to acknowledge the substantial contributions of others in both the conduct of this project and preparation of this report. Mr. Kenneth Blacks, Office of Research, Demonstration, and Innovation (TRI) and Ms. Tammy Taylor, Volpe National Transportation Systems Center ensured that research efforts conformed to standards of the Small Business Innovation Research (SBIR) Program. Mr. Dan Keeley, Dawnbreaker, Inc. provided detailed information on the potential commercialization of this research. Ms. Marianne Stock and Ms. Danielle Nelson, Office of Program Management, Rural and Targeted Programs, provided timely updates on the work of the Federal Coordinating Council on Access and Mobility.

At RLS & Associates, Inc., Ms. Christy Campoll conducted the initial literature review. Ms. Campoll, Ms. Robbie Sarles, and Ms. Julie Schafer worked with the Ohio Department of Transportation, the Mobility Ohio Committee, the Ohio Mid-Eastern Governments Association (OMEGA), and three human services and public transportation providers that serve the OMEGA Region — Carroll County Public Transportation, National Church Residencies, and South East Area Transit — to assist in the initial deployment and test of the NEMT cost allocation model's parameters and operability.

The author also acknowledges the contributions and participation of the Technical Advisory Committee established for the project, including Chuck Dyer, Ohio Department of Transportation; Rafiat Eshett, Ohio Department of Medicaid; Don Chartock and Jacob Brett, Washington State Department of Transportation; Tracy Graves and Todd Slettvet, Washington State Health Care Authority; Jeremy Johnson-Miller, Iowa Department of Transportation; Timothy Bradshaw, Vermont Agency of Transportation; and David Darm, Florida Commission of the Transportation Disadvantaged.

# Introduction

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## Project Background

The Federal government has long recognized and promoted the benefits of coordinating human services transportation. The Coordinating Council on Access and Mobility (CCAM), an interagency group comprised of senior leadership from multiple Federal departments and agencies, has been formed to coordinate Federal efforts. The CCAM defines “human service transportation” as any means used to meet the basic, day-to-day mobility needs of transportation-disadvantaged populations, especially individuals with low-incomes, people with disabilities, and older Americans.<sup>1</sup>

The General Accountability Office has identified 80 federal programs that fund a variety of transportation services for transportation-disadvantaged populations.<sup>2</sup> While many different federal programs support transportation, Medicaid has become, after the U.S. Department of Transportation, the largest funding source of medical and health-related transit services.<sup>3</sup>

Established in 1965, Medicaid is an entitlement program administered by the Centers for Medicare and Medicaid (CMS) and is jointly funded by individual states and the Federal

government. Medicaid benefits are guaranteed by law to pregnant women, children, disabled people, and the elderly based on income qualifications. States have the option of extending coverage to other additional populations, based on criteria established in a state Medicaid plan. It is estimated that 71.4 million persons were enrolled in Medicaid and a related children’s health program.<sup>4</sup>

Efforts to coordinate transportation for the transportation disadvantaged, including non-emergency medical transportation (NEMT), began during the 1970s, primarily through state and local initiatives. These entities recognized that a myriad of Federally-sponsored programs either directly funded client transportation as a direct service or as a supplemental service necessary to ensure

access to the primary program services. Federal interest regarding the coordination — or lack thereof — was first documented by the U.S. Senate Committee on Public Works. In public hearings held in 1975, concerns were raised about

the lack of coordination of Federally-funded programs supporting transportation in rural areas. This hearing led directly to a landmark General Accounting Office (later renamed as the Government Accountability Office (GAO)) report issued in 1977 that identified a number of hindrances to transportation coordination

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*It is estimated that 71.4 million persons were enrolled in Medicaid.*

*CMS, December 2019*

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<sup>1</sup> U.S. Department of Transportation and U.S. Department of Health and Human Services, *Final Report on the DOT/DHS Coordination Roundtable*, U.S. Department of Transportation, Technology Sharing Program, August 1992, p 10.

<sup>2</sup> General Accountability Office, *Transportation Disadvantaged Populations: Federal Coordination Efforts Could Be Further Strengthened*, GAO-12-647, Washington, D.C., Feb. 28, 2012, p 6.

<sup>3</sup> Burkhardt, J.E., Richard Garrity, Kathy McGehee, Susanna S. Hamm, Karen Burkhardt, Cindy Johnson, and David Koffman, *Transit Cooperative Research Program Report 144: Sharing the Costs of Human Services Transportation Volume 2: Research Report*, Transportation Research Board of the National Academies, Washington, D.C., 2011, p. 22.

<sup>4</sup> Centers for Medicare and Medicaid, September 2019 Medicaid & CHIP Enrollment Data Highlights, Washington, D.C., December 2019, p. 1.



efforts, including “accountability, paperwork, and bookkeeping problems.”<sup>5</sup>

In October 1986, the U.S. Department of Transportation (USDOT) and the U.S. Department of Health and Human Services (USDHHS) executed the “Agreement on the Coordination of Transportation Services,” declaring:

*...it is the policy of the Department of Health and Human Services and the Department of Transportation to coordinate related programs at the Federal level wherever possible and to promote maximum feasible coordination at the State and local level.*<sup>6</sup>

Since 1986, responsibility for coordination has rested with the Coordinating Council on Access and Mobility (CCAM), which was created under a memorandum of understanding between the USDOT and USDHHS. In 2004, Executive Order 13330 renamed the council the Federal Interagency Transportation Coordinating Council on Access and Mobility.

GAO continued its investigations and studies regarding the coordination of transportation, periodically focusing on specific recommendations. In one 2003 study, GAO recommended executive action on the part of the Federal government to:

*Develop and distribute additional guidance to states and other grantees that encourages*

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*The fundamental funding difference between human service agency funding and public transportation funding has hindered transportation coordination efforts for decades.*

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*coordinated transportation by clearly defining the allowable uses of funds, explaining how to develop cost-sharing arrangements for transporting common clientele, and clarifying whether funds can be used to serve individuals other than the program’s target population.*<sup>7</sup>

In 2005, CCAM, responding to one element of Executive Order 13330, issued its report to the President.

Five key recommendations were put forth, including one that directly addressed cost allocation methods:

*In order to ensure that adequate resources are available for transportation services for persons with disabilities, older adults and individuals with lower incomes, and to encourage the shared use of vehicles and existing public transportation services, the CCAM recommends where statutorily permitted that standard cost allocation principles for transportation be developed and endorsed by Federal human service and transportation agencies.*<sup>8</sup>

In the passage of the Fixing America’s Surface Transportation (FAST) Act (Pub. L. No. 114-94) in 2015, Congress stipulated that the USDOT and CCAM develop a cost allocation technology to account for disparate Federal reporting requirements and maintain separation of funding sources by trip for NEMT, the term given to transportation

<sup>5</sup> U.S. General Accounting Office, *Hinderances to Coordinating Transportation of People Participating in Federally Funded Grant Programs, Volume 1*, GAO/RCED-77-119, Washington, DC, October 17, 1977, p. 53.

<sup>6</sup> U.S. Department of Transportation and U.S. Department of Health and Human Services, *Final Report on the DOT/DHS Coordination Roundtable*, U.S. Department of Transportation, Technology Sharing Program, August 1992. p. 1.

<sup>7</sup> U.S. General Accounting Office, *Transportation Disadvantaged Populations: Some Coordination Efforts Among Programs Providing Transportation Services, but Obstacles Persist*, GAO-030697, Washington, DC, June 2003. p. 37.

<sup>8</sup> Coordinating Council on Access and Mobility, *Report to the President: Human Services Transportation Coordination – Executive Order 13330*, 2005, p. 33.



provided to eligible clients who need access to medical services.<sup>9</sup>

The USDOT notes the challenges to this seemingly simple task; these challenges include harmonizing different systems that utilize different levels of financial accounting, for example:

- Human service agency funding typically flows funds by the eligible individual, and
- Public transportation funding flows to the local transit system.
- This fundamental funding difference has hindered transportation coordination efforts for decades.

## SBIR Program Objectives

This project is being sponsored by the USDOT's Small Business Innovation Research (SBIR) program. The purpose of this program is to invite small businesses, with their valuable resources and creative capabilities, to submit innovative research ideas and solutions in response to the topics identified by the USDOT.

The SBIR Program encourages small businesses to engage in research or research and development (R/R&D) that has the

potential for commercialization and meets Federal R/R&D objectives.

- Stimulate technological innovation;
- Meet Federal research and development needs;
- Foster and encourage participation in innovation and entrepreneurship by socially and economically disadvantaged persons; and
- Increase private sector commercialization of innovations derived from Federal research and development funding.

## Project Objectives

This project seeks innovative solutions for a cost allocation method/technology that accounts for divergent Federal requirements and funding sources by trip. The development of an allocated cost model for NEMT can result in improved coordination across multiple Federal Agency programs that provide funding to access human services transportation.

This approach also responds to a Government Accountability Office audit recommendation to "finalize and issue a cost-sharing policy and clearly identify how it can be applied to programs under the purview of member agencies of the Coordinating Council that provide funding for NEMT."<sup>10</sup>

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<sup>9</sup> H.R. 22, 114th Congress, Fixing America's Surface Transportation (FAST) Act, Section 3006(c)(2)-(3) and Small Business Innovation Research (SBIR) Program Phase I Program Solicitation, 6913G619QSBIR1, p. 53.

<sup>10</sup> General Accountability Office, *Transportation Disadvantaged Populations: Nonemergency Medical Transportation Not Well Coordinated, and Additional Federal Leadership Needed*, GAO-15-110, Washington, D.C., December 2014, p 32.

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# Literature Review

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## Lack of Cost Allocation Methodology as a Barrier to Transportation Coordination

The Federal government has a long history of recognizing the need for coordination between governmentally funded public and human service transportation programs. As early as 1977, the General Accounting Office (GAO — later renamed as the Government Accountability Office) reported on the barriers to coordination between transportation agencies.<sup>1</sup>

The GAO revisited this subject in 1999 in a report that discusses the reasons for the persistent problem of fragmentation and duplication of service in public transit and human services transportation, despite consensus about the benefits of coordination.<sup>2</sup> The report provides background on activities at the Federal level during the 1980s and 1990s within the Departments of Transportation and Health and Human Services. These activities included the formation of a Coordinating Council on Human Services Transportation in 1986 and its 1988 effort that identified 64 barriers to transportation coordination and issued a Federal response to each of them. These barriers included the lack of standardized accounting and reporting procedures used by human service providers that receive Federal transportation funding, with the DOT and HHS responding that they would continue to discuss the development of such standards for all transportation components of their programs.

The report documents efforts during the 1997 and 1998 DOT appropriations bills to address

the need for state and regional planning to achieve transportation coordination objectives, including cost-sharing arrangements for HHS program clients transported by Americans with Disabilities (ADA) paratransit systems based on a uniform accounting system. Recommendations for Federal action include requiring the Coordinating Council to issue a strategic plan and an action plan, report annually on initiatives and accomplishments, and direct regional working groups to assess barriers to coordination at the local level.

In subsequent reports, the GAO continued to highlight the lack of a cost allocation methodology as a major barrier to coordination efforts. In 2003, the agency was asked to study the extent to which government agencies are currently providing transportation services to the transportation-disadvantaged (older adults, people with disabilities, and low-income individuals) and coordination of the provision of these services, including an update on actions taken by the Coordinating Council since the 1999 report. Research efforts identified 62 Federal programs that fund transportation services for populations that are transportation-disadvantaged.<sup>3</sup> The report documents some successful coordination efforts undertaken at the local level around the U.S. and notes that the re-named Coordinating Council on Access and Mobility (CCAM) has adopted a strategic plan and sponsored some research and technical assistance activities to promote coordination. However, barriers to coordination persist, including a reluctance among human service agencies to coordinate due to fears of loss of control over vulnerable clients' riding experience and the convenience of administering their own transportation.

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<sup>1</sup> GAO, *Hinderances*, p. 55.

<sup>2</sup> U.S. General Accounting Office, *Transportation Coordination: Benefits and Barriers Exist, and Planning Efforts Progress Slowly*, GAO/RCED-00-1, Washington, DC, October 1999.

<sup>3</sup> GAO, *Some Coordination Efforts Among Programs Providing Transportation Services, but Obstacles Persist*, p. 8.

The report documents that differing program requirements can impede coordination, including the lack of uniform data collection and reporting requirements among programs, which can make it difficult for agencies to determine their true transportation costs and the benefits that may be realized from coordination. One of the report's recommendations is to harmonize requirements among Federal programs, such as providing more flexible regulatory language that would allow providers to serve additional client groups, creating consistent cost accounting methods, and adopting common safety standards.<sup>4</sup> It was noted that the benefit from any change in standards or requirements would need to be balanced against continuing to properly meet client needs and sufficiently control funds distributed to grantees. It is also recommended in the report that the CCAM-member agencies develop guidance for grantees on cost-sharing arrangements for transporting common clientele.

A 2012 GAO report provides an update to the Federal government on transportation coordination since the

publication of the 2003 report. The report includes a listing of CCAM activities since 2003, which included reports and policy statements, the United We Ride and Veterans Transportation and Community Living Initiative grant programs, and nationwide technical assistance programs. The report documents several key challenges in coordination efforts. These include a lack of activity at the leadership level of CCAM and the absence of key guidance documents for furthering agency coordination efforts,

including a joint cost-sharing policy that CCAM had committed to developing in its 2005 report to the President. This report noted that a major obstacle to sharing transportation resources has been the difficulty of reaching agreements at the local level about the appropriate allocation of costs to coordinating agencies.<sup>5</sup>

The report cites the concerns expressed by the Centers for Medicare & Medicaid Services (CMS) that the co-mingling of Federal program funds for transportation coordination could violate the Federal restriction against the use of Medicaid funds for purposes other than to deliver medical services to eligible beneficiaries.<sup>6</sup> Similar concerns were expressed by the Veterans Administration (VA). While there have been many coordination activities at the State and local levels, local officials commented to the GAO that there is not sufficient Federal leadership and guidance on how to coordinate transportation services while following program requirements. The report's concluding recommendations include the development of a cost-sharing policy endorsed by CCAM.

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*A major obstacle to sharing transportation resources has been the difficulty of reaching agreements at the local level about the appropriate allocation of costs to coordinating agencies.*

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*GAO, October 1999*

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Soon after the 2012 report, the GAO issued a Statement for the Record that summarizes its reporting on transportation coordination.<sup>7</sup> The Statement reaffirms the recommendation that CCAM develop a cost-sharing policy for Federally-funded transportation programs, noting that as of November

2013, this recommendation has remained open. The Statement also cites that the trend of states shifting Medicaid NEMT responsibilities to private managed care systems as a potential new barrier to Medicaid programs'

<sup>4</sup> Ibid., p. 34.

<sup>5</sup> U.S. Governmental Accountability Office, *Transportation Disadvantaged Populations: Federal Coordination Efforts Could be Further Strengthened*, GAO-12-647, Washington, DC, June 2012, p. 14.

<sup>6</sup> Ibid., p. 20.

<sup>7</sup> U.S. Government Accountability Office, *Transportation Disadvantaged Populations: Coordination Efforts are Underway, but Challenges Continue*, GAO-14-154T, Washington, DC, November 2013.

participation in State and local coordination efforts.

## Instructional Resources on Cost Allocation

Cost allocation in the public transit field consisted primarily of locally developed methods until 1987 when FTA sponsored research created a specific framework for cost allocation techniques and methods. This document was directed toward providers of fixed route public transit services and introduced the concept of the three-variable model to allocate transit costs to specific services.<sup>8</sup> In this manual, direct costs associated with each service are captured in the accounting system; shared costs are allocated to the respective services by three variables: vehicle hours, vehicle miles, and peak vehicles.<sup>9</sup> A transit system must assign shared costs to one of these three categories, typically using a classification procedure that defines the object class as either a fixed or variable expense.

A lesser known element of this work addressed issues associated with comparative analysis of private sector and public sector cost structures — an element that must be taken into account in NEMT cost allocation, as many NEMT providers are for-profit entities. An ad-hoc group created by the Federal Transit Administration and the American Public Transit Association (APTA), known as the Competitive Services Board, developed guidance on the treatment of unique expenses associated with each type of organization (public or private).<sup>10</sup>

While groundbreaking in its comprehensive scope and development of a costing model, demand response transit operators found that the allocation of fixed expenses based on peak vehicles was not a concept that resulted in an equitable distribution of fixed costs. Cost allocation methodology in the context of public and human services transportation was introduced by the Multi-State Technical Assistance Program's (MTAP) in a 1992 manual. This reference manual provides recommended approaches to service planning, revenue management, costing, budgeting, and cash management. A section on monitoring and analysis provides guidance on financial and performance reporting, and audits. An accounting section instructs transit managers on basic accounting procedures and performance evaluation. A chapter on cost allocation is particularly relevant to this research. A model is provided to guide agencies in distributing total system costs among funding sources and to individual routes or services, including a step-by-step example. The model uses a two-variable method, vehicle miles and vehicle hours, to allocate costs.<sup>11</sup> Rather than use the third variable (peak vehicles), this model uses a mathematical workaround that involves the ratio of variable expenses to allocated fixed costs; this approach remedies the problem in the earlier FTA cost allocation model when applied to demand response environments. Examples of the model are provided to illustrate the allocation of costs for billing funders under various service scenarios. The model allows transit systems to bill agencies on a per-trip basis for rides provided to an agency's clients.<sup>12</sup>

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<sup>8</sup> *Fully Allocated Cost Analysis: Guidelines for Public Transit Providers*, prepared for the U.S. Department of Transportation, Urban Mass Transportation Administration, prepared by Price Waterhouse, April 1987, p. 9.

<sup>9</sup> *Ibid.*, p. 12.

<sup>10</sup> *Ibid.*, p. 59.

<sup>11</sup> Burkhardt, J. E., Hamby, B., MacDorman, L. C., McCollom, B. E., and Schreur, G. A., *Comprehensive Financial Management Guidelines for Rural and Small Urban Public Transportation Providers*, Ecosometrics, Inc., prepared for the American Association of State Highway and Transportation Officials/Multi-State Technical Assistance Program, Washington, DC, 1992, p. 12-4.

<sup>12</sup> *Ibid.*, p. 13-2.

This model works well in a single mode, community transit system environment. If the transit provider operates multiple modes, particularly both fixed route and demand response modes, this model abandons the three-variable approach incorporated into the FTA sponsored research and uses that mathematical work-around for this allocation, even for fixed route modes.

A 2011 Transit Cooperative Research Project (TCRP) report provided a comprehensive, unified approach to the issue of cost sharing among Federal programs. The report focuses on the need for organizations to adopt accounting practices to recognize the fully allocated cost of service delivery, provides some common principles for recognizing costs, including the depreciation of assets used in service delivery, and provides a model tool for allocating costs. This model is a variation of the previous MTAP model but solves the problem of allocating fixed costs in a multimodal transit operation. The report defines the basic data needed for managing coordinated transportation operations, methods for collecting data on transportation services and costs, and step-by-step instructions for establishing cost-sharing agreements for transportation services.<sup>13</sup>

The reasoning behind the report's objective — providing cost accounting and inter-agency coordination methods to transportation agencies — is fourfold. It ensures that operators are recording all services and costs on an accurate and consistent basis; ensures that complete information is reported on transportation services and costs and is available to a wide range of decision-makers; develops a uniform service and cost-reporting methodology that can be used to track and analyze transportation services and costs; and, allows for the sharing of costs of transportation services among the users and

other beneficiaries of those services, when appropriate.

The report defines data needs for measuring service: resource inputs, service inputs (service quantity inputs or qualitative statistics), and service outputs (consumption). The recommended process for determining how much a specific transportation service costs is provided in four steps:

1. Assembling data on all services provided and all expenses required to provide those services.
2. Assigning the expenses to cost categories that explain how these costs vary according to the resources required to produce these services.
3. Calculating average unit costs on a per mile, per hour, or per trip basis.
4. Allocating the costs of services among the parties receiving the services in proportion to the services that they have received.

Volume 2 of TCRP 144 provides background information related to transportation cost allocation including a summary of the Federal regulatory framework for various human service agencies' cost accounting requirements, and descriptions of the major Federal agencies that fund transportation services. The report includes detailed descriptions of how transportation providers in a sample taken from eight states approach transportation cost accounting and in-depth case studies of coordinated transportation practices in two states.

This research also developed a Microsoft Excel tool based on the unit cost calculation model. As noted above, this cost allocation model solves the problem of fixed cost allocation when multiple modes are operated by a single provider organization.

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<sup>13</sup> Burkhardt, *Sharing the Costs of Human Services Transportation Volume 1*, p. 23–27



## Medicaid Non-Emergency Medical Transportation

Medicaid is generally recognized as the U.S. government's largest entitlement program. As a partnership between the Federal government and the states, the individual states have been provided great latitudes in structuring the Medicaid program within the respective states. Each state structures and manages its NEMT program differently.

To understand common elements, a fact sheet for Medicaid beneficiaries provides basic information about the NEMT benefit.<sup>14</sup> It advises what a beneficiary is to do when a ride is needed, explaining that there will be state-by-state variations in what rides are permitted and how to schedule rides. It provides the rules that beneficiaries must follow, including how to cancel unneeded rides in advance and refrain from using NEMT for any trip purpose other than for going to an approved medical appointment. Information about fraudulent and abusive use of NEMT is provided with contact information for reporting incidents to the U.S. Department of Health and Human Services.

A booklet written for providers of NEMT service summarizes the general scope of Medicaid-covered emergency transportation and NEMT benefits and reviews principles applicable to such coverage. It also explains three modes for States to provide or arrange for covered NEMT (through brokers, managed care organizations, or directly with independent transportation providers),

common Medicaid transportation fraud and abuse issues, and provider tips to help prevent fraud and abuse. To prevent fraud, providers are advised to document all trips provided accurately and maintain records, verify beneficiaries' use of medical services, and bill accurately for trips. Providers are also advised to screen new hires, as well as all existing employees every month, to determine whether they are excluded from participation in Federal health care programs.<sup>15</sup>

An issue brief from The Center for Health Care Strategies, a nonprofit public policy organization focused on promoting innovations publicly financed health care, summarizes the current state of Medicaid NEMT services, its challenges, and opportunities for improvement.<sup>16</sup> It explores alternative transportation models piloted by states and health plans across the country, including the use of transportation network companies, such as Uber and Lyft, to augment NEMT services. The authors identify five key challenges in the provision of the NEMT benefit: complaints by beneficiaries of poor customer service, including the inability of customers to choose their transportation provider in states that classify NEMT as an administrative expense; inadequate transportation system responses to time-sensitive transportation needs, such as appointment time changes; service data collection and oversight; fraud and abuse; and, structural inefficiencies such as low reimbursement rates for transportation companies and administrative difficulties with transporting beneficiaries across county lines.

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<sup>14</sup> Centers for Medicare & Medicaid Services (CMS), U.S. Department of Health and Human Services. 2016a. *Medicaid Non-Emergency Medical Transportation Fact Sheet*, Baltimore, MD, 2016. (Downloaded at: <https://www.cms.gov/medicare-medicare-coordination/fraud-prevention/medicaid-integrity-education/downloads/nemt-factsheet.pdf>)

<sup>15</sup> Centers for Medicare & Medicaid Services (CMS), U.S. Department of Health and Human Services. 2016b. *Medicaid Non-Emergency Medical Transportation Booklet for Providers*, Baltimore, MD, 2016. (Downloaded at <https://www.cms.gov/medicare-medicare-coordination/fraud-prevention/medicaid-integrity-education/downloads/nemt-booklet.pdf>)

<sup>16</sup> Ganuza, A. and R. Davis, *Disruptive Innovation in Medicaid Non-Emergency Transportation*, Center for Health Care Strategies, Washington, DC, 2017. (Downloaded at: <https://www.chcs.org/resource/disruptive-innovation-medicare-non-emergency-transportation>)



The issue brief describes several innovations that demonstrate the potential to improve NEMT. Transportation network companies such as Uber and Lyft that offer on-demand service may help NEMT provide timely service in time-sensitive situations, and some for-profit brokerages have adopted convenient technologies such as app-based ride request features. These uses of technology are promising not only for service delivery but may also offer advancements in reporting and program analytics. Some states are seeing legislative efforts to address NEMT concerns, including laws to ease the licensing process for NEMT providers and the ability of managed care organizations to assume responsibility for NEMT. Also, some states have restricted access to NEMT for populations covered under Medicaid expansion programs authorized by the Affordable Care Act, enabling research studies to examine the health outcomes of populations receiving NEMT vs. those who do not receive the benefit. The authors advocate for brokers, vendors, and/or health plans to use more technologically advanced data collection systems to improve program oversight and quality assurance, and recommend that Medicaid programs consider increasing investments in their NEMT information technology infrastructure as a way to strengthen existing programs' efficiency and oversight, and potentially decrease exposure to Federal audits.

A 2016 GAO report reviews NEMT services under Medicaid and Medicare and how they are administered, CMS oversight of NEMT under both programs, and the challenges that exist in providing NEMT under Medicaid, including ways that States have addressed these challenges.<sup>17</sup> States are responsible for the daily operations of their Medicaid programs and have discretion in how they

deliver NEMT and use a variety of models, including transportation brokers, which are entities that contract with States to administer NEMT services. CMS uses regular program integrity activities, such as claims reviews, to oversee Medicare NEMT. Under Medicaid, CMS also uses regular oversight activities, including overseeing states' program integrity activities and periodically issuing guidance, but this guidance is sometimes outdated and does not reflect legislative and other changes. The report summarizes some states' responses to common challenges with Medicaid NEMT. To contain growing NEMT costs, states have used methods such as capitated payments, coordinating with public transit, and limiting allowable trip distances. Overbilling, improper payments, and other program integrity concerns are common issues. In response, states have enhanced their provider enrollment processes, required additional trip documentation, audited claims, added provider contract provisions, and conducted provider training. States have also taken measures to increase monitoring and oversight of NEMT brokers, address provider and beneficiary no-shows, and broaden the network of NEMT providers, including paying mileage reimbursements to beneficiaries or their family members, coordinating with non-NEMT transportation providers, and using volunteer drivers.

State Medicaid programs were given the option to establish brokerages to administer NEMT while retaining the ability to receive Federal matching funds for NEMT at the Federal medical assistance matching rate (FMAP) in 2008. The published Federal final rule, "Medicaid program: State option to establish non-emergency medical transportation program", implements section 6083 of the Deficit Reduction Act of 2005, which provides additional State plan flexibility to establish

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*States are responsible for the daily operations of their Medicaid programs and have discretion in how they deliver NEMT services.*

*GAO, February 2016*

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<sup>17</sup> U.S. Government Accountability Office, *Nonemergency Medical Transportation: Updated Medicaid Guidance Could Help States*, GAO-16-238, Washington, DC, February 2016, p. 9.

NEMT brokerage programs.<sup>18</sup> That section of the law contains four provisions that enable a state to:

- Select an NEMT broker through a competitive bidding process, provided the factors of experience, performance, references, resources, qualifications, and costs are used in the evaluation process;
- Monitor beneficiary access and complaints and ensure that transport personnel are licensed, qualified, competent, and courteous;
- Audit and provide oversight to ensure the quality of the transportation services provided and the adequacy of beneficiary access to medical care and services; and
- Comply with the prohibitions on referrals and conflict of interest as the Secretary shall establish.

Since the publication of the final rule, many states have opted to establish NEMT brokerages. The effects of brokerage systems on transportation coordination have been documented in two key publications.

A 2014 GAO report addresses the Federal programs that are authorized to provide funding for NEMT services, how Federal agencies are coordinating NEMT services, whether there is fragmentation or duplication of services, and how NEMT services are coordinated at the state and local levels and the challenges to coordination in states and localities. The report identifies 42 funding programs in six Federal departments that fund NEMT and documents CCAM activities to address the coordination of NEMT. CCAM's interagency working group on Health, Wellness, and Transportation is trying to

analyze the issue of trip costs and cost sharing, which remains a barrier to coordination, according to a CCAM official.<sup>19</sup>

The report repeats the observation from previous GAO reports that CCAM exercises little executive leadership in the area of coordination and needs to promulgate a policy on the allocation of costs among disparate transportation programs and services. The report found that cost and ride sharing are occurring in some locations in the absence of Federal guidance and that this has facilitated the coordination of NEMT service in two of the report's case study states, Oregon and Texas. The report documents barriers to the coordination of Medicaid NEMT, including state Medicaid programs' perceptions that program requirements limit their ability to share rides or costs with non-Medicaid programs, as well as the use of private brokers who do not participate in local coordination efforts. The report documented similar barriers to coordination with VA NEMT services, which were found to preclude the use of community transportation resources to support NEMT for veterans because the VA is unable to pay these providers due to funding restrictions. The report's recommendations suggested that CCAM update its strategic plan to clearly outline a strategy for addressing NEMT coordination, finalize and issue a cost-sharing policy and identify how it can be applied to programs that fund NEMT, and develop strategies for coordination with Medicaid and VA NEMT programs that address program integrity and fraud prevention.<sup>20</sup>

A recent Transit Cooperative Research Program (TCRP) discusses state models for providing non-emergency medical transportation (NEMT) to Medicaid beneficiaries, providing

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<sup>18</sup> Centers for Medicare & Medicaid Services (CMS), U.S. Department of Health and Human Services. 2008. Medicaid program: *State option to establish non-emergency medical transportation program*, Federal Register 73, no. 245 (December 19): 77519–77531.

<sup>19</sup> U.S. Government Accountability Office, *Transportation Disadvantaged Populations: Nonemergency Medical Transportation Not Well Coordinated, and Additional Federal Leadership Needed*, GAO-15-110, Washington, DC, December 2014, p. 16.

<sup>20</sup> Ibid., p. 32.

information to better understand what influences state Medicaid agencies to establish separate NEMT brokers and the resulting effects on NEMT customers, human services transportation, and public transportation

The report also addresses the trend of states to include NEMT as part of Medicaid managed care and discusses why human services and public transportation providers encourage coordination with NEMT with other transportation services. States use one, or a combination, of three models for NEMT service delivery: in-house management at a state, regional, or county level, typically contracting with transportation providers on a fee-for-service basis; statewide or regional brokerages that perform NEMT administrative functions and contract with transportation providers for rides; and managed care organizations, which may integrate NEMT into the health care system (known as “carved-in” NEMT).<sup>21</sup>

A companion document to the report describes each State’s model. The report documents the effects of these models on public transit and human service transportation coordination, noting the advantages of coordination: expanded overall access to transportation; leveraging of public transit expertise and resources in NEMT service delivery; increased efficiency in shared-ride transportation; improved productivity and cost-effectiveness for fixed route public transit; increased accessibility of NEMT for individuals with disabilities; and, the availability of NEMT revenue as local match for Federal Transit Administration grants.

The report provides strategies to coordinate NEMT with public and human services

transportation to achieve the common desired outcomes of improved health, better quality of service, and maximization of services delivered within available resources. In particular, the report recommends the implementation of a transparent cost allocation methodology to show how shared-ride public transportation can lower the cost for an NEMT trip.

Public transportation providers can adopt a comprehensive cost accounting system that identifies all costs incurred and all services rendered to establish and implement cost allocation to identify direct costs for coordinated services, including NEMT. The report outlines a range of strategies to affect a greater degree of coordination among public transit and NEMT.

Cost accounting challenges were identified in the report, including those imposed on a public entity that requires: (a) maintenance a separate cost accounting system for NEMT; and (b) excluding of shared costs or indirect costs/central services allocated from another governmental entity.<sup>22</sup>

It is recommended that the Medicaid agency and DOT in each State develop a cost allocation methodology appropriate for the NEMT model in that State. The report cites two examples of such methodologies — the North Carolina DOT community transportation system cost allocation methodology, and the model used by the ACCESS coordinated transportation service in Allegheny County, Pennsylvania.<sup>23</sup>

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<sup>21</sup> Cherrington, Linda, Suzy Edrington, et. al., *Handbook for Examining the Effects of Non-Emergency Medical Transportation Brokerages on Transportation Coordination, Volume I*, Transit Cooperative Research Report 202, The National Academies Press, Washington, DC, 2018, p. 56.

<sup>22</sup> Ibid., p. 34–35.

<sup>23</sup> Ibid., p 77.

## Mobility Management Software for Cost Allocation

Transportation providers involved in coordination efforts require specialized software tools to properly allocate costs. Three recent research studies document the conceptualization and development of transportation coordination software, which demonstrates the potential to incorporate cost allocation methodologies.

Transit IDEA Project 50 addresses the ability of transportation providers to coordinate passenger trips through scheduling/dispatching technology. The project attempts to resolve the inability of proprietary software packages to communicate with one another to exchange trip data. The project focuses on how to integrate the information and capabilities of multiple software applications for scheduling and dispatching demand-response services so that they can transfer information seamlessly to each other. The lack of this capability is one of the fundamental obstacles to coordination between transportation providers. With this capability, regional mobility management and “one-call, one-click” entities could easily schedule rides with multiple providers in the most cost-effective manner possible, increasing ride-sharing and minimizing trip distances, while properly allocating trip costs to the proper funding sources. This capability is known as interoperability; the desired outcome of the project is to conceptualize the technology that would enable interoperable data exchange between disparate scheduling/dispatching systems.<sup>24</sup>

The project created the term “universal data translator” for the technology that would enable the exchange of data from one agency to another without having to translate the data into a new format. The project provides a framework for the development of new software products that will assist

transportation brokers and providers to expand cooperation and coordination. Data interoperability guidelines were developed for two universal data translators: one for describing inputs necessary to schedule and dispatch trips, and another that describes the outputs necessary to provide information for billing and reimbursement.

For trip scheduling and dispatching, interoperability relies on the use of common data formats for trip tickets so that it is possible to exchange tickets between organizations electronically. The software must be able to import trip data that it can recognize and import into the correct fields, and in the proper format of the program receiving the data. An “import translator” accepts trip data from multiple sources and translates the data into a common format. Two examples of trip data are client name and date of the trip. There are many formats for names and dates, and a translator must understand all possible formats.

Ultimately, reporting requirements dictate the amount of data elements that a translator must be equipped to process. Data is contained in formats (open or proprietary) such as Structured Query Language (SQL) compatible data formats (such as comma-separated value, or CSV, files) or Extensible Markup Language (XML) format. Following the importing and translating of trip data from one source, a “ride data translator” generates trip tickets to be transmitted to a second source. The report includes descriptions of import and ride data translators developed by one existing automated scheduling and dispatch software company.

The report identifies issues concerning current transportation software that present complex challenges in coordination. These include rider “dual eligibility”, wherein a rider is eligible for multiple transportation programs (such as senior transportation and

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<sup>24</sup> Burkhardt, Jon E. in conjunction with Mobilitat, Inc., *Developing Regional Mobility Management Centers*, Transit IDEA Program Project 50, Transportation Research Board, National Research Council, Washington, DC, 2012, p 22.

ADA complementary paratransit), presenting the challenge of determining which agencies pay for what percentage of the trip cost; crossing jurisdictional boundaries, wherein county- or city-based public transit dollars must be divided equitably during shared rides; and, rides that include transfers between providers.<sup>25</sup>

The report takes note of some existing data interoperability protocols for comparison. The health care industry has developed interoperability protocols for electronic medical records, including the adoption by the Centers for Medicare and Medicaid Services (CMS) of the Electronic Data Interchange (EDI) 837 Standard for processing health care claims with data such as billing, demographic, and diagnosis information. Each state implements its version of the EDI 837 format.

The Department of Veterans Affairs (VA), with over 1,200 facilities, has the largest enterprise-wide health information system that includes an electronic medical record, known as the Veterans Health Information Systems and Technology Architecture (VistA). VistA follows Health Level Seven (HL7) data protocols. HL7 is a global non-profit organization accredited by ANSI, the American National Standards Institute, which works closely with the International Standards Organization (ISO), the global home for systems interoperability. Although HL7 data protocols are much more complex than what is needed for transportation, these standards have been successfully adopted in the health care industry, enabling the exchange of vastly complicated data among diverse software vendors.<sup>26</sup>

Several transit-related data protocols have been developed. The Federal Geographic Data Committee (FGDC) is a Federal interagency committee that promotes the coordinated development, use, and sharing of geospatial data on a national basis. This nationwide data publishing effort is known as the National Spatial Data Infrastructure (NSDI) and is a physical, organizational, and virtual network designed to enable the development and sharing of U.S. digital geographic information resources.<sup>27</sup>

Standardization of geographic codes enhances interoperability of transportation systems. TransXChange is a U.K. nationwide system for exchanging bus schedules, used for integration with trip planning and real-time tracking applications.<sup>28</sup>

The Google Transit Data Feed (GTDF), a collection of open source tools that generate transit data in the Google Transit data feed format from existing transit industry software formats, is now commonly used for fixed route transit, but efforts are underway to integrate demand responsive modes.<sup>29</sup>

A web-based TCRP report documents research to assess the exchange of electronic data between transportation providers, brokers, customers, and human service agencies for successful mobility management undertakings.<sup>30</sup> Like the preceding Transit IDEA Project 50, the project focuses on the development of data standards that would provide a foundation for three objectives: the sharing of trip records between agencies, developing a means for customers and others to obtain information about trip availability

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<sup>25</sup> Ibid, p. 17.

<sup>26</sup> Ibid., p. 24.

<sup>27</sup> Downloaded at <https://www.fgdc.gov/standards>.

<sup>28</sup> Downloaded at <https://www.gov.uk/government/collections/transxchange>.

<sup>29</sup> Downloaded at <https://developers.google.com/transit/gtfs>.

<sup>30</sup> O'Neill, Suzanne M. and Roger Teal, *Standardizing Data for Mobility Management Transit*, Transit Cooperative Research Program Web-Only Document No. 62, Transportation Research Board, National Research Council, Washington, DC, 2013.



and cost, and allowing software developers to build applications that use the data to benefit customers and transportation agencies.

A recommended framework for data standards is provided, which is organized into discovery and transactional data. Discovery data concerns the ability of customers and stakeholders such as mobility managers to obtain information about transportation service options. Transactional data is that which is needed to schedule a particular trip on a vehicle, provide the trip or job it out to another transportation provider, and verify the trip was made. The report notes that there are no current data standards in either category. To the extent that any data standards do exist, it is for information that must be collected for Medicaid reimbursement of non-emergency medical transportation trips.<sup>31</sup> There are nationwide data standards for NEMT as well as state-specific standards. The report notes that while some demand-response software companies have developed data translators that enable agencies to exchange trip information, they are customized to the agencies using them and do not rely on a universally accepted set of data standards.

The report identifies the following core data elements as critical to service transactions, noting that all are currently in use by existing providers of demand-response transportation scheduling software:<sup>32</sup>

1. Trip data
2. Passenger data

3. Organization data
4. Financial data
5. Vehicle data

A later TCRP report documents the development of a transactional data specification for demand responsive transportation (DRT). The transactional data specification is the set of rules that explain what data are needed, and in what format, for trip requests and responses, when the fulfillment of the trip involves at least two or more systems that must exchange trip data. The report includes documents that can be used in Requests for Proposals

by public agencies procuring technology or transportation systems to require that respondents be compliant with the proposed data specifications. It also includes a link to a transactional data specification validator software tool that has been developed for use by software systems that want to implement the specification.<sup>33</sup>

The transactional data specification that is provided is modeled after SUTI, the Scandinavian standard for DRT data that is currently in use in several countries, including Denmark, where it supports the FlexDanmark coordinated public demand-response system that delivers 16,000 one-way passenger trips per day. The specification uses a request/response approach to inter-system communication, meaning that the information exchange is based on the flow of messages, referred to as “telegrams”, between parties.

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*Despite decades of governmental efforts to promote coordination, the lack of cost allocation tools is a barrier.*

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<sup>31</sup> Ibid., p. 29.

<sup>32</sup> Ibid., p 44.

<sup>33</sup> Teal, R., N. Larsen, D. King, C. Brakewood, C. Frei, and D. Chia. 2019. *Development of Transactional Data Specification for Demand-Responsive Transportation*. Pre-publication draft of TCRP Research Report 210. Transportation Research Board, Washington, D.C., Appendix 8.

## Summary

The works cited in this literature review provide a cross-section of existing documentation of the role of cost allocation methodology in public and human service transportation coordination, and the potential to use cost allocation to facilitate improvements in inter-

agency coordination. This review intends to document the persistence of the lack of cost allocation tools as a barrier, despite decades of governmental efforts to promote coordination and to demonstrate the potential for new technology to resolve longstanding issues in the application of cost allocation methodology.



# Considerations in Developing a Cost Allocation Model

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A review of previous efforts to build cost allocation models have either: (1) presumed that the entity using the model is a governmental grant recipient and will adhere to the cost principles articulated by the Office of Management and Budget (OMB); or (2) did not address the subject of cost principles at all.

Without guidance on cost principles, any cost allocation model will have inherent problems:

- Cost inputs may violate cost allowability guidelines for any Federal program, including Medicaid
- Costs can be purposefully misstated to achieve some specific outcome (e.g., enhance profit or to output an artificially low cost to generate more trip assignments)

Additionally, the Centers for Medicare and Medicaid (CMS) has indicated, in a statement concerning Medicaid coverage principles, that Medicaid may only pay for the least costly mode of transportation suitable to meet beneficiaries' needs.<sup>1</sup> This implies that Medicaid agencies and/or their brokers must conduct some comparative assessment of costs in arranging for NEMT. Such decisions should be based on unbiased, uniform cost assessment procedures. Adopting cost principles, in combination with the use of a uniform costing model, will provide State Medicaid agencies, brokers, and others an objective basis for making provider selections.

Three factors combine to create obstacles to a uniform cost allocation model. These factors include:

- Deficiencies in provider cost accounting

- An expansive range of modes and types of services necessary to meet beneficiary needs
- A marketplace that includes different segments of the economy, including governmental entities, nonprofit corporations, for-profit companies, and private individuals

## Cost Accounting Issues

One hindrance to the creation of an NEMT costing model is the fact that transportation cost accounting, particularly among human service agencies that may be transporting clients for other program purposes, have not historically developed the requisite accounting tools to accurately report transportation costs. A Transit Cooperative Research Program (TCRP) report on cost-sharing cited the following problems:

- Transportation costs often are combined with generalized accounting categories that do not allow transportation costs to be reported as a separate and distinct cost category.
- Partially as a result of the practice of combining transportation costs with more general accounting categories, overall transportation expenses tend to be significantly underreported.
- Payments for transportation services may or may not have any direct relationship to the costs of providing services.
- The costs of administering transportation services may not be reported accurately; transportation-related expenses such as administrative salaries, office

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<sup>1</sup> CMS statement to the Coordinating Council on Access and Mobility on *Medicaid Coverage Principles and Medicaid Reimbursement Principles*, 2020.

rent, accounting services, and other administrative overhead items have been both understated and overstated in various communities.

- Staff travel to transport clients often is not reported as a transportation expense but as an administrative or case-management cost.
- Identifying the specific Federal or state program dollars used for funding transportation services may be difficult because of the blending of state and Federal funding sources at the local level.<sup>2</sup>

One of the reasons behind these issues is the lack of a standardized chart of accounts focused on transportation within the human services community; such a product would facilitate more accurate cost accounting. This hindrance exists despite the fact the U.S. Departments of Transportation and Health and Human Services jointly sponsored research in the 1980s that resulted in a standardized chart of accounts. The resulting report noted:

*While a standard chart of accounts and definitions is a major step in obtaining uniform accounting results, standard accounting practices must also be used. This means that an identical transaction should be recorded the same way each time the transaction occurs and the same way by every transit system. Accounting for rural and specialized transportation providers will be uniform when a uniform chart of accounts with uniform definitions and uniform accounting practices are used.*<sup>3</sup>

The Transportation Accounting Consortium, a voluntary alliance of eight states, disbanded shortly before the publication of this final report. Issued before the formation of the

CCAM, the report had no “champion” at the Federal or state levels to encourage the use of the standardized chart of accounts.

## Type of Human Services Transportation

NEMT is not a single concise mode of transportation; like other elements of human services transportation, there can be different types of service:

- **Community transportation** — The most common type of service, where clients or beneficiaries are provided transport on dedicated vehicles used for general public or specialized transportation.
- **Case management transportation** — This type of service is characterized by the use of agency staff to provide the transport, often in agency-owned vehicles and/or staff personal vehicles. The staff member providing case management transportation may perform specifically planned case management or therapeutic functions while providing the transportation services. This is typical in child custody cases and other similar services.
- **Travel services for individuals** — This type of service typically involves compensation paid directly to the client/beneficiary or family, friends, or neighbors to offset the costs of personal transportation, in privately-owned automobiles, to/from sponsored services.
- **Residential care transportation** — This type of service is often called managed care transportation but the more appropriate term is residential care transportation. This type of

<sup>2</sup> Burkhardt, Jon E., Richard Garrity, et al., TCRP Report 144: *Sharing the Costs of Human Services Transportation, Volume II*, Transportation Research Board of the National Academies, Washington, D.C., 2011, p. 4.

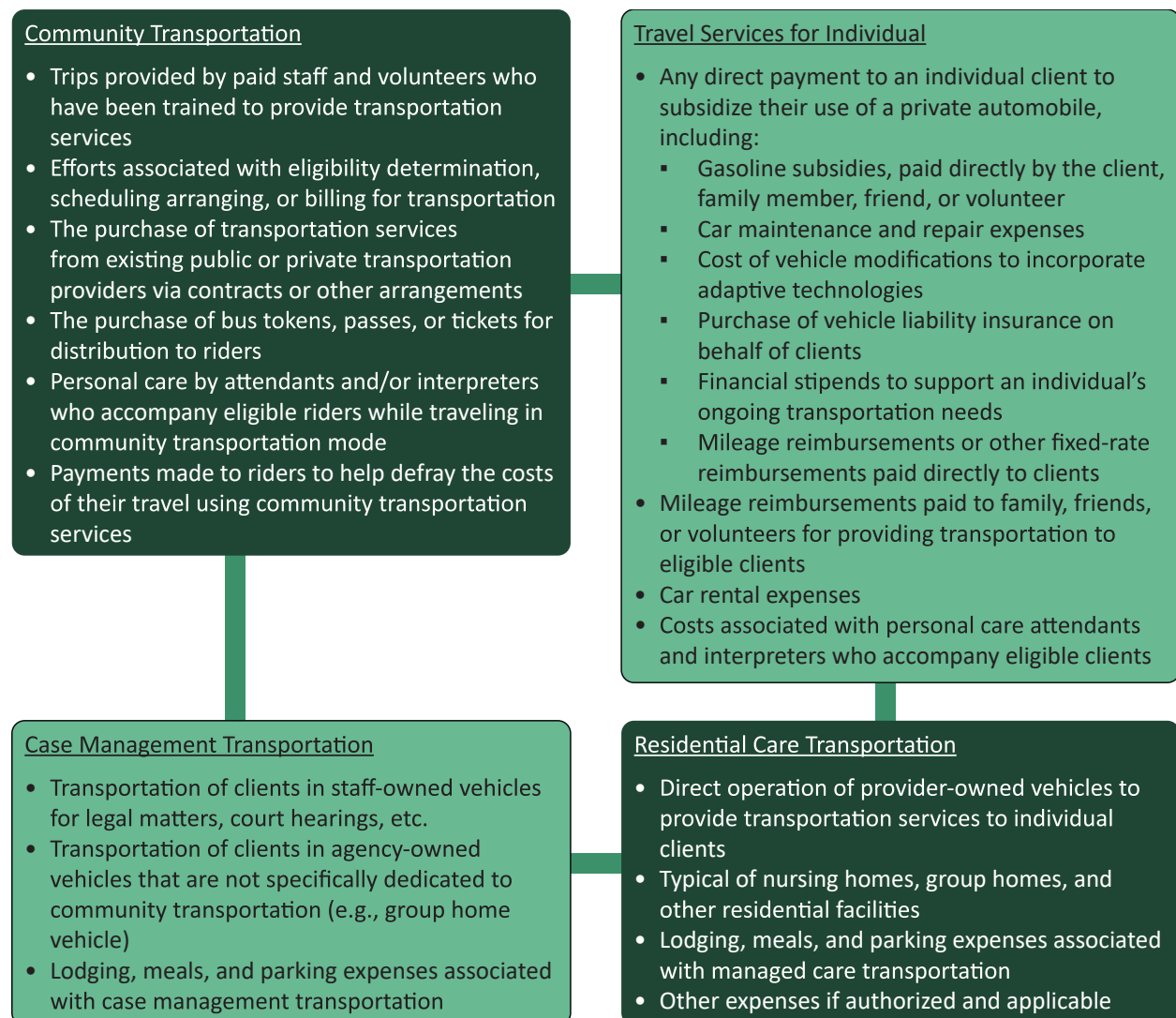
<sup>3</sup> Transportation Accounting Consortium, *Rural Transportation Accounting, a Model Uniform Accounting System for Rural and Specialized Transportation Providers, Final Report*, Office of the Secretary of Transportation/Technology Sharing Program (DOT-I-97-08), October 2986, p. 4.

transport was cited for elements such as nursing homes, group homes, and similar residential type facilities where there is typically a capitated payment made to the homeowner who in turn is obligated to provide a range of client services, including transportation (in this sense, this is similar to managed care organization responsibilities). This type of transportation was originally identified in the TCRP report to recognize that often such facilities operate their own vehicles, but these vehicles operate more like the “family

car” as opposed to a community transportation vehicle (Figure 1).

In examining these four types of service, there are key points that can assist in narrowing requirements for a cost allocation model. First, residential care transportation is akin, as suggested above, to the family car. As such, this type of transportation is rarely engaged in any type of purchase of service arrangement and the associated capitated payment rate structure thereby eliminating the need for rate-setting or fully allocated cost accounting.

**Figure 1. Different Types of Human Services Transportation**



Source: Burkhardt, *op cit.*

Similarly, case management transportation is typically one-on-one transportation, with an agency staff member directly transporting the client to a program service or to ensure that other essential services or case management functions are delivered to that client. There is typically no ridesharing in such arrangements, negating the need for any type of cost-sharing.

Travel services for individuals are generally recognized as the least expensive of these four types of services; moreover, unlike other types, the rules governing compensation to individuals, family, or friends may not be governed by program enabling legislation, or program regulation, but rules established by the Internal Revenue Service (IRS). While this type of service can be subject to ridesharing and the need for cost allocation, generally IRS policies prevail on such transactions.

Thus, it is community transportation where the vast majority of purchase of service and ridesharing occurs, and it is this type of transportation that should rightfully be the focus of this effort.

## **Different Market Segments Providing Community Transportation**

There are three primary market segments that delivery community transportation:

- Public entities, including
  - State governments
  - County governments
  - Municipal governments
  - Regional governments
  - Special districts and transit authorities
- Nonprofit entities
  - Typically, 501(c)(3) corporations that receive Federal financial assistance to support health and community needs
  - Community transportation, typically a secondary or supportive service for such organizations

- For-profit corporations, including
  - Taxicabs
  - Transportation network companies
  - Specialized medical transport companies

The development of cost principles that can address the needs of this broad range of organizations has historically proven to be challenging.

## **Cost Guidance Applicable to the NEMT Market Segments**

There are multiple sets of requirements that may have some applicability to defining cost principles applicable to NEMT service delivery. These requirements include, but are not necessarily limited to:

- Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, codified at 2 CFR Part 200
- Federal Acquisition Regulation (FAR), codified at 48 CFR Part 1
- Uniform Administrative Requirements, Cost Principles, and Audit Requirements for HHS Awards, codified at 45 CFR Part 75

## **Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards**

### **Overview**

This document superseded eight existing Office of Management and Budget (OMB) circulars and concluded a two-year effort by OMB and the Council on Financial Assistance Reform (COFAR) to update existing Federal grant guidance.

The purpose of the Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (“Uniform Guidance”) is to eliminate duplicative and

conflicting guidance, focus on performance over accountability, provide for consistent treatment of costs, place limits on allowable costs, and target audit requirements to avoid waste and fraud.

OMB published its Uniform Guidance on December 26, 2013, and the regulations became effective immediately for Federal agencies. All non-Federal entities (NFEs) were required to comply with the stipulations of this new guide by December 26, 2014.

The Uniform Guidance applies to all Federal agencies that make Federal awards to NFEs. These requirements apply to all costs related to Federal awards. The guidance makes clear that the requirements apply without regard to the status of the entity as a recipient or a subrecipient (e.g., awarded Federal funds by a primary recipient, or “pass-through” agency). The Guidance is organized as follows:

- Subpart A – Acronyms and Definitions
- Subpart B – General Provisions
- Subpart C – Pre-Federal Award Requirements and Contents of Federal Awards
- Subpart D – Post Federal Award Requirements
- Subpart E – Cost Principles
- Subpart F – Audit Requirements

Additionally, 11 appendices primarily address indirect cost allocation topics.

Of key importance is Subpart E — Cost Principles. This section details:

- General provisions
- Basic considerations
- Direct and indirect costs
- Special considerations for states, local governments, and Indian tribes
- Special considerations for institutions of higher education
- General provisions for selected items of cost, an A to Z guide on relevant principles associated with specific items of cost

## Applicability and Relevance

The Uniform Guidance applies to a wide range of organizations, described as “Non-Federal Entities.” NFEs include states, local governments, Indian tribes, institutions of higher education (IHE), or nonprofit organizations that carry out a Federal award as a recipient or subrecipient. Local governments include:

- Counties
- Boroughs
- Municipalities
- Cities
- Towns
- Townships
- Parishes
- Local public authorities, including any public housing agency under the United States Housing Act of 1937
- Special districts
- School districts
- Intrastate districts
- Council of governments, whether or not incorporated as a nonprofit corporation under state laws
- Any other agency or instrumentality of a multi-, regional, or intra-state or local government<sup>4</sup>

Indian tribes include any Indian tribe, band, nation, or other organized group or community, including any Alaska Native village or regional or village corporation as defined in or established pursuant to the Alaska Native Claims Settlement Act (43 U.S.C. Chapter 33), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians (25 U.S.C. 450b(e)).

IHEs include public or nonprofit institutions that regularly admit persons that have graduated from a secondary education school, is legally authorized to operate in the state, provides an education program that awards a bachelor’s degree or two-year degree that is acceptable for full credit towards a bachelor’s

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<sup>4</sup> 2 CFR § 200.64.



degree and is accredited by a nationally recognized accrediting agency or association.<sup>5</sup>

Nonprofit organization means any corporation, trust, association, cooperative, or other organization, not including IHEs, that:

- Is operated primarily for scientific, educational, service, charitable, or similar purposes in the public interest
- Is not organized primarily for profit
- Uses net proceeds to maintain, improve, or expand the operations of the organization

The Uniform Guidance generally does not apply to for-profit organizations. However, OMB notes in 2 CFR § 200.101(c) that Federal agencies are permitted to apply subparts A through E of this part to for-profit entities.

## Exceptions

While the Uniform Guidance appears to be flexible in its applicability to use as the foundation in the NEMT cost allocation model, some exceptions must be acknowledged. The Uniform

Guidance notes exceptions to Subpart F (Cost Principles) at 2 CFR § 200.101(d); the following programs are not subject to the cost principles:

- Block grants authorized under the Omnibus Budget Reconciliation Act of 1981
- Federal awards to local education agencies
- Veterans Affairs' State Home Per Diem Program
- Grants authorized under the Child Care and Development Block Grant Act of 1990

While subject to Federal interpretation, it does not appear that these exceptions will impact the provision of NEMT.<sup>6</sup>

Federal awarding agencies are also empowered, typically with OMB prior approval, to make other exceptions. There are no known exceptions to the cost principles applicable to NEMT.

## Federal Acquisition Regulation (FAR) System

### Overview

The Federal Acquisition Regulation (FAR) System is a comprehensive set of regulations used by all executive branch agencies of the Federal government in their acquisition

of supplies and services with appropriated funds. It became effective on April 1, 1984, and is administered under the joint authorities of the Administrator of General Services, the Secretary of Defense, and the Administrator for the National Aeronautics

and Space Administration, under the broad policy guidelines of the Administrator, Office of Federal Procurement Policy, and Office of Management and Budget.<sup>7</sup>

The Federal Acquisition Regulation (FAR) establishes the rules and requirements that Federal agencies must follow when procuring goods and services. The Uniform Guidance, by contrast, establishes requirements that must be followed by grantees when procuring goods and services needed to carry out a Federal grant or subgrant. The Uniform Guidance, like the FAR, is designed to ensure that procurements involving Federal funds

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*While the OMB Uniform Guidance appears to be flexible to use in an NEMT cost allocation model, some exceptions must be acknowledged.*

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<sup>5</sup> 20 U.S.C. § 1001.

<sup>6</sup> This section of the Uniform Guidance does contain an exception that does apply to Medicaid (and potentially NEMT). However, this exception relates to Subpart C – Pre-Federal Award Requirements and Contents of Federal Awards (see 2 CFR § 200.101(e)(v)).

<sup>7</sup> Forward, Chapter 1, Federal Acquisition Regulation, 48 CFR Part 1.

are conducted with integrity, fairness, and openness. However, procurement issues that arise in carrying out Federal grants must be resolved based on the requirements set out in the Uniform Guidance and the recipients' written procurement policies rather than the FAR.

## Applicability and Relevance

FAR regulations are applicable to procurement activities directly undertaken by executive branch agencies of the Federal government and may apply to Federal awards under certain cost-reimbursement type contracts (as established by the Federal awarding agency).

The Federal Transit Administration (FTA), has commented on the relationship between FAR and the Uniform Guidance in its contracting guidance. FTA states:

*The Federal Acquisition Regulation (FAR), 48 CFR Chapter 1, does not apply to federally assisted procurements, absent Federal laws or regulations to the contrary. In the case of FTA programs, FAR cost principles Part 31 apply to grants and cooperative agreements with private for-profit entities. Audits of A&E services listed in 49 U.S.C. Section 5325 must be carried out under FAR Part 31 cost principles. Nevertheless, in the absence of other guidance, FAR standards may prove useful if the recipient's circumstances are suitable for application of the specific FAR provision under consideration.<sup>8</sup>*

This statement, while applicable to only FTA recipients and subrecipients, combined with 2 CFR § 200.64, gives rise to the option of building cost allocation model principles for all provider sectors on the Uniform Guidance, relying on FAR only when necessary. This concept would simplify cost principles and provide a regulatory framework for the cost allocation model.

## Uniform Administrative Requirements, Cost Principles, and Audit Requirements for HHS Awards

### Overview

The U.S. Department of Health and Human Services (USDHHS) has issued its own Uniform Guidance. Fortunately, the structure of this regulation is built upon the structure of the OMB regulations. In many instances, particularly concerning cost principles (Subpart E), this guidance is identical to the OMB guidance.

While there is some amplification on OMB language in these HHS principles, a comparative analysis of the two documents reveals no substantial issues that would impact the use of OMB regulations as the basis for an NEMT cost allocation model.

### Applicability

Embracing OMB's Uniform Guidance is tantamount to adopting this guidance; given the broader applicability, this strategy should be adopted. However, HHS guidance does contain a budget certification that will support the goals of this project. The certification should be used.

## Recommendations on Principles for Incorporation into the Cost Allocation Model

Based on the issues identified in this introduction, several themes emerge that should be addressed in the development of an NEMT cost allocation model.

1. The model should be structured, incorporating a standardized account structure, complete with definitions, to ensure consistency in

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<sup>8</sup> FTA Circular 4220.1D, *Third Party Contracting Guidance*, Chapter II, § 3(b).



use and compliance with Federal cost principles.

2. Some additional controls, such as a certification process comparable to the required certification that must be executed when submitting an indirect cost rate proposal to the cognizant agency for indirect costs, should be developed.
3. The cost allocation model should be built on the cost principles articulated in OMB guidance found at 2 CFR § 200. This guidance applies to virtually all local governments, nonprofit organizations and, with the decision of the Federal awarding agency, can be extended to apply to for-profit entities.
4. While there are varied types of NEMT, those modes that require cost sharing invariably apply to services in “community transportation” mode. The model should focus on this mode.

Based on the review of potential existing cost principles, Subpart F of 2 CFR § 200 (“Uniform Guidance”) is the most ubiquitous, already applies to many existing NEMT providers, and can be extended to for-profit operators. Due to these factors, the Uniform Guidance will be used in the development of cost principles supporting the NEMT cost allocation model.

## Composition of Costs

The Uniform Guidance notes that the total amount of costs charged to a Federal award is:

$$\text{Amount} = \text{Allowable direct costs} + \text{allocable portion of indirect costs} - \text{applicable credits}$$

This means that it is the responsibility of the NEMT provider to develop an accounting system that is capable of distinguishing between:

- Allowable and non-allowable costs
- Direct and indirect costs

Direct costs (in this context) are those costs that can be identified as directly relating to and benefiting only the delivery of NEMT services.

Direct costs include the salary or wages paid to drivers, fuel, vehicle maintenance, and similar costs directly associated with NEMT operation.

Indirect costs are those costs incurred by the NEMT service provider that benefits not only NEMT service delivery, but also other aspects of the provider’s service, and cannot readily be allocable as a direct expense without a level of effort that is disproportionate to the accounting benefits gained. An example of such costs might be telephone costs associated with a call center that is used to take phone calls from consumers for NEMT as well as other specialized types of demand response transportation. These utility costs benefit both the other specialized services as well as NEMT service delivery. However, such costs are not readily assignable to NEMT and these other benefiting services. These costs should appropriately be treated as indirect costs.

Indirect costs are likely to be incurred by virtually all NEMT providers except private, for-profit entities that are exclusive NEMT providers. They are typically charged to Federal awards and/or contracts through an indirect cost rate.

Applicable credits are rebates, refunds, and similar type items that have the net effect of reducing the amount of the cost of the item purchased by an NEMT service provider (often at a later date). Examples of such transactions are purchase discounts, rebates or allowances, recoveries or indemnities on losses, insurance refunds or rebates, and adjustments of overpayments or erroneous charges. To the extent that such credits accruing to or received by the NEMT provider relate to allowable costs, they must be credited to the Medicaid program either as a cost reduction or cash refund, as appropriate.

Examples of NEMT-related costs include:

- A multipurpose nonprofit agency is eligible for a rebate of state fuel taxes. To obtain the rebate, the agency must apply to a state revenue department for the refund quarterly. In its accounting,

this agency should segregate the fuel costs from the state taxes paid on fuel which will ultimately be refunded to the organization. NEMT should only be billed based on the fuel cost, less the state tax.

- A for-profit organization that exclusively provides NEMT services buys an office computer (with an acquisition cost of less than \$5,000). The computer manufacturer offers a \$100 rebate upon submission of proof of purchase. The amount in the supplies object class billable to NEMT should exclude the \$100 rebate.

Unallowable costs must be excluded from contract costs and claims against any Federal awards. It is the responsibility of the entity to understand cost principles and be able to segregate unallowable costs from billable costs.

## Basic Considerations in Determining the Allowability of Costs

There are seven (7) basic factors that are outlined in the Uniform Guidance that must be met for any cost to be charged to a Federal grant award. The cost of delivering NEMT service under contract to a local health and human services department of transportation broker is a contract, not a Federal grant award, but the cost principles associated with a Federal award are proposed for application to the NEMT cost model. With some modifications to reflect the intended application, the following basic factors will be used to determine NEMT cost allowability. Costs must:

- Be necessary and reasonable for the management and operation of non-emergency medical transportation
- Conform to any limitations or exclusions set forth in the NEMT provider's contract

- Be accounted for consistently with policies and procedures that apply uniformly to both Federally-financed and other activities of the NEMT provider
- Be treated consistently; if a cost is treated as a direct cost under other Federally-funded contract activity, then the cost must be treated as a direct cost on its NEMT contracts
- Be adequately documented

## CCAM Statement on Cost Principles

In June 2020, CCAM issued its Cost Sharing Policy Statement. The statement provides key transportation cost-sharing information to encourage greater state and local cost-sharing, including principles specific to the provision of Medicaid non-emergency medical transportation (NEMT). The policy is included in this report in Appendix A.

The CCAM document is more extensive in scope than is required for the cost allocation model process, as it also addresses “Federal fund braiding,” a term that defines how and when Federal funds can be used as match to other Federal grant programs.<sup>9</sup> Concerning cost-sharing, the policy addresses cases when two or more Federal programs share the use of a vehicle to deliver program services (vehicle sharing) and when clients of two or more Federal programs share the same vehicle on the same trip (ridesharing).

## Policy Statement

The statement begins with a broad proactive declaration on the role of the Federal government in the promotion of the coordination of transportation funding resources, to the extent feasible, thereby addressing General Accountability Office (GAO)

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<sup>9</sup> 2 CFR § 200.401(f) generally prohibits the use of Federal funds as local match to other Federal funds, unless specifically authorized in statute. Most FTA funds have some limited statutory authority to use other Federal funds as match to its programs.

recommendations in this regard. The policy states:

*CCAM agencies agree that Federal grantees should coordinate their transportation resources where possible, including sharing costs for mutually beneficial transportation services, in order to maximize the availability and efficiency of transportation services.*

*Cost-sharing arrangements include both vehicle and ride-sharing as well as Federal fund braiding for local match across Federal programs, which are discussed in more detail below.*

The policy establishes a principle that in any such vehicle or ridesharing arrangement, the participants to such an agreement should first develop a strategy to equitably distribute the costs of the service to the benefiting parties. Inherent in any cost-sharing agreement, the parties must:

- Incorporate the general and program-specific principles articulated in the policy statement
- Adhere to any Federal, state, or local laws and regulations related to vehicle and ridesharing and cost allocation

## CCAM Principles

The policy details seven general principles for any cost-sharing agreement and adds three additional principles that should be addressed if the state or local agreement will involve Medicaid funds and/or Veterans Health Administration (VHA) funds.<sup>10</sup>

## General Principles

The general principles state:

1. Costs must be allocated based on the benefit received by each partner and may not be allocated based on how much funding individual partners have available.
2. Each partner must pay the amount equal to its allocable share of the costs.
3. No partner may pay for a cost that does not benefit its program as determined in the cost-allocation process.
4. No program may pay for a cost that is unallowable under its governing statutes and regulations.
5. The local cost-allocation agreement must be updated regularly (e.g., annually) to account for changes in expenses or frequency of use.
6. If shared activities result in program income, then the program income should be allocated to partners in the same proportion as shared costs.
7. Local cost-allocation agreements should address how rates address the cost of a required attendant for a passenger.

## Medicaid Principles

These principles apply to any transportation cost-allocation agreement that includes a local partner using Medicaid funds for transportation.

8. Medicaid will only pay for transportation to and from covered medical care.
9. Medicaid is the payer of last resort, and will only pay for transportation if there are no other legally liable third

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<sup>10</sup> At the time of issuance of the draft, CCAM did not include any specific principles for VHA funds, but a placeholder for such principles was included in the document. It can be assumed that these principles may be issued at a later date and that the cost allocation model incorporate these additional principles.

- payers. There are some exceptions to this rule.<sup>11</sup>
10. Medicaid will not pay directly for unloaded miles (miles driven when the Medicaid beneficiary is not in the vehicle) or for missed trips. However, Medicaid may pay indirectly for these costs and other indirect costs, such as vehicle depreciation, when they are built into the rate methodology for completed trips.
  11. Medicaid will not pay any additional costs that arise from sharing rides with local partners' beneficiaries, such as costs associated with longer trip times.

15. The VHA encourages HRTG grantees to avoid potential public misperception that passengers who are not highly rural Veterans are being served by HRTG funds. To support this goal, HRTG grantees using HRTG-branded and Veteran-branded vehicles to transport local partners' beneficiaries may consider covering HRTG-specific and Veteran-specific vehicle markings or using unbranded vehicles when serving local partners' beneficiaries.

### CCAM Cost Sharing Principles: Impacts on the Cost Allocation Model Structure

#### Veterans Health Administration's (VHA)/Highly Rural Transportation Grants (HRTG) Principles

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*Any proposed Cost Allocation Model Structure must adhere to a standard set of principles.*

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Any cost allocation model developed under this project must adhere to the principles outlined in the CCAM policy. In this section, the implications for the cost allocation model

These principles apply to any transportation cost-allocation agreement that includes a local partner using HRTG funds.

elements are detailed based on these principles.

12. HRTG will pay for the transport of Veterans who live in highly rural areas (county or counties with less than seven persons per square mile) to and from VA medical facilities or VA-authorized medical facilities.
13. Before participating in vehicle or ride sharing with local partners, HRTG grantees should consult the VHA.
14. Vehicles purchased with HRTG funds may be used for vehicle and ride sharing to transport local partners' beneficiaries within or outside highly rural areas. Costs to transport local partners' beneficiaries must be allocated to those local partners.

#### General Principle #1: Cost Allocation Must be Predicated on Benefits Received

This principle states that the allocation process should be predicated on the "benefit received by each partner" and may not be based on how much funding individual partners have available (a common practice in early efforts to coordinate human services transportation).

When measuring benefits received in a vehicle sharing or ridesharing context, this principle primarily addresses **passenger trips**. However, because passenger trips vary greatly, depending on trip purpose, the residential origin of the passenger, and the location of common transportation trip destinations, this

<sup>11</sup> For exceptions to Medicaid's payer of last resort rule, see page 20 of the "Coordination of Benefits and Third Party Liability (COB/TPL) In Medicaid" handbook (<https://www.medicaid.gov/sites/default/files/2019-12/training-and-handbook.pdf>). In addition to the programs listed in the handbook, the World Trade Center Health Program and the Title IV-E Prevention Services program are also exceptions to Medicaid's payer of last resort rule.

is not a very equitable measure of resources consumed by the sponsoring agency. Moreover, it is known that trip distances for NEMT trips are longer than average trip distances for other Federally-sponsored trips. Thus, the use of passenger trips is not particularly useful when considering the second principle, which embraces equitability.

In examining existing cost allocation models identified in Report #1 developed under this project, most existing models were built on a common theme that demand response transportation costs were driven by two factors, **time** and **distance**. Simply put, trips that consume more time and distance result in higher direct operating costs to the service provider and generate a higher cost to the sponsoring agency. Time and distance can be readily converted to commonly collected performance measures: vehicle hours and vehicle miles. Generally, the cost per vehicle hour or the cost per vehicle mile are the same for the transportation service provider when delivering a Medicaid trip, a trip for a senior center, or other common human service agency.

The NEMT cost allocation model should, therefore, follow these existing methods and embrace time and distance in allocating costs to the benefiting users.

## General Principle #2: Cost Must be Equitably Distributed Among Partners

This principle emulates a common foundation used in indirect cost allocation — a cost can be equitably allocated to multiple Federal awards if the goods or services involved are chargeable or assignable to that Federal award or cost objective in accordance with the relative benefits received.

This principle embraces the notion that the cost allocation model must distribute “shared expenses” equitably among all participants in a vehicle sharing or ridesharing plan. Under

this concept, direct expenses that cannot be readily assigned in the accounting process to one sponsored service or another must be equitably distributed among those services. Examples of such shared expenses are:

- Salaries of the transportation director, secretary, and bookkeeper
- Insurance premiums
- Office supplies
- Facilities and equipment rental

A similar scenario is found in public transit agencies, where Federal reporting requirements under the National Transit Database (NTD) dictate that such shared expenses be distributed among the various modes of service operated by the transit agency (e.g., fixed route bus, commuter bus, demand response service). The NTD manual recommends a **service-based allocation** approach. A service-based cost allocation method differs substantially from an indirect cost allocation methodology but maintains the requirement for equitable distribution of such expenses.

Embracing this recommendation, and consistent with the impact of the first CCAM general principle, the use of vehicle miles and vehicles hours consumed by each sponsoring agency as the basis for distribution of shared costs will address the goal of equitability.

## General Principle #3: Participation in Non-Benefitting Activities

This principle holds that a participating sponsoring agency in a vehicle sharing or ridesharing arrangement should not pay for services that do not meet or benefit its program purposes. An example of this scenario would be a public transit system that operates fixed route service, ADA complementary paratransit service, and general-purpose demand response service. The agency coordinates its demand response services with several local human service agencies and provides NEMT services.



To manage its ADA services, Federal regulations require that the entity also implement and operate an eligibility process for these services.<sup>12</sup> However, this function does not benefit the remainder of its coordinated demand response services, as eligibility for the service is determined by a third party (typically the sponsoring agency).

These costs should be excluded from the distribution of shared expenses and not be included in the allocation of costs to agencies that do not utilize the shared service.

### General Principle #4: Unallowable Costs

Cost principles under the Uniform Guidance define general “cross-cutting” provisions (guidance applicable to all Federal awards) on the allowability of specific items of cost. Individual Federal awards may be more restrictive in establishing cost allowability under the respective programs.

These requirements impose burdens on both the Federal program (or its pass-through agencies and/or agents) and the NEMT service provider. The Federal program is responsible for citing specific cost allowability standards in its contract for service with the NEMT provider. The provider must adopt the necessary accounting practices and expertise to identify unallowable costs and segregate such costs to be included in allowable, billable costs.

Most modern desktop accounting software systems provide this functionality.

### General Principle #5: Frequency of Updates

This principle suggests that the cost allocation agreement be updated regularly. Generally, the

allocation methods, per se, will not be updated; however, the underlying financial and service data will change on an annual basis. Similar to indirect cost allocation plans, the proposed service-based NEMT cost allocation process should also be updated on an annual basis.

The period of coverage for the cost allocation plan should correspond to the fiscal year employed by the state Medicaid agency.

### General Principle #6: Allocation of Program Income

Program income is defined in the Uniform Guidance as the gross income earned by a non-Federal entity (NFE) that is directly generated by a supported activity or earned as a result of the Federal award during the period of performance. Program income includes but is not limited to income from fees for services performed, the use of rental or real or personal property acquired under Federal awards, the sale of commodities or items fabricated under a Federal award, license fees and royalties on patents and copyrights, and principal and interest on loans made with Federal award funds. Except as otherwise provided in Federal statutes, regulations, or the terms and conditions of the Federal award, program income does not include rebates, credits, discounts, and interest earned on any of them.<sup>13</sup>

Under this CCAM principle, it is recommended that any program income be allocated back to the participants in the vehicle sharing or ridesharing arrangements in a similar fashion to the allocation of shared costs. This principle should be embraced in the NEMT cost allocation model with the additional caveat that if a participating entity had no role in the generation of the program, they should not receive an allocation of this income.

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<sup>12</sup> See 49 CFR § 37.123(a) – (i).

<sup>13</sup> See 2 CFR § 200.80.

## General Principle #7: Personal Care Attendants (PCAs)

This principle requires that the cost allocation agreement address how rates encompass the cost of a required attendant for a passenger. FTA guidance for the Americans with Disabilities Act (ADA) applicable to transportation providers defines a personal care attendant as “someone designated or employed specifically to help the eligible individual meet his or her personal needs.” A PCA typically assists with one or more daily life activities such as providing personal care, performing manual tasks, or providing assistance with mobility or communication. PCA assistance is not always needed during the trip but rather throughout the day at the passenger’s destination.<sup>14</sup>

Under the ADA, the USDOT is the designated agency responsible for the implementation of the ADA for all public and privately operated transportation (with some exceptions). Under USDOT rules, the transportation provider is not responsible for providing attendant services.

However, a sponsoring agency, including NEMT, may authorize such services. This principle merely stipulates that local cost-sharing arrangements eliminate any ambiguities associated with payment responsibilities for such services.

## Medicaid Principle #8: NEMT Allowable When Provided To/From Covered Medical Care Service

This principle appears to be rooted in longstanding regulation or policy embraced by CMS. Medicaid regulations (42 CFR §

440.170(a)(1)) provides that NEMT may include expenses for transportation and other related travel expenses determined to be necessary by the agency to secure “medical examinations and treatment for a beneficiary” as defined in the state Medicaid plan.

NEMT providers are aware of these requirements and understand that Medicaid cannot be used to support beneficiary travel for other trip purposes (e.g., grocery shopping, social/recreational trips). One problematic issue, however, is associated with the billing practice and the burden on the NEMT provider to establish and document that the trip destination was provided to a covered medical service.<sup>15</sup>

## Medicaid Principle #9: Medicaid as the Payer of Last Resort

Medicaid describes itself to be the “payer of last resort.” The GAO has explained Congressional intent in this regard as follows:

*If Medicaid beneficiaries have another source of health care coverage — such as private health insurance or a health plan purchased individually or provided through an employer — that source, to the extent of its liability, should pay before Medicaid does.*<sup>16</sup>

While envisioned as a precaution against Medicaid’s reimbursing a provider for medical services that could be paid from an individual’s private health insurance, this concept of the payer of last resort has been extended to transportation services. In other words, if a Medicaid client was dually eligible under Medicaid and some other funding program for transportation, Medicaid looks to the other

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<sup>14</sup> FTA Circular 4710.1, Chapter 9, § 9.8.

<sup>15</sup> A series of recent audits conducted by the Office of Inspector General (OIG) at the U.S. Department of Health and Human Services suggest that both brokers and providers are not maintaining proper trip documentation supporting the beneficiary’s obtaining medically necessary services (based on OIG audits for a six state sample (Michigan, New Jersey, North Carolina, Oklahoma, Minnesota, Louisiana, and Texas)).

<sup>16</sup> U.S. General Accountability Office, *Medicaid Third-Party Liability: Federal Guidance Needed to Help States Address Continuing Problems*, Report GAO-06-862, Washington, D.C., September 2006, p. 1.



funding source to pay for the trip. This concept has presented challenges to those entities seeking to create coordinated transportation service delivery networks involving multiple funding programs.<sup>17</sup>

This principle is not new; Medicaid has enforced this policy for many years and most NEMT service providers are familiar with this principle and have developed accounting practices that appropriately categorize individual clients to a specific funding program when appropriate. All known automated scheduling and dispatch software packages have built-in functionality to assign the appropriate funding source to a specific individual.

### Medicaid Principle #10: NEMT Payments for Only “Loaded” Miles

This principle, now articulated at the Federal level, embraces the practices that many state Medicaid agencies have implemented over the past decade: Medicaid will only pay for loaded miles (e.g., only those vehicle miles when the Medicaid beneficiary is physically onboard the vehicle). This principle suggests that Medicaid will not pay for an NEMT provider’s “deadheading,” or the time/distance incurred getting to/from the beneficiary’s location to originate the trip.

This principle notwithstanding, every NEMT provider will incur costs for operating deadhead miles. Thus, to break even (in the case of a public or nonprofit provider) or to make a modest profit (in the case of a for-profit entity), the NEMT provider must incorporate these costs into its billing practices in some form or fashion. The principles recognize this fact; the CCAM policy goes on to note that “Medicaid will pay indirectly for these costs, and other indirect costs, such as vehicle depreciation, when the cost allocation

agreement incorporates indirect costs into the overall rate that all participants pay for completed trips.” This passage suggests deadhead be included in the shared costs that are then allocated as a shared cost and incorporated into the rate.

Missed trips may arise through the fault of the Medicaid beneficiary or the fault of the NEMT service provider. In other programs, when missed trips are the fault of the passenger, some compensation is made to the provider; under this principle, such costs may be accumulated in other than direct cost accounts and allocated back to compute the price of an NEMT trip.

### Medicaid Principle #11: NEMT Will Not Participate in Additional Costs Associated with Ridesharing

Coordinated service delivery implies ridesharing will take place on-board system vehicles. This principle is designed to ensure that Medicaid beneficiaries are not charged an additional cost associated with additional passengers picked-up on a vehicle run that will result in additional miles and ride time for the Medicaid passenger.

This policy is logical on the surface; as transportation costs are driven by time and distance, adding increments to these parameters in the effect coordinated service delivery would increase costs passed on to the passenger/sponsoring agency. The reality is the provider’s costs will be driven by vehicle miles and hours, not passenger miles and hours. The incremental costs of a few additional miles and hours of service are more than offset by the fact that the cost can now be allocated to multiple passengers, reducing the cost of all of the entities with sponsored passengers on the vehicle run.

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<sup>17</sup> The CCAM policy notes that there are some exceptions to this policy, however, the draft did not elaborate on these exceptions. It would be useful, for purposes of cost allocation model construction, to articulate these exceptions.

Moreover, this principle has a substantial impact on cost allocation methodologies (discussed in a subsequent section).

## HRTG Principle #12: HRTG Pays for Transport of Veterans in Highly Rural Areas

This principle holds that HRTG funds will only pay for the transport of veterans who live in highly rural areas (county or counties with less than seven persons per square mile) to and from VA medical facilities or VA-authorized medical facilities. This introduces a non-transportation related element into the costing process, wherein a provider must determine the population density of the passenger in the trip reservation process.

This additional element, however, is not complex and can readily be determined through a one-time process during the client registration process to verify if the veteran resides in a county meeting this demographic criterion. This is not unlike establishing the age of a prospective client for participation in programs sponsored under the Older Americans Act.

## HRTG Principle #13: Consultation Requirement

This principle holds that before participating in vehicle or ride sharing with local partners,

HRTG grantees should consult the Veterans Health Administration.

## HRTG Principle #15: Consultation Requirement

This principle permits vehicles acquired with HRTG to support coordination efforts but requires that the costs associated with non-HRTG beneficiaries be allocated to the participating agencies.

## HRTG Principle #16: Consultation Requirement

This final principle does not relate to the costing of services.

## Selected Items of Cost

As noted earlier, the Uniform Guidance provides some guidance on selected items of costs. These items have been evaluated on a case-by-case basis for potential inclusion to establish a standardized approach to the determination of eligible costs in the NEMT cost allocation model; see Table 1, Recommended Cost Allowability Principles for an NEMT Cost Allocation Model.

Costs that were unique to institutions of higher educations (IHEs) were generally excluded from this analysis.

**Table 1. Recommended Cost Allowability Principles for an NEMT Cost Allocation Model**

<b>2 CFR § 200 Citation</b>	<b>Cost</b>	<b>Allowability Under NEMT Cost Model</b>	<b>Description</b>
§ 200.421	Advertising and public relations	Yes, with limitations	Allowable for recruitment of personnel; procurement of goods and services; and disposal of surplus materials.
§ 200.422	Advisory councils	Unallowable	Costs incurred by advisory councils or committees are unallowable.
§ 200.423	Alcoholic beverages	Unallowable	Costs of alcoholic beverages are unallowable.

<b>2 CFR § 200 Citation</b>	<b>Cost</b>	<b>Allowability Under NEMT Cost Model</b>	<b>Description</b>
§ 200.425	Audit services	Yes, with limitations	Reasonably proportionate share of the costs of audits required by, and performed in accordance with, the Single Audit Act Amendments of 1996 (31 U.S.C. 7501-7507), as implemented by requirements of this part, are allowable. There are some limitations however, that results in audit fees being unallowable.
§ 200.426	Bad debts	Unallowable	Bad debts (debts which have been determined to be uncollectable), including losses (whether actual or estimated) arising from uncollectable accounts and other claims, are unallowable. Related collection costs, and related legal costs, arising from such debts after they have been determined to be uncollectable are also unallowable.
§ 200.427	Bonding costs	Allowable	Costs of bonding required pursuant to the terms and conditions of the NEMT contract are allowable. The costs of bonding required by the NEMT service provider in the general conduct of its operations are allowable as an indirect cost to the extent that such bonding is in accordance with sound business practice and the rates and premiums are reasonable under the circumstances.
§ 200.428	Collections of improper payments	Allowable	The costs incurred by a non-Federal entity to recover improper payments are allowable.
§ 200.430	Compensation — personal services	Allowable	<p>Costs of compensation are allowable to the extent that they satisfy the specific requirements of this part, and that the total compensation for individual employees is reasonable for the services rendered and conforms to the established written policy of the non-Federal entity consistently applied to both Federal and non-Federal activities.</p> <p>Incentive compensation to employees based on cost reduction, or efficient performance, suggestion awards, safety awards, etc., is allowable to the extent that the overall compensation is determined to be reasonable and such costs are paid or accrued pursuant to an agreement entered into in good faith between the NEMT service provider and the employees before the services were rendered, or pursuant to an established plan followed by the NEMT service provider so consistently as to imply, in effect, an agreement to make such payment.</p> <p>Budget estimates (i.e., estimates determined before the services are performed) alone do not qualify as support for charges to Medicaid.</p>

<b>2 CFR § 200 Citation</b>	<b>Cost</b>	<b>Allowability Under NEMT Cost Model</b>	<b>Description</b>
§ 200.431	Compensation — fringe benefits	Allowable	Fringe benefits are allowances and services provided by employers to their employees as compensation in addition to regular salaries and wages. Fringe benefits include, but are not limited to, the costs of leave (vacation, family-related, sick or military), employee insurance, pensions, and unemployment benefit plans. Except as provided elsewhere in these principles, the costs of fringe benefits are allowable provided that the benefits are reasonable and are required by law, NEMT agreement with its employees, or as an established policy of the NEMT service provider.
§ 200.432	Conferences (sponsored by the NEMT service provider)	Allowable	Allowable conference costs paid by the NEMT service provider as a sponsor or host of the conference may include rental of facilities, speakers' fees, costs of meals and refreshments, local transportation, and other items incidental to such conferences unless further restricted by the terms and conditions of the NEMT service contract.
§ 200.434	Contributions and donations	Unallowable	Costs of contributions and donations, including cash, property, and services, from the NEMT service provider to other entities, are unallowable.
§ 200.435	Defense and prosecution of criminal and civil proceedings, claims, appeals and patent infringements	Unallowable	Costs incurred in connection with any criminal, civil or administrative proceeding (including filing of a false certification) commenced by the Federal government, a state, local government, or joined by the Federal government (including a proceeding under the False Claims Act), against the NEMT service provider, (or commenced by third parties or a current or former employee of the NEMT service provider who submits a whistleblower complaint of reprisal in accordance with 10 U.S.C. 2409 or 41 U.S.C. 4712), are not allowable.
§ 200.436	Depreciation	Allowable, with limitations	The computation of depreciation must be based on the acquisition cost of the assets involved. For an asset donated to the non-Federal entity by a third party, its fair market value at the time of the donation must be considered as the acquisition cost. Such assets may be depreciated. Any portion of the cost of buildings and equipment borne by or donated by the Federal government, irrespective of where title was originally vested or where it is presently located cannot be depreciated as an allowable contract expense.

<b>2 CFR § 200 Citation</b>	<b>Cost</b>	<b>Allowability Under NEMT Cost Model</b>	<b>Description</b>
§ 200.437	Employee health and welfare costs	Allowable	Costs incurred in accordance with the non-Federal entity's documented policies for the improvement of working conditions, employer-employee relations, employee health, and employee performance are allowable.
§ 200.438	Entertainment costs	Unallowable	Costs of entertainment, including amusement, diversion, and social activities and any associated costs are unallowable.
§ 200.439	Equipment and other capital expenditures	Allowable with written approval, but excluded from the cost allocation process	Capital expenditures for special purpose equipment are allowable as direct costs, provided that items with a unit cost of \$5,000 or more have the prior written approval of the Federal awarding agency or pass-through entity. However, the cost allocation process excludes capital expenditures.
§ 200.441	Fines, penalties, damages, and other settlements	Unallowable with limitations	Costs resulting from an NEMT provider's violations of, alleged violations of, or failure to comply with, Federal, state, tribal, local or foreign laws and regulations are unallowable, except when incurred as a result of compliance with specific provisions of the Federal award, or with prior written approval of the Federal awarding agency.
§ 200.442	Fund raising and investment management costs	Allowable and unallowable, depending on nature of expense	Costs of organized fund raising, including financial campaigns, endowment drives, solicitation of gifts and bequests, and similar expenses incurred to raise capital or obtain contributions are unallowable.  Costs of investment counsel and staff and similar expenses incurred to enhance income from investments are unallowable except when associated with investments covering pension, self-insurance, or other funds which include Federal participation allowed by this part.
§ 200.444	General costs of government	Unallowable	For states, local governments, and Indian Tribes, the general costs of government are unallowable.
§ 200.445	Goods or services for personal use	Unallowable	Costs of goods or services for personal use of the non-Federal entity's employees are unallowable regardless of whether the cost is reported as taxable income to the employees.
§ 200.446	Idle facilities and idle capacity	Unallowable with limitations	The costs of idle facilities are unallowable unless the idle facility is necessary to meet workload requirements which may fluctuate and are allocated appropriately to all benefiting programs.

<b>2 CFR § 200 Citation</b>	<b>Cost</b>	<b>Allowability Under NEMT Cost Model</b>	<b>Description</b>
§ 200.447	Insurance and indemnification	Allowable	Costs of insurance required or approved and maintained, pursuant to the NEMT contract, are allowable. Other insurances are also allowable within limitations.
§ 200.449	Interest	Unallowable	Costs incurred for interest on borrowed capital, temporary use of endowment funds, or the use of the NEMT provider's own funds, however represented, are unallowable.
§ 200.450	Lobbying	Unallowable	The cost of certain influencing activities associated with obtaining grants, contracts, cooperative agreements, or loans is an unallowable cost.
§ 200.451	Losses on other contracts	Unallowable	Any excess of costs over income under any other award or contract of any nature is unallowable.
§ 200.452	Maintenance and repair costs	Allowable	Costs incurred for utilities, insurance, security, necessary maintenance, janitorial services, repair, or upkeep of buildings and equipment (including Federal property unless otherwise provided for) which neither add to the permanent value of the property nor appreciably prolong its intended life, but keep it in an efficient operating condition, are allowable.
§ 200.453	Materials and supplies costs, including costs of computing devices	Allowable	<p>Costs incurred for materials, supplies, and fabricated parts necessary to carry out the NEMT contract are allowable.</p> <p>Purchased materials and supplies must be charged at their actual prices, net of applicable credits. Withdrawals from general stores or stockrooms should be charged at their actual net cost under any recognized method of pricing inventory withdrawals, consistently applied. Incoming transportation charges are a proper part of materials and supplies costs.</p> <p>Materials and supplies used for the performance of the NEMT contract may be charged as direct costs. In the specific case of computing devices, charging as direct costs is allowable for devices that are essential and allocable, but not solely dedicated, to the performance of a Federal award.</p>
§ 200.454	Memberships, subscriptions, and professional activity costs	Allowable with limitations	<p>Costs of the NEMT contractor's membership in business, technical, and professional organizations are allowable. Costs of the non-Federal entity's subscriptions to business, professional, and technical periodicals are allowable.</p> <p>Costs of membership in any country club or social or dining club or organization are unallowable. Costs of membership in organizations whose primary purpose is lobbying are unallowable.</p>



<b>2 CFR § 200 Citation</b>	<b>Cost</b>	<b>Allowability Under NEMT Cost Model</b>	<b>Description</b>
§ 200.455	Organization costs	Unallowable	Costs such as incorporation fees, brokers' fees, fees to promoters, organizers or management consultants, attorneys, accountants, or investment counselor, whether or not employees of the NEMT contractor in connection with establishment or reorganization of an organization, are unallowable.
§ 200.457	Plant and security costs	Allowable	Necessary and reasonable expenses incurred for routine and security to protect facilities, personnel, and work products are allowable. Such costs include, but are not limited to, wages and uniforms of personnel engaged in security activities; equipment; barriers; protective (non-military) gear, devices, and equipment; contractual security services; and consultants.
§ 200.459	Professional service costs	Allowable with conditions	Costs of professional and consultant services rendered by persons who are members of a particular profession or possess a special skill, and who are not officers or employees of the NEMT contractor, are allowable.
§ 200.460	Proposal costs	Unallowable	The cost of preparing bids or proposals to obtain NEMT contracts are unallowable.
§ 200.461	Publication and printing costs	Allowable	Publication costs for electronic and print media, including distribution, promotion, and general handling are allowable.
§ 200.463	Recruiting costs	Allowable	Costs of "help wanted" advertising, operating costs of an employment office necessary to secure and maintain an adequate staff, costs of operating an aptitude and educational testing program, travel costs of employees while engaged in recruiting personnel, travel costs of applicants for interviews for prospective employment, and relocation costs incurred incidental to recruitment of new employees, are allowable to the extent that such costs are incurred pursuant to the NEMT contractor's standard recruitment program.
§ 200.464	Relocation costs of employees	Allowable, with limitations	Relocation costs are costs incident to the permanent change of duty assignment (for an indefinite period or for a stated period of not less than 12 months) of an existing employee or upon recruitment of a new employee. Relocation costs are allowable, subject to the limitations.
§ 200.465	Rental costs of real property and equipment	Allowable, with limitations	Rental costs are allowable to the extent that the rates are reasonable in light of such factors as: rental costs of comparable property, if any; market conditions in the area; alternatives available; and the type, life expectancy, condition, and value of the property leased.

<b>2 CFR § 200 Citation</b>	<b>Cost</b>	<b>Allowability Under NEMT Cost Model</b>	<b>Description</b>
§ 200.467	Selling and marketing costs	Unallowable	Costs of selling and marketing any products or services of the NEMT contractor (unless allowed under §200.421 Advertising and public relations) are unallowable.
§ 200.470	Taxes (including Value Added Tax)	Allowable with limitations	<p>For states, local governments and Indian tribes: taxes that a governmental unit is legally required to pay are allowable, except for self-assessed taxes that disproportionately affect Federal programs or changes in tax policies that disproportionately affect Federal programs. Gasoline taxes, motor vehicle fees, other taxes that are in effect, and user fees for benefits provided to the Federal government are allowable.</p> <p>For nonprofit organizations: in general, taxes which the non-Federal entity is required to pay and which are paid or accrued in accordance with generally accepted accounting principles (GAAP), and payments made to local governments in lieu of taxes which are commensurate with the local government services received are allowable.</p>
§ 200.472	Training and education costs	Allowable	The cost of training and education provided for employee development is allowable.
§ 200.473	Transportation costs	Allowable	Costs incurred for freight, express, cartage, postage, and other transportation services relating either to goods purchased, in process, or delivered, are allowable.
§ 200.474	Travel costs	Allowable	Travel costs are the expenses for transportation, lodging, subsistence, and related items incurred by employees who are in travel status on official business of the NEMT contractor. Such costs may be charged on an actual cost basis, on a per diem or mileage basis in lieu of actual costs incurred, or on a combination of the two, provided the method used is applied to an entire trip and not to selected days of the trip, and results in charges consistent with those normally allowed in like circumstances in the NEMT contractor's non-NEMT activities and in accordance with the NEMT contractor's written travel reimbursement policies.

**Source: 2 CFR § 200.420 – 200.475, with RLS & Associates, Inc. modifications.**

## TAG Input on Selected Items of Costs

Throughout the SBIR project, the consultant relied on input and feedback provided by a Technical Advisory Group (TAG). The TAG consisted of transportation and Medicaid representatives from six states, including California, Iowa, Florida, Vermont, Ohio, and Washington. Following a conference call on May 11, 2020, with the TAG, a follow-up survey on potential limitations on selected items of costs was developed.

Additionally, one question focused on the accuracy or integrity of cost inputs into the cost model and potential strategies to enhance those features.

Survey results indicate that 100% of the respondents agree that model integrity is an important issue, and that to enhance accuracy and integrity of the cost allocation model, data should be subjected to a validity test and users should be required to certify their data.

Given the question of whether users should be required to enter financial data using established categories and definitions based on the NTD Uniform System of Accounts (USOA), answers varied. Some respondents neither agreed nor disagreed; however, two thirds either agreed or strongly agreed. One respondent further indicated that NTD

compliance is not debatable and should be part of the cost allocation model.

When asked whether FAR limits should be imposed on executive compensation for NEMT provider managerial personnel, most respondents did not have an opinion.

When asked whether the respondent supported the concepts of enforcing limitations on fringe benefits as stated in the Uniform Guidance (2 CFR § 200.431), the majority of respondents had no opinion. The question of whether depreciation should be excluded as

an allowable expense because of the use of Federal funds to purchase vehicles resulted in the majority of respondents either agreeing or strongly agreeing to exclude depreciation due to the administrative burden associated with Federal or pass-through agency monitoring of such costs.

One question related to profit. The model's initial design proposed no limits or exclusions for profit; a concept that incorporates an understanding that neither governmental entities nor nonprofits will include profit in the costing model, and that private for-profit vendors will use caution when setting profit rates to remain price-competitive. When asked whether they agreed with that concept, the majority of those polled agreed with this approach.

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*One hundred percent of Technical Advisory Group (TAG) members agreed that model integrity is important, data should be subjected to a validity test, and users required to certify their data.*

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**Table 2. Recommended USOA-Based Chart of Accounts**

Class	Code	Description	Service Modes/Functions				
			NEMT	Other DR	Dedicated Other Service	Ineligible Expenses	Shared Expenses
5010		Labor					
	5011	Salaries and Wages					
	5012	Paid Absences					
	5013	Other Salaries and Wages					
	5014	Other Paid Absences					
5015		Fringe Benefits					
5020		Services					
5030		Materials and Supplies					
	5031	Fuel and Lubricants					
	5032	Tires and Tubes					
	5039	Other Materials and Supplies					
5040		Utilities					
5050		Casualty and Liability Costs (Insurance)					
5060		Taxes					
5090		Miscellaneous Expenses					
5101		Purchased Transportation					
	5101	Other NEMT Provider					
	5102	Volunteers					
5260		Depreciation					
5330		Organization Indirect Costs					

**Source: Uniform System of Accounts, Table 4, p. 25, with RLS & Associates, Inc. modifications.**

## Uniform Account Structure

Given design considerations supported by the endorsement of the TAG, it is recommended that the NEMT cost allocation model require users to input cost data following a structured account basis.

The NTD has its own account structure, known as the Uniform System of Accounts (USOA). This chart of accounts is purpose-built to enhance full cost accounting on the part of transportation entities. Given that this chart of accounts is designed specifically for transportation, it is recommended that this chart of accounts be used, with modifications, in the cost model.

Table 2 provides an overview of this account structure.

Typically, the USOA would have various NTD/USOA function codes across the columns; however, in this case, it is necessary to have providers input other direct data, as follows:

- **NEMT Direct Expenses** – These are direct costs that are attributable to only the provision of NEMT services.
- **Other DR Services** – This column is designed to accumulate the direct expenses associated with the provision of other transportation services. For

example, if the NEMT provider were a taxicab company, NEMT contract direct expenses would be accumulated in the first column and taxicab expenses in the second column.

- **Dedicated Other Services** – In some cases, the NEMT service provider may be engaged in other contracted services that are designed, through contractual means, to fully recover all costs of service. Normally, such accounting would not be a concern of the entity contracting with the provider; however, such service should bear their pro-rata share of “shared expenses.” Thus, to demonstrate this is occurring, these expenses should be shown in the cost allocation model.
- **Ineligible Expenses** – Following the guidance provided in Table 1, the NEMT provider would capture ineligible expenses in this fourth column.
- **Shared Expenses** – This final column includes those shared expenses that must be allocated to all benefitting services provided by the entity.

The task of the cost allocation model will be to allocate the expenses accumulated in this last column equitably to all other services using a service-based allocation strategy.

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# Service Metrics

This section addresses the concepts of cost and price and will discuss differences in various pricing methods common in human services transportation. Implications of the CCAM Cost Sharing Policy and its impact on model metrics and computations will be presented. Finally, computations steps will be detailed.

## Concepts of Cost, Price, and Billing Units

This section will address any issues in service metrics that will arise in the development of an NEMT cost model. As a first step, this section will review the concepts of cost, price, and billing units. In particular, the terms “cost” and “price” are often used interchangeably in the provision of service under contract yet represent two different concepts.

## Transportation Costs

The cost of any transportation is predicated on the units of service consumed by that service. Existing cost allocation models typically compute the fully allocated costs of a route (fixed mode services) or a vehicle tour (demand response service), where the hours and miles associated with service delivery are precisely measured and assigned.

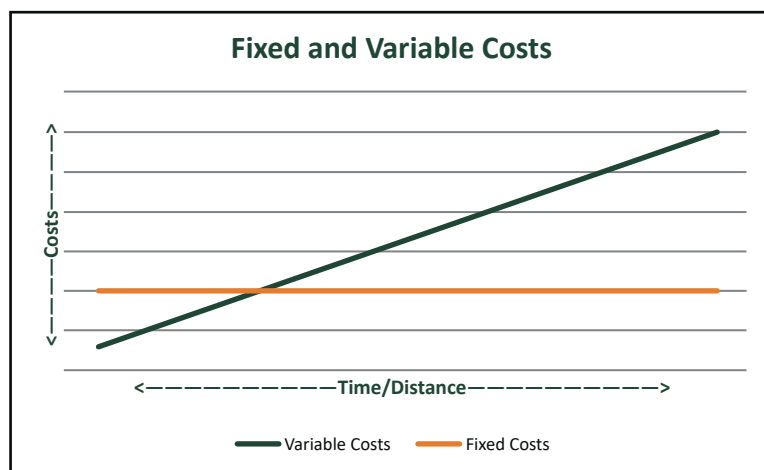
Fundamental to this process is the recognition that a provider’s costs consist of variable and fixed costs. Variable costs are those costs that will increase/decrease based on the services provided. Classic examples of driver salaries and wages, vehicle maintenance, and fuel. A provider’s variable costs will change based on the level of service (revenue-hours and revenue-miles) associated with the operation of service. Similarly, there are costs incurred by the provider that will not change with the level of service provided. Salaries and wages of administrative personnel and facility-related expenses (rent, utilities, etc.) are illustrative of fixed costs (Figure 2).

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*Fundamental to the fully allocated cost process is recognition that a transportation provider’s costs consist of both fixed and variable costs.*

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**Figure 2. Illustration of Fixed and Variable Cost Concepts**



In estimating the fully allocated cost of a service, a provider must calculate its variable costs plus the allocable portion of fixed costs associated with the service being costed.<sup>1,2</sup>

<sup>1</sup> The equation is similar to the concept of “composition of costs” under Federal awards, which defines what amounts can be charged to Federal grant awards as the sum of the “allowable direct and allocable indirect costs less any applicable credits” (see 2 CFR § 200.402).

<sup>2</sup> Fixed costs, in virtually all existing cost allocation methods reviewed previously, are allocated using some service based factor; however, these service based factors are different in fixed modes versus demand response modes.

The formula for the computation is:

$$\text{Transportation Costs} = \text{Variable Costs} \\ + \text{Allocable Portion of Fixed Cost}$$

In all models reviewed previously in this project, the allocation of fixed expenses is based on a service factor. These factors have included:

- Number of vehicles used to operate the service at peak periods (fixed modes)
- A ratio of fixed costs over variable costs, calculated on hours and miles of service provided (demand response modes)

These models do an excellent job of computing the fully allocated cost of a service.

## Transportation Price

The price of a transportation service is what the purchaser pays to the provider. Price is not the same as cost, and a provider's perspective on cost may be predicated on the market segment of the entity.

For example, the price charged for service by the nonprofit may not bear a relationship to the entity's cost of providing the service; referred to as the "philanthropic" model, the nonprofit agency recognizes the need to provide the service and if the ability to fully pay for the service is not available, then the nonprofit entity seeks other revenues or donations to ensure the service is delivered.

Government agencies, on the other hand, typically employ a "business" model wherein the goal is to ensure that revenues equal expenses. Thus, these organizations set pricing to fully recover their costs and may not be concerned with profit.

Conversely, for-profit entities must generate profit if the entity is to remain a viable business concern or invest in rolling stock replacement/upgrades and other capital items. This entity would employ an "entrepreneurial" model that ensures that revenues exceed costs and provides for suitable profit. The goal of profit

realization is tempered by market forces and the desire to remain competitive, particularly in light of Medicaid rules that require the use of the most appropriate, low-cost provider.

Thus, like the commercial sector, there is no one single model for community transportation to price transportation services; given the three sectors noted above, three pricing formulas may arise:

### Nonprofit/Philanthropic Pricing Model

$$P = FAC - D$$

Where:

*P* = Transportation price

*FAC* = Fully allocated transportation cost

*D* = Donations and/or subsidy used to reduce cost

### Public Agency/Business Pricing Model

$$P = FAC$$

Where:

*P* = Transportation price

*FAC* = Fully allocated transportation cost

### For-Profit Sector/Entrepreneurial Pricing Model

$$P = FAC + MU$$

Where:

*P* = Transportation price

*FAC* = Fully allocated transportation cost

*MU* = Mark-up or profit

It is important to note that nothing prevents any market segment from using any of these pricing models. For example, while it would be atypical for a public agency to specifically seek profit on the sale of a service, it is common for a program to generate a program "surplus."

Similarly, mark-up may be very dynamic — sellers, including NEMT for-profit service providers, have always used concepts of dynamic pricing, such as discount pricing or loss-leaders to capture a greater market share.

Uber’s pricing model, for example, is based on the same foundation concepts articulated in all cost allocation models – time and distance (Uber’s estimate length and duration of the trip). However, the Uber pricing model includes as many as eight additional factors, including “surge” pricing and “route-based” adjustments.<sup>3</sup>

Existing cost allocation models generally do not generate price.<sup>4</sup> Moreover, in discussing the concept of profit with the six-state Technical Advisory Group, strong opinions were expressed that the cost allocation model should not be prescriptive in the area of profit to permit market forces to prevail.

## Pricing Transportation

The previous discussion demonstrates that the price of a transportation service is based on cost plus some dynamic mark-up. Cost allocation models do not generate unit prices (the units typically used in the selling of transportation) — rather the models estimate costs for delivery of a service. Due to modal characteristics, typical models produce different outputs, depending up whether the service is a fixed mode service or demand response service.

### Fixed Route Service

Fixed routes, by definition, operate on a fixed schedule over a fixed path daily. Generally, the hours or miles of service provided can be easily measured and will not vary on a typical basis. Cost allocation models can accurately assess the cost of any given route on a daily, weekly, monthly, or annual basis.

## Demand Response Service

As the name implies, demand response service operates on an irregular schedule (driven by customer demand) and typically does not operate on a fixed path.<sup>5</sup> Demand response services are usually organized into “runs” that are compiled based on passenger origins, destinations, and required travel times. Even if the run is based on picking up groups of similar passengers, the hours or miles of service operated by that run may vary from day to day, depending on the passengers traveling on any given day. Unlike fixed routes, which will produce the same cost on a day-to-day basis, a demand response run’s cost will vary every day. This fact introduces complexities when attempting to establish a price for transit services.

## Pricing the Service

Cost allocation models can accurately compute the fully allocated cost of a service based on the hours or miles of service operated; the resulting output (regardless of mode) is a lump sum amount based on the hours and miles of services provided by the transit operator. This amount is rarely used as the price for service, as the consumers of the service typically seek to pay on a unit rate basis. Common unit rates are:

- Price per mile
- Price per hour
- Price per passenger

If the fully allocated cost of service is known, unit prices can be calculated, shown below using the business model pricing philosophy:

$$PM = FAC \div M$$

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<sup>3</sup> Documented at <https://marketplace.uber.com/pricing>.

<sup>4</sup> TCRP Report #144, *Sharing the Costs of Human Services Transportation*, identified a North Carolina model, developed for use by Section 5311 rural transit providers, that enabled providers to incorporate an optional “percent of costs” mark-up for use in pricing service.

<sup>5</sup> It is recognized that “subscription” services may involve demand response runs that are operated on the same schedule and same route paths on a regular basis. However, even subscription runs may vary if a subscription passenger cancels a trip.

Where:

*PM = Price per mile*

*FAC = Fully allocated transportation cost*

*M = Vehicle miles*

Similarly:

$$PH = FAC \div H$$

Where:

*PH = Price per hour*

*FAC = Fully allocated transportation cost*

*H = Vehicle hours*

Similarly:

$$PP = FAC \div UPT$$

Where:

*PP = Price per passenger*

*FAC = Fully allocated transportation cost*

*UPT = Unlinked passenger trips*

Consider a soft drink company; if it knows its production costs (raw materials, production, marketing, distribution, etc.), the company can sell its product by the can, quart, or liter. Adopting this premise to the business model of pricing, if a public agency knows its fully allocated cost of a transportation service, it can sell that service by the mile, by the hour, or by the trip.

It is further possible to create variations on these three, unit pricing mechanisms. The real world of transit operations will present some complexities in this seemingly simplistic process.

## Pricing Complexities

Multiple circumstances will complicate the process of converting the cost of a transit service to a unit price.

## Fixed Route

### Public Transit Practices

The price for fixed transit modes are reflected in fares; fares are highly subsidized by some combination of Federal, state, and local financial resources. It has long been recognized that fares, as a matter of public policy, should be established at levels that do not represent the full cost of service.

Research has long articulated that the basis for such policy is traced to:

- Special needs for transit by the transit disadvantaged population, such as individuals with disabilities, elderly persons, or persons with low-income who are unable or cannot afford to drive or access other forms of transportation
- Subsidization of other modes of travel, such as highways, intercity rail, and air travel
- Benefits derived from positive externalities associated with transit, including changes to land use and arrangement of the built environment<sup>6</sup>

Thus, the pricing of fixed modes service for the public is typically not predicated on the cost of service due to public policy goals.

### Fixed Route Modes and NEMT Policy

NEMT members may use fixed route services to obtain need medical care for a Medicaid covered service. Medicaid regulations issued in 2008 (42 CFR § 440.170(a)(4)) addressed scenarios when a State Medicaid Agency opts to use an NEMT broker. If the broker is a governmental agency, CMS requires that the broker documents that the Medicaid program is paying no more for fixed route public transportation than the rate charged to the general public (i.e., the fare.).<sup>7</sup>

<sup>6</sup> Vickrey, W. "Optimal Transit Subsidy Policy," Transportation, 9, (1980), p. 389–409.

<sup>7</sup> Medicaid Program; State Option To Establish Non-Emergency Medical Transportation Program, *Federal Register*, 73 FR 77519, December 19, 2008 (42 CFR § 440.170(a)(4)(ii)(B)(4)(ii)).

While this regulation was promulgated to address rates charged by a governmental broker, this language has been adopted as the policy for all fixed route transit travel by some states.

Due to this interpretation, as well as the approach taken to establish fares in the public transit industry, determining the price of service on fixed modes requires no further investigation under this project.

## Demand Response

There are a series of factors that introduce complexities in the pricing of demand response services, including:

- Ridesharing
- Wait time
- Long-distance trips
- Mixed fleets of vehicles

### Ridesharing

When a demand response run consists of passengers of only one funding program/sponsoring agency, the simplistic pricing mechanism described above is effective. However, when ridesharing occurs, there is a necessity to split the fully allocated costs between two or more different entities. Historically, transit providers have addressed this problem by computing a ratio of sponsored passengers from Agency 1 to total passengers to compute a pro-rata share of run costs attributable to that agency.

$$Cost_n = \{[FAC \times (PAg_1 \div \sum Pass)] + [FAC \times (PAg_2 \div \sum Pass)] + [FAC \times (PAg_n \div \sum Pass)]\}$$

Where:

$Cost_n$  = the cost attributable to all agencies with passengers on the run

FAC = Fully allocated transportation cost/ vehicle run or route

$PAg_1$  = the number of sponsored passengers from Agency 1

$PAg_2$  = the number of sponsored passengers from Agency 2

$PAg_n$  = the number of sponsored passengers from Agency n

$\sum Pass$  = the total number of passengers on the vehicle run

Once the fully allocated costs are computed for each agency with passengers on the vehicle run, that cost can be converted to a unit price. Using the business model pricing philosophy, a cost per passenger trip would be calculated as follows:

$$PP = Cost_1 \div PAg_1$$

Where:

PP = Price per passenger

$Cost_1$  = The cost attributable to Agency 1 with passengers on the run

$PAg_1$  = the number of sponsored passengers from Agency 1

This type of allocation is generally not difficult and can be done even at transit agencies that lack sophisticated scheduling/dispatch/billing software. However, this methodology assumes uniform trip characteristics (e.g., all trip lengths are approximately equal); if this is not the case, this method produces less accurate pricing. Systems will generally have to use revenue passenger-miles to allocate costs in this circumstance (discussed more thoroughly later in this section).

### Long-Distance Trips

Many rural communities lack a full range of medical services that may be required by Medicaid clients. This often means that Medicaid clients must be transported to destinations outside the service area to access needed care. These trips can be among the most expensive for community transportation and for-profit operators to provide; to minimize expenses, providers will often try to book as many passengers as possible on the trip.

The problematic aspect of such trips is that while at the destination, it may be necessary to wait lengthy periods until all clients have completed appointments/treatments. During

this time, the driver may still be considered “on-duty” and subject to the Fair Labor Standards Act (FLSA) requirements to be paid for the downtime. Additionally, the destination is often located too far away from the primary service area for the vehicle to deadhead back to resume revenue service.

Sponsoring agencies may be reluctant to pay for this downtime as clients are not benefitting from the transportation service. Transportation agencies, particularly those entities that use trips or miles as a pricing unit, may have difficulty establishing an allocation basis for this downtime.

## Mixed Fleets

Unlike fixed route bus service, where the 40-ft. transit bus is the vehicle of choice, demand response fleets may consist of a range of vehicle types, from sedans to larger, body-on-chassis vehicles. This fact gives rise to potential differences in the operating costs when different types of vehicles are used to deliver demand response service.

This can result in agencies that buy service to dictate vehicle assignments in search of lower unit costs. However, developing a price structure for every vehicle type is cumbersome and, ultimately, confusing to consumers and purchasing agencies.

In reality, the net difference in operating cost between vehicle types, when combined with driver labor (the largest cost segment) and allocable fixed costs, is relatively small. When a single blended rate incorporating all operating costs are used, maximum flexibility is provided to the agency to match vehicle type with needs. This enables the transit provider the ability to assign passengers to the most appropriate vehicle type; conventional wisdom holds that over time, the assignment will result in equal assignment practices among all uses, resulting

in little inequity in charges assessed to one agency or another.<sup>8</sup>

## Complexities Created by the CCAM Cost Sharing Principles

This project was established, in part, to ensure that the cost allocation model adhered to a set of uniform cost principles adopted by the Federal Coordinating Council on Access and Mobility (CCAM). CCAM Cost-Sharing Policy Statement provides key transportation cost-sharing information to encourage greater State and local cost-sharing.

This includes principles specific to the provision of Medicaid non-emergency medical transportation (NEMT) and the Veterans Health Administration’s (VHA) Highly Rural Transportation Grants (HRTG) program, which provides NEMT for Veterans living in highly rural areas. Based on the final policy statement, three principles may have a direct impact on the development of any cost allocation model.

**General Principle # 7** – Local cost-allocation agreements should include how rates address the cost of a required attendant for a passenger.

**Medicaid Principle #10** – Medicaid will not pay directly for unloaded miles (miles driven when the Medicaid beneficiary is not in the vehicle) or for missed trips. However, Medicaid may pay indirectly for these costs and other indirect costs, such as vehicle depreciation, when they are built into the rate methodology for completed trips.

**Medicaid Principle #11** – Medicaid will not pay any additional costs that arise from sharing rides with local partners’ beneficiaries, such as costs associated with longer trip times.

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<sup>8</sup> There is no research to support this hypothesis; a literature search found multiple studies examining a mix of vehicle types for use in fixed route mode, but no one study that addressed smaller vehicles.



Other principles will not have a direct bearing on the model's development.

## Cost of an Attendant

Costs are incurred by a transportation provider based on the time and distance (hours and miles) consumed in the delivery of service. The transport of a companion serving in the role of a personal care attendant<sup>9</sup> may have an impact on the development of the costing model. Based on the literature review, no existing model estimates costs based on passenger loads, as this factor is independent of cost drivers.

Under USDOT rules implementing the Americans with Disabilities Act, the concept of a PCA is introduced as an individual who accompanies a qualified individual with a disability. For complementary paratransit service (a specialized form of demand response transportation), a PCA may ride with an ADA eligible individual without charge if the PCA has the same origin and destination as the eligible individual.

While this rule applies only to complementary paratransit, virtually all public transit agencies operating other modes of service permit travel of a PCA without charge, provided the PCA has the same origin and destination. When this occurs, there is no additional cost to the transportation provider in the transport of

a second passenger. Thus, if a comparable origin/destination policy were incorporated into the cost model, there will be no impact.

However, if such a policy is not used, and the sponsoring funding agency does not adopt a similar practice, then the transportation provider will incur additional time and travel in the pick-up and drop-off of the PCA. In this case, it will be necessary to include PCA travel parameters (miles and hours of service consumed in both the initial system estimates of revenue-hours and revenue-miles of service, as well as in individual trip pricing.

## Payment for Loaded Miles

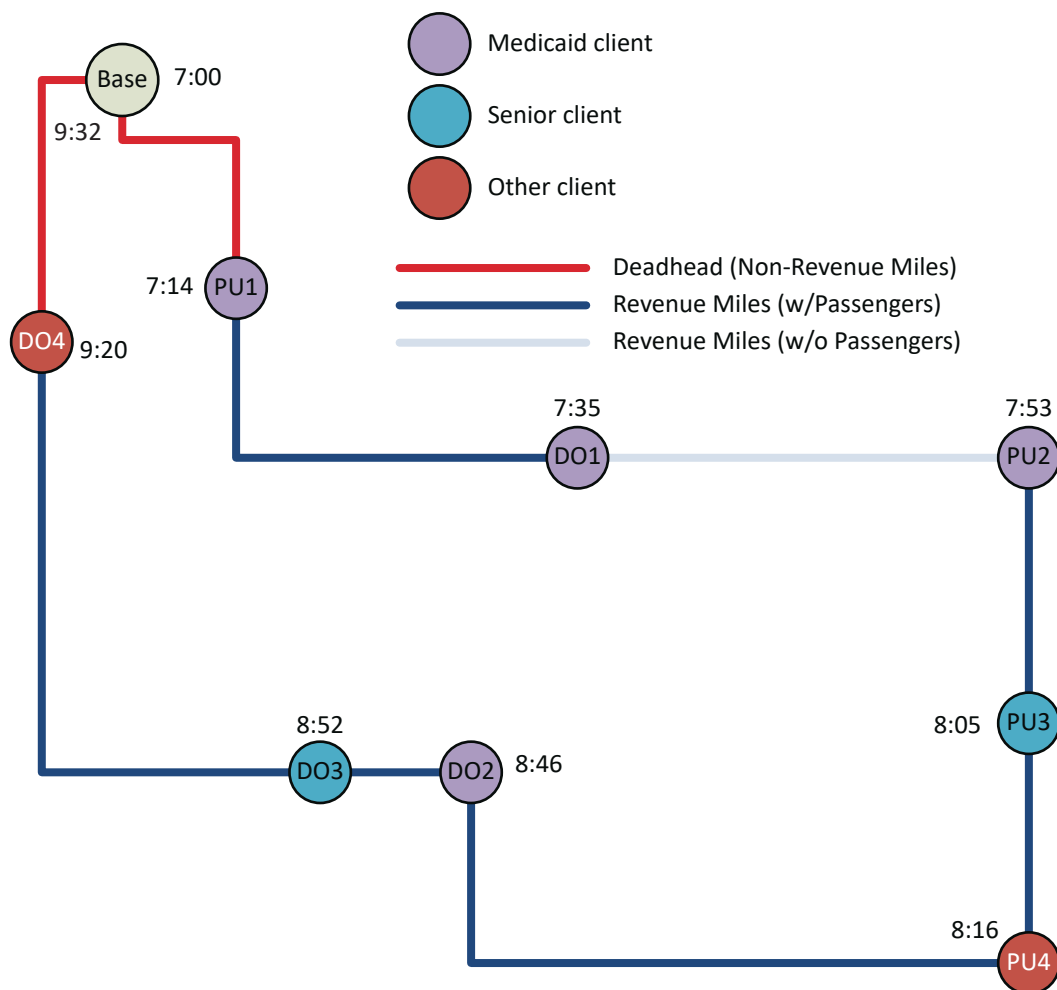
Medicaid seeks to reimburse NEMT service providers for only "loaded" miles (passenger revenue-miles) when a Medicaid member is on the vehicle – deadhead mileage, or the mileage from base to member's home or medical destination – is not a reimbursable cost. Any NEMT provider, however, will incur such costs in the delivery of service. Any commitment of time and distance in revenue vehicle movement will result in costs to the NEMT provider, and revenues must exceed expenses for NEMT service to be viable for any service provider.

Consider the example detailed in Figure 3 and the resulting route characteristics detailed in Table 3.

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<sup>9</sup> The definition of an attendant, for purposes of operationalizing this cost principle, will be based on the definition of a personal care attendant (PCA) found in USDOT's ADA regulation found at 49 CFR § 37, Appendix D. A PCA is someone designated or employed specifically to help the eligible individual meet his or her personal needs.

**Figure 3. Illustrative Demand Response Route 101**



**Table 3. Route 101 Trip Characteristics/Manifest Details**

Sched. Time	Action	Name	Sponsor	Actual Time	Odometer
6:50	Report	Base	_____		23,220
7:00	Pull-out	Garage	_____	7:00	23,223
7:15	PU-1	J. Smith	Medicaid	7:14	23,229
7:30	DO-1	J. Smith	Medicaid	7:35	23,234
7:45	PU-2	M. Jones	Medicaid	7:53	23,237
8:00	PU-3	B. Brown	Senior Center	8:05	23,240
8:00	PU-4	S. Lee	Dept. Social Services	8:16	23,248
8:30	DO-2	M. Jones	Medicaid	8:45	23,249
8:30	DO-3	B. Brown	Senior Center	8:52	23,257
9:00	DO-4	S. Lee	Dept. Social Services	9:20	23,261
9:15	Pull-in	Garage	_____	9:32	23,220

Route 101 provides 41 total vehicle miles; 34 vehicle miles are considered vehicle revenue miles using NTD definitions. The route provides 2 hours and 32 minutes of vehicle time with 2 hours and 6 minutes considered vehicle revenue-hours.

The transit agency uses a cost estimation tool, such as the National RTAP Cost Allocation Calculator, to determine the fully allocated costs of the service. The transit agency concludes its fully allocated costs of operating Route 101 this day was \$108.94. If there were no ridesharing, the agency could simply translate the costs as follows, assuming the agency is a public entity using the business model:

$$PVM = FAC \div VM$$

Where:

*PVM = Price per vehicle mile*

*FAC = Fully allocated transportation cost*

*VM = Vehicle miles*

This translates to a price per vehicle mile as follows:

$$\$2.67 = \$108.94 \div 41$$

If the sponsoring agency, however, only wanted to pay for loaded miles, this would require the transit provider to perform additional computations. Loaded miles are not the same as vehicle revenue-miles. In Figure 3, the eight-mile segment between DO1 and PU2 has no passengers and while this segment is considered revenue service, these miles do not represent loaded miles. Thus, there are 29 loaded miles for this route. The agency can re-compute a price per loaded mile as follows:

$$PLM = FAC \div LM$$

Where:

*PLM = Price per loaded mile*

*FAC = Fully allocated transportation cost*

*LM = Loaded vehicle miles*

This translates to a price per loaded vehicle mile as follows:

$$\$3.76 = \$108.94 \div 29$$

As noted previously, older methodologies to address pricing service on a service where ridesharing occurs would be to distribute the fully allocated cost by passenger sponsorship (Table 4).

**Table 4. Route 101: Traditional, Low Tech Approach to Allocating Costs in Ridesharing Situation**

<i>Sponsor</i>	<i>UPTs</i>	<i>Allocation Percent</i>	<i>Allocated Amount</i>
Medicaid	2	50%	\$ 54.47
Senior Center	1	25%	\$ 27.23
Dept. Social Services	1	25%	\$ 27.23
<b>Total</b>	<b>4</b>	<b>100%</b>	<b>\$ 108.94</b>

However, there are issues with these traditional methods for dealing with sharing costs when ridesharing occurs. As seen in the oversimplistic example in Table 4, each of the four passengers is charged the same amount, yet the service consumed differs for each passenger, with PU4 traveling the longest and farthest on the route.

Importantly, these traditional methods accommodating ridesharing in agency billing structures do not address the CCAM's Medicaid Principle #10, which states that Medicaid will not pay directly for "unloaded" miles. This term is defined as anytime a Medicaid beneficiary is not in the vehicle. Thus, issues of equity in billing and compliance with CCAM cost principles dictate that new methods of both passenger accounting and rate structure development must be applied in coordinated transit service delivery when ridesharing occurs.

## Passenger Accounting Requirements

Inherent in the concept of a provider being able to monitor loaded or unloaded miles is the fact that the provider must manually use vehicle telematics to record passenger boarding/

alighting (on/off) odometer readings. At present, this is not common for transit service providers that have not embraced or invested in automated scheduling/dispatch software with onboard devices capable of capturing such data.

The percent of NEMT providers that have such technology in their fleets is unknown; however, it is safe to assume that smaller entities, regardless of market segment, may still utilize manual passenger accounting practices. These entities may incur additional administrative overhead expenses with the incorporation of this passenger accounting practice.

## Calculating Costs Based on Loaded Miles

If odometer readings are available, then the loaded passenger miles for each passenger must be computed. Then, the rate per loaded passenger mile can be calculated and applied to the sum of all loaded passenger miles consumed by passengers from Agency 1, Agency 2, Agency n, etc. The transit agency can calculate the cost to each sponsoring agency as follows:

$$Cost_n = \{[(FAC \div \sum LM) \times \sum PLMAg_1] + [(FAC \div \sum LM) \times \sum PLMAg_2] + [(FAC \div \sum LM) \times \sum PLMAg_n]\}$$

Where:

$Cost_n$  = The cost attributable to all agencies with passengers on the run

FAC = Fully allocated transportation cost/ vehicle run or route

$\sum LM$  = All loaded passenger miles, this run

$\sum PLMAg_1$  = The total number of all sponsored passenger loaded miles from Agency 1

$\sum PLMAg_2$  = The total number of all sponsored passenger loaded miles from Agency 2

$\sum PLMAg_n$  = The total number of all

sponsored passenger loaded miles from Agency n

In applying this methodology to the sample run depicted in Figure 3, the allocation of costs to the respective agencies' changes, more reflective of the actual services consumed (Table 5).

**Table 5. Route 101: Traditional, Loaded Miles Approach to Allocating Costs in Ridesharing Situation**

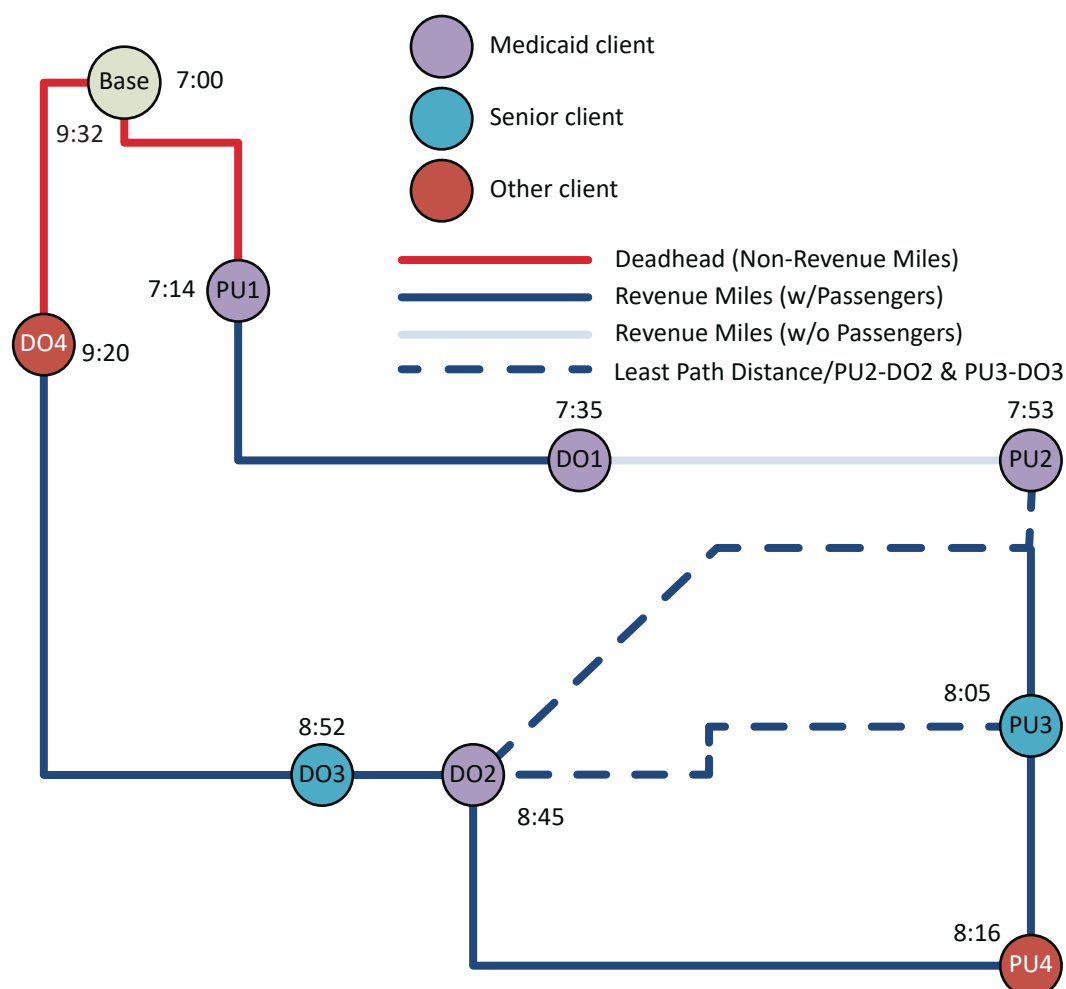
Sponsor	UPTs	Loaded Miles	Loaded Mile Rate Per Passenger	Allocated Amount
Medicaid	2	20	\$ 2.21	\$ 42.70
Senior Center	1	12	\$ 2.21	\$ 27.40
Dept. Social Services	1	18	\$ 2.21	\$ 38.84
<b>Total</b>	<b>4</b>	<b>50</b>		<b>\$ 108.94</b>

## Least Distance Path Payment of Loaded Miles

CCAM Medicaid Principle #11 states that Medicaid will not pay any additional costs that arise from sharing rides with local partners' beneficiaries, such as costs associated with longer trip times. Consider the example in Figure 3, where a Medicaid client (PU2) is picked-up, then two additional pick-ups are made before dropping the Medicaid client off at their destination (DO2). In the computation of loaded miles allocable to Medicaid in Table 5, the miles traveled by this beneficiary do result in longer trip times and distances.

Figure 4 illustrates that the current path of the route, designed for the efficient routing and scheduling of all four passengers; however, this routing does impose additional travel time and distance for the Medicaid passenger 2 and the senior passenger 3. If the route were run without regard for passenger 4 (PU4), a shorter path between the origin and destination for passengers 2 and 3 is available given the road network in the service area (Figure 4).

**Figure 4. Illustrative Demand Response Route 101 Demonstrating Least Path Distance**



## Calculating Costs Based on Loaded Miles

With Principle #11, Medicaid is requiring that the NEMT provider only bill for miles along the least distance path between a passenger's origin and destination. If NEMT is delivered by the service provider in an integrated setting, e.g., coordinated with other public and human service agency programs, it is logical for administrative simplicity that the transit provider applies this principle to the costing and pricing of all services.

There is a key difference with this principle that distinguishes it from all others. In all other costing and pricing scenarios, input units are derived from **actual** service data; implementing this principle means that the transit provider

must rely on estimated data generated from GIS analysis.

$$Cost_n = \{[(FAC \div \sum LPD) \times \sum LPDAg_1] + [(FAC \div \sum LPD) \times \sum LPDAg_2] + [(FAC \div \sum LPD) \times \sum LPDAg_n]\}$$

Where:

$Cost_n$  = The cost attributable to all agencies with passengers on the run

FAC = Fully allocated transportation cost/vehicle run or route

$\sum LPD$  = Sum of all least path distances, all trips, this run

$\sum LPDMAg_1$  = The sum of all least path distances between trip origins and destinations, Agency 1

$\sum LPDMAg_2$  = The sum of all least path

*distances between trip origins and destinations, Agency 2*  
 $\sum PLMAg_n$  = The sum of all least path distances between trip origins and destinations, Agency n

Passenger 1 and passenger 4 are already on paths that represent the least distance between origin and destination; thus, there is no change in the miles attributable to these passengers. However, there is a difference between loaded miles and the least path distance miles for passengers 2 and 3. In this method, that transit provider must bill on a rate predicated on the least path distance miles; the provider's cost of \$108.94 still must be recovered if the provider is to remain financially viable. Conversion of the least path loaded miles rate results in \$2.76 per least path loaded mile rate (Table 6).

**Table 6. Route 101: Traditional, Loaded Miles Approach to Allocating Costs in Ridesharing Situation**

Sponsor	UPTs	Least Path Miles	Least Path Loaded Mile Rate	Allocated Amount
Medicaid	2	13.67	\$2.76	\$37.75
Senior Center	1	8.28	\$2.76	\$22.85
Dept. Social Services	1	17.51	\$2.76	\$48.33
<b>Total</b>	<b>4</b>	<b>39.46</b>		<b>\$ 108.94</b>

## Passenger Accounting Requirements

Under this cost principle, an additional complexity is introduced, which essentially will require the NEMT provider to compute the "least path distance" over the existing road network for any Medicaid trip that will be used later in establishing the price for the trip. If Medicaid is a large component of the service provider's network, administrative simplicity in billing practices dictates that estimating the least path distances be done for all trips.

Some automated scheduling and dispatch software companies perform this function in the background; however, this functionality is primarily used in algorithms that work to

provide "real-time" scheduling functionality to the transit provider. An initial assessment of both time and distance is calculated using both GIS and cartesian cartography during the trip reservation process. Once information regarding the x- and y- coordinates of the passenger's requested origin and destination are geocoded, the software will produce initial estimates of time and distance of the trip. The software then examines all existing trip reservations and route assignments and provide options of where, in the schedule for all vehicles operated by the system, the requested trip will fit in the overall schedule without violation of various user established parameters, such as maximum ride time. Further, this initial estimate may be revised after the reservation window is closed. Once all reservations are recorded, it is common for the system to run a "batch" scheduling

process where refinements are made to the schedule. This task may be both automatic and manual, as it is common for a scheduler to manually make minor adjustments

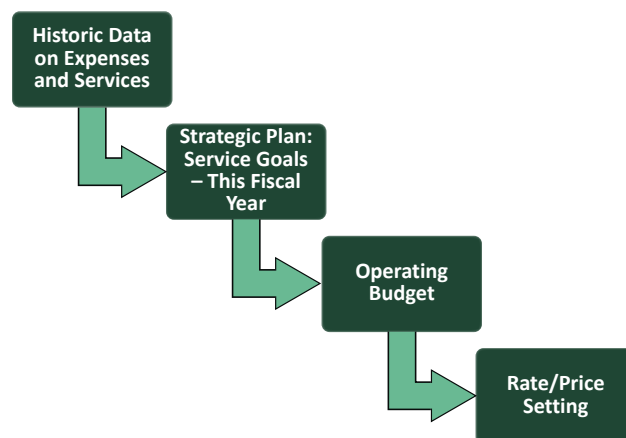
to a computer-generated schedule. This will produce revisions to the initial estimates of time and distance for each trip and may no longer reflect the least path distance and travel times for the passenger; rather it reflects the most efficient routing and schedule for *all* passengers assigned to the route.

Software platforms that use this methodology will typically store this initial estimate of time and distance for any trip but typically will create new fields with both the final scheduled time and distance and the actual post-trip time and distance. This *scheduled* and *actual* data is used for reporting and analysis purposes (productivity and on-time performance); the



initial estimated data is rarely provided in any type of user report.

Incorporating the least path distance metrics into the pricing of transit services introduces multiple changes in the operating environments for any entity that coordinates the delivery of human services transportation. Pricing transit services can only occur after the completion of the budget process. This process relies on *actual*, historical operating data on the units of services provided in a prior period and projection of units of service to be provided in the upcoming fiscal period.



Pricing is then predicated on:

$$P = FAC \div Units + Mark-up$$

Where:

*P* = Price

*FAC* = Fully allocated transportation cost

*Units* = The units of service on which price will be based (e.g., hours, loaded miles)

*Mark-up* = Profit

As the least path trip distances are not traditionally collected and analyzed by transit management, establishing the initial rate will not be predicated on actual data. Transit agencies would have to estimate such units until sufficient actual data is collected and prices set accordingly. This places the transit agency at some risk of operating at a loss.

For those entities with some type of software platform, some interaction with the software vendor may be necessary to produce a report that will extract the least path distance and travel time estimates from the software's databases.

Those NEMT providers without scheduling software may have alternatives. In an era of mobile computing, there are any number of mapping applications, many with turn-by-turn directions, that can be used to estimate the least path distance between two points. Google maps may be the most widely known application and is available across multiple platforms. While this app and others like it will produce accurate measures of distance between two points over an existing road network, this platform may be less accurate with respect to the second major driver of transportation costs, travel time. However, these apps may not be able to estimate traffic, weather conditions, construction, or incidents/accidents that will impact travel time.

Developers have sought to improve on this problem, using crowdsourcing methods to provide real-time updates of travel conditions. Waze (now owned by Google) is the most widely known application that incorporates these techniques. Importantly, data from this application is being shared for multiple purposes. The Waze Connected Citizens Program has enabled more than 1,000 municipalities and other public sector partners around the world to incorporate its traffic data.<sup>10</sup> Additionally, ESRI, the world's leading GIS software provider, has partnered with Waze to integrate this traffic data with the ArcGIS software platform, extensively used by local governments throughout the United States.<sup>11</sup>

These types of initiatives make it more practical to consider using the least path distance as a possible pricing mechanism for coordinated transportation providers.

<sup>10</sup> Documented at <https://www.waze.com/ccp>.

<sup>11</sup> Documented at <https://go.esri.com/waze>.

## Comparative Analysis of Pricing Units

Based on this section, it has been observed that the price of transportation should be predicated on a computation of the transit provider's fully allocated costs. Depending on the market segment of the provider, the actual price charged for a service may be less than full cost (philanthropic model), may equal cost (business model), or may be cost plus some appropriate mark-up (entrepreneurial model).

Converting that model to a unit price is relatively simple, involving the fully allocated costs divided by the total units of service anticipated to be delivered during the fiscal period. Accurate budgeting and service delivery estimation will ensure accurate unit pricing.

Historically, coordinated human services transportation providers have used common billing rates such as:

- Price per vehicle mile
- Price per vehicle hour
- Price per passenger trip
- Price per passenger mile

CCAM cost principles may give rise to newer pricing units, such as:

- Price per loaded vehicle mile (Medicaid Principle #10)
- Price per vehicle mile on least distances path (Medicaid Principle #11)

A comparative assessment of the attributes of each pricing unit is described below and illustrated in Table 7.

In looking at the computation methods, it is important to understand that some pricing units are designed to avoid some costs; three pricing units are of note, as they do not necessarily delete the expense from the user charge:

- Price per passenger mile and price per loaded vehicle mile – Billing is predicated on the number of passenger miles consumed by clients of the sponsoring agency in both cases. When using this billing method, the agency is only paying for passenger miles attributable to that organization. However, the rate must be predicated on all of the transit agency's operating costs or the entity will not be able to maintain financial viability.
- Price per vehicle mile on least distance path – Billing is predicated on the least path distance between the sponsored client's origin and destination. This particular billing unit is not directly related to actual hours or miles consumed by the passenger but it is nevertheless equally as critical that the rate developed for this billing unit recover the provider's fully allocated costs.

**Table 7. Comparison of Attributes of Various Pricing Units in Coordinated Transportation**

<b>Pricing Mechanism</b>	<b>Computation</b>	<b>Positive Attributes</b>	<b>Negative Attributes</b>
Price per Passenger Trip	Fully Allocated Cost ÷ $\Sigma$ Total UPTs	<p>Simple computation</p> <p>Minimal level of effort in passenger accounting</p> <p>Works best in smaller geographical service areas where trip distances and travel times for all passengers are comparable</p> <p>Provides the appearance of shared ride equity</p>	<p>Short trips subsidize longer trips</p> <p>Imposes some risk on the transit provider to accurately forecast average trip characteristics</p> <p>Some audit risk for sponsor agency for billing of trips not taken</p>
Price per Vehicle Mile	Fully Allocated Cost ÷ $\Sigma$ Total Vehicle Miles	<p>Relatively simple passenger accounting practiced by virtually all providers in all market segments</p> <p>Most easily auditable based on vehicle records</p> <p>Concept of vehicle miles readily understood by sponsoring agencies</p>	<p>Does not address wait time</p> <p>Does not address downtime at out-of-service area locations</p> <p>Sponsoring agencies do not like paying for deadhead mileage</p> <p>Requires supplemental passenger accounting to allocate/price trips in routes that transport clients of two or more agencies</p> <p>The price charged for a trip with the same origin and destination may vary depending on passenger loads</p>
Price per Vehicle Hour	Fully Allocated Cost ÷ $\Sigma$ Total Vehicle Miles	<p>Perceived as a very accurate billing method, as most operating costs are variable costs that vary based on time</p> <p>Addresses wait time</p>	<p>The price charged for a trip with the same origin and destination may vary depending on passenger loads</p> <p>Without Automatic Vehicle Location (AVL) technology or other vehicle telematics, manual recordkeeping burden on drivers is increased</p>

<b>Pricing Mechanism</b>	<b>Computation</b>	<b>Positive Attributes</b>	<b>Negative Attributes</b>
Price per Passenger Mile	Fully Allocated Cost $\div \sum$ Total Passenger Miles	Perceived as a very accurate billing method, as the level of data capture for each trip more closely reflects actual consumption of service  Addresses issue of sponsoring agencies paying for deadhead mileage	Requires on/off odometer readings  Without Automatic Vehicle Location (AVL) technology or other vehicle telematics, manual recordkeeping burden on drivers is increased  The price charged for a trip with the same origin and destination may vary depending on passenger loads
Price per Loaded Mile	Fully Allocated Cost $\div \sum$ Total Loaded Vehicle Miles	Addresses direct payment of miles attributable to deadheading (non-revenue vehicle miles)	Requires on/off odometer readings  Without Automatic Vehicle Location (AVL) technology or other vehicle telematics, manual recordkeeping burden on drivers is increased  The price charged for a trip with the same origin and destination may vary depending on passenger loads
Price Per Least Path Distance	Fully Allocated Cost $\div \sum$ Total Estimated Least Path Distance Computations, Trip Origins/Destinations	The price charged for a trip with the same origin and destination will not vary depending on passenger loads  No “coordination penalty” associated with increased distance and travel time	The price charged is based on estimated parameter and does not reflect actual vehicle operation which drives operator costs  Requires inclusion of, and access to, the least path distance and travel time calculator in the scheduling and billing process

# Lessons Learned from the Demonstration Site

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As part of this project, the consultant was able to enlist the support of the Ohio Department of Transportation (ODOT) and its leadership efforts in its Mobility Transformation Initiative. As explained in the following sections, this statewide effort enabled preliminary testing of cost allocation concepts and even the roll-out of a Microsoft Excel version of a cost allocation model that included many of the features required in an NEMT cost allocation model.

## Ohio's Mobility Transformation Initiative

Ohio's Mobility Transformation Task Force (a group of 14 state agencies that fund human service transportation (HST)) has executed a vision that aligns the elements of policies, funding, planning, and technology into an enhanced mobility platform. This new platform has a foundation grounded in extensive research that has uncovered new opportunities for productive interagency relationships and created a mechanism for limitless transportation options for Ohio residents.

Historically, like most states, Ohio's key funding agencies that support human services transportation (HST) developed solutions to meet the needs of their clients using the agency-specific funding sources available to them. This "silo" approach has been cited repeatedly as a primary obstacle to the coordination of HST. The goals and initiatives of Mobility Transformation sought to change this.

Creating a clear road forward to improve access to high-quality mobility resources for all Ohioans required collaboration between the many state agencies that fund human services transportation in service of their missions to pursue the best outcomes for clients. Mobility Transformation incorporated data and statistics from human service agencies, public

transit, aging programs, and local and regional governments. This study recommended the regionalization of Ohio's public and human service transportation programs in a manner that facilitates the cost-effective use of available funding and deploys, at the regional level, enhanced technologies for all of Ohio's human services programs that use agency-sponsored and public transportation resources. The recommended structure also provides direction for aligning transportation pricing practices, policies and standards through 14 state agencies that fund transportation to promote enhanced access to vital services for Ohioans.

Beginning in 2018, the Task Force met as a working group to develop agreed-upon quality and safety standards that will be applied to all health and human service transportation in Ohio. There is now one common set of policies and procedures recognized by all agencies in the following areas:

- HST driver tier specifications and tier definition standards
- Driver qualification standards
- Vehicle specification standards
- Driver licensing standards
- Criminal history and abuse registry background check standards
- Insurance coverage standards
- Drug and alcohol testing standards
- Physical and medical qualification standards
- Driver training standards
- Vehicle inspection and maintenance standards

In addition to the agreed-upon standards, the agencies decided that the effort should continue with a phased-in implementation of the standards and the establishment of a rate-setting model that will be used by all health and human services transportation providers. The working group members reached the consensus that the rate paid to any provider for

transportation service should, at a minimum, cover the fully allocated costs to deliver the service. It was recognized that the funding and contracting requirements employed by some agencies did not support this concept and agreement was reached that no State agency should be subsidizing the transportation of clients of another state agency. To this end, the agencies endorsed the development of a rate-setting tool based on the fully allocated costs to provide transportation.

It is anticipated that the use of a standardized cost allocation tool will assist in “leveling the playing field” among transportation providers by establishing a uniform method of setting rates for service, regardless of the type of provider. The beta version of the model is currently being tested by a small group of providers in the OMEGA region of southeastern Ohio. OMEGA, or Ohio Mid-Eastern Governments Association, is a regional council of governments serving eight Ohio counties (Carroll, Columbiana, Coshocton, Guernsey, Harrison, Holmes, Muskingum, and Tuscarawas) that are not members of a Metropolitan Planning Organization (Belmont and Jefferson Counties are located within MPOs). This pilot project is further explained below.

## OMEGA Pilot Project

The Ohio Department of Transportation (ODOT) is leading the effort to pilot test the Mobility Ohio (previously Mobility Transformation) rate-setting tool in one of the State’s 10 newly established human service transportation coordination (HSTC) regions. With implementation as the focus, the work has shifted to the development of administrative tools, including an Excel-based tool that incorporates the elements articulated in this project. The tool will be used by all health and human service transportation providers. These tools also include policies, forms, and operating procedures to guide the implementation of uniform rate setting to ease administrative burdens. The goal of the

pilot project is to allow costs to be allocated and billed appropriately to the transportation user. Ultimately, this will facilitate the more efficient use of transportation resources in the pilot region. The rate-setting tool’s methodology embraces the concept of fully allocated costs, which include direct and allocable indirect costs. The Excel-based tool allows transportation providers to enter expense data and easily perform calculations to generate pricing by a unit of service (service hour, service mile, one-way passenger trip, or passenger-mile).



### *The OMEGA Region*

As part of the rate-setting pilot, four local providers in the pilot region have already begun to use the tool. The project consultant is using the tool to compare the transportation prices generated through the tool against current billing rates, analyzing the potential impact of the new rate-setting methodology on human service agency budgets. The four local providers are:

### South East Area Transit (SEAT)

South East Area Transit (SEAT) is an FTA Section 5311-funded rural public transit



provider operating under the authority of a transit board. SEAT provides fixed-route and demand response public transit service in Guernsey, Muskingum, and Noble Counties. In addition to providing public transit service, SEAT operates contracted service for Medicaid Non-Emergency Medical Transportation (NEMT) beneficiaries and has established a regional mobility management center, Mid-Ohio Mobility Services, which connects residents and stakeholders to transportation providers through information and referral services.

## Carroll County Public Transit

Carroll County Public Transit is also an FTA Section 5311-funded rural transit provider operated by the Carroll County Board of Commissioners. This agency provides demand response service to the general public and human service agency clients through contracts, including NEMT.

## National Church Residences, LLC

National Church Residences, LCC is a private nonprofit organization formed under IRSS 501(c)(3) rules. The agency provides contracted human service transportation within southeast Ohio and northern West Virginia. The organization also provides affordable housing throughout its service area.

## Checker Transportation, Inc.

This company is a privately owned, for-profit provider of contracted transportation, including NEMT and other medical transportation. The company serves eastern Ohio, northern West Virginia, and western Pennsylvania.

## Pilot Project Objectives and Timeline

The OMEGA pilot project consists of five content areas, each with its objectives, deliverables, and timeframes. These areas are:

- Adoption of rate-setting methodology
- Establishment of local investment and support for the pricing standard
- Adoption of driver and vehicle standards
- Implementation of DRIVES: driver regulations inventory vehicle entry system
- Adoption of the governance structure

The COVID-19 pandemic has temporarily delayed work in some of the content areas, due to the necessity for state agency personnel to focus their efforts on responding to the crisis.

## Adoption of Rate Setting Methodology

During the first half of 2020, the contractor developed the beta version of the cost allocation model using Microsoft Excel-software. Like any costing model, it is necessary to input various service and financial data to compute the necessary service metrics used to calculate fully allocated costs.

The first step in using the tool was to input service and financial data from each of the four test providers. Then, unit costs were calculated for each provider (service mile, service hour, one-way passenger trip, and passenger-mile).

Beginning in June 2020, the contractor began collecting invoice data from the four service providers and comparing the costs reflected on the invoices to the pricing generated by the cost allocation tool. This process will continue through August 2020 and will permit a comparative analysis of existing billing practices with projected costs generated by the cost allocation model.<sup>1</sup> Typically, State agencies reimburse transportation providers on a passenger-mile basis. Some agencies pay providers on a passenger-trip basis. Contracts based on vehicle-miles or vehicle-hours are less common in human service transportation in Ohio.

<sup>1</sup> Phase I of the SBIR project concludes in July. The contractor is able to continue work on the OMEGA region through a technical assistance contract with the Ohio Department of Transportation.

Preliminary analysis indicates that providers are currently being compensated at rates that are below their fully allocated costs. Actual invoiced amounts were 17% to 51% lower than the amounts generated by the rate-setting tool.

This preliminary finding demonstrates a greater likelihood of cross-subsidization between programs. For example, the same state agency pays one provider \$1.75 per passenger-mile and pays a different provider between \$2.25 and \$3.00 per passenger-mile (in addition to a guaranteed minimum payment per trip), depending on the county.

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*Preliminary analysis from the beta testing of the cost allocation model indicated that participating agencies in the test were invoicing as much as 51% below their fully allocated costs.*

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It is anticipated that in August 2020, state agencies will sign Memoranda of Understanding (MOUs) to endorse the rate-setting tool and promote its acceptance by local offices. In general, it is the local offices, not the state-level officials, that execute contracts with transportation providers.

During this same timeframe, some education of local stakeholders about cost allocation principles and the cost allocation model will be necessary. It is estimated that there are approximately 200 transportation providers in the 10-county OMEGA region. It is the intent of the initiative to ensure that all state agencies adjust their procedures for transportation reimbursement contracts to base rates on the cost allocation tool (for the state fiscal year beginning on January 1, 2021). For example, the Ohio Department of Developmental Disabilities uses a per-trip rate (\$18.73) but may be asked to convert to using a passenger-mile-based rate for OMEGA region providers during the pilot.

## Local Investment and Support for Pricing Standard

This area will primarily focus on education. In addition to state agency officials and local transportation providers, it will also be

necessary to educate officials in local human service agencies about the cost allocation and rate-setting methodology. This outreach effort is scheduled for August 2020, following the adoption of the MOUs endorsing the pricing standard. State agencies have been provided with a draft template letter and informational materials that describe the Mobility Ohio initiative, the pilot project, and the cost

allocation and rate-setting tool. Webinars are planned for August 2020 to provide local-level stakeholders with an overview of the initiative and the opportunity to ask questions and make comments. The objectives of this effort are to secure the support of local offices for the

pricing standard and to retain transportation investment by local authorities.

## Adoption of Driver and Vehicle Standards

Beyond the pricing standard, the adoption of standardized driver and vehicle standards for all human service transportation providers is central to the Mobility Ohio effort. A set of recommendations has been developed for statewide standards for vehicle types, tiers of driver qualifications, addressing key topics of criminal background and driving history; driver training requirements; employee reporting; insurance; physical and medical qualifications; drug and alcohol testing; and vehicle maintenance and safety.

For the OMEGA pilot project, state agencies will temporarily authorize the adoption of these standards. It was anticipated that this would have occurred before the OMEGA demonstration, however, this action was subject to delays due to the COVID-19 pandemic. When the effort resumes, the state agencies will review the standards and provide comments to ODOT on any requirements that would preclude agency endorsement and participation.

Upon adoption, these common standards will be communicated to the transportation providers in the pilot region. Provider manuals and training programs will be developed. The implementation of the standards in the pilot region will serve as a demonstration before the eventual formalization of these standards through legislation.

## **DRIVES: Driver Regulations Inventory Vehicle Entry System**

A lead state agency will take responsibility for DRIVES, or the Driver Regulations Inventory Vehicle Entry System, a statewide database to register all drivers and vehicles that are eligible to provide human service transportation in the state. Like some of the implementation schedules, this too has been delayed during the COVID-19 pandemic.

## **Governance Structure**

Oversight for the Mobility Ohio project will be assigned to either a new or existing state agency. All standards, legislation, and regulatory development/adoption will be assigned to this organization. During the OMEGA pilot, ODOT has temporarily assumed leadership for oversight and implementation.

The eventual governance structure will also include program oversight at the regional level. One organization in each of the 10 HSTC regions will be responsible for managing the coordinated health and human service transportation network specific to each region. Any human service transportation provider must contract and work through this regional program. These regional lead organizations will be responsible for providing compliance oversight, reporting, agency-specific billing, ride scheduling and dispatching, and purchase of service contracts. OMEGA is the first of the ten regions to implement this management concept in the state. Lessons learned will be applied as regional oversight programs are established in the other nine HSTC regions following the pilot.

## **Lessons Learned**

Delays due to the COVID-19 pandemic have hindered the original schedule for the OMEGA regional mobility project and as a consequence, all potential lessons that should be incorporated into the cost allocation model may have not yet been discovered. However, some lessons have already been identified and can be carried forward in the project:

### **Recognize Differences in Sophistication in Finance and Account Structures Among Providers**

A standardized chart of accounts, based on the older Uniform System of Accounts formats, was developed for the OMEGA region. Based on initial feedback, relatively small, single mode providers may not require a detailed data sheet for entry of financial data required in the cost allocation process.

Additionally, instruction and education will be required on account definitions, expenditures to be included in each object class, etc.

### **Refinement of Purchased Transportation Object Class is Required**

Another preliminary lesson that has implications on the cost allocation model is the fact that the beta model only permits aggregate entry of “purchased” transportation. One provider has multiple contracts with different contractors and the model does not distinguish service and financial data from these multiple contractors.

### **User Manuals**

The beta model was rolled out under contractor guidance, thus no user manuals were developed from the beta version. Feedback from the four primary providers indicates that instructional manuals will be

necessary for proper data entry, function, and use of the software.

## **Education and Training**

While cost allocation is frequently discussed in both public and human service agency circles, initial feedback indicates there is little in the way of training and education on this topic. The observation applies to state agency funding sources, local human service agency personnel, and transportation service providers. Education and training will be key to the successful implementation of the cost allocation model.

## **Consistent Pricing**

Participants in the OMEGA region expressed some interest in the concept of consistent

pricing. As noted in Table 6, the cost or price charged to a sponsoring agency under some pricing scenarios for the same trip (e.g., same origin and destination) may vary day-to-day depending upon who is assigned to the route or run. The beta version of the cost allocation model was developed before CCAM released its final version of its cost principles. This final version contained Medicaid Principle #11, which essentially called for pricing a service based on the least path distance between a passenger's origin and destination. As this principle was not in earlier versions of the CCAM policy, this functionality was not included in the beta model.

Based on stakeholder comments on the use of the beta model, this functionality is desired in the NEMT cost allocation model.

# Cost Allocation Model Parameters and Structure

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This section details the structure and computational methods of the cost allocation model and includes all elements of the six sections of this report. The model should be capable of generating industry-accepted computations of fully allocated costs, by mode, built upon previous research and model development. The model should recognize that many NEMT providers operate a range of services using different modes of service. To the extent possible, the model should be built on a framework of definitions as developed under FTA's National Transit Database.

## General Model Overview

One issue identified in previous model development was the methods used to assign fixed costs to individual service components. Price Waterhouse, in its pioneering work for FTA in 1987 used a "three-variable model" for computing fully allocated costs.<sup>1</sup> Subsequent use of this model in demand response environments demonstrated that the use of the service variable (peak vehicles) employed in the calculation of unit rates did not produce an equitable distribution of costs in demand response environments deployed vehicles different and concepts of peak and off-peak were less well defined.

This issue was addressed in a subsequent contribution by the authors in the 1992 AASHTO/MTAP work which created a "two-variable model" more appropriate for use in demand response modes. One problem, however, is the use of either model in the now common situation where a transit provider

operates both fixed and demand response modes; with differing techniques for allocating fixed expenses, a blended model would not reconcile to total fixed expenses. This problem was addressed in subsequent TCRP research on sharing the costs in a coordinated human services environment, where fixed expenses were allocated to each mode of service prior to the application of Price Waterhouse methods.<sup>2</sup> This approach is recommended and incorporated herein.

A common element in NEMT service delivery is the use of volunteers; currently, only minimal recognition of volunteers is made in NTD reporting. This method of service delivery is considered a service mode in this cost allocation model. Thus, some expansion of NTD definitions is required to meet the objectives of this project.

One issue with previous cost allocation models was the fact that the models assumed use by recipients of FTA funds and, therefore, would be subject to Federal cost principles and use an account reporting structure embraced by the USOA. For the current application, no such assumptions have been made. It is anticipated that many users will not be recipients of FTA funds. As a result, some structure on the input of financial data should be built into the model to ensure consistent results.

## Cost Allocation and Pricing Functionality

Virtually all previous cost allocation models are designed to estimate the fully allocated cost of a mode of service or

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*The final cost allocation tool must allow for both costing and pricing of the services provided.*

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<sup>1</sup> Fully Allocated Cost Analysis: Guidelines for Public Transit Providers, Price Waterhouse, p. 15.

<sup>2</sup> Burkhardt, Transit Cooperative Research Program Report 144: Sharing the Costs of Human Services Transportation Volume 2: Research Report, CD-supplement.

individual components of service (e.g., Route 1 or Route 2). However, these models assume that the user can then, if necessary, translate such fully allocated cost estimates into a price for service. Under many circumstances, this report has shown that cost may equal price. However, given the large percentage of private for-profit serving as NEMT providers, other pricing philosophies must prevail. This model must include pricing functionality.

## Web-Based Platform

Previous cost allocation models have used software to create and enhance user functionality and deployment. Microsoft Excel has been a common platform and, more recently, the National RTAP program has used both Excel and Microsoft Access to build its Cost Allocation Calculator tool.

However, trends in the software industry reflect the move to “Software as a Service” (SaaS) model, rather than software as a “program.” Under the SaaS model, updates and deployment of newer versions of the software are deployed universally and version compatibility issues are no longer present. Given the advantages of this model and the fact that this strategy enhances commercialization aspects of the cost allocation model, the model should be deployed as a web-based tool.

## Error and Validity Checks

In all existing cost allocation models, all service and cost data entries inputted by the user were accepted in the cost allocation model. If an error were made in data entry, it would be very difficult to detect or de-bug.

While the ultimate responsibility for accuracy must rest with the end-user, some assistance can be provided through a series of validity and error checks. For example, consider a small nonprofit transportation provider with three vehicles and the equivalent of 4.0 FTE drivers. Operator salaries and wages entered in the financial data entry sheet is \$120,000. However, in the service data entry sheet, the

user indicates the operation of 22,000 revenue vehicle hours (almost three times the paid hours for bus operators). This simple validity could be conducted in the background and an error message issued to the user to check either data entry for accuracy. A series of comparable checks can be used to enhance the integrity of the cost allocation model and should be incorporated into the web version.

## Depreciation

As many NEMT service providers are for-profit corporations, privately financed vehicles are used to deliver transportation services to Medicaid beneficiaries. This is a cost of business for these for-profit entities who cannot use Federally-funded assets to deliver the service. Depreciation of these assets is an operating cost and must be recognized in the cost allocation model for this market segment of providers.

However, contract service delivery may not be the only business endeavor of the entity. Vehicles may be used for dual purposes, such as NEMT and taxi service. Thus, while depreciation must be incorporated into the model, controls must be in place to ensure pricing only includes depreciation on billable miles of service rendered in contract service delivery.

## Elements of the Model

Emulating the concept of steps used in the National RTAP Cost Allocation Calculator, this model will be broken down into a series of sequential steps or modules.

## Identification Module

As the model is to be built as a web-based application, an identification module will be necessary to log-in and use the model, as well as to associate all entered data to a particular transportation provider. Finally, the confidential nature of finance and service data,



particularly with respect to for-profit providers, must be respected.

## Login Elements

To access the cost allocation model from any web browser, a dedicated site address should be established and access to the site should be controlled by login credentials: registered username and password. As the frequency of use of the model will be intermittent, it would be helpful to create tools that enable users to remember usernames and passwords.

**Functionality.** The login process should incorporate the following functional elements:

- Password reset – password reset functions should be incorporated to avoid the need to contact a help desk when a user forgets their password.
- Password retrieval – Alternatively, a secret question function could be incorporated that would permit users to retrieve a forgotten password.
- Authentication protocols – Tools to ensure that only authorized users can access the site.
- Remember me cookies – repeat visits to the site should permit users to have their username auto-populate the login dialogue window. For security, the password should not be displayed.

**Data Fields.** Data required will include:

- Username
- Password
- Secret question and answer

## Identification Elements

**Functionality.** This module would capture information about the identity of the user and the type of organization.

**Data Fields.** The identification of the user should include basic address and contact information:

- Identification
  - Name of entity
  - Contact name

- Contact title
- Address 1
- Address 2
- City
- State
- Zip
- Contact email
- Contact phone
- Contact mobile
- Organization type
  - Radio option button:
    - County, municipal, or other governmental operation
    - Transit authority, district or similar organization
    - Nonprofit corporation
    - For-profit company

## Modes of Service Module

This module is used to identify the various modes of service operated by the transit service provider. Determining modes of service is necessary to ensure that the proper allocation of fixed expenses is used in the cost computation process.

**Functionality.** When computing a price for a service, the selected mode in that module must match modes of services entered in this module.

**Data Fields.** Modes of service following definitions contained in the NTD. As noted previously, volunteer transportation has been established as a mode of transportation (a mode not recognized by the NTD).

- Fixed modes
  - Fixed route bus
  - Commuter bus
- Demand response modes
  - Demand response
  - Demand response taxi
  - Volunteers

## Service Parameters Module

In this module, users must enter projected service data to be operated for the upcoming fiscal year. Service data is entered by mode.

**Functionality.** Service data is aggregated into fixed modes and demand modes for purposes of allocating a provider’s fixed expenses. This enables the use of a three-variable model for computation of fully allocated fixed route costs and a two-variable model for use in demand response services.

**Data Fields.** Data is required as follows:

- Motor bus (NTD name for fixed route bus)
  - Vehicle revenue hours
  - Vehicle revenue miles
  - Unlinked passenger trips
  - Revenue passenger miles
  - Peak period vehicles
- Commuter bus
  - Vehicle revenue hours
  - Vehicle revenue miles
  - Unlinked passenger trips
  - Revenue passenger miles
  - Peak period vehicles
- Demand response
  - Vehicle revenue hours
  - Vehicle revenue miles
  - Unlinked passenger trips
  - Revenue passenger miles
- Demand response taxi
  - Vehicle revenue hours
  - Vehicle revenue miles
  - Unlinked passenger trips
  - Revenue passenger miles
- Volunteer
  - Vehicle revenue hours
  - Vehicle revenue miles
  - Unlinked passenger trips
  - Revenue passenger miles

## Financial Parameters Module

This module is the most complex of all the data entry steps. As noted in the introduction of this section, the model requires the user to organize its financial data to fit object classes and individual objects of expenditure as defined by the USOA, the accounting structure used in the NTD.

The data input format established in the beta model reflected requirements imposed by the

NTD: reporters are required to report total transit expenses by mode of service. However, during the demonstration in the OMEGA region, feedback indicates that this initial data entry screen should be customizable so that more complex operations are presented with a detailed screen and less complex operations (e.g., entities operating a single mode of service) have a simpler set of data entry fields. This tiered functionality should be addressed in the web model.

**Functionality.** The design of the financial data entry form is to capture direct expenses by mode of service, consistent with NTD reporting requirements. Direct expenses are those costs that strictly benefit a single mode of transportation. Some costs incurred by entities that operate multiple modes of service cannot be assigned to a single mode; these expenses benefit two or more modes of service and cannot readily be assignable to a mode. Such expenses might include the salary of the transit manager, facility rent, etc. The model must capture what the NTD calls “shared expenses” and create a mechanism to allocate these expenses to each mode of service. NTD recommends the use of a “service-based” allocation factor. The beta model uses either revenue vehicle hours or revenue vehicle miles based on the mode or combination of modes of service operated by the entity. Once the allocation factor is selected, shared expenses are distributed across the modes using the following formula:

$$AShE = (VHMode \div \sum VH) \times \sum ShE$$

or

$$AShE = (VMMode \div \sum VMH) \times \sum ShE$$

Where:

*AShE = Allocable shared expenses attributable to a single mode of operation*  
*VHMode = The revenue vehicle hours operated by that mode of service*  
*∑VH = The sum of all revenue vehicle hours operated by the transit provider*  
*∑ShE = The sum of all shared expenses*

*VMMode = The revenue vehicle mile operated by that mode of service*  
*ΣVM = The sum of all revenue vehicle mile operated by the transit provider*

The model also adopts Federal cost allowability principles codified at 2 CFR § 200. It is anticipated that most entities will incur costs that do not meet the allowability standards to be adopted for this cost allocation model; thus, the model is formatted to capture these ineligible costs. The model does not use these costs in any way in the allocation process. Rather this data entry requirement is designed primarily to assure other entities evaluating the output of the cost allocation model that the user has taken into account unallowable costs.

A final element of functionality, reserved for any commercialization of the product, would be the ability to complete a generic budget input form and submit the form to the website as a PDF document. The fields in the pre-formatted form would then be automatically read and data recorded in the appropriate objects and classes based on the existing line item descriptions.<sup>3</sup>

**Data Fields.** Financial data is collected in the following object classes and individual objects of expenditure:

- 5010: Labor
  - 5011: Salaries and Wages
  - 5012: Paid Absences
  - 5013: Other Salaries and Wages
  - 5014: Other Paid Absences
- 5015: Fringe Benefits
- 5020: Services
- 5030: Materials and Supplies
  - 5031: Fuel and Lubricants
  - 5032: Tires and Tubes
  - 5039: Other Materials and Supplies
- 5040: Utilities
- 5050: Casualty and Liability Costs (Insurance)

- 5060: Taxes
- 5090: Miscellaneous Expenses
- 5100: Purchased Transportation
  - 5101: Other NEMT Provider
  - 5102: Volunteers
- 5260: Depreciation
- 5330: Organization Indirect Costs

These data elements are collected for each mode and the category of “shared” expenses and “ineligible” expenses.

## Certification Module

USDHHS regulations at 45 CFR § 75.415 require all vouchers and requests for payment under a grant award be accompanied by a certification, signed by an official who is authorized to legally bind the non-Federal entity, that verifies the accuracy of the claim. Although payments to an NEMT provider would be considered contractor payments, not grant awards, the parameters associated with the allocation process impacts grant-related expenditures. To this end, and to assist in the prevention of fraudulent entries into the cost allocation model designed purely to increase the rate of reimbursement, the cost allocation model proposes to incorporate a variation of the HHS certification, as follows:

*By submitting this cost allocation model, I certify to the best of my knowledge and belief that the financial and service data are true, complete, and accurate, and the proposed expenditures are for the purposes and objectives set forth in the terms and conditions of the contract for service. I am aware that any false, fictitious, or fraudulent information, or the omission of any material fact, may subject me to criminal, civil, or administrative penalties for fraud, false statements, false claims or otherwise. (U.S. Code Title 18, Section 1001 and Title 31, Sections 3729-3730 and 3801-3812).*

<sup>3</sup> This functionality emulates that of many travel service websites (such as Triplt) where users can submit travel itineraries from airlines, hotels, car rental companies and the necessary data is mined from the input source and organized into a standard format daily itinerary.

## Depreciation Module

This module is designed for use only by for-profit entities who acquire privately-owned assets for use in human service contract transportation. As depreciation is an allowable and important consideration for these entities in making pricing decisions, depreciation must be recognized in the cost allocation process.

**Functionality.** This module first verifies that the user entering vehicle data is a for-profit entity based on data provided in the identification module. A series of sequential steps are automatically undertaken in the model:

1. Based on the make and model, the vehicle is classified by type.
2. Based on mileage, and useful life definitions, the remaining useful life for the vehicle is computed.<sup>4</sup>
3. Based on the ultimate disposition of equipment, by class, a residual value is calculated.
4. Disposition mileage is calculated as useful life plus an additional mileage amount because vehicles are operated beyond useful life standards.
  - a. Sample data derived from a Consumer Report market value in “poor” condition was used to assess actual makes and models commonly used by private transportation companies; and
  - b. An average residual value was then calculated for each class of vehicle.
5. The depreciable value is calculated based on acquisition costs less residual value.
6. Remaining useful life, in miles from the time of acquisition to disposition, is calculated.
7. A depreciation cost per mile is calculated.

When a private sector user performs a price calculation in the model, depreciation is added to the projected fully allocated cost of service.

**Data Fields.** The following information is collected in this module:

- VIN
- Local ID number
- Vehicle type/class
  - Sedan
  - Minivan
  - Standard van
  - Modified van
  - Light duty, body-on-chassis
  - Medium duty, body-on-chassis
- Manufacturer
- Model
- Model year
- Unit acquisition cost
- Acquired new or used
- Useful life
- Date placed in service
- Mileage when placed in service
- Current mileage

## Costing Module

As illustrated in Figure 3, all cost models take the approach that a transportation provider’s costs must be classified as either a fixed or variable expense. Further, recognizing that transportation costs will vary based on either time (revenue hours) or distance (revenue miles), all cost models divide variable costs into variable cost by hours and variable costs by miles. Because a standardized budget template is used, it enabled the project consultant to assign a cost classification to each object of expenditure in the financial data entry template. This ensures that the task of cost classification is executed consistently by all users.

The costing model performs the assignment to these three categories, by mode, producing an aggregated amount of fixed expenses, variable

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<sup>4</sup> FTA does not typically dictate useful life definitions on smaller vehicles; many states, in their State Management Plans, have established useful life definitions for their subrecipients’ fleets. Several SMPs were sampled and consensus values for useful life, by type of equipment, were adopted.

expenses by hour, and variable expenses by mile for each mode of service operated.

**Functionality.** The process of cost allocation involves the computation of unit cost factors that are then used in projecting the fully allocated cost of a service. Three units are projected in fixed mode service delivery as follows:

$$AlcH = (\sum M_1 VHc \div M_1 VH)$$

Where:

*AlcH = Allocated hours rate*

*$\sum M_1 VHc$  = The sum of all expenses classified as variable by hours for Mode 1*

*$M_1 VH$  = The total of revenue vehicle hours operated for Mode 1*

The unit rate addressing variable costs by mile is computed as follows:

$$AlcM = (\sum M_1 VMc \div M_1 VM)$$

Where:

*AlcM = Allocated miles rate*

*$\sum M_1 VMc$  = The sum of all expenses classified as variable by miles for Mode 1*

*$M_1 VM$  = The total of revenue vehicle miles operated for Mode 1*

The final computation addresses fixed costs as follows:

$$AlcF = (\sum M_1 F \div PV)$$

Where:

*AlcF = Allocated fixed rate*

*$\sum M_1 F$  = The sum of all expenses classified as fixed for Mode 1*

*PV = The total of peak vehicles used in Mode 1 service*

With these three factors computed, the fully allocated cost of any proposed service to be provided by the organization can be calculated if an estimate of the proposed hours, miles, and required vehicles for the service can be estimated.

$$FAC = [(AlcH \times PVH) + (AlcM \times PVM) + (AlcF \times PPV)]$$

Where:

*FAC = Fully allocated cost of the proposed service*

*AlcH = Allocated hours rate*

*PVH = Proposed vehicle hours, this service*

*AlcM = Allocated miles rate*

*PVM = Proposed vehicle miles, this service*

*AlcF = Allocated fixed rate*

*PPV = Proposed peak vehicles, this service*

As noted previously, a difference exists in the computation of fixed costs when this approach is applied to demand response service. Variable costs by hour and by mile are computed in the same fashion. Rather than allocate fixed expenses by peak vehicle, the “two-variable” model simply computes a ratio of fixed expenses to variable expenses. This is computed as follows:

$$FCF = [\sum DMF \div (\sum VMc + \sum VHc)]$$

Where:

*FCF = Fixed cost factor*

*$\sum DMF$  = The sum of all fixed costs for the demand response mode*

*$\sum VMc$  = The sum of all variable by miles costs for the demand response mode*

*$\sum VHc$  = The sum of all variable by hours costs for the demand response mode*

With these computations made, the fully allocated cost of any proposed demand response service to be provided by the organization can be calculated if an estimate of the proposed hours and miles for the service can be estimated.

$$FAC = (AlcH \times PVH) + (AlcM \times PVM) + \{[(AlcH \times PVH) + (AlcM \times PVM)] \times FCF\}$$

Where:

*FAC = Fully allocated cost of the proposed service*

*AlcH = Allocated hours rate*

*PVH = Proposed vehicle hours, this service*

*AlcM = Allocated miles rate*  
*PVM = Proposed vehicle miles, this service*  
*FCF = Fixed cost Factor*

The costing module would typically be used for internal analysis. For example, a municipal transit operator may wish to determine the cost of operating one of its four fixed routes. This model will produce a very accurate projection of those fully allocated costs.

**Data Fields.** Only three data items are necessary to use the costing module, as all computations are done automatically in the background of the model. The user only needs to have an estimate of the following to compute the fully allocated cost of a fixed mode service (fixed route bus and commuter bus):

- Projected vehicle hours to be consumed in the service
- Projected vehicle miles to be consumed in the service
- Projected number of vehicles used during peak periods of the service

For demand response, demand response taxi, and volunteer service:

- Projected vehicle hours to be consumed in the service
- Projected vehicle miles to be consumed in the service

## Pricing Module

Connected to the costing module, the pricing module is built on the premise that all transit pricing should be predicated on the provider's fully allocated costs of service. Once the necessary data to compute the fully allocated costs is entered into the model, the output is provided in a dialogue window. From this window, the user can access the pricing module to compute a unit rate to use in contract negotiations.

Pricing a service is very comparable to costing a service, particularly if the philanthropic or business model philosophies are at work. The pricing of service, however, may be used at the micro level, getting down to the appropriate pricing for a single passenger trip.

The beta model being used in Ohio only translates fully allocated costs into unit prices without regard to profit. Profit, or mark-up, is at the discretion of the user. It was the opinion of the Technical Advisory Group that each provider, with a better understanding of local market conditions, could better set profit. Thus, the beta version has no user-specified profit parameter.

**Functionality.** The pricing module is capable of producing four pricing options. The model quickly converts fully allocated costs into the following pricing units:

- Price per Passenger Trip
- Price per Vehicle Mile
- Price per Vehicle Hour
- Price per Passenger Mile

In the initial beta version, the price per passenger mile was deemed to be a surrogate for price per loaded mile. The beta version, developed before the final CCAM cost principles, does not currently have the functionality to produce a price based on the least path distance between origin and destination. However, given the lessons learned in the OMEGA region and on this Medicaid cost principle, this pricing option should be included in the final web version of the model.

**Data Fields.** In the pricing module, only two data items are required:

- The projected number of passenger trips (for users computing a price per trip)
- The projected number of passenger miles (for users computing a price per passenger mile)



# Recommendations/Assessment

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## Recommendations for Inclusion in the Cost Model

The preceding sections provide a full description of elements of the model that were included in a beta version of the model, developed for illustration purposes in Microsoft Excel.

Based on preliminary feedback provided from an initial deployment of the model in the OMEGA region of Ohio and internal evaluation of the functionality of the model, the model is capable of producing industry accepted standard results for the fully allocated cost of service operated across a range of transit modes frequently used in the delivery of non-emergency medical transportation (NEMT). While the COVID-19 pandemic hindered demonstration efforts, lessons learned from the initial demonstration will strengthen the model's usability, particularly for smaller entities without sophisticated scheduling and dispatch software systems.

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*Lessons learned from the beta testing of the cost allocation model will strengthen the model's usability, in particular for smaller entities.*

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## Additions to the Model

### Create a Scaled Approach to Financial Data Input

The rationale behind the use of a standardized template for financial data entry was based, in part, on the observed finding that many transportation providers, especially those in the human services community, do not fully account for all inputs that drive transportation costs. Using a chart of accounts designed specifically for transit operations has proven effective in raising awareness of all cost categories that must be considered when establishing the organization's transportation

budget. Moreover, National Transit Database (NTD) requirements stipulate that all required reporting entities report transit operating expenses by mode. Thus, the framework for financial data entry works well for entities that received Federal Transit Administration (FTA) financial assistance.

Experience in the OMEGA region suggests that there are also likely to be many provider organizations that do not receive FTA assistance or operate only a single mode of transportation. It is acknowledged that a simpler, less complex financial data sheet could be created to facilitate the use of the model by these entities.

It is recommended, either in the user registration process for web access or in the identification section, that a series of questions be asked to assess the technical capacity of the potential user. Suggested questions may include:

- Is your organization a direct recipient of Federal financial assistance?
  - If yes, for how long?
- Does the level of Federal financial assistance received by your agency exceed the threshold to require your organization to prepare a single audit?
- Do you directly operate vehicles?
  - If yes, what is the size of your fleet?

Answers to these questions will be categorized and the user automatically directed, when ready for financial data entry, to the appropriate simple/complex user screen.

## Ensure That All Financial Terms are Hyperlinked

Even those users who are deemed technically proficient with NTD requirements may not be familiar with the account and object definitions

in the Uniform System of Accounts (USOA). Existing NTD reporting requirements for recipients of FTA Section 5311 funds only require the reporting of total expenditures; individual object classes need not be reported. Thus, many users are not knowledgeable with either definitions or the expenses that should be recorded in each account.

The final version of the cost allocation model, in all data entry screens, should ensure that the service and cost categories be hyperlinked to definitions. These hyperlinks should provide options to obtain additional help, such as suggestions on what items are typically charged to the account.

## Expand Purchased Transportation

Feedback from the OMEGA region revealed an issue with the purchased transportation line. NTD only requires reporters to aggregate all purchased transportation; there is no need to disaggregate these expenses by individual contracts.

When applied to cost allocation, however, fully allocated cost is not predicated on the cost profile of the purchaser, but the bid prices offered by the contractor. Some users wish to continue to use pricing arising from the competitive procurement process rather than the output of a cost allocation model. While the cost allocation model is technically more accurate (contract administration costs are included on top of the vendor unit charges), users may need to distinguish different contract rates.

To accommodate this need, the financial data entry screen must include a table that permits expandable rows, so users would be able to make multiple entries under the same expense object. This would be comparable to inserting a row in a spreadsheet and creating a subtotal in Excel.

## Education and Training

Cost allocation in general has rarely been taught as a topic by FTA, state DOTs, or other technical assistance programs. Therefore, there is little expertise in this subject area among both transit and human service agency professionals.

To enhance acceptance and use of the model, online, self-paced training programs should be developed and offered in conjunction with the manual. Opportunities for traditional classroom training should also be developed, as this subject can be a technically challenging topic. (Note: given the current pandemic, consideration to virtual, trainer-led training should also be considered).

## Add New Functionality to Pricing Module

The addition of a new Medicaid Principle, along with a request from the OMEGA region, will require some expansion in the model, adding functionality not currently embedded in the beta model, but possible when the model is migrated to a web platform.

The ability to compute the least path distance and travel time between a passenger's origin and destination is not possible in the beta model unless a specific set of x- and y-coordinates and a map of the road network and various attributes of that network are available for use in estimating these travel parameters.

This functionality can be added to the web-based model. There are multiple options from obtaining license authority and adding a Google maps API to the website or using a third-party developer that works off Google maps or a comparable platform. As discussed earlier, various existing GIS platforms represent other opportunities to include this functionality.

As noted previously, adding the distance calculator will enable the model to price service based on the least path distance between two points. As Table 6 illustrates, this method

will enable the system to charge sponsoring agencies the same price for the same trip, day-in, day-out. In other pricing strategies, the amount billed to the sponsoring agency may vary for the same trip, depending on passenger loads and overall routing efficiency. However, the task of computing the initial “total least path distance” (necessary for computing the initial fully allocated cost per loaded mile) without historical data may be overwhelming for smaller entities, as this measure is not tied to actual operating performance data typically collected by the operator.

The project consultants recommend that this pricing mechanism be added to the model as some agencies that have existing automated scheduling software can access historic data and capture the estimated least path miles. However, for transit providers without this capacity, it is recommended that other pricing methods be used with the model while this data is collected for a sufficient period to enable the provider to establish trends in passenger travel patterns sufficient to generate accurate least distance path for travel billing rates.

## Profit and Capital Cost of Contracting

### Profit

Based on the advice of the Technical Advisory Group (TAG), the concept of profit for privately-owned NEMT providers is necessary and allowable under adopted cost principles. However, input from State Medicaid Agency representatives expressed the belief that market forces and competition should be permitted to drive profit rates; the model should not be prescriptive in establishing either a range or ceiling on such rates.

It is recommended, therefore, that any solicitation of rates from a for-profit entity

should require submission of fully allocated costs and a separate line item for profit. In this manner, the sponsoring agency (the purchaser of the service) can objectively assess profit margin and determine the reasonableness of this cost quotation/bid.

These figures should then be converted to a unit rate based on a projected number of units (miles, hours, etc.) developed by the sponsoring agency.

## Capital Cost of Contracting

For recipients of FTA financial assistance that contract with a third party to provide transit services, the FTA will assist with the “the capital portion of costs for service provided under contract.” Under this strategy, known as the “Capital Cost of Contracting,” only privately-owned assets are eligible. The FTA recipient may not capitalize any assets (e.g., a vehicle, equipment, or facility) that have any Federal interest or items purchased with state or local government assistance. Similarly, recipients may not capitalize any costs under the contract that were incurred delivering services ineligible for FTA assistance (e.g., charter or school bus service). Recipients may compute capital costs as a fixed percentage of the contract without further justification.

This strategy represents a viable means to stretch local dollars committed to the transit program as certain operating expenses associated with the service contract may be billed at a higher Federal capital participation rate. To use this method, the entity that purchases transportation services from a private entity must first determine the type of contract. For convenience, FTA has defined seven (7) contract types and, for accounting simplicity, established capital participation rates for each type of contract.

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*While the TAG as a whole endorsed the concept of profit as allowable in the cost principles, State Medicaid representatives on the TAG believe that the model should not be prescriptive in either a profit rate range or ceiling.*

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As revenues derived from the use of capital cost of contracting methods would involve FTA financial assistance, other sponsoring agencies would need to ensure that Federal financial assistance is not being used to pay for the same service twice (e.g., capital cost of contracting and vehicle depreciation). This would constitute a violation of the basic concepts of cost allowability detailed in 2 CFR § 200.

Thus, any revenues derived from the FTA practice of capital cost of contracting must be excluded from or backed out of a provider's fully allocated cost.

## Assessment of Commercialization Potential

A Commercialization Readiness Assessment (CRA) was conducted and documented in a separate report for this SBIR project. The purpose of the assessment was for the project consultant and the CRA contractor to identify areas where more information was needed to enhance the company's commercialization strategy.<sup>1</sup>

Based on extensive data provided by the project consultant, the CRA assessment provided a comprehensive examination of two potential markets for use of a cost allocation software that can track different Federal funding sources by trip and funding source reporting requirements:

1. **Managed Care Organizations (MCOs)**  
– Many state Medicaid agencies (SMAs) have transitioned all or part of their Medicaid programs from a fee-for-service model to a managed care model. Under this model, care organizations, typically large insurance companies or medical service providers, agree to provide the range of Medicaid services for a fixed price per member per month. MCOs are

therefore responsible for ensuring the required access to services.

2. Existing technology companies that develop, sell/license, and support automated scheduling and dispatch software – A range of companies have developed software tools to maintain client databases, use actual road networks to efficiently schedule and batch groups of clients requiring demand response transportation services, and provide basic billing functionality. In some cases, these providers have worked directly with SMAs to enable electronic automated billing of NEMT services.

Under this concept, RLS would partner with such organizations to assist in the development and subsequent licensing or sale of the software technology created under the SBIR project.

## Managed Care Organizations

The market assessment identified the use of 38 states that use MCOs to deliver some or all of a state's Medicaid services. Many states contract with more than one MCO, resulting in a total of 283 such contracts in 38 states and the District of Columbia (July 2017 data). Comprised of both publicly-owned companies trading on the stock exchange and nonprofit medical care organizations, the CRA identified that the publicly traded companies all rank in the Forbes top 200 companies in terms of revenues. Based on enrollment data, five of these top companies serve over 26.5 million beneficiaries.

Profiles of these leading MCOs reveal that most have a nationwide focus, although some companies have had more market success in specific regions of the country.

While typically authorized by the SMA to contract directly with NEMT service

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<sup>1</sup> *Cost Allocation Technology for Non-Emergency Medical Transportation: Customized Market Research*, prepared for RLS & Associates, prepared by Dawnbreaker, Rochester, NY (February 2020).

providers, this is not the service delivery model typically used by the MCO. In the vast majority of cases, an MCO will contract with a Medicaid Transportation Broker to handle a range of NEMT functions, including (but not necessarily limited to): identification of NEMT provider organizations, development of contracts and performance standards for NEMT providers, the conduct of quality assurance reviews, provision of call center/trip reservation services, and processing requests for payments from providers. Given this role, the CRA provided details on current market conditions in this industry.

## NEMT Brokers

The CRA identified brokers as follows:

- Logisticare Solutions LLC
- ProHealth Care Inc.
- Mercy Health Medical Transportation LLC
- Molina Healthcare, Inc.
- Express Medical Transporters, Inc.
- Aramark Healthcare Technologies LLC
- Crothall Healthcare Inc.
- Medical Transportation Management (MTM, Inc.)
- Mobile Care Group Inc.
- Medspeed LLC
- WellMed Medical Management Inc.
- American Medical Response, Inc.
- Lyft, Inc.,
- Uber Technologies, Inc
- Once Call Services, Inc.
- Veyo
- Access2Care
- Secure Transportation
- Coordinated Transport Services, Inc.
- Southeastrans
- IntelliRide, a subsidiary of TransDev Services, Inc.
- LeFleur Transportation

The CRA notes that this list is not exhaustive. A profile of some of the major brokers was provided in the report and a more detailed analysis was provided for selected states,

including several states represented on the Technical Advisory Group.

## Existing Scheduling and Dispatch Technology Firms

The CRA identified a range of firms providing scheduling and dispatch software, as follows:

- Routematch
- Ecolane DRT
- Easy Rides
- Transportation Manager
- HASTUS-OnDemand
- TripSpark Paratransit Demand Response
- OrbCAD
- CleverCAD
- Paraplan
- HB Software
- MOBILE-DMS
- Adept
- CTS/TripMaster

Based on publicly available records derived from recent competitive procurements, background information was provided in the CRA report on the markets served by these companies.

## Other Considerations

Although the CRA includes transportation network companies such as Lyft and Uber with the NEMT brokers, the report notes that more recently, the companies have entered into direct contracts with medical care providers. The report states:

*It is important to note that on March 5, 2018, Allscripts and Lyft announced that the two companies have joined forces to create an EHR-integrated desktop application where doctors can arrange free patient transportation. The venture could potentially reach upwards of 7 million people, eliminating the transportation barriers that prevent consistent patient care. Around the same time, Uber also reported “the launch of Uber Health, a new*



*service that will partner with healthcare organizations to provide free rides for patients.<sup>2</sup>*

This suggests that such companies may provide some disruption in the traditional markets for the cost allocation model.

## Market Potential

### Customers

The CRA report concludes that the focus of this product rests as either a stand-alone software package or a plug-in for existing financial modeling and/or scheduling software products. Three distinct markets are identified:

- Funding agencies – The report notes that little research is available on NEMT travel characteristics and that only recently has CMS begun to collect data on total NEMT expenditures. The report concludes that the introduction of cost allocation technology could produce a “more stable marketplace, improved quality of service, and less turnover in the transportation providers willing to provide NEMT.”
- NEMT Service Providers – Although this market segment was not detailed in the report, it is estimated that the number of NEMT service providers is in the thousands. A benefit of this product in this customer segment would be more realistic contract pricing (and likely more stability in the provider marketplace).
- Scheduling and dispatch software companies – While this market is limited in terms of market size, this market segment may generate the most interest in the cost allocation model.

## Market Threats

The CRA recognizes that under a White House proposal, the transportation assurance now codified at 42 CFR §431.53 is proposed for elimination, giving states the right to drop NEMT as a provided service in the state’s Medicaid Plan. The legislative outcome of this proposal is unknown at this time. While it is anticipated that most states would continue to provide NEMT, it should be noted that at least two states, under waiver authority, have already eliminated or severely reduced the scope of NEMT services.

## Commercialization Strategy

A cost allocation model that addresses a range of needs but is positioned within a limited marketplace of unknown size is not recognized as a product that can be developed, marketed, and sold as a stand-alone, for-profit venture. Thus, this is a venture that is best undertaken by a company with related interests and whose economic fortunes are not solely dependent upon the sale of the model as its only product.

It is recommended that a commercial approach involving the licensing of this technology to other market segments, such as transportation brokers, NEMT service providers, and existing scheduling technology companies represent the most logical use of this software tool.

## Development

The concept of this software was developed by RLS & Associates, Inc., Dayton, OH. The company’s primary work objective is assisting local communities, governmental entities, transportation providers, and human service agencies with transportation-related issues. As a result, RLS has developed a nationally recognized reputation within the transportation industry for responding to clients’ individual needs and offering pragmatic, implementable solutions to the critical issues facing today’s transportation systems. RLS prides itself on

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<sup>2</sup> Ibid., page 78.



products that, rather than “sit on a shelf,” have been developed in such a way as to guide and direct transit leaders for years to come. Most of the work developed by this company, however, has been in the public domain.

RLS has a limited role and history in developing commercial products. More recently, the company has developed interactive, online training programs that have expanded to a limited commercial market.<sup>3</sup> Additionally, the company is not a software or technology company and does not have specialized expertise in this area; it will be necessary to partner with a company with these qualifications to develop the cost allocation model as proposed. Anticipating this need, the company has affiliated with one such firm that has the necessary credentials to assist in the development and market delivery of the model.

## Deployment

Given that a CCAM Cost Principle recommends that the output from this model be generated on an annual basis, the most logical and potentially most commercially successful approach would be to distribute the cost allocation model using the SaaS model. Under this concept, potential users would pay an annual subscription fee to access a web-based model. The entity would be responsible for web hosting, maintaining updates to the software, user registration, privacy rights protection, maintaining provider databases, and obtaining industry data to continually improve oversight of quality assurance checks on data entered by NEMT providers. Whether these functions are best undertaken by RLS & Associates, Inc., a new subsidiary firm, or licensed to a technology company is unknown at this time and should be examined in Phase II.

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<sup>3</sup> The company has not had a strategic plan to commercialize these training programs; market demand from the private sector have created these business opportunities.

## Schedule

The roadmap provided in the CRA provides some, but not all, of the milestones that should be established in a Phase II schedule.

### Year 1 – Phase II

- CCAM Partner Review and Feedback
  - Amend model concepts as appropriate based on Federal review results.
- Identify Product Description
  - Determine how the cost accounting methods will be packaged, either as a website, plug-in or a standalone software package.
- Software Development Objectives
  - A feature set should be outlined for integration into the final product.
- Form Marketing and Sales Team
  - It must be decided how the product is to be sold and who will be hired to sell it. A joint venture with an associated channel partner should be explored.
- Rollout Beta Testing
  - The first edition of the software should be tested within a select group of customers.
- Collect Customer Feedback
  - The select group will provide essential feedback to integrate into the final product.

### Year 2 – Phase II

- Explore IP Protection
  - A law firm should explore possible IP protection strategies if the cost accounting method is placed into the public domain.
- Launch Product
  - Depending on the marketing and sales strategy, a clear product launch date should be set and executed upon once software development is completed.
- Expand Sales and Marketing

- Depending on market opportunity, sales and marketing should be scaled to address additional customers and locations.
- Continue to Collect Feedback and Explore Adjacent Markets
  - As the product is sold and used by a range of customers the company should continue to collect feedback and iterate to improve upon future versions.

## Other Options

Another potential outcome for this product is to keep the results from this research in

the public domain. It is possible that a CCAM member agency would be willing to provide oversight of a cost allocation model and may be amenable to hosting this product as a government-provided application. No such formal expression of interest has been made at this time; however, this should be recognized as a potential action.

If this option is pursued, further development of the cost allocation model as described herein may not be consistent with SBIR objectives.

# Appendix A: Coordinating Council on Access and Mobility Cost-Sharing Policy Statement

June 2020

## Introduction

The Coordinating Council on Access and Mobility (CCAM) was established in 2004 by Executive Order 13330 in order to improve the accessibility, availability, and efficiency of transportation services for people with disabilities, older adults, and individuals of low income. The Secretary of Transportation chairs the CCAM and the CCAM's membership consists of the secretaries of Agriculture (USDA), Education (ED), Health and Human Services (HHS), Housing and Urban Development (HUD), the Interior (DOI), Labor (DOL), Transportation (DOT), and Veterans Affairs (VA), as well as the Attorney General (DOJ), the Chairperson of the National Council on Disability (NCD), and the Commissioner of the Social Security Administration (SSA).

The Executive Order directs CCAM members to work together to provide the most appropriate, cost-effective transportation services within existing resources, and reduce duplication to make funds available for more services. Fully coordinating transportation through vehicle and ride sharing for Medicaid, aging, and other human service transportation trips can result in a 10 percent increase in passengers per revenue hour, which can create significant cost savings for Federal, State, and local agencies.<sup>1</sup>

This CCAM Cost-Sharing Policy Statement provides key transportation cost-sharing information to encourage greater State and local cost sharing. This includes principles specific to the provision of Medicaid nonemergency medical transportation (NEMT) and the Veterans Health Administration's (VHA) Highly Rural Transportation Grants (HRTG) program, which provides NEMT for Veterans living in highly rural areas.

## Policy Statement

CCAM agencies agree that Federal grantees should coordinate their transportation resources where possible, including sharing costs for mutually beneficial transportation services, in order to maximize the availability and efficiency of transportation services.

Cost-sharing arrangements include both **vehicle and ride sharing** as well as **Federal fund braiding for local match** across Federal programs, which are discussed in more detail below.

## Vehicle and Ride Sharing

**Vehicle and ride sharing** occur when a single shared vehicle transports beneficiaries of multiple Federal programs. Vehicle sharing may occur with shared rides, when multiple Federal programs' beneficiaries are on the same vehicle simultaneously, or with individual rides, when a vehicle

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<sup>1</sup> "Uncover the Impacts of Coordinating Human Services Transportation—One Study, Two Locations, and Three What-If Coordination Scenarios." Charlotte Burnier, et al. Presented at 93rd Annual Meeting of the Transportation Research Board. 2014.

transports a single beneficiary at a time. Participating partners pay for the equitable proportion of shared costs for transporting its beneficiaries.

Before local partners begin to share vehicles and rides, they should first establish a local cost-allocation agreement that details how partner organizations will allocate shared costs. To establish this agreement, local partners may wish to consult the Federal Transit Administration's Cost Allocation Handbook, which provides high-level guidance on determining and allocating shared costs. Local partners should incorporate the general and program-specific principles below, as applicable. Local partners should also consult and adhere to any Federal, State, or local laws and regulations related to vehicle and ride sharing and cost allocation.

*General Principles: These principles apply to any transportation cost-allocation agreement.*

1. Costs must be allocated based on the benefit received by each local partner and may not be allocated based on how much funding individual partners have available.
2. Each local partner must pay the amount equal to its allocable share of the costs.
3. No local partner may pay for a cost that does not benefit its program as determined in the cost-allocation process.
4. No program may pay for a cost that is unallowable under its governing statutes and regulations.
5. The local cost-allocation agreement must be updated regularly (e.g., annually) to account for changes in expenses or frequency of use.
6. If shared activities result in program income, then the program income should be allocated to partners in the same proportion as shared costs.
7. Local cost-allocation agreements should include how rates address the cost of a required attendant for a passenger.

*Medicaid Principles: These principles apply to any transportation cost-allocation agreement that includes a local partner using Medicaid funds on transportation.*

1. Medicaid will only pay for transportation to and from covered medical care.
2. Medicaid is the payer of last resort, and will only pay for transportation if there are no other legally liable third payers. There are some exceptions to this rule.<sup>2</sup>
3. Medicaid will not pay directly for unloaded miles (miles driven when the Medicaid beneficiary is not in the vehicle) or for missed trips. However, Medicaid may pay indirectly for these costs and other indirect costs, such as vehicle depreciation, when they are built into the rate methodology for completed trips.
4. Medicaid will not pay any additional costs that arise from sharing rides with local partners' beneficiaries, such as costs associated with longer trip times.

*HRTG Principles: These principles apply to any transportation cost-allocation agreement that includes a local partner using HRTG funds.*

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<sup>2</sup> For exceptions to Medicaid's payer of last resort rule, see page 20 of the "Coordination of Benefits and Third Party Liability (COB/TPL) In Medicaid" handbook (<https://www.medicaid.gov/sites/default/files/2019-12/training-and-handbook.pdf>). In addition to the programs listed in the handbook, the World Trade Center Health Program and the Title IV-E Prevention Services program are also exceptions to Medicaid's payer of last resort rule.

1. HRTG will pay for the transport of Veterans who live in highly rural areas (county or counties with less than seven persons per square mile) to and from VA medical facilities or VA-authorized medical facilities.
2. Before participating in vehicle or ride sharing with local partners, HRTG grantees should consult the VHA.
3. Vehicles purchased with HRTG funds may be used for vehicle and ride sharing to transport local partners' beneficiaries within or outside highly rural areas. Costs to transport local partners' beneficiaries must be allocated to those local partners.
4. The VHA encourages HRTG grantees to avoid potential public misperception that passengers who are not highly rural Veterans are being served by HRTG funds. To support this goal, HRTG grantees using HRTG-branded and Veteran-branded vehicles to transport local partners' beneficiaries may consider covering HRTG-specific and Veteran-specific vehicle markings or using unbranded vehicles when serving local partners' beneficiaries.

## Federal Fund Braiding for Local Match

Federal fund braiding for local match, also referred to as Federal fund braiding, is when Federal funds from one grant program are used to fulfil the local match requirement of another Federal grant. This provides Federal grantees the opportunity to share costs of a transportation project across multiple Federal programs. All statutory and regulatory requirements, such as eligibility and reporting, must be met for both programs.

Federal fund braiding arrangements can especially benefit communities that are otherwise unable to provide match funds for Federal transportation projects. Federal fund braiding also encourages greater coordination at the local level due to the additional reporting requirements that grantees must meet when receiving funds from two Federal sources.

Federal fund braiding is not available between all Federal programs that may fund transportation. To determine if Federal fund braiding is a possibility, potential grantees should consult the CCAM's Federal Fund Braiding Guide. The Federal Fund Braiding Guide discusses whether Federal fund braiding is allowable for 67 Federal programs that may fund transportation and provides additional information on grantee eligibility requirements.

Potential grantees looking to find State or local partners to coordinate and braid funds with may also consult the CCAM Program Inventory, which identifies 130 Federal programs that may provide funding for human service transportation. Grantees of these Federal programs may be potential future partners for transportation projects funded via Federal fund braiding.

## List of Resources

1. **"Appendix A: Cost Allocation Handbook." Federal Transit Administration. 2016.**  
[https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/ntd/56681/uniform-system-accounts-usoa-effective-fy18\\_o.pdf](https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/ntd/56681/uniform-system-accounts-usoa-effective-fy18_o.pdf)  
*The Federal Transit Administration's Cost Allocation Handbook provides high-level guidance for Federal grantees to assign costs when participating in vehicle and ride sharing. The Cost Allocation Handbook begins on page A-1 of this document.*
2. **"CCAM Program Inventory." Coordinating Council on Access and Mobility. 2019.**  
<https://www.transit.dot.gov/regulations-and-guidance/ccam/about/ccam-program-inventory>  
*The CCAM Program Inventory identifies 130 Federal programs that may provide funding for*

*human service transportation for people with disabilities, older adults, and/or individuals of low income.*

3. **“Federal Fund Braiding Guide.” Coordinating Council on Access and Mobility. 2020.**  
<https://www.transit.dot.gov/regulations-and-programs/ccam/about/coordinating-council-access-and-mobility-ccam-federal-fund>

*The Federal Fund Braiding Guide provides information for Federal employees and potential grantees on whether CCAM agency programs may participate in “Federal fund braiding,” or the use of Federal program funds to fulfil the match requirement of other Federal programs on eligible transportation projects.*



# Appendix B: Technical Advisory Group Conference Call Minutes

SBIR CCAM Technical Advisory Group

April 20, 2020

TAG Conference Call #1

## In Attendance

**Danielle Nelson**, CCAM Lead, FTA Office Of Program Management, Rural and Targeted Programs

**Kenneth Blacks**, Contracting Officer, FTA Office of Research, Demonstration, and Innovation

**Kirsten Wiard-Bauer**, Senior Consultant, Brighthouse (consultants to FTA)

**Timothy Bradshaw**, Vermont Agency of Transportation (VTrans), Public Transit Program Coordinator

**Chuck Dyer**, Administrator, Ohio Department of Transportation, Office of Transit

**Don Chartock**, Assistant Director, Washington State Department of Transportation, Public Transportation Division

**Todd Slettvet**, Medicaid Administrative Match Section Leader, Washington State Healthcare Authority

**Jeremy Johnson-Miller**, Transit Programs Administrator, Iowa Department of Transportation

**Richard Garrity**, Senior Associate, RLS & Associates, Inc.

**Amy Rast**, Associate, RLS & Associates, Inc.

## Introductions

Danielle Nelson provided a brief background on the Coordinating Council on Access and Mobility Management (CCAM). She indicated that the genesis for this project is based in the Fixing America's Surface Transportation (FAST) Act, which required FTA to develop a cost-sharing policy, specifically for those entities that fund non-emergency medical transportation (NEMT), that does not violate applicable Federal laws.

Kenneth Blacks spoke on the role of the FTA Office of Research partnering with CCAM to solve the longstanding challenge of cost allocation in coordinated transportation service delivery with the overall goal of improving public transit and transportation for all. He thanked RLS for pushing this project forward, and he is looking forward to seeing the project's recommendations. In the spirit of SBIR, he welcomed any innovative approaches in both this topic and for future SBIR projects.

## Project Background

Rich Garrity provided a summary of the Scope of Services on behalf of the Office of Research: Literature Review, Establishment of a Transit Advisory Group (TAG) for input and feedback for the

project as it develops. He indicated that because Medicaid (CMS) differs by state, State level input is critical to steer the project.

Mr. Garrity noted that cost allocation/cost-sharing is a complex and persistent problem dating back almost 40 years. There are currently approximately 130 different siloed Federal programs supporting transportation, each with its own funding/accounting parameters which further complicates the issue.

CCAM has previously reported in its 2005 Report to the President that lack of an appropriate costing model is a barrier to coordinated transportation. This project aims to address this longstanding problem.

### **States Roundtable**

Introductions of state personnel on the call were held, with each state given the opportunity to discuss current public transit/NEMT coordination efforts and obstacles that exist within the state to better coordinate service.

**Vermont:** Tim Bradshaw indicated that RLS is currently working with VTrans toward a Statewide Cost Allocation model for coordinated trips. The state currently directs considerable efforts to specialized transportation and NEMT is an important component of the statewide network. Mr. Bradshaw noted that Vermont currently uses rather simplistic allocation strategies and recognizes that other methods may provide more exact allocation of costs to sponsor agencies.

**Ohio:** Chuck Dyer indicated that he has reports in his office from 1972 relative to coordination and is fully aware of the longstanding barriers that have existed with state and local level coordination efforts. Mr. Dyer expressed encouragement at seeing FTA's leadership on this topic. He cited a 2015 statewide transit needs study which recommends increased coordination, indicating that ODOT began coordinating and found that a top-down approach was most successful. ODOT has worked with the Ohio Department of Medicaid to tackle coordination and to develop a standard set of operating policies that all state agencies now use in their administration of human services transportation. While a change in gubernatorial administrations has resulted in some loss of momentum in statewide efforts, ODOT was continuing to pursue a regionalization strategy that holds much promise not only for increasing mobility but also for improving the efficiency of specialized transportation.

**Washington State:** Don Chartock indicated that WSDOT uses a regional broker model (which Washington state feels is superior to a statewide broker model) and has created some localized successes, but efforts to institutionalize these regional successes on a statewide basis have encountered difficulties. A statewide task force, for example, developed a cost-sharing plan that would meet statewide needs, but there were objections at the Federal level to the proposed approach. WSDOT would appreciate any efforts from the Federal perspective that will facilitate their efforts.

Todd Slettvet represents Washington's Medicaid program and indicated that the state uses six regional NEMT brokers. Brokers are responsible for providing bus passes for public transit but they are looking for a better reimbursement model that would more accurately reflect the actual cost of service. Mr. Slettvet noted that based on a recent demographic analysis of NEMT users, the highest percentage of trips are for individuals with behavioral issues, chemical dependencies, and those with mental health disorders. Dialysis transportation is also a critical need in the system.

**Iowa:** Jeremy Johnson-Miller indicated that in 1976 Iowa passed legislation mandating the coordination of transit services. Despite this historic legislation, Mr. Johnson-Miller stated that coordination is not happening as intended. While a statewide transportation council meets several times a year to improve transportation for clients, barriers, such as the constant turnover with providers and brokers, and delays caused by loss of institutional knowledge, have caused numerous problems. Current Medicaid reimbursement policies have proven problematic for the state's public transportation providers.

### **Meeting Handout**

All participants were provided a draft of the CCAM "Cost Sharing Policy" with the agenda in advance of the meeting. Ms. Nelson explained that the CCAM has been meeting monthly with Medicaid and Veterans Affairs on a cost-sharing policy, with a deadline for submittal of a report to Congress and the President by September 30, 2020. While work remains on clarifications to the CMS policy position, Veteran Affairs has submitted its elements for the policy. Thus, the document submitted to the TAG remains a draft.

Ms. Nelson noted key policy highlights:

Allocation of transportation costs must be based on the benefits received.

- Medicaid's position as the "payer of last resort" must be respected, but some useful clarifications have been provided by CMS.
- Medicaid will only pay for transportation to and from medical appointments; unloaded miles (e.g., deadhead), no-shows, etc. are not part of CMS' cost principles.

CMS has recognized, however, that an NEMT provider does incur costs when deadheading, responding to no-show trips, etc. and is open to paying for such costs via an organization's indirect cost structure or some other means.

Ms. Nelson welcomed any comments from TAG members. Direct any comments on the draft CCAM policy to her at [CCAM@dot.gov](mailto:CCAM@dot.gov) or [Danielle.Nelson@dot.gov](mailto:Danielle.Nelson@dot.gov).

Mr. Dyer, Ohio DOT, indicated that he is meeting with a multi-agency state level group next week and, with FTA's permission, will solicit comments from his peer state officials. Ms. Nelson indicated that they would like the best possible draft on this tight deadline and would welcome additional input/feedback. If necessary, feedback can be submitted anonymously.

Ms. Nelson, in response to a question about Federal matching requirements, indicated that the CCAM has previously developed a "braiding" guide that examines which Federal program funds can be used to match other Federal programs. A copy of that draft paper is attached.

### **Next Steps**

Working toward a project deadline of July 2020, Mr. Garrity proposed that the next TAG conference call occur on May 11, 2020, at 1:00 PM EDT. The TAG requested that the conference call invite be sent as early as possible to ensure the call gets on member calendars.

## **SBIR CCAM Technical Advisory Group**

**May 11, 2020**

### **TAG Conference Call #2**

#### **In Attendance**

**MaryAnn Stock**, FTA, Chief, Rural and Targeted Programs

**Danielle Nelson**, CCAM Lead, FTA Office Of Program Management, Rural and Targeted Programs

**Kirsten Wiard-Bauer**, Senior Consultant, Brighthouse (consultants to FTA)

**Timothy Bradshaw**, Vermont Agency of Transportation (VTrans), Public Transit Program Coordinator

**Chuck Dyer**, Administrator, Ohio Department of Transportation, Office of Transit,

**Don Chartock**, Assistant Director, Washington State Department of Transportation, Public Transportation Division

**Jacob Brett**, Transportation Planner, Washington State Department of Transportation, Coordinated Human Service Planning

**Tracy Graves**, Medical Assistance Program Specialist, Washington State Health Care Authority, Non-Emergency Medical Transportation Program

**Todd Slettvet**, Medicaid Administrative Match Section Leader, Washington State Healthcare Authority

**Jeremy Johnson-Miller**, Transit Programs Administrator, Iowa Department of Transportation

**David Darm**, Executive Director, Florida Commission for the Transportation Disadvantaged

**Robbie Sarles**, President, RLS & Associates, Inc.

**Richard Garrity**, Senior Associate, RLS & Associates, Inc.

**Julie Schafer**, Senior Associate, RLS & Associates, Inc.

**Christie Campoll**, Associate, RLS & Associates, Inc.

**Amy Rast**, Associate, RLS & Associates, Inc.

#### **Introductions**

Introductions of Federal agency staff, state staff, and contract staff members kicked off the second TAG conference call.

#### **Presentation**

Mr. Rich Garrity provided a brief overview of existing cost allocation methodologies. In 1987, Price Waterhouse conducted Federal Transit Administration (FTA)-sponsored groundbreaking research and created a methodology that enabled public transit agencies to compute fully allocated costs. This permitted fair comparisons of public transportation service delivery options to similar private

service delivery options. This model was the foundation for all subsequent fully allocated cost assessments.

Mr. Garrity went on to explain that in the 1980s this three-variable allocation model (revenue vehicle hours, revenue vehicle miles, and peak period service hours) did not work well for the demand response mode of service, because of how fixed costs were allocated using a vehicle-based parameter.

In 1992, the American Association of State Highway and Transportation Officials' (AASHTO) subsidiary, the Multi-State Transit Technical Assistance Program (MTAP), working on a financial management manual, retained a consulting group which included Price-Waterhouse. The resulting manual described a two-variable cost allocation process that worked more effectively for demand response operations than the original 1987 research.

With the advent of Americans With Disabilities (ADA), transit systems that historically may have operated a single mode of service were now obligated to provide multiple modes of service: fixed route service and complementary paratransit service. Neither version of the Price-Waterhouse models worked well in multi-modal environments.

In 2009 the Transit Cooperative Research Program (TCRP), under the National Academies of Sciences, Engineering, and Medicine, issued TCRP report #144, *Sharing the Cost of Human Services Transportation*. The report, which included a CD-ROM with a cost allocation model, built upon the two-variable cost allocation model from AASHTO's MTAP effort, but with the resolution of the multimodal service issue. An Excel version of the model was developed as a companion deliverable of the project.

The two-variable model developed in TCRP Report #144 was aimed at human services transportation, was very basic, and did not recognize elements typically required under FTA-funded programs.

Most recently, the National Rural Transportation Assistance Program (National RTAP) created a fairly sophisticated "cost calculator" designed as a cost allocation application in MS Excel and MS Access formats. This cost calculator built upon the two-variable model framework but was tailored toward FTA recipients. It solves many of the National Transit Database (NTD) reporting and grant driven cost allocation issues by accounting for multimodal services, grant program differences, and NTD reporting. To date, the National RTAP model is the most sophisticated model available, but it is FTA-centric. Moreover, the NTD is foreign to many non-emergency medical transportation (NEMT) service providers.

In wrapping up the discussion of existing models, Mr. Garrity noted:

- Unlike indirect cost allocation, where plans are submitted to a cognizant agency, no such structure exists for service-based cost allocation.
- None of the existing models were designed specifically for NEMT.
- None of the models have controls on financial or service inputs; if a user wanted to distort the outcome of the model, inflated/deflated inputs could be used.
- There is no common financial framework for financial data input, giving rise to potential inaccuracies if different definitions exist for various objects of expenditure or object class.

He then addressed the proposed concepts for this project:

- The proposed model should be a web-based model, with a series of successive input screens that permit entry of identification information, service data, and financial data.

- The model should generate an output report detailing fully allocated costs and costs expressed in various units of service (e.g., cost/per hour, cost per mile).

Mr. Garrity then presented some options being considered to address various model building challenges.

- Model integrity
  - Include required certification of costs inputs, with 18 USC § 1001 sanctions
  - Subject user cost data to various validity tests (similar to FTA review of NTD data)
- Cost Principles
  - Build on CCAM draft
  - Adopt Office of Management and Budget (OMB) Uniform Guidance; refer to the Federal Acquisition Regulation (FAR) as OMB does not address
- Cost Allowability
  - Use standardized format for cost input, with definitions
  - Expand on NTD
- Specific Items of Cost
  - FAR limitations on executive compensation
  - OMB guidance on allowable fringe benefits
  - Disallow depreciation for public and nonprofit sectors
  - Create standardized approach to private sector depreciation
  - No policies on profit

### States Roundtable

**Vermont:** Mr. Timothy Bradshaw indicated that Mr. Garrity gave a great presentation and noted that VTTrans is currently working on a cost allocation template for Vermont, migrating financial data into a chart of accounts. They are working with the budget season, starting at the beginning of the year and projecting costs for the upcoming year. The State of Vermont uses a brokerage model for NEMT delivery, wherein the Vermont Public Transportation Association (VPTA), comprised of most Vermont public transit providers, acts as the broker and uses a capitated rate of reimbursement. The capitated rate does not accurately compensate transit providers for actual trip costs, thus a tool that provides more accurate assessments of the true, fully allocated costs of NEMT would be welcome.

**California:** There were no representatives from California who were on the call.

**Ohio:** Mr. Chuck Dyer asked how to mitigate concerns of for-profit service providers, with specific concerns about the protection of proprietary data from private, for-profit service providers. Mr. Dyer also asked what Federal entity would be responsible for oversight and enforcement. Ms. Nelson interjected that, at this point, a draft proposal has been offered (but not yet adopted) that proposed to assign Federal oversight responsibility for a cost-sharing model to OMB.

Mr. Dyer expressed support for the concept of validity tests but cautioned that such tests must be built on regional data, as costs may vary from one region of the country to another.

**Washington:** Mr. Don Chartock applauded the consultant's efforts in recognizing fraud, as this has been an unspoken but most important issue. He further supported disallowing depreciation as unnecessarily complicating computation and on-going oversight of the model.

Mr. Todd Slettvat indicated that he supported the general approach being advocated under the project. He elaborated that his agency has avoided some issues found in other states by contracting with NEMT brokers and including a separate administration rate; this tends to eliminate issues of



brokers forcing NEMT providers to accept lower contract rates to enhance the broker's bottom line. He believed this contracting strategy has worked in Washington State.

**Iowa:** Mr. Jeremy Johnson-Miller indicated that he found the discussion highly enlightening and is interested in examining the various brokerage models that have been used in other states, expressing particular interest in the Vermont model. Mr. Garrity pointed out another TCRP project looked at that very issue and developed a classification scheme of state NEMT models (See TCRP Report #202, "Handbook for Examining the Effects of Non-Emergency Medical Transportation Brokerages on Transportation Coordination," 2018).

**Florida:** Mr. David Darm indicated that, like Iowa, Florida has migrated from a model where his commission used to have responsibility for coordinating NEMT with other services but, over time, a managed care model was adopted. The Managed Care Organizations (MCOs) all use brokers.

### **Next Steps**

Ms. Danielle Nelson volunteered the schedule the CCAM was working under, with a Congressional mandate to complete work and present findings by the end of this Federal fiscal year. She reiterated that CMS is a partner in the effort and that the CCAM is keeping them up to speed with this project.

Ms. MaryAnn Stock reminded TAG members that the report and all recommendations are still in draft form; the states should keep those facts in mind as they discuss work under this project in their respective states.

Mr. Garrity indicated that the next steps include:

1. Developing proof of concept and a demonstration on the next call of how the proposed model will work.
2. Assessment of commercialization potential of the Cost Allocation Model.
3. A short poll was sent to the Technical Advisory Group. The poll is designed to collect more detailed feedback from TAG members on the various concepts presented during the call. Mr. Garrity asked that members respond by 5:00 P.M., Monday, May 18, 2020.

Mr. Garrity noted that no date has been set for the next call, but will be scheduled for June. A notice will be set out at least two weeks in advance. Address any questions to Mr. Garrity at [rgarrity@rlsandassoc.com](mailto:rgarrity@rlsandassoc.com).

## **SBIR CCAM Technical Advisory Group**

**June 29, 2020**

### **TAG Conference Call #4**

#### **In Attendance**

**Marianne Stock**, FTA, Chief, Rural and Targeted Programs

**Danielle Nelson**, CCAM Lead, FTA Office Of Program Management, Rural and Targeted Programs

**Kirsten Wiard-Bauer**, Senior Consultant, Brighthouse (consultants to FTA)

**Timothy Bradshaw**, Vermont Agency of Transportation (VTrans), Public Transit Program Coordinator

**Chuck Dyer**, Administrator, Ohio Department of Transportation, Office of Transit,

**Rafiat Eshett** – OHIO Dept of Medicaid

**Don Chartock**, Assistant Director, Washington State Department of Transportation, Public Transportation Division

**Jacob Brett**, Transportation Planner, Washington State Department of Transportation, Coordinated Human Service Planning

**Tracy Graves**, Medical Assistance Program Specialist, Washington State Health Care Authority, Non-Emergency Medical Transportation Program

**Todd Slettvet**, Manager, Community Services, HCA, Washington State Healthcare Authority

**Jeremy Johnson-Miller**, Transit Programs Administrator, Iowa Department of Transportation

**Richard Garrity**, Senior Associate, RLS & Associates, Inc.

**Julie Schafer**, Senior Associate, RLS & Associates, Inc.

**Amy Rast**, Associate, RLS & Associates, Inc.

#### **Introductions and Presentation**

Mr. Rich Garrity provided a brief overview of the beta cost allocation model for demonstration purposes, opening the door for more commercial firms to use it.

Mr. Garrity explained the data entry steps of the model (Steps 1-5) capturing organizational, service, financial, and fleet information on the provider.

Steps 6-7 were included for private operators only to address depreciation recovery in vehicles used for NEMT service delivery. The model computes fully allocated cost for any service. Once this is calculated, the fully allocated costs can be converted to various pricing formats, including cost per passenger, cost per mile, cost per passenger-mile, or cost per hour.

## States Roundtable

**Vermont:** Mr. Timothy Bradshaw indicated that the model is excellent and has a lot of consistency with Vermont's Cost Allocation Model. He wondered if a web-based application would be a good option for Vermont as well.

**California:** There were no comments from California.

**Ohio:** Mr. Rafiat indicated that he appreciates that the model and web portal will have more integrity than current processes. Mr. Chuck Dyer indicated that he is also excited about the web-based model, which he believes will provide more consistency across a region by using the same contract template for transportation costs.

Ms. Julie Schafer, who is working with Ohio's OMEGA region, provided input from a provider perspective, saying that cost allocation has different meanings to different entities. This model may bring consistency to the terminology.

**Washington State:** Mr. Todd Slettvet indicated that he is struggling with how to use this model in his area for HCA's service model. He is intrigued and interested in exploring the implementation. Mr. Don Chartock thanked RLS for bringing this concept forward. He provided some clarity in the use of various public transit terms discussed during the call.

Mr. Slettvet inquired whether this model will be used for cost allocation with other Federal agencies.

**Iowa:** There were no comments from Iowa.

**Florida:** There were no comments from Florida.

**FTA:** Ms. Marianne Stock discussed the role of CCAM in promoting the use of this model across the CCAM community. She indicated that the cost-sharing policy has been vetted through all other agencies and is in the final stages of approval. From an overarching policy perspective, buy-in has been obtained from CCAM agencies. One recommendation for promoting the model was to have each CCAM agency have a designated "chief mobility officer."

Ms. Danielle Nelson indicated that Congressional staff has asked if the recommendation will be submitted on time (CCAM has a September 30, 2020 deadline). She indicated that the CCAM report will be submitted on schedule. The final report and recommendations are to be presented in webinar format in October. Ms. Nelson also indicated that CMS is working on updating the [Coordination of Benefits \(COB\) & Third Party Liability in Medicaid Handbook](#) published in 2016 and that CMS wants the updated COB handbook linked in the Cost-Sharing Policy Statement

## Next Steps

Mr. Garrity indicated that the next steps include:

1. A document will be put together to describes how the model works.
2. An assessment of the commercialization potential of the Cost Allocation Model will be conducted.
3. Reports will be submitted to the SBIR in July 2020.
4. Phase II will be proposed, which includes the development of the web-based allocation model. This is due in October of 2020.

5. Phase I of this project is virtually complete, and RLS thanked the FTA and the Technical Advisory Group members for their participation in Phase I of this project.

Comments are requested on Cost Principles White Paper by July 8th.

Please address any questions to Mr. Garrity at [rgarrity@rlsandassoc.com](mailto:rgarrity@rlsandassoc.com)



