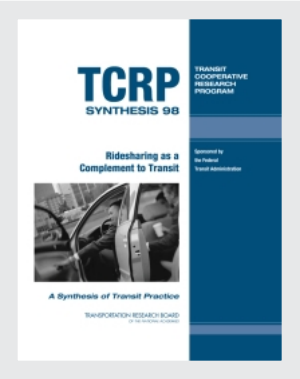

Ridesharing as a Complement to Transit

DETAILS

62 pages | | PAPERBACK
ISBN 978-0-309-22353-9 | DOI 10.17226/14655

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TRANSIT COOPERATIVE RESEARCH PROGRAM

TCRP SYNTHESIS 98

Ridesharing as a Complement to Transit

A Synthesis of Transit Practice

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Research Sponsored by the Federal Transit Administration in Cooperation with
the Transit Development Corporation

TRANSPORTATION RESEARCH BOARD

WASHINGTON, D.C.
2012
www.TRB.org

TRANSIT COOPERATIVE RESEARCH PROGRAM

The nation's growth and the need to meet mobility, environmental, and energy objectives place demands on public transit systems. Current systems, some of which are old and in need of upgrading, must expand service area, increase service frequency, and improve efficiency to serve these demands. Research is necessary to solve operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the transit industry. The Transit Cooperative Research Program (TCRP) serves as one of the principal means by which the transit industry can develop innovative near-term solutions to meet demands placed on it.

The need for TCRP was originally identified in *TRB Special Report 213—Research for Public Transit: New Directions,* published in 1987 and based on a study sponsored by the Federal Transit Administration (FTA). A report by the American Public Transportation Association (APTA), *Transportation 2000*, also recognized the need for local, problem-solving research. TCRP, modeled after the longstanding and successful National Cooperative Highway Research Program, undertakes research and other technical activities in response to the needs of transit service providers. The scope of TCRP includes a variety of transit research fields including planning, service configuration, equipment, facilities, operations, human resources, maintenance, policy, and administrative practices.

TCRP was established under FTA sponsorship in July 1992. Proposed by the U.S. Department of Transportation, TCRP was authorized as part of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). On May 13, 1992, a memorandum agreement outlining TCRP operating procedures was executed by the three cooperating organizations: FTA, the National Academy of Sciences, acting through the Transportation Research Board (TRB); and the Transit Development Corporation, Inc. (TDC), a nonprofit educational and research organization established by APTA. TDC is responsible for forming the independent governing board, designated as the TCRP Oversight and Project Selection (TOPS) Committee.

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The TCRP provides a forum where transit agencies can cooperatively address common operational problems. The TCRP results support and complement other ongoing transit research and training programs.

TCRP SYNTHESIS 98

Project J-7, Topic SB-19
ISSN 1073-4880
ISBN 978-0-309-22353-9
Library of Congress Control Number 2012032132

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TRANSIT COOPERATIVE RESEARCH PROGRAM

are available from:

Transportation Research Board
Business Office
500 Fifth Street, NW
Washington, DC 20001

and can be ordered through the Internet at
http://www.national-academies.org/trb/bookstore

Printed in the United States of America

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FOREWORD

Transit administrators, engineers, and researchers often face problems for which information already exists, either in documented form or as undocumented experience and practice. This information may be fragmented, scattered, and unevaluated. As a consequence, full knowledge of what has been learned about a problem may not be brought to bear on its solution. Costly research findings may go unused, valuable experience may be overlooked, and due consideration may not be given to recommended practices for solving or alleviating the problem.

There is information on nearly every subject of concern to the transit industry. Much of it derives from research or from the work of practitioners faced with problems in their day-to-day work. To provide a systematic means for assembling and evaluating such useful information and to make it available to the entire transit community, the Transit Cooperative Research Program Oversight and Project Selection (TOPS) Committee authorized the Transportation Research Board to undertake a continuing study. This study, TCRP Project J-7, "Synthesis of Information Related to Transit Problems," searches out and synthesizes useful knowledge from all available sources and prepares concise, documented reports on specific topics. Reports from this endeavor constitute a TCRP report series, *Synthesis of Transit Practice*.

This synthesis series reports on current knowledge and practice, in a compact format, without the detailed directions usually found in handbooks or design manuals. Each report in the series provides a compendium of the best knowledge available on those measures found to be the most successful in resolving specific problems.

PREFACE

By Donna L. Vlasak
Senior Program Officer
Transportation Research Board

The purpose of the synthesis was to report the state of the practice, as well as to aid transit agencies and other entities in deciding how to enhance ridesharing and public transit. Key results show that closing gaps and penetrating difficult to serve areas are the top reasons that transit agencies integrate ridesharing into public transit; however, the agencies involved in this effort remain modest in number.

A review of the relevant literature was conducted for this effort. Although much has been written about ridesharing, only a few documents appear to discuss the public transit and ridesharing linkage. As of July 2010, there were approximately 384 ridematching programs in the United States, but only 32 operated by public transit agencies.

A selected survey of public transit agencies of varying sizes and serving different areas, such as regions, single counties, and entire states, as well as non-transit agencies linking ridesharing and public transit, yielded an 84% response rate (41 of 49). Brief agency profiles, achieved through interviews, highlight successful or innovative approaches offered at ten transit providers: Pace in Illinois; King County Metro, the state of Washington legislature, and the Washington State Department of Transportation and Avego Corporation pilot program in Washington State; Des Moines Area Rapid Transit in Iowa; Kings County Area Public Transit Agency, Metropolitan Transportation Commission, and Bay Area Rapid Transit in California; Space Coast Area Transit in Florida; and Potomac and Rappahannock Transportation Commission in Virginia.

Gail Murray and Mark E. Chase, Nelson\Nygaard Consulting Associates, Inc., collected and synthesized the information and wrote the report, under the guidance of a panel of experts in the subject area. The members of the topic panel are acknowledged on the preceding page. This synthesis is an immediately useful document that records the practices that were acceptable within the limitations of the knowledge available at the time of its preparation. As progress in research and practice continues, new knowledge will be added to that now at hand.

CONTENTS

Note: Many of the photographs, figures, and tables in this report have been converted from color to grayscale for printing. The electronic version of the report (posted on the Web at www.trb.org) retains the color versions.

RIDESHARING AS A COMPLEMENT TO TRANSIT

SUMMARY

Closing gaps in service and penetrating difficult to serve areas are the top reasons that public transit agencies use ridesharing to complement their services. Despite these important reasons for integrating ridesharing into transit services, only a modest number of public transit agencies is involved in ridesharing. These are key conclusions from this synthesis, *Ridesharing as a Complement to Transit.*

The purpose of the synthesis is to report the state of the practice as well as to assist transit agencies and other entities in deciding how to enhance ridesharing and public transit coordination. The review integrated three methods of collecting data. First, a review of relevant literature was conducted. Second, an original web-based survey was sent to a sample of agencies based on size and geography. The sample was gleaned from the literature search and knowledge of the field by both the consultants and the technical panelists overseeing the study. Survey results represent 28 public transit agencies and 13 nontransit agencies, for an 83.7% response rate. Finally, brief agency profiles were developed based on interviews with survey respondents or others identified in the literature search.

Although much has been written about ridesharing, the literature review produced only a few documents discussing the linkage between public transit and ridesharing. Twenty-six documents were reviewed, but most were not specifically about the nexus between the two travel modes. As of July 2010, there were approximately 384 ride-matching programs in the United States, with 32 of these programs operated by public transit agencies, according to the literature review. This evidence supports the finding that, although ridesharing has been a common travel mode for decades, it is still not well-integrated with public transit.

Despite the small percentage of public transit agencies that have embraced ridesharing, the agency profiles tell a number of positive stories. Chapters three through six each contain agency profiles that highlight successful or innovative approaches to the synthesis topic. Agencies profiled are:

- Pace, Illinois—vanpool feeders from Metra train stations
- King County Metro Transit, Washington—ridesharing integrated into the transit agency's services
- Des Moines Area Regional Transit Agency (DART), Iowa—vanpool miles used to maximize transit revenue
- Kings County Area Public Transit Agency (KCAPTA), California—vanpools for farm workers
- State of Washington—state legislation supporting ridesharing
- Metropolitan Transportation Commission, California—Metropolitan planning organization funding a nine-county ridesharing program
- Space Coast Area Transit (SCAT), Florida—communication through social media
- Washington State Department of Transportation (WSDOT) and Avego Corporation—dynamic ridesharing pilot program
- San Francisco Bay Area Rapid Transit District (BART), California—controls on casual carpooling

- Potomac and Rappahannock Transportation Commission (PRTC), Virginia—promotion of casual carpooling.

Several innovations described in these agency profiles present opportunities for using ridesharing as a complement to transit. These examples could be considered by other public agencies as ways of expanding their markets and providing a robust menu of transportation options to the communities they serve.

- **Solving the "Last Mile":** Pace, serving the suburbs of Chicago, and King County Metro in Seattle have used feeder vanpools—vanpools limited to 10 miles between home or work and the transit stop—to transport transit riders to their workplace, a problem dubbed "the last mile." In the process, both agencies have found a new application for well-used vanpool vehicles in their fleets.
- **Maximizing Agency Revenue:** DART receives $3 million annually from the FTA, which awards funds for vanpool miles traveled in areas with a population of at least 200,000. The funds are used to replace aging vans, with the remainder converted into operating funds for the agency's bus fleet.
- **Creating Capacity through Slugging/Casual Carpools:** PRTC in Virginia supports casual carpooling, which arises spontaneously, because it helps address PRTC's capacity constraints. Thousands of people irregularly (casually) carpool into the core employment areas around the District of Columbia, commuters that PRTC could not accommodate on its transit service.
- **Leading through Legislation:** The state of Washington has a 30-year history of legislative and financial support for vanpooling, thanks to which 20 public transit agencies operate vanpool programs across the state.

Other notable findings from the study include the following:

- *The top two reasons why it is important for ridesharing and public transit to work together are to bridge service area gaps not filled by existing transit, and to address market demand from customers.* Transit agencies indicated that they use ridesharing to serve people in areas not dense enough to justify transit service. The primary ways that customer feedback is incorporated into ridesharing programs are by e-mail surveys of customers and by collecting customer comments to improve the program. Ten agencies reported that their ridesharing program was created because of customer requests.
- *Carpool/vanpool matching, marketing to businesses, and providing a guaranteed ride home benefit are the top three components of both public transit and non-transit ridesharing programs.* Only those agencies that had some type of ridesharing program were surveyed. Of the 41 respondents who checked components of their ridesharing program, 36, or 88%, said that they provide carpool and vanpool matching. Although approximately 78% of the respondents reported that they market to businesses, half of the public transit agencies and fewer than half of the non-transit entities market ridesharing to transit riders.
- *Vanpooling is a key component of the ridesharing programs offered by both public transit and non-transit agencies.* Approximately half of the articles found in the literature review are about vanpool programs. The literature search indicated that vanpooling is used by rural transit agencies to extend their reach into areas of their service district with sparse populations. Establishing vanpools and subsidizing vanpool fares had a high frequency of response from survey participants reporting components of their ridesharing programs.
- *Most agencies use a variety of performance measures to determine whether the amount spent on ridesharing is worthwhile; however, the majority considers ridesharing as part of their mix of mobility services rather than using a cost-effectiveness metric separately to evaluate the ridesharing program.* More than one-third of the public transit agencies reported spending less than one percent of their operating budget on ridesharing. The

most common performance measure used by both transit and non-transit agencies is the number of individuals who sign up for the ridesharing program.

- *Technology supports the integration of ridesharing and public transit on agency websites.* Twenty-seven of 37 respondents have a link to ride-matching on the agency's website. About half indicated that their trip planner responds to a specific query by searching for both ride-matching and transit options. Fifteen respondents also promote ridesharing and transit on social media. However, using social media for ride-matching is not common, although some agencies reported that they are in the process of developing these and other technological tools, including smart phone applications.
- *A high level of coordination exists between regional planning entities and agencies with ridesharing programs.* The majority of public transit and non-transit agencies attend regional rideshare planning meetings. Other significant coordination activities include participating in transportation events sponsored by regional agencies, information tables at businesses, and reporting program results to another entity.
- *Although no successful dynamic, or real-time, ridesharing program was operational among those surveyed, there is substantial interest.* Forty-five percent of 40 respondents indicated they are interested in dynamic ridesharing, which is same-day or "on-the-fly" ridesharing. WSDOT and the Avego Corporation implemented a pilot program in 2011, and the Metropolitan Transportation Commission has funded a future pilot program in three San Francisco Bay Area counties. However, close to one-third of survey respondents indicated that they do not see dynamic ridesharing as part of their mission.

Most public transit agencies do not consider the economic benefits of supporting vanpools versus instituting more rail or bus commuter service. This finding is significant, given the uncertain funding climate for public transit and the opportunity ridesharing could provide for retaining levels of service. Only five public transit agencies indicated that they compare the capital and operating costs of transit to the cost of a ridesharing program. Also, only three transit agencies reported that they go the additional step of substituting ridesharing for a transit route as a cost-saving measure. Examples of agencies that consider the economic trade-offs between fixed routes and vanpool routes are KCAPTA, DART, and the Regional Transportation District (RTD) in Denver. RTD subsidizes the regional vanpool program, because RTD performs an annual analysis that shows the subsidy per boarding for its express routes is substantially more than the vanpool subsidy. KCAPTA uses vanpools, at half the per trip cost of fixed-route service, to transport farm workers with nontraditional hours. As mentioned, DART's vanpool program actually increases the federal revenues available to the public transit agency.

To understand why ridesharing as a complement to public transit—the topic of this synthesis—is not more prevalent, the survey asked what challenges all respondents (transit and non-transit) faced in integrating ridesharing with transit. Of the 35 who answered the question, almost 46% responded that some consider ridesharing to be competition for transit riders and resources. Almost as many, 40%, answered that not everyone considers ridesharing important to the agency's mission. Close to 29% said that customers do not easily accept ridesharing as a substitute for full transit service.

By its nature, a synthesis has a limited survey sample size. A good topic for future study would be a more in-depth look at the challenges of integrating ridesharing and public transit. Follow-up research could delve into the obstacles identified here and present a more robust case for integrating ridesharing and transit. Findings from this synthesis suggest four major areas of future study:

- **Obstacles and opportunities for integration of ridesharing with public transit:** Before public transit agencies can be convinced that ridesharing presents them with economic and operational opportunities, a more thorough examination of the challenges is needed. Why is ridesharing considered competition and what opportunities can be

offered to counteract this perception? Research could explore in more detail the topics listed previously—solving "the last mile," maximizing agency revenue, creating capacity through slugging/casual carpools, and increasing legislative incentives. A toolkit could be developed to outline how to take advantage of these opportunities. Through case studies and cost comparisons, the toolkit could also address the economic benefits, such as the lower subsidy required for vanpool programs, and could document how agencies have used ridesharing in contingency planning for natural disasters and security crises.

- **Emerging technologies for ridesharing and transit:** Models for use of emerging technologies that support mobility management, such as real-time ride-matching, social networking sites, and programs accessed by means of mobile phones, could be documented through further research into successful practices.
- **Ridesharing and public transit parking management:** Agencies are clearly searching for answers to the competition for parking when ridesharing is promoted with transit and would benefit from research that identified solutions.
- **Better performance measures for evaluating the worth of ridesharing within a public transit environment:** When difficult economic decisions are being made, agencies might benefit from a study providing the metrics for developing better performance measures for evaluating ridesharing programs.

It is highly unlikely that transit can absorb the anticipated growth in vehicles that is predicted over the next decade. Ridesharing needs to be given serious consideration as a solution in partnership with public transit if congestion, pollution, and emissions are to be tamed in the future.

CHAPTER ONE

INTRODUCTION

OVERVIEW

Ridesharing as a Complement to Transit is a state-of-the-practice synthesis of public transit agencies that either operate, or coordinate with others in the provision of, ridesharing services. Information was also gathered from a number of non-transit entities, such as councils of government (COGs), metropolitan planning organizations (MPOs), a department of transportation (DOT), and a transportation management association (TMA), all of which are involved in ridesharing services.

The purpose of the synthesis is to aid public transit agencies and other entities in deciding how to enhance coordination between public transit and ridesharing. Both ridesharing and public transit have environmental benefits, such as reducing energy consumption and emissions—benefits that could be emphasized to reduce travel by the single-occupant automobile. Ridesharing is also an economical method of extending service into low-density areas not well suited for fixed-route public transit service. However, despite these benefits, the synthesis found that the number of public transit agencies involved in ridesharing is limited. Further, the perception remains that ridesharing takes passengers away from transit, according to a web-based survey of 41 agencies. Nonetheless, the synthesis uncovered examples of exemplary practices by public agencies illustrating how to better integrate ridesharing and public transit. It also includes recommendations for future studies to address perceptions and obstacles that persist in hindering the use of ridesharing as a complement to public transit.

METHODOLOGY

Data for this synthesis was collected in three ways, through a review of relevant literature; by means of an original web-based survey; and through interviews with survey respondents or others identified in the literature search, which were used to create short agency profiles.

LITERATURE REVIEW

The sources for this literature review were identified through a search of the Transportation Research Information Services (TRIS) database, online resources, and references in publications. The majority of the literature was published after 1998. However, some documents, particularly those relating to the economics of using ridesharing in a public transit setting, date back to the 1970s. Although 26 documents were reviewed, few explicitly focused on the integration of ridesharing and transit. The existing research primarily includes case studies of specific programs run by transit agencies. Roughly half of the articles reviewed are about vanpool programs.

SURVEY

A web-based survey was used to gather data about ridesharing as a complement to transit. The survey was pre-tested by the technical panel overseeing the study, after which minor modifications were made. A single version of the survey was sent to a total of 49 agencies, of which 37 were transit agencies and 12 were non-transit agencies. These agencies were chosen because of their known involvement with ridesharing and public transit, based on information gleaned from the literature review and contacts of the panelists and consultants. Each potential respondent was contacted by phone to encourage a high response rate. The response rate overall was 83.7%.

Survey respondents were asked to identify themselves as either public transit agencies or non-transit agencies. Respondents from four known public transit agencies checked that they were non-transit agencies. One non-transit agency representative checked the box for a transit agency. These discrepancies may be attributed to the wording of the sentence, "Are you a transit system operator?" Also, the non-transit representative is a contractor for a transit agency. The known transit agency respondents may have been in a ridesharing division, where they did not consider themselves transit operators. However, it's notable that they did not consider themselves aligned with transit, even though they worked in a department of the public transit agency. Nonetheless, in analyzing the survey, the results are reported true to the way those five respondents identified themselves. Therefore, the responses reflect 28 public transit agencies and 13 non-transit agencies.

Survey questions were based on topics developed by the technical panel appointed for this project:

- How does ridesharing integrate or interface with the transit system?
- What was/is the reason(s) for including ridesharing in the mix of transit options? For example, regulations, gaps in services, market demand, environmental concerns, policy issues, financial incentives, etc.

- How is the agency organized for integrating ridesharing?
- To what extent is ridesharing included in transit service planning?
- How do you coordinate/collaborate with regional planning entities?
- What are the performance measures for cost/benefit, etc?
- What are your coordination successes and/or challenges?
- How does/will technology play a role in supporting the integration of ridesharing and transit, through trip-planning, social media, mobile apps, or other means?
- What other strategies such as fare–media integration, marketing, loyalty programs, etc., play a role in the integration of transit and ridesharing?

It is important to note that when percentages or a number of survey responses are indicated in the question-by-question analysis, this refers to the percentage of responses to that survey question, rather than to the overall survey response rate. In other words, most questions reflect the response of the subset of respondents who answered that question. In addition, all answers to the survey are self-reported answers—that is, respondents supplied what they believed was the most appropriate answer for their program.

AGENCY PROFILES

Chapters three through six each contain agency profiles that highlight successful or innovative approaches to integrating ridesharing into public transit. Profiles were selected based on material that emerged in the literature search or the survey. The ten profiles were primarily based on phone interviews or e-mail exchanges with staff at the highlighted agency. Some information was gleaned from websites and published articles beyond the documents in the literature review.

ORGANIZATION OF THE REPORT

Following the Summary and this chapter one (Introduction), the report is organized into six topical chapters: Literature Review, Ridesharing within Transit Agencies, Ridesharing within Non-Transit Entities, Marketing and Technology, Transit Agencies and Casual Carpooling, and Conclusions. The report contains four appendices: the Survey Questionnaire and Results (Appendix A), Profiles of Participating Transit and Non-Transit Agencies (Appendix B), Transit Modes Operated by Respondents (Appendix C), and Ridesharing Placement Within Agencies (Appendix D).

CHAPTER TWO

LITERATURE REVIEW

INTRODUCTION

This chapter summarizes the relevant findings of literature on the integration of ridesharing with transit. The sources in this literature review were identified through a search of the TRIS database, online resources, and references in publications. Twenty-six documents were reviewed, the majority of which were published between 1999 and 2011, although some date to the 1970s.

Ridesharing programs in public transit agencies are not widespread. Perhaps because of this, there is limited research focusing on the integration of ridesharing and transit. The existing research primarily includes case studies of specific programs run by transit agencies. Roughly half of the articles reviewed herein are about vanpool programs, including those operated by transit agencies, where a key purpose is to increase penetration into areas where bus service is not realistic. Some research has indicated that using vanpools instead of express buses can reduce operating costs. Other studies examine ridesharing incentives or ride-matching services provided by transit agencies. There has also been research on casual carpooling (carpooling without pre-arrangement) and dynamic, or real-time, ridesharing in specific cities, but the focus has not largely been on the nexus between transit and ridesharing.

PUBLIC TRANSIT AGENCIES WITH RIDESHARING PROGRAMS

Although government-sponsored ridesharing projects have been around since the 1970s, ridesharing is not well integrated into public transit agencies. "Ridesharing in North America: Past, Present, and Future" (Chan and Shaheen 2011) reported that currently there are approximately 384 ride-matching programs in the United States. When contacted, the authors consulted their database and found as of July 2010, 32 of the 384 were operated by U.S. public transit agencies. To be counted in the 32 agencies, the transit agency showed direct support to both transit services and carpool/vanpool services on its website. Seven of the 32 offer carpool services, 12 offer vanpool services, and 13 offer both carpool and vanpool services. The paper, quoting unpublished data, also noted that there are seven times as many U.S. passenger miles for commute trips by carpool and vanpool as there are for public transit. Although ridesharing has increased slightly in recent years to around 10.7% of mode share, it has declined since 1970, when the census reported that 20.4% of American workers commuted to work by carpool. The decline is attributed to a drop in gasoline prices, as well as improved fuel economy and shifting social trends.

TRANSIT-OPERATED VANPOOL PROGRAMS

There have been several studies that examine vanpool programs across the county. The 2002 report *Transit-Operated Vanpools in the United States: Selected Case Studies* (Higgins and Rabinowitz 2002), for example, profiles 25 vanpool programs, including those run by transit agencies, public-sector organizations, and nonprofit groups. Among the programs surveyed are six operated by transit agencies in the Seattle area as well as vanpool services provided by Pace Suburban Bus Service in Chicago. The authors find that the most common objective of the vanpool programs studied is to "extend the reach of transit services into areas or service hours not well served by fixed-route public transit." They also determined that there are several conditions that lend to successful programs, including centralized employment centers, long-distance commutes, strong retail growth, increasing fuel prices, and priority on roadways for vanpools.

An older report, *APTA Vanpool Involvement Survey,* by Pace Market Research, published in 1996, described the state of vanpool programs within the public transit agency industry at that time. Based on survey responses from APTA members, the report discusses a wide variety of issues, including the reasons vanpool programs were established, the types of vans used, and the sources of funding for operations and capital purchases. The report, for example, concluded that opening new markets and fulfilling agency missions were the most important factors for starting vanpool programs. In addition, the report illustrates the differences between transit agencies with vanpool programs and those without. It found that agencies with vanpool programs serve larger areas but smaller populations than those without.

Another study, *TCRP Report 95: Traveler Response to Transportation System Changes, Chapter 5—Vanpools and Buspools* (Evans 2005), describes different types of vanpool programs in the country—employer-sponsored, third-party, and transit-provided vanpool programs—and analyzes traveler response factors to vanpools and buspools. This 2005 report also provides case studies of four vanpool programs, three of which are operated or supported by transit or transportation

agencies. In the mid-1990s, nearly 60 transit agencies reportedly provided vanpools. The authors state that the number of vanpools operated by transit agencies has been rapidly growing, reaching more than 3,900 in 2001.

One agency highlighted in the 2005 TCRP report is Pace, which serves Chicago's six county suburbs and operates a Vanpool Incentive Program (VIP). The program has several vanpooling options, including passenger vans for groups of commuters and vans for human service agencies that provide work-related transportation service to individuals with disabilities (Evans 2005). It operates like a fixed-route service and differs from conventional vanpool programs in its route design, payment procedures, fare structure, and other elements, according to an article called "Pace Vanpool Incentive Program" that examines the program's development, implementation, operation, and impact. Pace designs each of its vanpool routes as opposed to allowing drivers and riders decide. Drawing from the Pace VIP experience, the article also points out several benefits of integrating vanpooling into the public transit system, including improved responsiveness to economic change and enhanced mobility for certain commuters (Cervero 1996).

A transit operator in the state of Washington, King County Metro Transit, runs the largest public commuter van program in the country, and as such, the program has been discussed in several studies. The 1999 article *The Best Practices in Vanpooling: The First Public Vanpool Program Marks its 20th Year* (Pawlowski and Maillet 1999) describes the King County program, which provides roughly three million rides a year to those not well served by traditional transit. The authors of this article contend that WSDOT's support has been key to the program's success. In addition, it was the state legislature that first passed the Ridesharing Act in 1979, which provided sales tax exemption for purchasing vanpooling vehicles, established liability insurance as "ordinary standard of care" for volunteer drivers, and defined vanpooling as a fixed group of up to 15 individuals traveling from home to work or school. This legislation paved the way for vanpool programs throughout Washington State. This vanpool history is similarly recounted in "Pooling Together: Why the Vanpool Works in the US and the Netherlands" (Enoch 2003), which explains King County's program in depth, describing everything from fee structures to daytime uses of the vans.

Washington State also boasts vanpool programs in rural regions. In rural south central Washington, for example, Ben Franklin Transit operates a regional vanpool program that largely serves federal government and private employment sites in two states and eight counties. According to an article about the program called "Vanpools: A Viable Option in Rural Regions," the transit agency focuses on meeting customer needs, using a variety of funding sources and building partnerships with other organizations to help ensure its success (Conrick 2008).

The agency's vanpool program is one of 23 profiled in a 2009 CTAA report called *Profiles of Innovative Rural Vanpool Programs;* roughly half of the programs included are sponsored or supported by transit agencies. The rest of the profiles are of a variety of other organizations, such as a university and a nonprofit agency. According to the report, rural communities have "led the way in pioneering vanpool programs," and the most innovative programs have been in Washington State, which supports, funds, and encourages vanpools. The report also outlines several elements that have led to successful vanpool programs, including the development of innovative partnerships, involvement of area employers, and political support from local leaders.

RIDESHARING PROGRAMS AND INCENTIVES

King County Metro's Rideshare program, established in 1984, is the focus of a 2000 study called "Rideshare Plus—Customized Ridesharing Program Finding Success" (Blumenthal and Pawlowski 2000). The authors describe how the program—which has evolved over the years—helps form carpools and vanpools for commuters by using Geographic Information Systems software. Data analysis, promotional activities, personal follow-ups, and surveys are all part of the program, which is contracted to employers.

A 1999 study also looked at King County Metro and examined its voucher programs Commuter Bonus and Commuter Bonus Plus, which promoted alternative commuting modes, such as carpooling and public transit. The study report, "Unique Voucher Programs to Increase Alternative Commuting," (Allen et al. 1999) discusses the development, implementation, operation, and performance of the two programs. Several conclusions were reached about the overarching Commuter Bonus voucher program. For example, the author found that it "generated enough revenue (through new transit ridership) to support the operation" of the two voucher programs, increased alternative commuting trips, and demonstrated that a "large-volume voucher program could be operated as an in-house program from a single PC [personal computer]" (Allen et al. 1999). The voucher programs have since been replaced by Commuter Cheques and ORCA, a comprehensive regional pass (S. Pawlowski, Rideshare Operations Supervisor, personal communication, Mar. 22, 2011).

CASUAL CARPOOLING

There have been several articles on casual carpooling, also called slugging, in Houston, San Francisco, and the Northern Virginia/Metro Washington D.C. areas. They tangentially discuss transit's intersection with casual carpooling, instead focusing on how specific systems work or how passengers behave.

Of the articles, "Casual Carpooling in the San Francisco Bay Area" (Beroldo 1990) discusses the intersection with

transit to the greatest extent. In part, the article assesses whether or not casual carpools should be encouraged. Beroldo comes to mixed conclusions, tentatively contending that casual carpooling should be discouraged because it adds vehicles to the road. He qualifies this conclusion, saying it may only apply to the Bay Area. On the other hand, he suggests that casual carpooling could be encouraged if it reduces demand on transit service along a particular corridor, thereby allowing transit service to be increased along other corridors, which might attract new riders and take cars off the road. The article also provides insight into the effects of casual carpooling on transit agencies, citing several problems reported by BART and AC Transit (Alameda–Contra Costa Transit). These problems include a decline in public transit ridership and revenue and a lack of parking available for roundtrip transit patrons. In response, the transit agencies have made changes to their operations, although attempts to control or discourage casual carpooling have been largely ineffective (Beroldo 1990): a survey conducted in 2010 by 511 Rideshare reported that 47.3% of casual carpoolers indicated they previously commuted by BART or AC Transit before they started casual carpooling.

On the other hand, a recent article, "Estimating the Energy Consumption Impact of Casual Carpooling" (Minett and Pearce 2011) notes that casual carpooling can reduce the number of buses needed. The authors estimate that $30 million a year could be saved from casual carpooling on the Bay Bridge leading to San Francisco in the morning commute. This conclusion is based on the need for fewer bus purchases and paid drivers by AC Transit, which operates the transbay bus service across the bridge, as well as the value of time saved, lower emissions, and fewer accidents.

The other articles are essentially case studies of specific cities. "Slugging in Houston—Casual Carpool Passenger Characteristics" (Burris and Winn 2006) describes how casual carpooling in the Texas city occurs at three park-and-ride lots, which are primarily used for transit. In the San Francisco area, casual carpooling is a one-way phenomenon; most passengers carpool in the morning but take BART and AC Transit home in the evening, according to *Casual Carpooling 1998 Update* (RIDES 1999). A 2010 update of that report confirmed this finding and further found that the vast majority of casual carpoolers planned to continue their commuting practices despite a new toll on carpools (511 Rideshare 2010). According to another article "Slugging—The People's Transit," however, carpooling decreased 26% on area bridges a month after the tolls were implemented (Badger 2011).

Slugging reportedly began in Northern Virginia in the 1970s along Interstate 395 high-occupancy vehicle (HOV) lanes (Badger 2011). Today, it is estimated that roughly 10,000 people travel to Arlington and the District of Columbia by means of slugging. So-called slug lines form in areas that have ample parking and are close to HOV routes. Most slug lines, according to "The Native Slugs of Northern Virginia," are co-located with mass transit access, providing commuters with the option to take transit if they cannot get a ride carpooling (Oliphant 2008).

An additional document, *Flexible Carpooling: Exploratory Study* (Dorinson et al. 2009), written by researchers at the University of California at Davis, concludes that the circumstances where casual carpooling would draw from public transit depend on the quality of the service available. For example, flexible/casual carpooling would be attractive if the transit trip involved multiple providers and poor connectivity. However, as a benefit to society, "the energy savings of flexible carpooling are similar to what could be achieved by an express bus service, but without the cost of providing the bus service." The authors recommend research trials to determine whether flexible carpooling can reduce demand for peak hour transit service, thereby also reducing overall transit costs.

DYNAMIC RIDESHARING

Dynamic ridesharing is same day or "on the fly" ridesharing. From November 2005 through May 2006, BART participated in a focused test of dynamic ridesharing at one of its stations with impacted parking called RideNow! The results of the test are documented in a report to the Alameda County Congestion Management Agency titled *RideNow! Evaluation Final Report* (Nelson\Nygaard 2006). Through the web or an automated telephone system, riders requested rides minutes before leaving home or on the BART train in the evening. Because eight partner agencies were involved, the project faced multiple challenges in implementation. Only 12% of the ride requests were fulfilled. Recommendations for future projects included substantial simplification of the program, increased target marketing, and more time to build the volume of drivers and riders (2006).

"Markets for Dynamic Ridesharing? Case of Berkeley, California" (Deakin et al. 2010) is a study to assess the potential of dynamic ridesharing to downtown Berkeley and the University of California. The area has high rates of walking, biking, and transit use, causing university and city officials to question whether dynamic ridesharing would encourage undesirable shifts away from these travel modes rather than reducing the number of single drivers. The researchers found that "the potential market for dynamic ridesharing to the campus was up to 1,200 if no restrictions were placed on participation and a more modest 700 if the program were limited to those who were outside of walk–bike–transit zones." The study concludes with nine policy implications for consideration if a dynamic ridesharing program is to be implemented.

ECONOMIC CONSIDERATIONS OF RIDESHARING WITHIN PUBLIC TRANSIT AGENCIES

Some transit agencies consider the economics of supporting vanpools over instituting more commute-hour bus service. A section of a 1978 document, *Recent Developments in Bus*

Transportation, contains a cost analysis to test the feasibility of express bus service on a freeway in Minneapolis–St. Paul. The result of the analysis is a recommendation to compute vehicle hours by route and time of day, rather than systemwide, and concludes that "Expansion of service in peak periods at a relatively greater rate than base periods will also adversely affect transit operating costs" (Cherwony 1978). A monograph, "Peak Period Supplements: The Contemporary Economics of Urban Bus Transport in the U.K. and U.S.A." (Oram 1979), integrated the findings of numerous studies indicating that peak-only services have substantially higher marginal costs than all-day services, given the regulatory history and current institutional framework of the transit industry and recent service innovations, such as vanpools, subscription buses, and privately operated "supplements."

Peak/off-peak marginal cost analysis, as recommended in the foregoing documents, is currently performed by the RTD in Denver, where the operating costs and subsidy are derived for each route operated. For example, the average subsidy per boarding of the 25 express bus routes RTD provided in 2009 was $4.73, with the lowest at $3.12 and the highest at $29.25. During the same year, the subsidy per boarding in the VanPool program was $2.58. Using this economic rationale for ridesharing as a complement to its express bus service, RTD provides subsidy support to the Denver Regional Council of Governments' RideArrangers VanPool program (RTD–Denver 2009).

CONCLUSION

The literature review reveals that existing research rarely focuses on the integration of ridesharing and transit, instead concentrating on specific programs as case studies. Several articles look at transit-operated vanpool programs; these appear to be the most common form of integration examined in previous studies. There have also been studies of casual carpooling; however, they tend to focus on specific cities where such operations occur.

Overall, there do not appear to be any substantial studies that provide a comprehensive look at how ridesharing has been integrated by transit agencies. Research on the integration of ridesharing in transit planning, the use of technology to promote ridesharing, and the need or use of performance measures related to ridesharing is largely missing from the literature. As a result, the literature review supports the need for this synthesis, which gathers information from public transit agencies and other organizations that either operate or support ridesharing programs. This synthesis is intended to provide a better understanding of how operators provide ridesharing as a complement to transit by enhancing coordination between the two modes.

CHAPTER THREE

SURVEY RESULTS: RIDESHARING WITHIN PUBLIC TRANSIT AGENCIES

This chapter provides insight into the various ways in which public transit agencies have incorporated ridesharing into their transportation services. It specifically presents the survey results from 28 transit agencies across the country. For example, it shows that the most common ridesharing services provided by the transit agencies are carpool and vanpool matching and guaranteed ride home programs. This chapter also analyzes survey results related to other issues, including the motivation for providing ridesharing services, the evaluation of those services, and the amount of money spent on ridesharing programs. In reporting the challenges to integrating transit and ridesharing, more than 40% of respondents indicated that ridesharing within their agency is considered a threat or not part of its mission.

The public transit agencies surveyed for this synthesis vary in size and area coverage. Seventeen agencies serve regions, nine serve single counties, and two serve entire states (Figure 1). Some of the agencies' ridesharing programs have been highlighted in case studies. Appendix A contains the survey questionnaire and the responses for each question.

RIDESHARING SERVICES OFFERED BY TRANSIT AGENCIES

Transit agencies greatly differ in the ridesharing services that they offer and the way in which those services are provided. Half of the transit agencies surveyed (14) indicated that they operate their ridesharing program in house. Five others said that their program is operated by an MPO/COG, TMA, or DOT. Only two transit agencies reported that they contracted out their program to another organization.

However the programs are provided, carpool and vanpool matching is one of the most common ridesharing services offered by transit agencies. Nearly all of the agencies surveyed (24) reported that they provide this matching service. The other widely popular ridesharing feature is a guaranteed ride home program, which is also offered by almost all transit agencies surveyed (24).

Another prevalent component of ridesharing services is marketing. Most transit agencies market their ridesharing programs to businesses, as shown in Table 1; half directly target their marketing to transit riders. Other common ridesharing services provided by transit agencies include parking for vanpools and carpools, assistance with forming vanpools, and subsidies for vanpool fares.

Incentives are an important tool to encourage ridesharing. Of the 13 transit agencies responding, more than half said that they use prizes such as gift cards to encourage ridesharing. Nearly 40% use recognition in print or web publications. Direct cash subsidies, loyalty programs, commuter checks, and transit vouchers are offered by almost one-third of respondents. Those who responded "Other" also listed annual lunches, HOV lane access, and incentives funded by private sponsors (see Figure 2).

In providing a robust ridesharing program, the agency that "does it all" is King County Metro in Seattle, profiled next.

PROFILE: KING COUNTY METRO TRANSIT IN SEATTLE INTEGRATES RIDESHARING INTO AGENCY

King County Metro Transit is a public transit agency with a multi-faceted ridesharing program in King County, Washington. A division of the King County DOT, Metro Transit, as the agency is called, operates the largest publicly owned commuter van program in the country. The city of Seattle, which created the first publicly operated vanpool service in the state in 1979, transferred the program to Metro Transit in the 1980s. It has grown from 130 vans in 1984 to more than 1,150 commuter vans in 2011 (Enoch 2003).

The commuter van program complements Metro Transit's fixed-route bus service, according to the agency's Rideshare operations supervisor. Unlike Metro Transit buses that primarily serve King County, commuter vans travel all over the Puget Sound region; however, their origin or destination must be within King County. In addition, the formation of vanpools is driven by consumer choice, with no restrictions regarding whether or not a bus is also available.

Metro Transit's commuter van program has two components, VanPool and VanShare. The VanPool program provides vans, maintenance, support services, fuel, and insurance to groups of 5 to 15 people who travel together (see Figure 3). All riders, except the volunteer driver, pay a monthly fee based on the number of vanpoolers, the size of the van, and the roundtrip mileage of the commute.

FIGURE 1 Locations of transit agencies surveyed.

VanShare provides vans to commuters to cover the distance—up to 10 miles one way—between a public transportation terminal and a workplace or between home and a public transit connection. Launched in 2001, the VanShare program was modeled after a similar service operated by Pace in Illinois. Van Share serves multiple functions: it provides commuters a link to their worksite instead of using their own personal vehicle; extends the functional life of a vanpool vehicle by continuing its use for short trips; and reduces the need for parking at transit-served stations.

Ridership for the VanPool and VanShare programs topped 2.8 million passenger trips in 2010, down from 3.18 million trips in 2009 owing to the recession (King County DOT 2011). More than 5,600 vehicles have been eliminated from the roads as a result of Metro Transit's commuter vans (King County DOT 2011).

Metro Transit also helps form carpools and vanpools through a regional ride match system. The system allows riders to find other commuters through an online system, www.Rideshareonline.com, which is a partnership between King County and the Washington, Oregon, and Idaho state DOTs. Alternatively, riders can fill out a rideshare application and receive a list of people who live in their neighborhood or have similar commuting needs (King County Metro Transit 2011). There are more than 11,000 active names in the regional ride match system. Other ridesharing options include a custom bus program, whereby schools and employers contract with King County for express bus routes to areas not previously well served by fixed-route transit (King County Department of Transportation, Metro Transit Rideshare Operations 2011). With its consumer-oriented approach, Metro Transit has integrated ridesharing into its menu of services.

TABLE 1
DOES THE RIDESHARING PROGRAM INCLUDE ANY OF THE FOLLOWING COMPONENTS?

Response	Count	Percent
Provide carpool and vanpool matching	24	86
Provide guaranteed ride home	24	86
Market ridesharing to businesses	20	71
Help establish vanpools with vehicles our agency owns or leases	18	64
Market ridesharing to transit riders	14	50
Subsidize vanpool fares	13	46
Form vanpool through a third-party provider	12	43
Provide parking for vanpools and carpools	12	43
Provide incentives (e.g., loyalty programs, commuter checks, prizes, recognition)	11	39
Other	4	14
Total responses	28	100

Answers exceed 100% because respondents could choose multiple answers.

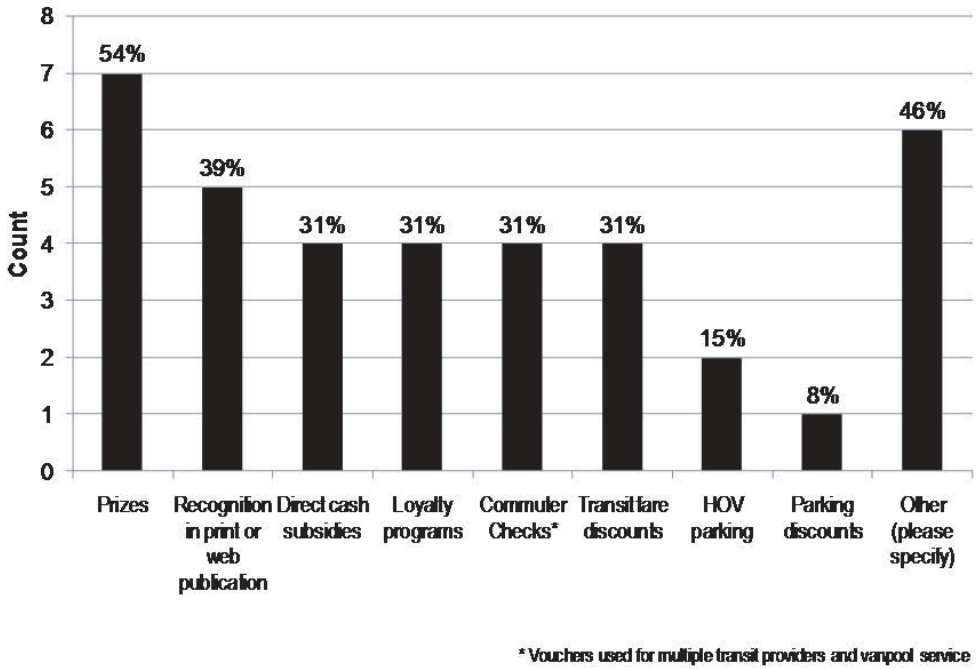

FIGURE 2 Ridesharing incentives offered by transit agencies. If you indicated above that the rideshare program provides incentives, please check all incentive programs that you provide ($n = 13$).

FIGURE 3 King County Metro seven-passenger vanpool. (*Courtesy:* King County Metro.)

There are many different reasons why public transit agencies think ridesharing and transit should work together. According to survey results, common reasons include market demand from customers, environmental concerns, and improved access to public transit routes and stations (see Table 2). Although regulations were not a major motivating factor, they were, nonetheless, a reason for transit agencies to offer ridesharing as part of their services. In a follow-up question, roughly one-quarter of the transit agency respondents reported that regulations are a factor, and state regulations (6 of 7) are the most common type (Figure 4).

By and large, however, the most common reason for transit and ridesharing to work together—one cited by all transit agencies—is to fill gaps in service areas not covered by existing transit service. This reflects the viewpoint that

TABLE 2
WHY IS IT IMPORTANT FOR RIDESHARING AND TRANSIT TO WORK TOGETHER?

Responses	Count	Percent
Service area gaps not filled by existing transit service	28	100
Market demand from our customers	24	8
Environmental concerns	20	71
Improved access to public transit routes, stations, or park-and-ride lots	20	71
Increased access to businesses and services with limited parking	15	54
Meet mobility manager policy goals	8	29
Regulations	3	11
Other	3	11
Total Responses	28	100

Answers exceed 100% because respondents could choose multiple answers.

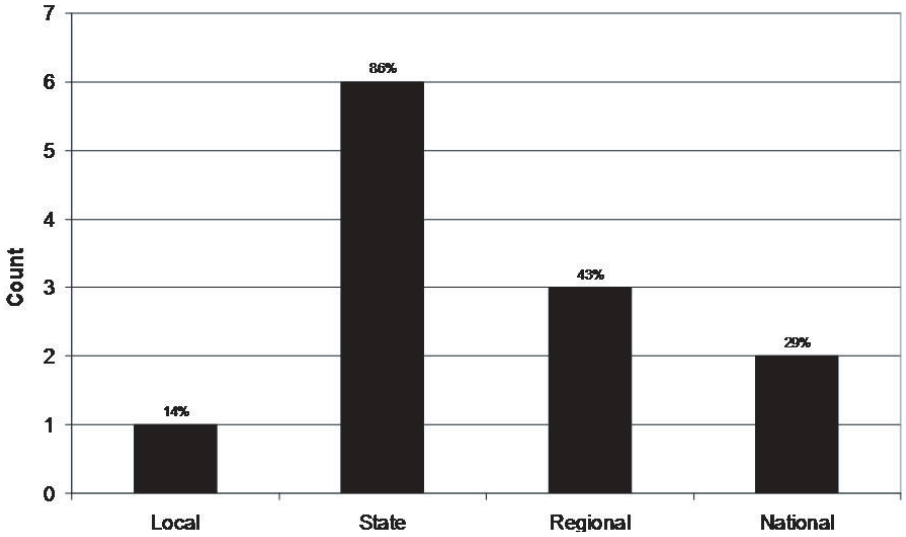

FIGURE 4 Types of regulations that are motivating factors for including ridesharing in the mix of transit options. (If you indicated above that regulations are motivating factors, please specify the type of regulations below.) ($n = 7$.)

ridesharing supplements traditional transit service. One agency added to this point, saying, "Transit doesn't meet every possible travel need. Nor does ridesharing."

One example of a program that fills a service gap is the Agricultural Industries Transportation Services (AITS) program, which transports farm workers who have nontraditional work hours (Figure 5). The program, operated by the Kings County Area Public Transit Agency (KCAPTA) in central California, is profiled here.

PROFILE: KINGS COUNTY AREA PUBLIC TRANSIT AGENCY VANPOOLS SERVE FARMWORKERS

KCAPTA, based in Hanford, California, operates a comprehensive vanpool program as part of its transportation services. Launched in 2001, the vanpool program has roughly 350 vanpools serving 14 counties. Work sites include correctional facilities, schools and colleges, and a military base. Roughly 110 to 160 of the vanpools take agricultural workers to work through KCAPTA's AITS program, operated with the participation of eight COGs. That program was developed in response to a van accident in 1999 that killed 13 farm workers (Wasserman 1999).

FIGURE 5 KCAPTA's agricultural vanpools fill a gap. (*Courtesy:* Kings County Area Public Transit Agency.)

During the late 1990s, vans were unregulated and unsafe. Vans were aging and poorly maintained, drivers did not have licenses, and vans were often modified so that many passengers did not have seatbelts. Since then, California has passed a law that requires factory-installed seat belts and annual inspections, which has helped to increase vanpool safety. KCAPTA's eight- and 15-passenger vans, which are leased on a monthly basis, are also routinely inspected and serviced. They are equipped with a global positioning system, first aid kits, fire extinguishers and other safety items (KCAPTA 2010). Each van is covered by a $10 million insurance policy, and all routine maintenance is done on site, with spare vans being provided as needed. Vanpool drivers must have a Class C license, pass a physical exam, and provide proof of a clean driving record. They are also responsible for collecting monthly fees from riders and forwarding the payments to KCAPTA.

For KCAPTA, vanpools overcome limitations in the agency's fixed-route bus service by accommodating nontraditional work or school schedules, including flexible work weeks. For example, there are 13 vanpools that take workers from the small city of Avenal to agricultural work sites in the surrounding area. The workers travel at nontraditional work hours, and their work weeks can vary depending on the weather. The bus service that travels to Avenal three times a day cannot meet their transportation needs.

In addition to providing greater flexibility, KCAPTA's vanpool program is more cost-effective than its bus service. Specifically, the cost per trip of a van is $2.19, which is almost half that of a bus ($4.10). Several factors lower the cost of vanpooling, including the fact that vanpool drivers are volunteers. In addition, vanpool riders pay a monthly fee—based on the size of the van, number of riders, and distance traveled—that covers the cost of maintaining, insuring, and replacing the vans. In contrast, only 16% of the operational costs of KCAPTA's buses are covered by passenger fees.

KCAPTA also applies for subsidies and vouchers on behalf of vanpoolers to lower their costs. For example, the agency has received money generated through a voter-approved sales tax increase to start new vanpools in Fresno County. Typically, KCAPTA receives roughly five different types of subsidies a year that new riders can use to reduce their monthly cost. These subsidies normally last for one year, after which time the rider pays the full cost. State employees who participate in vanpools can also receive up to $65 a month; the subsidy is up to $230 a month for federal employees. With all of the subsidies and vouchers, out-of-pockets costs for vanpoolers usually range from $27 to $174 a month.

This year, KCAPTA is forming a new authority called CalVans—which stands for California Vanpool Authority—to take over its vanpool program. The new authority's board will consist of representatives from each of the eight COGs that currently participate in KCAPTA's vanpool program. The board will grow as new COGs join the program. However, operations of the vanpool program are not expected to change. CalVans will help ensure that the vanpool program continues to exist even if some COGs—or KCAPTA—decide not to participate in the future.

Table 3 shows that 12 transit agencies reported they specifically use ridesharing to serve customers who live in areas that are not dense enough to justify transit service. Three agencies, on the other hand, reported that they substitute ridesharing for transit routes to save money.

Among the recognized service gaps that ridesharing can fill is the "last-mile" barrier to transit use. The following profile demonstrates how transit agencies can use ridesharing to support their main-line transit services.

PROFILE: PACE COVERS THE "LAST MILE" WITH METRA FEEDERS

The "last mile" issue is an ongoing problem for transit agencies trying to increase ridership. Potential riders say they would take transit, but they do not have a way to get to or from their ultimate destination after they get off the bus or train. Instead, they drive the entire trip.

Pace, the suburban bus operator for six counties surrounding Chicago, Illinois, has addressed this issue with its Vanpool Incentive Program (VIP). Its Metra Feeder vans are parked at the work end of a train trip, so riders getting off the train can use the van to complete their commute to various companies located in the same geographic area. Although there is no fare integration with the Metra commuter trains, Metra Feeder participants pay less than those in a traditional Pace vanpool. The flat rate of $58 a month makes the total train-plus-vanpool trip affordable. Drivers ride for free, and backup drivers receive a $10 per month discount. Participants are eligible for up to $125 a year worth of guaranteed ride home services.

With approximately 300 vanpools, Pace has one of the largest vanpool programs in the country, delivering about one million rides in 2009. Although the Metra Feeder program comprises a small percentage at 13 vanpools, it is considered an important part of the family of services that Pace provides in its role as a mobility manager.

RIDESHARING IN THE PLANNING PROCESS

Some transit agencies consider ridesharing when planning their transit service. As shown in Table 4, seven agencies said ridesharing and transit planners collaborate, although ridesharing is *not* viewed as a transit substitute. One transit agency respondent said its ridesharing program largely functions as a commuter information service: "Tracking requests for information by origin and destination can, to some extent, assist with identifying emerging and/or underserved markets." In some cases, agencies contemplate whether ridesharing can take the place of a transit route, whether existing or planned.

TABLE 3
IF YOU INDICATED ABOVE THAT RIDESHARING FILLS A SERVICE GAP OR AVOIDS ADDING ANOTHER BUS OR TRAIN, PLEASE TELL US HOW

Responses	Count	Percent
We use ridesharing to serve people who live in an area not dense enough to justify transit service.	12	92
We use ridesharing to pilot a route as a test for potential ridership on transit.	4	31
We substitute ridesharing for a transit route as a cost-saving measure.	3	23
Other	5	38
Total responses	13	100

Answers exceed 100% because respondents could choose multiple answers.

TABLE 4
TO WHAT EXTENT IS RIDESHARING INCLUDED IN TRANSIT SERVICE PLANNING?

Response	Count	Percent
Ridesharing and transit planners collaborate, but ridesharing is not seen as a substitute for transit service.	7	47
We weigh whether ridesharing can substitute for existing or proposed transit service.	5	33
Ridesharing and transit are separate sections of the agency and seldom or never interface with transit service planning.	3	20
Total responses	15	100

FUNDING OF RIDESHARING

Most transit agencies do not spend a significant amount of operating money on ridesharing. More than one-third (ten) reported that they spend less than one percent of their current operating budget on ridesharing (see Table 5). Several others reported that they do not use any operating funds on ridesharing, depending instead on grants, rider fees, or other agencies to cover the cost. Some also use staff time toward ridesharing programs. The median number of person hours per week spent on ridesharing programs is 60, and the mean is 208 hours.

PERFORMANCE MEASURES OF RIDESHARING SUCCESS

Transit agencies use a wide variety of measures to evaluate the performance of their ridesharing programs (see Table 6). (See question 43 in Appendix A.) Eleven agencies compare the number of carpools or vanpools in operation to a specific goal. For example, one agency reported that its goal is 200 new registrations per year, whereas another's goal is an average annual growth of 10%. Five respondents said they look at whether they have reached a particular environmental goal, such as the reduction in the number of vehicle-miles traveled or daily tons of nitrogen oxide. Less than a third of the transit agencies (six) reported they do not set a specific performance measure to evaluate their ridesharing programs.

Those who answered "Other" included responses such as successful matches, customer satisfaction, demand for services, reduction in vehicle-miles traveled, and the amount of federal formula capital funds generated.

In addition to evaluating their programs, nearly all transit agencies reported that they try to determine if the amount spent

TABLE 5
WHAT AMOUNT OF YOUR AGENCY'S CURRENT OPERATING BUDGET IS DEVOTED TO RIDESHARING?

Response	Count	Percent
Under 1%	10	38
Between 1% and 4%	3	11
Between 4% and 7%	2	8
Between 7% and 10%	0	0
10% or more	0	0
Not applicable: We do not use operating funds for ridesharing	7	27
Do not know	4	15
Total Responses	26	100

TABLE 6
WHAT SPECIFIC PERFORMANCE MEASURES, IF ANY, DO YOU USE TO EVALUATE THE RIDESHARING PROGRAM?

Response	Count	Percent
Number of carpools and/or vanpools measured against a goal	11	44
Number of participants measured against a goal	9	36
We do not set specific performance measures for the ridesharing program	6	24
Environmental goals reached, such as decreased carbon emissions	5	20
Increased miles or percent of service area covered because of ridesharing program	4	16
Number of residents and businesses included	2	8
Avoided cost of transit service not required because of ridesharing program	1	4
Other	8	32
Total Responses	25	100

Answers exceed 100% because respondents could choose multiple answers.

TABLE 7
HOW DO YOU DETERMINE IF THE AMOUNT SPENT ON RIDESHARING IS WORTHWHILE?

Response	Count	Percent
Through the number of people subscribed to/signed up for the ridesharing program	17	63
Through the number of successfully matched rides	13	48
Through achievement of our goal to increase mobility in our service area	12	44
Through customer satisfaction surveys or other customer feedback	11	41
Through environmental measurements, such as decreased carbon emissions	10	37
By closing a service gap	10	37
By avoiding the need to add another bus or train	2	7
Through adherence to regulations	1	4
Through cost savings to the agency	0	0
Other	9	33
Total Responses	27	100

Answers exceed 100% because respondents could choose multiple answers.

on ridesharing is worthwhile (see Table 7). Agencies use a range of factors from customer satisfaction surveys (11 responses) to environmental measures (10), to accomplish this. According to survey results, the most common way (17) is to look at the number of people who have subscribed to the ridesharing program. One agency, for example, examines whether it is "maintaining and increasing the number of vans operating with a sustainable number of riders (70% full approximately)."

Of those who answered "Other," one said that the agency is discontinuing the program after determining it is not worthwhile and another said evaluation was discontinued because funding for the annual marketing survey was removed. A third agency implied that no evaluation was done because the agency does not spend any money on ridesharing.

COST-BENEFIT COMPARISON OF RIDESHARING AND TRANSIT SERVICES

As mentioned earlier, many transit agencies see ridesharing as a supplement to, but not a substitute for, traditional transit service. In other words, ridesharing is considered part of an agency's range of mobility services. The majority of transit agencies surveyed (17) said this is why they do not try to prove that ridesharing is cost-effective compared with a transit route (see Table 8). Five agencies, however, reported that they compare the two transportation modes by looking at operating and capital costs.

This profile of DART illustrates how one agency uses vanpooling as a conscious strategy in its cost-effectiveness calculation.

PROFILE: DES MOINES AREA REGIONAL TRANSIT AGENCY (DART) CAPTURES VANPOOL MILES TO MAXIMIZE REVENUE

DART's vanpool program in Des Moines, Iowa, is valued not only for its contribution to mobility but also for its ability to maximize revenues for the transit agency. DART generates nearly $3 million in annual FTA Section 5307 formula funds by reporting the mileage of its 103 vanpools. (See inset for explanation of Section 5307.) It uses $400,000 to $600,000 of that amount to replace aging vans each year. The rest is converted from capital to operating funds to cover needs such as maintenance of its 155-vehicle bus fleet.

The vanpool program, which started in 1996, primarily serves commuters from outside DART's service area of Polk County. Vanpools can travel from 30 to 90 miles away to the 80,000 jobs in the state capitol of Des Moines. Because the Section 5307 formula awards DART a grant of $3.17

TABLE 8
HOW DO YOU PROVE THAT RIDESHARING IS COST-EFFECTIVE COMPARED TO A TRANSIT ROUTE?

Response	Count	Percent
We do not attempt to prove it is cost-effective, because it is considered part of our mix of mobility services	17	68
By comparing the operating and capital cost of transit versus the cost of a ridesharing program (e.g., cost per hour and subsidy per hour)	5	20
With ridership measurements, actual or projected, for a transit route (e.g., riders per hour)	4	16
Other	6	24
Total Responses	25	100

Answers exceed 100% because respondents could choose multiple answers.

per mile for vehicle-miles traveled, the vanpool program is a conscious strategy to increase revenues for DART.

Initially vanpoolers were required to pay 100% of the cost of operating the van. They also received an identification card entitling them to ride frees on all DART buses. However, with vanpool expenses rising, particularly because of fuel costs, DART acted to prevent the loss of vanpools by stabilizing fare increases. The DART Board recently changed its policy when setting vanpool fares by crediting the federal funds that the vanpools generate for a reduction in the fare. Although the vanpool program is low-cost compared with fixed-route service, it has a high value to DART's overall revenues.

FTA Section 5307

The FTA Urbanized Area Formula Funding Program, or Section 5307, is a grant program that provides capital, operating and planning assistance for mass transportation in urbanized areas. For areas with 50,000 to 199,999 people, funds are allocated using a formula based on population and population density. Additional factors such as bus passenger miles and fixed guideway revenue vehicle miles are factored into the formula for areas with at least 200,000 people. Vanpool miles may be included in this calculation.

COORDINATION WITH REGIONAL ENTITIES

Ridesharing services are often funded, planned, operated, or marketed by different agencies or groups. In particular, regional planning agencies and COGs tend to be involved in ridesharing programs; nearly all transit agencies surveyed reported that they coordinate with regional entities. Close to two-thirds of the agencies (17) said they attend regional meetings to plan ridesharing, and nearly half (13) said they participate in activities sponsored by the regional entity (see Table 9).

CHALLENGES

Some transit agencies are ambivalent about integrating ridesharing with transit. Nearly half of respondents noted that they think some people in their transit agency consider ridesharing a threat (48%); 43% do not think it is important to their mission (see Table 10).

Transit agencies cited several other challenges. For example, some said transit customers do not easily accept ridesharing as a substitute for full transit service (30%) and staff competency does not include ridesharing (13%).

TABLE 9
HOW DO YOU COORDINATE WITH OTHER ENTITIES REGARDING RIDESHARING?

Response	Count	Percent
We attend regional rideshare meetings to plan and/or coordinate.	17	61
We participate in activities sponsored by the regional entity, such as regional events and/or information tables at businesses.	13	46
We report the results of our ridesharing program to the regional entity.	11	39
The regional entity runs a complementary ridesharing program in our area.	8	29
We run the ridesharing program for our agency, and a regional entity representative sits on our board.	3	11
Our coordination is limited to occasional feedback on documents or programs	3	11
Not applicable	1	4
Other	9	32
Total Responses	28	100

Answers exceed 100% because respondents could choose multiple answers.

TABLE 10
WHAT CHALLENGES HAVE YOU FACED INTEGRATING RIDESHARING AS A COMPLEMENT TO TRANSIT?

Responses	Count	Percent
Some consider ridesharing as competition for transit riders and resources.	11	48
Not everyone considers ridesharing important to our mission.	10	43
Customers do not easily accept ridesharing as a substitute for full transit service.	7	30
Staff competency does not include ridesharing.	3	13
Another agency provides ridesharing and/or transit services.	3	13
Staff competency does not include transit expertise.	1	4
Other (please specify)	7	30
Total responses	23	100

Answers exceed 100% because respondents could choose multiple answers.

CHAPTER FOUR

SURVEY RESULTS: RIDESHARING WITHIN NON-TRANSIT AGENCIES

Non-transit agencies often operate ridesharing programs, either in coordination with or independent of transit agencies. This chapter summarizes the survey results of non-transit agencies to determine how they interact and coordinate with transit agencies, what services they offer and why, and how they measure the success of their efforts. The most common measurement is the number of people subscribed to the ridesharing services. As with the public transit agencies, non-transit agencies consider filling service gaps to be an important reason for their involvement in ridesharing programs. The chapter concludes by highlighting the challenges non-transit agencies face when they seek to coordinate their services with public transit. Two non-transit agency programs have also been highlighted with agency-specific profiles.

Non-transit agencies include COGs, MPOs, state DOTs, and TMAs. Thirteen of the 41 total survey respondents identified themselves as non-transit agencies (see Figure 6). A little more than half of the non-transit respondents (seven) reported that they operate the ridesharing program for their area, whereas 31% (four) noted that a transit agency operates the program. More than 75% said they meet with public transit agencies to plan or coordinate services.

The non-transit agencies serve a wide range of geographic areas, including single employment sites and entire states (see Figure 7). More than half said they serve regional areas, whereas almost one-quarter serve counties.

MOTIVATING FACTORS

Non-transit agencies cited many reasons they think ridesharing and transit should work together. All but one non-transit respondent, for example, indicated that filling service gaps was an important reason. More than three-quarters of respondents reported that market demand from customers was important. One respondent added that it is important to "present all commute options to workers, so they can select the travel mode that best suits their needs." Another said ridesharing forms a "dependable back-up solution in 'emergency' situations or unplanned events (e.g., transit strikes, bridge/highway closures, natural disasters, etc.)."

Table 11 also shows additional reasons cited by non-transit agencies, including improved access to public transit, environmental concerns, and increased access to businesses and services.

RIDESHARING SERVICES OFFERED

Non-transit agencies offer a variety of ridesharing services, including guaranteed ride home programs and subsidies and incentives to encourage ridesharing. The most common services, according to survey results, are carpool and vanpool matching and marketing to businesses. A full list of services is outlined in Table 12.

It is worth noting that although non-transit agencies offer a range of services, only 38% (5 of 13) actually market their ridesharing services to transit riders. (In contrast, one-half of transit agency respondents reported they do so, as shown in chapter three.)

The following is an example of a full-service ridesharing program sponsored by a MPO, the Metropolitan Transportation Commission (MTC), in the San Francisco Bay Area.

PROFILE: METROPOLITAN TRANSPORTATION COMMISSION LEVERAGES RIDESHARING AND TRANSIT IN THE SAN FRANCISCO BAY AREA

MTC is the transportation planning, coordinating, and financing agency for the nine-county San Francisco Bay Area. Created by the state legislature in 1970, the agency is guided by a 19-member policy board comprised of 14 commissioners appointed by local elected officials, two regional agency representatives, and three nonvoting members representing state and federal agencies.

Ridesharing is one of the services MTC manages through the San Francisco Bay Area's 511 Traveler Information Program (see Figure 8). In addition to ridesharing, the program provides coordinated information about the public's travel choices, including traffic, transit, and bicycling. The 511 Program is a partnership among MTC, Caltrans, the California Highway Patrol, many of the region's transit and paratransit operators, county congestion management agencies, and the Bay Area Air Quality Management District. The program provides traveler information to the public by means of the federally dedicated information phone number 511 and the website 511.org.

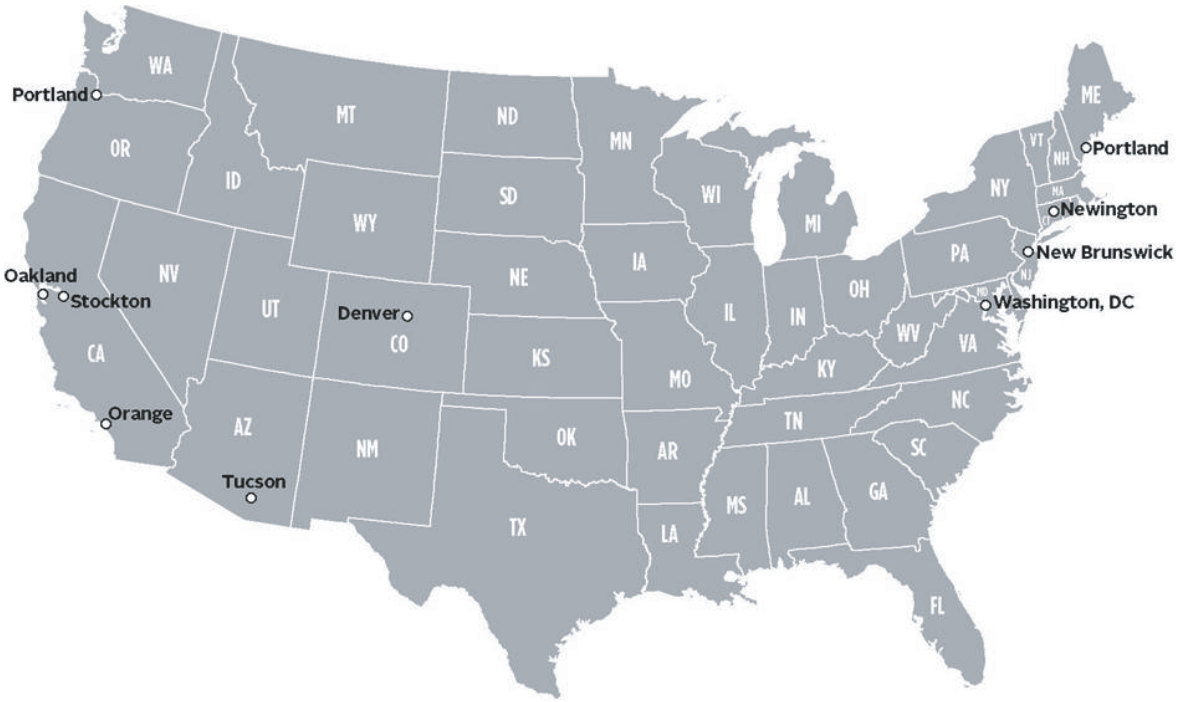

FIGURE 6 Locations of non-transit agencies surveyed.

Since 1995, MTC has contracted to deliver regional ridesharing services, including support for formation of carpools and vanpools, employer transportation consulting and outreach, management of online ride-matching tools, marketing, and some limited bicycling, airport, and incident-related parking information services. Starting in 2011, the ridesharing program will be renamed the 511 Regional Ridesharing and Bicycling Program, and it will include consolidated bicycling information services. MTC is working on a multi-modal trip planner that will extend the existing 511 transit trip planner to compare taking transit against the time, cost, and carbon emissions of driving to a transit stop or of driving the entire trip

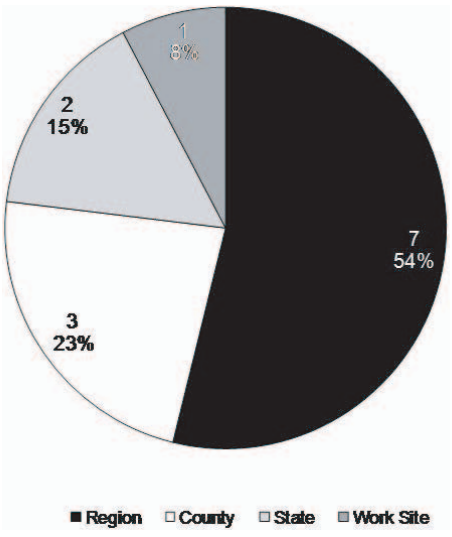

FIGURE 7 Geographic areas served by non-transit agencies.

Through its Climate Initiative grant program, MTC has approved $1.5 million of federal funds for a dynamic ridesharing pilot project in three Bay Area counties—Contra Costa, Marin, and Sonoma. The project, approved in October 2010 for development, envisions contracting with one or more software vendors to connect a pre-selected group of drivers and riders through mobile phones. MTC intends to incorporate lessons learned from the pilot project into the services provided by the 511 Rideshare program and potentially offer real-time rideshare services regionally.

According to the MTC survey respondent, "Since MTC is not a transit operator, 511 Rideshare usually assists transit agencies after a decision has been made to alter/eliminate a service. 511 Rideshare can help customers looking for commute alternatives, and often helps them with alternative transit services or with carpooling and vanpooling options." The respondent also mentions that ridesharing has proven to be a solution in some emergency situations or unplanned events, such as transit strikes, major road closures, and natural disasters.

INCENTIVES

Many non-transit agencies offer incentives to encourage people to participate in their ridesharing programs. According to survey results, the most common incentive is prizes (Figure 9). For example, one non-transit agency said it provides gift cards for starting a vanpool, and it gives out small prizes such as tote bags for signing up for its ride-matching system.

TABLE 11
WHY IS IT IMPORTANT FOR RIDESHARING AND TRANSIT TO WORK TOGETHER?

Responses	Count	Percent
Service area gaps not filled by existing transit service	12	92
Market demand from our customers	10	77
Improved access to public transit routes, stations, or park-and-ride lots	10	77
Increased access to businesses and services with limited parking	9	69
Environmental concerns	8	62
Regulations	1	8
Meet mobility manager policy goals	1	8
Other	3	23
Total responses	13	100

Answers exceed 100% because respondents could choose multiple answers.

TABLE 12
DOES THE RIDESHARING PROGRAM INCLUDE ANY OF THE FOLLOWING COMPONENTS?

Responses	Count	Percent
Provide carpool and vanpool matching	12	92
Market ridesharing to businesses	12	92
Provide guaranteed ride home	11	85
Form vanpool through a third-party provider	10	77
Provide incentives (e.g., loyalty programs, commuter checks, prizes, recognition)	10	77
Subsidize vanpool fares	8	62
Help establish vanpools with vehicles our agency owns or leases	6	46
Market ridesharing to transit riders	5	38
Provide parking for vanpools and carpools	4	31
Other	3	23
Total responses	13	100

Answers exceed 100% because respondents could choose multiple answers.

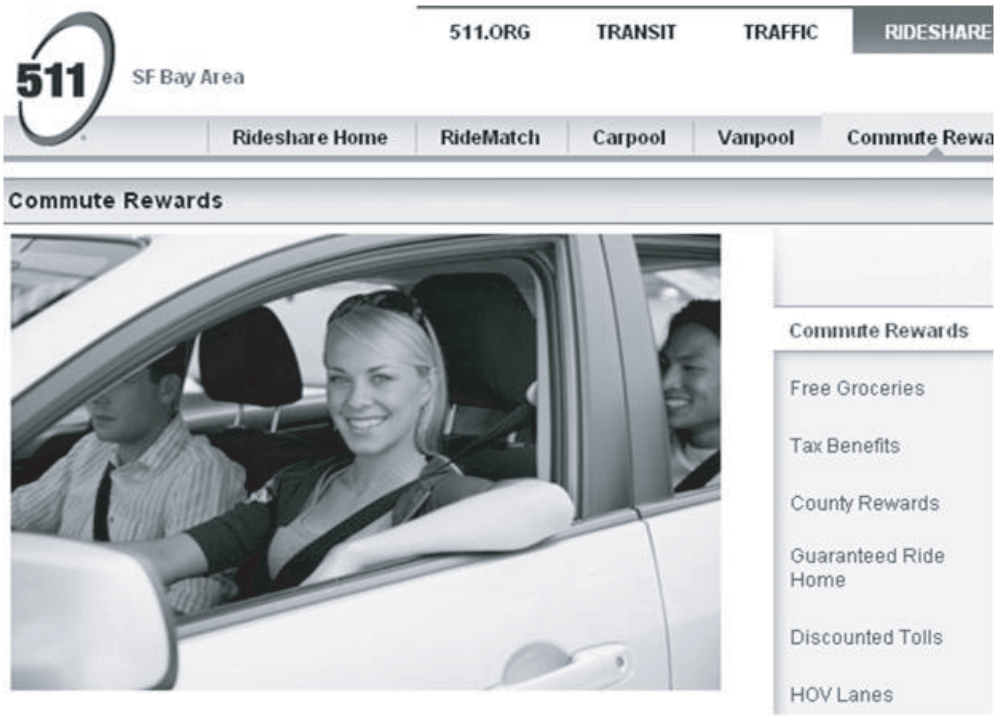

FIGURE 8 SF Bay Area 511 Program Offers Rewards to Ridesharing Commuters. (*Courtesy:* Metropolitan Transportation Commission website.)

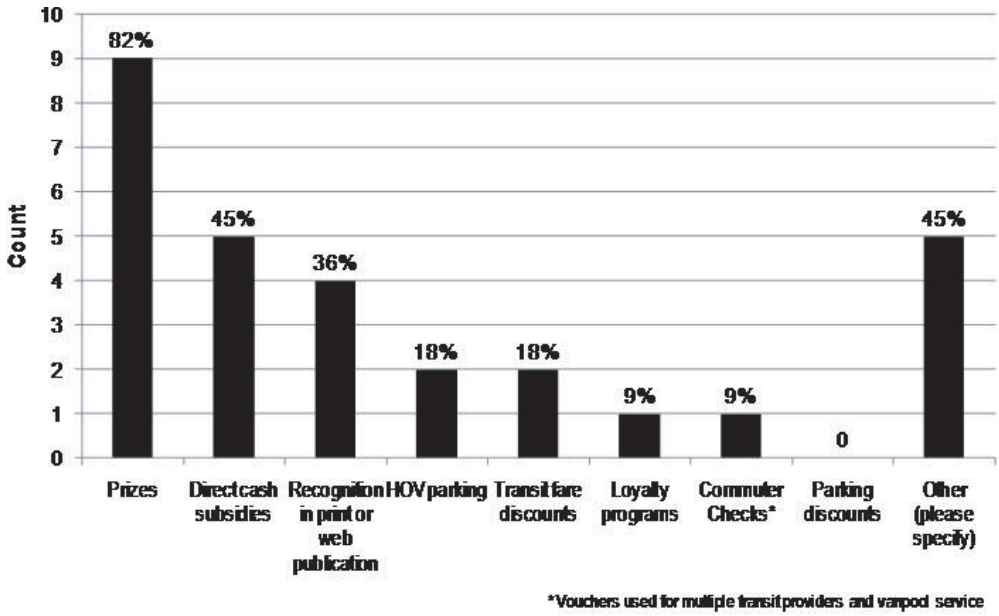

FIGURE 9 Incentives Offered by Non-Transit Agencies.

COORDINATION AND INTEGRATION WITH TRANSIT AGENCIES

Different agencies often plan, fund, market, or operate ridesharing programs in a given service area. More than three-quarters (ten) of non-transit agencies reported that they meet with transit agencies to plan and/or coordinate services (Table 13). An even larger number (11) participate in regional events sponsored by other agencies or report the results of their efforts to other agencies.

Comments gathered in the survey emphasize the collaborative nature of planning, marketing and operations among different agencies:

- "We have successfully integrated ridesharing and transit based on our ability to provide information on ALL commuting options available to commuters."
- "We have an amazingly good relationship with our local transit agency—which is supportive to the point of including carpool/vanpool in its marketing and providing fare subsidies to vanpool riders within its boundaries. We greatly appreciate their partnership."
- "We coordinate the regional TDM program and coordinate with local jurisdictions, transit operator's, DOT's, and TMA's."

The state of Washington has fostered strong relationships with transit agencies through legislation and funding, as shown in the following profile.

PROFILE: WASHINGTON STATE LEADS NATION IN VANPOOLING

The state of Washington boasts the nation's largest public vanpool fleet, thanks in part to legislation, support, and funding from the state. Today, there are 20 public transit agencies that operate vanpool programs across the state (WSDOT 2011). As of January 2011, there were a total of 2,498 traditional

TABLE 13
HOW DO YOU COORDINATE WITH OTHER ENTITIES REGARDING RIDESHARING?

Responses	Count	Percent
We report the results of our ridesharing program to another entity.	11	85
We participate in activities sponsored by others, such as regional events and/or information tables at businesses.	11	85
We meet with public transit agencies in the area to plan and/or coordinate.	10	77
We attend rideshare meetings with other kinds of agencies to plan and/or coordinate.	10	77
Our coordination is limited to occasional feedback on documents or programs.	0	0
Not applicable	0	0
Other	2	15
Total responses	13	100

Answers exceed 100% because respondents could choose multiple answers.

vanpools in operation. In addition, there were 148 VanShares, vanpools that require a multimodal connection and have short trip lengths of no more than 10 miles one way.

Washington's leadership in vanpooling dates back more than 30 years. In 1979, the Washington State Legislature enacted the Ridesharing Act, which, among other things, allowed the use of government vehicles for commuter ridesharing and defined vanpooling as a fixed group of up to 15 people commuting from home to work or school (Pawlowski and Maillet 1999). Subsequent legislation exempted vanpool vehicles from sales, use, and motor vehicles taxes (Washington State Ridesharing Organization 2002).

Also in 1979, the city of Seattle created the first publicly operated vanpool service in the state (one of the first in the country). Ten years later, the program was transferred to Metro Transit and in 1994 it was incorporated in the Metro–King County merger. King County Metro began its VanShare program in 2001 to help employees travel from public transportation stations, Washington State ferries and park-n-ride lots to their work site. (See profile of King County Metro in chapter three.)

WSDOT got involved in vanpooling in the early 1980s by using money from a lawsuit settlement to stimulate the development of vanpool programs across the state (Conrick 2008). The Commute Trip Reduction Law, adopted in 1991, further spurred the expansion of vanpooling. It required major employers in counties with more than 150,000 people to establish transportation demand management measures to reduce employee commuter trips (Washington State Ridesharing Organization 2002; WSDOT 2011). For example, employees were instructed to offer options for decreasing single-occupant commuting, which could include providing priority parking for vanpoolers and carpoolers (CTAA 2009). Tax credits have also been made available to major employers who participate in trip reduction programs and provide financial ridesharing incentives to their employees. In addition, employers are absolved from liability during their employees' commute time.

In 2003, the state legislature created a vanpool grant program to expand vanpooling in Washington. Roughly $30 million has been allocated to the program. Previously, these funds could only be used for "capital costs associated with putting new vans on the road and employer incentives to increase employee vanpool use" (WSDOT 2011). However in the 2009–2011 biennium, transit agencies, for the first time, were able to use grant funds to purchase replacement vans as well. Transit agencies must provide a 20% cash match for the cost of vans, and the state reimburses the remaining 80%. Allocations are based on a maximum cost of $26,000 per van. According to a WSDOT representative, this leveraging of local and state resources and the "community of vanpool operators who support each other" contributes to a partnership that makes vanpooling the success it is in Washington.

PERFORMANCE MEASURES OF RIDESHARING SUCCESS

The most common metric used by non-transit agencies to determine the value of their ridesharing programs is the number of people subscribed to the service (69% of respondents). The full range of performance metrics is outlined in the Table 14.

CHALLENGES

Non-transit agencies reported that they face a variety of challenges that inhibit the integration of ridesharing and transit. For example, five respondents said some consider ridesharing to be competitive with transit, whereas four noted that not all agencies consider ridesharing to be important to their mission. Three non-transit agency respondents said customers do not easily accept ridesharing as a substitute for full transit service (Table 15).

TABLE 14
HOW DO YOU DETERMINE IF THE AMOUNT SPENT ON RIDESHARING IS WORTHWHILE?

Responses	Count	Percent
Through the number of people subscribed to/signed up for the ridesharing program	9	69
Through customer satisfaction surveys or other customer feedback	6	46
Through the number of successfully matched rides	6	46
Through environmental measurements, such as decreased carbon emissions	6	46
Through achievement of our goal to increase mobility in our service area	5	38
By closing a service gap	3	23
By avoiding the need to add another bus or train	2	15
Through adherence to regulations	1	8
Through cost savings to the agency	1	8
Other	2	15
Total responses	13	100

Answers exceed 100% because respondents could choose multiple answers.

TABLE 15
WHAT CHALLENGES HAVE YOU FACED INTEGRATING RIDESHARING AS A COMPLEMENT TO TRANSIT?

Responses	Count	Percent
Some consider ridesharing as competition for transit riders and resources	5	42
Not everyone considers ridesharing important to our mission	4	33
Customers do not easily accept ridesharing as a substitute for full transit service	3	25
Another agency provides ridesharing and/or transit services	1	8
Staff competency does not include ridesharing	0	0
Staff competency does not include transit expertise	0	0
Other	3	25
Total responses	12	100

Answers exceed 100% because respondents could choose multiple answers.

CHAPTER FIVE

SURVEY RESULTS: MARKETING AND TECHNOLOGY

MARKETING STRATEGIES INTEGRATING RIDESHARING AND TRANSIT

Marketing is critical to the success of ridesharing and transit. The 41 organizations that participated in the survey were asked who markets their ridesharing program. In this section of the survey, both transit and non-transit agencies answered the same questions. Nearly two-thirds (25) said the ridesharing program is marketed together with public transit, although more than a third said it is marketed independently. In addition, it appears fairly common for a ridesharing program to be marketed by more than one agency. Nearly half (19) reported that they market the ridesharing program along with another organization such as a TMA or state or regional entity. More than one-third (16), on the other hand, reported that they promote the program themselves.

Incentives are an important component of any marketing program. More than half of those surveyed indicated that their ridesharing program includes incentives. Two-thirds (16), for example, offer prizes as incentives, whereas some give recognition in print or web publications or offer direct cash subsidies. Less common incentives include transit fare discounts, loyalty programs, commuter checks, and HOV parking as shown in Figure 10.

It does not appear to be very common for ridesharing participants to receive credits or vouchers toward their transit fares, as shown in Table 16. It appears even less common for transit riders to receive credits or vouchers for ridesharing services (Table 17); only three respondents said they offer ridesharing credits or vouchers to their transit riders. However, some agencies do give ridesharing participants credits toward transit fares. The following profile describes transit fare incentives offered by public transit operators to ridesharing participants in three different states.

PROFILE: VANPOOLERS GET DEALS ON TRANSIT RIDES AT DART, PACE, AND KING COUNTY METRO

DART in Iowa gives vanpoolers an identification card allowing them to ride free on all its buses. The trips are usually short ones in downtown Des Moines, where they work during the day. Many vanpoolers also work at a major employer, such as Principal Financial Group, where the employer pays a lump sum to DART for all its employees to ride the buses free.

Vanpoolers who ride a Pace bus in Illinois to or from their vanpool pick-up point are eligible for a 30-day Commuter Club Card. The card allows vanpoolers unlimited rides on all Pace buses. Vanpoolers can also receive a discount on a 30-day pass for rides on Chicago Transit Authority and Pace fixed routes.

In the Puget Sound region in Washington, companies can provide their employees with a subsidized pass that can be used not only on public transit but also for vanpools in the region (King County Metro 2009). The annual transportation pass program, which is called ORCA Business Passport, requires participating companies to buy a pass for every benefits-eligible employee. Companies, however, can choose if they want their employees to co-pay up to 50% of the cost of an individual pass. In 2010, nearly 700 companies in King County alone participated in the pass program.

INCORPORATING CUSTOMERS' PERSPECTIVES

Gathering feedback from customers is an important element in developing and improving ridesharing programs. Survey questions addressed how both public transit and non-transit agencies gather feedback from customers to improve services. More than a third of respondents (14) indicated that the customer service department collects feedback to strengthen the program (see Table 18). One respondent echoed this sentiment with the following comment: "We have made adjustments to the web site and program guidelines after receiving feedback from our rideshare line or email." Those surveyed also reported beginning the ridesharing program owing to customer interaction (six) or customer requests (ten). Nearly half (16) reported periodically surveying ridesharing customers for feedback.

Agencies were queried about how often they surveyed customers. As illustrated in Figure 11, half of those who responded to the question (ten) reported surveying customers at least once a year. The rest indicated that they survey less frequently than that or periodically with no set time frame.

When asked about what method respondents use to survey customers, three-quarters (15) indicated that they used e-mail surveys, making it the most common form of collecting

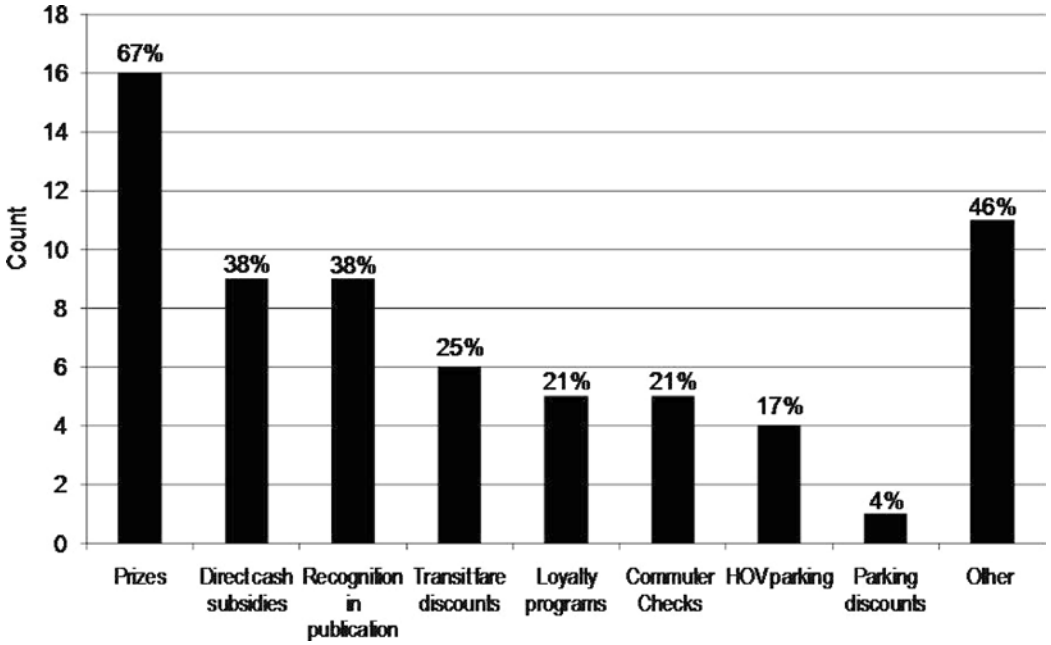

FIGURE 10 Incentives offered. (If you indicated above that the rideshare program provides incentives, please check all incentive programs that you provide.) ($n = 24$.)

TABLE 16
DO PARTICIPANTS IN THE RIDESHARE PROGRAM RECEIVE VOUCHERS OR OTHER CREDIT TOWARD THEIR TRANSIT FARES?

Response	Count	Percent
Rideshare program participants do not receive vouchers or credit toward their transit fare.	25	71
Rideshare program participants do receive vouchers or credit toward their transit fare.	10	29
Total responses	35	100

TABLE 17
DO TRANSIT RIDERS RECEIVE VOUCHERS OR OTHER CREDIT TOWARD THE RIDESHARING SERVICES?

Response	Count	Percent
Transit riders do not receive vouchers or other credit toward ridesharing services.	34	92
Transit riders do receive vouchers or other credit toward ridesharing services.	3	8
Total responses	37	100

TABLE 18
HOW HAVE YOU INCORPORATED FEEDBACK FROM PEOPLE WHO USE THE RIDESHARING PROGRAM?

Response	Count	Percent
Customers are surveyed periodically for feedback.	16	43
The customer services department of our agency collects comments, which are used to improve the program.	14	38
The ridesharing program is part of our agency because of customer requests for service.	10	27
The ridesharing program was initially designed through interaction with customers.	6	16
Not applicable	8	22
Other	8	22
Total responses	37	100

Answers exceed 100% because respondents could choose multiple answers.

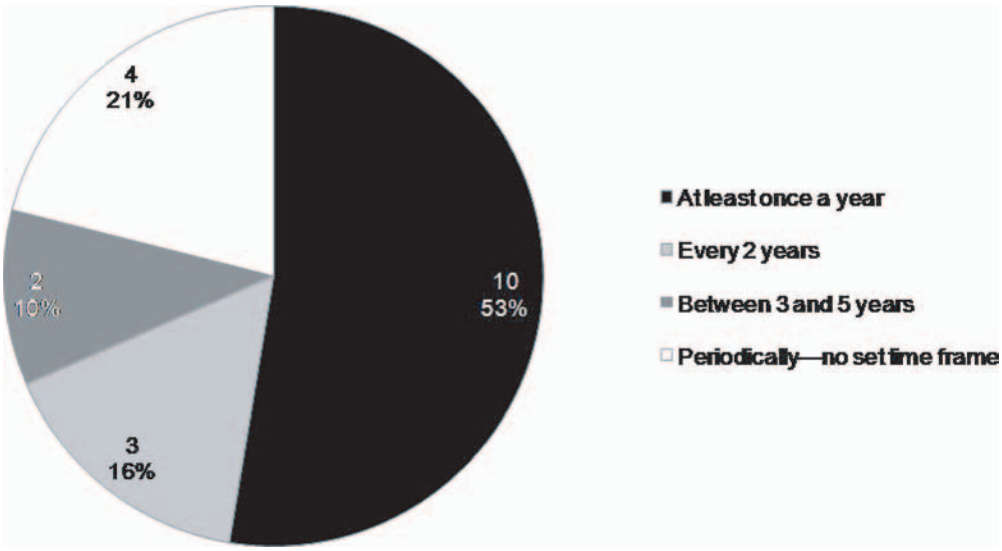

FIGURE 11 Customer survey frequency. (If you indicated above that you surveyed customers, how often do you survey customers?) ($n = 19$.)

customer feedback. More than one-third (seven) implement a telephone survey, and one-quarter (five) a postal survey. Twelve respondents use a combination of two or more methods (Figure 12).

TECHNOLOGY AND SOCIAL MEDIA

Technology has helped to integrate ridesharing and public transit, particularly through the use of website tools. For example, more than half (19) said they use a trip planner that allows customers to search for both transit and ride-matching. Even more organizations and agencies (27) provide a ride-matching link on their website for carpools and/or vanpools, as shown in Table 19.

Only five agencies (13%) provide matching on social networking sites such as Facebook, and only three (8%) give customers the ability to access transit and ridesharing programs through a mobile phone application. Several agencies, however, reported that they are in the midst of developing technological tools to engage customers in ridesharing. Comments from survey respondents include:

> "Future system refines will include mobile apps and social marketing integration."

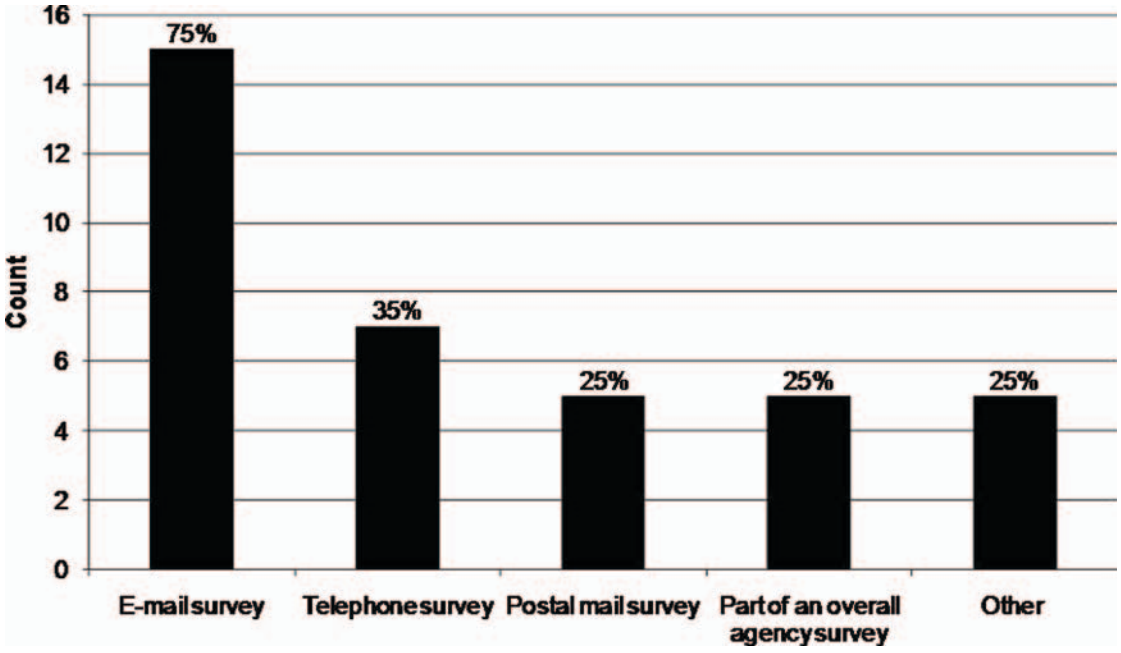

FIGURE 12 Survey mediums. (If you indicated that you surveyed customers, what survey mechanisms do you use for the ridesharing program?) ($n = 20$.)

TABLE 19
HOW DOES TECHNOLOGY PLAY A ROLE IN SUPPORTING THE INTEGRATION OF RIDESHARING WITH TRANSIT?

Response	Count	Percent
The program has a link to ridematching for carpools and/or vanpools on our agency's website.	27	73
The program has a trip planner that searches for both ridematching and transit options to satisfy a given query.	19	51
Both the ridesharing program and transit operations are promoted on social media (e.g., Facebook, MySpace, LinkedIn, etc.).	15	40
Customers can obtain carpool and vanpool matches for our program on a social networking site (e.g., Facebook, MySpace, LinkedIn, etc.).	5	13
Transit and ridesharing programs are accessible via a mobile phone app	3	8
Other	7	19
Total responses	37	100

Answers exceed 100% because respondents could choose multiple answers.

"We are developing a more integrated strategy for providing this information to the public . . . that will include mobile apps."

"We are currently working on a multi-modal trip planner that would provide options/itineraries for transit and other modes. Currently, we provide trip planners for transit, ridesharing, bicycling, but these are all offered independently from each other."

Facebook (16) and Twitter (12) were the most common social media sites used to promote ridesharing (see Figure 13). MySpace was used by only one transit agency.

The following are specific examples of agencies using Facebook and other social media to reach customers.

PROFILE: SCAT AND DART COMMUNICATE THROUGH SOCIAL MEDIA

SCAT, a department of the Brevard County Board of County Commissioners in Florida, uses technology in innovative ways to reach out to the community and promote its transportation services. Previously, riders had to call the agency to learn of route and service changes. In 2010, SCAT expanded its use of technology in marketing by launching a Facebook page and Twitter account, SCATBus. The agency uses the social media sites to inform transit riders of any changes in service—such as bus service delays and route deviations—and to provide information about its route schedules and

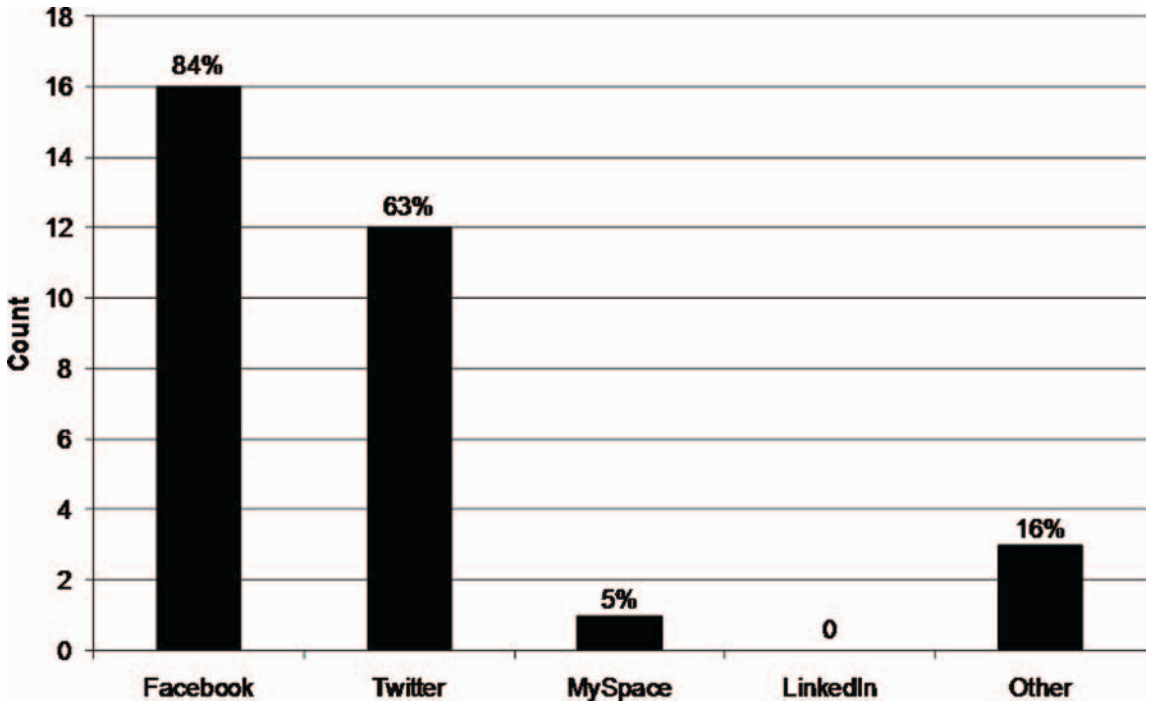

FIGURE 13 Social media sites used to promote ridesharing. (If you indicated above that you use social media in promoting ridesharing with transit, what sites do you use?) ($n = 19$.)

maps, vanpool program, and park-and-ride lots. A link to the agency's "Vanpool Information Request Form" used for ride-matching is available on the Facebook website. Similarly, links to the agency's Facebook and Twitter websites are featured on the main SCAT website, www.ridescat.com, and icons for both sites are on the agency's bus schedules. The Facebook and Twitter websites are also intertwined so that updates to one are automatically sent to the other. Roughly 30 people follow SCAT on Twitter, and more than 60 people "like" the agency's Facebook page.

DART operates about 12 of its vans into Des Moines from Ames, 35 miles to the north. A vanpooler who misses his van can ride on any of the others, providing there is room. The general manager of DART sees an opportunity for these vanpoolers to check on real-time availability through the use of DART's Facebook page. He believes it is currently a method of communication among fellow riders as well as among riders from different vans in the same area. In the future, he intends to provide on-line ride-matching on Facebook.

DYNAMIC RIDESHARING

Dynamic ridesharing is a new technology that has few participants. It can be defined as "technology-assisted slugging," as rides are usually arranged on the fly in real time, often using mobile phones. As illustrated in Table 20, most agencies surveyed do not offer it. Only one agency said it participated in dynamic ridesharing, whereas another reported trying the program in the past but said "it was not successful." Close to a third indicated that they do not see dynamic ridesharing as part of their mission (12).

However, 18 agencies said they were interested in dynamic ridesharing and offering it in the future. In comments received on the survey, five others indicated that they are already promoting dynamic ridesharing or are in the planning stages. This nascent state of dynamic ridesharing is reflected in the following respondent's comment: "We are waiting to see demonstrated meaningful results and means to address security concerns."

WSDOT has funded Phase One of a dynamic ridesharing pilot project, which is being implemented during Phase Two by Avego Corporation in 2011 (see Figure 14). MTC has awarded funding to develop a pilot program in three counties. (See the MTC profile in chapter four.)

PROFILE: DYNAMIC RIDESHARING COMING TO SEATTLE

The first large-scale real-time ridesharing program in the country—"go520"—went live in 2011. Avego Corporation uses GPS-enabled smartphones to connect riders with drivers on State Route 520. Avego signed up 1,000 participants who travel in the 15-mile route between Redmond and Seattle to participate in the project. In phase one, "go520" was launched, Avego added phase two, which provides a guaranteed ride service for those who do not get a real-time match.

Riders and drivers register in advance to participate. There are mandatory criminal history and sex offender registry checks for all participants, and mandatory driving record checks and proof of insurance requirements for all drivers. To use the system, drivers with iPhones or Windows Phone 7 must download Avego's free smartphone application. When a ride is requested, the Avego Shared Transport System guides the driver to a preestablished safe pick-up point along the route and riders are sent the make, model, and license plate number of the driver's car. The rider is given a one-time pin number to identify himself or herself to the driver. The pin number also serves to charge the rider an electronic payment of $1 plus 20 cents per mile traveled. For a typical 12-mile trip, the cost will be $3.40, comparable to a two-zone peak fare of $3 on transit.

Pick-up points can be any public place. Pick-up and drop-off points where a driver will meet a rider include Children's Hospital, the University of Washington, selected park-and-ride lots, and the Microsoft campus in Redmond. Some of the established pick-up points are at transit stops, as one goal of the project is to cover the "last mile" to or from connections with transit. For safety reasons, no pick-ups can occur from residential addresses.

Drivers receive incentives to participate. In addition to the payments they receive from riders, Avego-approved drivers will earn 85 cents for every rider picked up and 17 cents per mile. Riders are only limited by the capacity of the vehicle, but federal rules limit the reimbursement for the total riders

TABLE 20
WHAT IS YOUR AGENCY'S PRACTICE REGARDING DYNAMIC RIDESHARING?

Response	Count	Percent
We are interested but not currently involved in dynamic ridesharing.	18	45
We do not view it as part of our mission.	12	30
We offer or are participating in dynamic ridesharing.	1	2
Other	9	22
Total responses	40	100

FIGURE 14 Seattle's dynamic ridesharing pilot project. (*Courtesy:* Avego Corporation website.)

in a car to 50 cents per mile. The Avego system credits the rider's and driver's account and gives them an instant receipt.

WSDOT sponsored phase one, a $400,000 pilot project, which included a pre-pilot web-based survey conducted by the Washington State Transportation Center. The "go520" project was conceived to coincide with the introduction of tolls on the Lake Washington Bridge. It is expected that the tolls will give an added incentive for commuters to carpool, boosting participation in Phase two.

CHAPTER SIX

SURVEY RESULTS: PUBLIC TRANSIT AGENCIES AND CASUAL CARPOOLING

Casual carpooling, which is also known as "ad-hoc carpools" or "slugging," is a form of carpooling where drivers and passengers meet without prior arrangement at a designated location. Casual carpools often form at transit stations where riders and drivers can take advantage of HOV lanes. Houston, San Francisco, and Northern Virginia/Washington D.C. have the most established programs among metropolitan areas in the United States.

Casual carpooling was not common among survey respondents. More than two thirds (27 of 39) reported that there is no casual carpooling in their area (see Table 21). Of those who do have casual carpooling in their area, six agencies said they tolerate it but do not encourage it.

Only four agencies noted that they support casual carpooling in any way. Two agencies encourage casual carpooling by allowing pick-ups and drop-offs on their property. One promotes casual carpooling on its website as well as in its written materials. Another said, "We have cooperated with designating locations for slugging and ensure operational cooperation between our transit system and slugging participants."

Not all agencies and organizations, however, are in favor of casual carpooling. One survey respondent said, "Slugging uses precious parking capacity and generally reduces our ridership and fare revenue." Two others are concerned that transit parking lots may lose valuable parking spaces to casual carpool riders, who may leave their cars at the transit station for the day but do not contribute any fare revenue to the system. One respondent reported that casual carpoolers are prohibited from parking at its facility.

Public transit agencies clearly have different views of casual carpooling. The profiles below highlight two agencies with contrasting views: BART prohibits casual carpooling on its property, and PRTC actively encourages the practice. The latter case highlights casual carpooling's role in reducing demand on transit services, as mentioned in the literature by Beroldo (1990) in chapter two.

PROFILE: BART AND CITIES MANAGE CASUAL CARPOOLING

Casual carpooling in the San Francisco Bay Area provides a more comfortable and less expensive commute than taking public transit to jobs in San Francisco. However, it could not easily exist without transit for the ride home. In this way, public transit complements casual carpooling; however, at least one transit agency considers casual carpooling a detriment to its operations.

BART began to experience problems caused by casual carpooling during the agency's heyday in the late 1980s. Casual carpoolers were parking in BART's oversubscribed lots but only using the transit system one-way. When roundtrip riders were unable to find parking, BART installed machines inside the fare gates that required riders to enter their parking space number. Not paying a fare to access the parking machines could result in a parking ticket.

At the same time, some cities set up loading zones for casual carpoolers on sidewalks near BART. These zones, which continue today, enable casual carpooling for the morning commute without impinging on BART parking, while they allow the casual carpoolers to return by BART in the evening. However, a 2010 report by 511 Rideshare indicated that 35% of the casual carpoolers previously took BART before switching to casual carpooling, causing a loss of fare revenue. BART must also add more cars to its evening trains to accommodate the additional riders who carpooled in the morning.

Although San Francisco has set aside loading zones for the evening commute, casual carpooling is less attractive for the return trip. Unlike the morning commute through the toll plaza, there is no designated carpool lane on the bridge between San Francisco and the East Bay and no reverse toll in the evening.

Casual carpooling near BART occurs most often in cities that are near the middle of a trip, when the BART train is most often likely to be crowded with no or limited seating available. For example, the town of Orinda is seven stops from the beginning of the line and six to nine stops away from the downtown San Francisco stops. Consequently, Orinda attracted 101 casual carpools a day, totaling more than 300 riders, according to the 2010 511 Rideshare report.

The Bay Area Toll Authority raised bridge tolls to $6 in peak periods and began charging all carpools a $2.50 toll in July 2010; carpools had previously been free. Riders and drivers involved in casual carpooling debated about whether or not they needed to pay the driver a share of the toll, and if so, how much (Kane 2010). One year later, by June 2011,

TABLE 21
WHAT IS YOUR AGENCY'S PRACTICE REGARDING CASUAL CARPOOLING/SLUGGING?

Response	Count	Percent
There is no casual carpooling or slugging in our area	27	69
We tolerate the activities but do not encourage them	6	15
We encourage these activities by allowing pick up and drop off on our property	2	5
We encourage these activities through information on our website	2	5
We encourage these activities by installing signs to formally designate pick up and drop off points on our property	1	3
We encourage these activities by promoting them in our written materials and transit announcements	1	3
We prohibit these activities on our property	0	0
Other	8	21
Total Responses	39	100

Answers exceed 100% because respondents could choose multiple answers.

the number of vehicles in the carpool lane had decreased by 26% (L. Lee, Bay Area Toll Authority, Metropolitan Transportation Commission, personal communication, Sep. 1, 2011).

Two studies conducted at the University of California at Berkeley in spring 2011 examined the impact of toll increases on casual carpooling and transit use. University researchers conducted focus groups of more than 100 current and former casual carpoolers. In addition, 400 responses were collected from surveys at casual carpool sites. Researchers found that about half of the loss of casual carpoolers was the result of changes in residential and employment locations and status rather than the toll. However, the toll definitely deterred some casual carpool drivers and riders, not only because of the cost itself but also because the injection of money into the social dynamics of offering or accepting a ride made them uncomfortable. Research results indicate that a $1 payment is now offered to drivers at most casual carpool sites, and $1.25 from greater distances. A few drivers stopped picking up riders because they were worried that collecting a fee would create insurance and liability issues. The toll did not affect more affluent drivers because they considered the savings in travel time in the carpool lane more important than a toll. Some drivers were no longer interested in offering rides because the faster travel time was reduced with toll collection (E. Deakin, University of California Transportation Center, personal communication, Aug. 29, 2011).

PROFILE: PRTC SUPPORTS CASUAL CARPOOLING

PRTC supports casual carpooling in the Washington, D.C./Northern Virginia area, acknowledging the vital role it plays in the transportation system. There are more "slugs"—or casual carpools—in the region than there are transit riders who use PRTC's express service, according to the public transit agency's manager of planning and quality assurance. Those casual carpools take thousands of people into the core employment areas around the District of Columbia, commuters that PRTC could not accommodate as a result of capacity issues. There is also an integral connection between casual carpooling and transit in the DC area, as PRTC's transit service is located near many slugging origins and destinations. PRTC thus supports and promotes casual carpooling in a variety of ways.

One way is by disseminating information about casual carpooling on the transit agency's website. Included is a link to www.slug-lines.com, which offers everything from tips on slugging etiquette to descriptions of where slug lines form in the morning and afternoon. PRTC also supplies information about casual carpooling to people who request it through the agency's ride-matching request form. (The form specifically asks if people are interested in receiving this information.) Customer service agents in PRTC's call center are also able to provide information on slugging to callers.

In addition, PRTC assists casual carpoolers when changes are made to slugging locations. When the number of commuter parking spaces at a mall recently decreased from 1,000 to 275, for instance, the transit agency informed casual carpoolers of alternate lots they could use and provided the location of new slug lines, according to the transit agency's manager of planning and quality assurance. The transit agency also suggests traffic patterns that might work best for given lots, and it has provided input on slug line placement in the District of Columbia. The District is planning to relocate slug lines from main thoroughfares onto adjacent streets, according to PRTC. PRTC has also advocated consideration of slug activity during the planning phases of new park-and-ride lots.

CHAPTER SEVEN

CONCLUSIONS

Ridesharing can help public transit agencies fill many types of service gaps. For example, these gaps may be caused by a lack of funding to institute fixed-route services, a service area that is too large or too sparsely populated or existing services that are over capacity. This rationale for linking transit and ridesharing is a key finding of the review done for this synthesis. This linkage is not universally embraced, however, as more than 40% of respondents indicated that their agency does not consider ridesharing important to its mission.

The synthesis looked at how transit and ridesharing can be leveraged together for mutual benefit. Only those agencies that had some type of ridesharing program were surveyed. Forty-one agencies responded to the survey, yielding an 83.7% response rate: 28 reported that they were transit agencies and 13 reported that they were non-transit agencies.

Publications linking public transit and ridesharing were few in number. The probable cause is that a relatively modest number of transit agencies are actively involved in ridesharing programs. Most documents found were about specific case studies on vanpool programs that filled some service gap. Using ridesharing to save public transit operating costs does appear to be feasible, according to the literature. For example, the Regional Transportation District in Denver tracks the cost of a vanpool as well as an express bus, and in all 2009 cases reported, vanpools had a lower subsidy per passenger. Similarly, casual carpooling could save the San Francisco Bay Area $30 million a year, according to one literature source. Despite these operational benefits, the literature search found very little written on the economic benefits of ridesharing to transit agencies.

REASONS FOR PUBLIC TRANSIT AND RIDESHARING TO WORK TOGETHER

As with the findings in the literature review, the top reason all survey respondents indicated it is important for public transit and ridesharing to work together is to fill service area gaps. In rural regions in particular, agencies use vanpools to extend their reach into sparsely populated areas of their service district. Research uncovered other reasons for working together, including addressing "the last mile" between a transit stop and the ultimate destination and providing a back-up solution in emergencies and natural disasters. Only three transit agencies said they substitute ridesharing for a transit route as a cost-saving measure.

Market demand from customers was the second most common answer given in response to the question, "Why it is important for transit and ridesharing to work together?" This indicates that many agencies view their role as mobility managers—that is, they aim to provide a full range of travel alternatives to their customers.

TECHNOLOGY

Technology supports the integration of ridesharing and transit on agency websites. More than 70% of respondents have a link to ride-matching on their website. About half indicated that their trip planner searches for both ride-matching and transit options in response to a given query. Fifteen respondents also promote ridesharing and transit on social media. Although the use of technology is growing as a means of promoting or integrating ridesharing, it is still evolving. For example, using social media for ride-matching is not common. However, some agencies report that they are in the midst of developing these and other technological tools, including phone applications and one-stop search engines. No respondent reported a successful dynamic, or real-time, ridesharing program; however, there is substantial interest in such programs, which may coincide with the rise in the use of smartphones by customers. Nevertheless, 12 survey respondents indicated that they do not see dynamic ridesharing as part of their mission.

CHALLENGES

According to survey respondents, ridesharing continues to be a point of contention within their agencies. They indicated that the primary challenge faced by agencies trying to integrate ridesharing as a complement to transit is that ridesharing is considered competition for transit riders and resources. This survey response was chosen by 11 of 23 transit agencies and 5 of 12 non-transit agencies. Nearly as many indicated that not everyone in their organizations considers ridesharing important to the mission (ten transit agencies and four non-transit agencies). About a third of respondents noted that customers do not easily accept ridesharing as a substitute for full transit service. Other challenges mentioned in written comments in the survey included competition for parking, off-peak work-shift hours, funding, and the perception of competition by private-sector providers.

OPPORTUNITIES

Several innovations by survey respondents present opportunities to use ridesharing as a complement to transit. The following examples could be considered by agencies to expand their market and provide a greater menu of transportation options to the communities they serve.

Solving the "Last Mile"

How to address the "last mile" issue is an ongoing problem for public transit agencies trying to increase ridership. Potential riders say they would take transit, but they do not have a way to get to or from their destination after they get off the bus or train, a problem dubbed "the last mile." Pace, which serves the suburbs of Chicago, and King County Metro in Seattle have addressed the problem by using feeder vanpools—vanpools limited to ten miles between home or work and the transit stop. The life of a well-used vanpool vehicle can also be extended by taking it off long-distance trips and limiting it to such short feeder trips.

Maximizing Agency Revenue

The mileage that vanpools travel can generate funds for a transit agency. FTA formula grants award funds for vehicle-miles traveled in areas with a population of at least 200,000. Des Moines Area Regional Transit Agency generates $3 million in federal grants, some of which is used to replace aging vans. It converts the remainder to operating funds for its bus fleet. How widely this revenue strategy is used by others and the extent of revenue produced would be useful information for transit agencies not yet employing this strategy.

Creating Capacity Through Slugging/ Casual Carpools

Casual carpooling was not a common factor, with 27 of 39 respondents reporting that there was none in their area. However, where slugging exists, there is an opportunity to have it play a vital transportation role in heavy commute corridors. An article referenced in the literature chapter suggests that casual carpooling, which arises spontaneously, should be encouraged if it can reduce demand on transit service in a specific corridor, thereby allowing transit service to be increased along other routes. The Potomac and Rappahannock Transportation Commission in Virginia supports casual carpooling because it takes thousands of people into the core employment areas around the District of Columbia, commuters that the agency could not accommodate owing to capacity constraints.

Leading Through Legislation

State leadership and legislation can be instrumental in elevating ridesharing as a travel mode and, thereby, encouraging public transit to offer ridesharing programs. The state of Washington has the largest public vanpool fleet in the nation. This leadership can be credited to legislation passed more than 30 years ago allowing the use of government vehicles for commuting. In 1991, state law required major employers to establish measures to reduce employee commuter trips, but it also gave employers tax credits and excluded them from liability. Current legislation funds a vanpool grant program. As a result of this legislative and financial support from the state of Washington, 20 public transit agencies operate vanpool programs across the state.

By its nature, a synthesis has limitations, such as a small sample size and a self-reported survey bias. Despite these limitations, a synthesis can uncover items that are ripe for more in-depth research. Based on information collected for this study, the following ideas for further study are presented.

Obstacles to and Opportunities for Integration of Ridesharing with Public Transit

This study has taken place in an unsettled funding environment for public transit: the national economy is still weak, reauthorization of the federal surface transportation act has been stalled, major cuts to federal spending are being discussed, and states across the country are facing deficits. Transit agencies' services may be facing contraction instead of expansion.

- Identifying Obstacles:

Ridesharing programs can be part of the answer for agencies that see mobility as their mission. However, this study reveals that ridesharing is viewed skeptically by many in public transit agencies. Almost 46% of survey respondents indicated that some in their agency consider ridesharing as competition for transit riders and resources. Competition for parking designated for transit riders is one obstacle identified in this study. A belief that ridesharing may lure away transit riders is another. Are these valid concerns and, if so, what strategies are available to address them? Are there additional obstacles and how can they be addressed? In some cases, another agency in the region provides the ridesharing program. How can transit agencies coordinate more closely with these agencies to the benefit of both?

- Examining Opportunities:

After the obstacles have been identified, a toolkit could be developed with a step-by-step approach for using both vanpooling and carpooling as opportunities instead of obstacles for public transit. Building on case studies of successful practices and using cost comparison data, the toolkit could explore in more detail the issues discussed previously: solving "the last mile," maximizing agency revenue, creating capacity through slugging/casual carpools, and leading through legislation. Other options that could be included in the toolkit could result from a deeper examination of the economic benefits of linking

ridesharing and transit and from case studies of public transit agencies that have used ridesharing in contingency planning.

The Regional Transportation District in Denver supports vanpools because they require a lower subsidy per boarding than its express routes. Kings County Area Public Transit Agency in central California uses vanpools for farm worker transportation because it is more cost-efficient than trying to serve nontraditional hours with fixed-route bus service. Only three transit agencies in this survey use ridesharing as a cost-saving measure. A detailed case study of these and others in the broader universe of agencies could help transit agencies that may face service cuts. Rather than simply cutting service when their ability to maintain the status quo is threatened by falling revenues, transit agencies could explore ridesharing as an alternative mode of providing mobility to their communities.

Contingency planning allows for transit agencies to identify potential threats to their service and plan for ways to address worst-case scenarios. Further research could focus on successful practices of specific agencies that use ridesharing in their contingency planning. This research could explore how ridesharing has been used for backup during transit strikes, vehicle breakdowns, natural disasters, and national security crises. Carpooling in particular is an important option in such events, but very little was found in the literature search about how carpooling can be integrated into transit planning.

The following are other subjects that emerged from the synthesis which present further topics for research.

Emerging Technologies for Ridesharing and Transit

A mobility manager provides a full range of alternatives to the single-occupant automobile. One such strategy is using ridesharing as a complement to transit. A rapidly increasing menu of technologies is available to transit agencies that want to be mobility managers. Some examples of these technologies include smartphones for dynamic ridesharing, transit trip planners that search for both ride-matching and transit options to satisfy a given query, transit social networking websites that allow ride-matching and real-time communication among vanpoolers and carpoolers, transit and ride-matching programs accessible through a mobile phone application, instant feedback to a survey question from customers by means of a mobile phone application, and a technological solution to fare integration of ridesharing and transit. Technology can also be valuable in facilitating communications during natural disasters and national emergencies. Research could be undertaken to document successful practices in the transit industry that would serve as models for others in this fast-paced field of emerging technologies.

Ridesharing and Transit Parking Management

Parking is a knotty problem when ridesharing is promoted with transit. One comment from a survey participant cited the competition for parking when ridesharers are allowed to park in lots designated for transit riders. This competition was highlighted in the profile of Bay Area Rapid Transit and the controls it employs to prevent the use of its parking lots by casual carpools. On the other hand, the Potomac and Rappahannock Transportation Commission actively assists casual carpools by helping to identify parking for them. Pace helps find parking for its Metra feeder vans in city-owned lots. Just as these three agency profiles illustrate parking management techniques, public transit agencies that are considering ridesharing programs would find a deeper exploration of parking management helpful. Another survey participant noted the need for publicly accessible park-and-ride lots in any ridesharing program linked to transit. Agencies are clearly searching for good answers to the parking problem and would benefit from research that identified successful programs.

Better Performance Measures for Evaluating the Worth of Ridesharing Within a Public Transit Environment

Almost two-thirds (65%) of respondents determine if the amount spent on ridesharing is worthwhile by the number of people subscribed to/signed up for the ridesharing program. Ten survey respondents (26%) do not set *any* performance measures for the ridesharing program. Although subscription is a common metric for ridesharing programs, it may be considered soft data by transit professionals who are most familiar with quantitative measures, such as a route's farebox recovery and daily ridership numbers. When difficult economic decisions are being made, transit professionals will need sound performance measures to see the value of starting or maintaining ridesharing programs within their agencies. For example, what are the impacts on revenue and on operating costs of using ridesharing to substitute for transit routes? What are the environmental benefits of ridesharing and how can they be measured to demonstrate compliance with legislation or funding requirements (e.g., reduction in vehicle-miles traveled, reduction in carbon emissions, and particulates)? A future study could define the metrics and guide agencies in obtaining the needed information to develop better performance measures when evaluating ridesharing programs.

CONCLUSION

Evidence that ridesharing complements public transit is limited, according to this examination of the state of the practice. Even though ridesharing has been around for decades as a travel mode and despite the benefits that a number of agencies have experienced a good deal of skepticism about combining ridesharing and public transit still exists. Nonetheless, this review has also uncovered some interesting practices that can give food for thought to public transit agencies. These practices are highlighted in the synthesis' agency profiles and are the impetus for suggestions of future research that can advance the state of the practice.

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APPENDIX A

Survey Questionnaire and Results

Question 1. Please provide us with the following information:		
Answer Options	**Response Percent**	**Response Count**
Name:	100.0%	41
Position:	100.0%	41
Agency:	100.0%	41
	answered question	41
	skipped question	0

Question 2. What geographic region does your service area encompass? Please check the largest one that applies:		
Answer Options	**Response Percent**	**Response Count**
Nation	0.0%	0
State	9.8%	4
Region	58.5%	24
County	26.8%	11
City	0.0%	0
Business park	0.0%	0
Other (please specify):	4.9%	2
	answered question	41
	skipped question	0

Question 3. How would you BEST describe how you operate the ridesharing program? (Check only one)		
Answer Options	**Response Percent**	**Response Count**
Funded by us but contracted out	7.3%	3
Directly operated for the general public by the transit agency	43.9%	18
Directly operated for the general public by MPO/COG, TMA, or DOT	29.3%	12
Other (please specify):	19.5%	8
	answered question	41
	skipped question	0

Question 4. If you mentioned that the ridesharing program is operated by another agency, what is the name of that agency?		
Answer Options	**Response Count**	
	6	
Answered question	6	
Skipped question	35	

Question 5. Has your agency ever considered but rejected directly operating a ridesharing program for the general public?		
Answer Options	**Response Percent**	**Response Count**
No, we've never considered directly operating a ridesharing program for the general public.	50.0%	1
Yes, but it was rejected.	50.0%	1
	answered question	2
	skipped question	39

Question 6. Why did you reject directly operating a ridesharing program for the general public?		
Answer Options	**Response Percent**	**Response Count**
Inadequate staffing or budget to support an internal program	0.0%	0
Lack of management support	0.0%	0
Potential competition to transit operations	0.0%	0
Low customer demand	0.0%	0
Not considered central to our mission	0.0%	0
Because role is filled adequately by other agencies	0.0%	0
Other (please specify):	100.0%	2
	answered question	2
	skipped question	39

Question 7. Comments:		
Answer Options	**Response Count**	
	2	
Answered question	2	
Skipped question	39	

Question 8. How involved are you in the ridesharing services provided by another agency? (Check all that apply.)		
Answer Options	**Response Percent**	**Response Count**
We pay some or all of the costs.	66.7%	2
We are involved in the planning and/or design of services.	100.0%	3
We permit or assist in marketing of ridesharing to transit riders.	66.7%	2
We permit carpoolers and/or vanpoolers to use our property for parking and/or pick-up points.	66.7%	2
We support ridesharing but are minimally or not involved in the provision of ridesharing services.	0.0%	0
Other (please specify):	66.7%	2
	answered question	3
	skipped question	38

Question 9. Comments:		
Answer Options	**Response Count**	
	1	
Answered question	1	
Skipped question	40	

Question 10. To what extent is ridesharing included in transit service planning?		
Answer Options	**Response Percent**	**Response Count**
Ridesharing and transit are separate sections of the agency and seldom or never interface with transit service planning.	26.3%	5
Ridesharing and transit planners collaborate, but ridesharing is not seen as a substitute for transit service.	47.4%	9
We weigh whether ridesharing can substitute for existing or proposed transit service.	26.3%	5
Comments		6
	answered question	19
	skipped question	22

Question 11. Why is it important for ridesharing and transit to work together? (Check all that apply.)		
Answer Options	**Response Percent**	**Response Count**
Regulations	9.8%	4
Environmental concerns	68.3%	28
Market demand from our customers	82.9%	34
Meet mobility manager policy goals	22.0%	9
Service area gaps not filled by existing transit service	97.6%	40
Improved access to public transit routes, stations or park and ride lots	73.2%	30
Increased access to businesses and services with limited parking	58.5%	24
Other (please specify):	14.6%	6
	answered question	41
	skipped question	0

Question 12. If you indicated on the above question that regulations are motivating factors for including ridesharing in the mix of transit options, please specify the type of regulations below:		
Answer Options	**Response Percent**	**Response Count**
Local	11.1%	1
State	88.9%	8
Regional	33.3%	3
National	33.3%	3
Comments		5
	answered question	9
	skipped question	32

Question 13. Comments:		
Answer Options	**Response Count**	
	4	
answered question	4	
skipped question	37	

Question 14. Are you a transit system operator?		
Answer Options	**Response Percent**	**Response Count**
Yes	68.3%	28
No	31.7%	13
	answered question	41
	skipped question	0

Question 15. Which of the following does your agency operate? (Mark all that apply.)		
Answer Options	**Response Percent**	**Response Count**
Regular local fixed route buses (including shuttles and trolley buses)	85.2%	23
Express/limited/commuter buses	85.2%	23
Bus rapid transit	25.9%	7
Other (please specify):	33.3%	9
	answered question	27
	skipped question	14

Question 16. Paratransit vehicles		
Answer Options	**Response Percent**	**Response Count**
Demand-response or flexible route service, including ADA paratransit	100.0%	26
	answered question	26
	skipped question	15

Question 17. Trains		
Answer Options	**Response Percent**	**Response Count**
Commuter/passenger rail	57.1%	8
Heavy rail (e.g., subway, elevated railway)	21.4%	3
Light rail	35.7%	5
Streetcar, trolley or other fixed guideway rail service	14.3%	2
Other (please specify):	7.1%	1
	answered question	14
	skipped question	27

Question 18. Regarding ridesharing, how do you coordinate with regional planning entities (e.g., Metropolitan Planning Organization [MPO], Council of Government [COG], Transportation Management Association [TMA], Department of Transportation [DOT])? (Check all that apply.)		
Answer Options	**Response Percent**	**Response Count**
The regional entity runs a complementary ridesharing program in our area.	28.6%	8
We run the ridesharing program for our agency, and a regional entity representative sits on our Board.	10.7%	3
We report the results of our ridesharing program to the regional entity.	39.3%	11
We attend regional rideshare meetings to plan and/or coordinate.	60.7%	17
We participate in activities sponsored by the regional entity, such as regional events and/or information tables at businesses.	46.4%	13
Our coordination is limited to occasional feedback on documents or programs.	10.7%	3
Not applicable	3.6%	1
Other (please specify):	32.1%	9
	answered question	28
	skipped question	13

Question 19. How do you prove that ridesharing is cost-effective compared to a transit route? (Check all that apply.)		
Answer Options	**Response Percent**	**Response Count**
By comparing the operating and capital cost of transit versus the cost of a ridesharing program (e.g. cost per hour and subsidy per hour)	20.0%	5
With ridership measurements, actual or projected, for a transit route (e.g. riders per hour)	16.0%	4
We don't attempt to prove it is cost-effective, because it is considered part of our mix of mobility services.	68.0%	17
Other (please specify):	24.0%	6
	answered question	25
	skipped question	16

Question 20. If possible, please elaborate to help us understand the cost/benefit evaluation of ridesharing to your agency.		
Answer Options	**Response Count**	
	9	
Answered question	9	
Skipped question	32	
Over the past 3 years [our agency's] Rideshare Program has increased its fares charged to van riders three times and we are beginning to see signs that our fares are a deciding factor in choosing rideshare. So our Board has adopted a new policy on rideshare fares that attempts to maximize both operating and generated capital grant revenue (long-distance vans generate significant federal capital funds for [our agency]). We are testing our rideshare fare elasticity in an attempt to find the "sweet spot" where we maximize fare revenues AND federal capital dollars. We don't attempt to prove ridesharing is cost-effective, but if we want to reduce bus service, we measure ridership and cost to calculate subsidy per hour. The figure is generally obviously more than marketing a ridesharing program, less so in		

the case of vanpools, which for a short time longer will be subsidized at $500/month (thereafter $350). We did make this comparison recently upon elimination of an express route, and vanpool subsidy expenses for the existing riders was still substantially less (although the fares were higher, too). Cost-effectiveness of the vanpool program is measured by the passenger trip subsidy compared to other transit options, VMT reduction and passenger trips. In addition, the program cost is measured against the increased federal allocation from 5307 funding. Cost/benefit evaluation for rideshare promotions compares the cost to the reach. Bus system monitors operating costs covered by passenger fares, so the same thing is done for vanpool service. It is a given that ridesharing options are cost-effective options where transit is not cost-effective, particularly in unserved communities and to suburban/rural destinations. As a transit agency, we look at the available funding sources and demand for services to see that vanpool is better suited to much of our market. We had done, for more than 20 years, an annual market survey to assess effectiveness of ridesharing efforts, but funding for this activity was removed last year. Lower cost of van, volunteer driver and no deadhead trips make unit cost for vanpool trips much lower than traditional transit. Comparing the op and cap cost of transit vs. ridesharing program cost would make sense, of course... Ridesharing is a very difficult process to get an ROI on, but we do measure self reporting mode use.		

Question 21. What is your transit system's annual operating budget?		
Answer Options	**Response Percent**	**Response Count**
Under $500,000	0.0%	0
$500,000–$999,999	0.0%	0
$1,000,000–$99,999,999	68.0%	17
$100,000,000–$249,999,999	4.0%	1
$250,000,000–$499,999,999	16.0%	4
$500,000,000–$999,999,999	8.0%	2
$1 billion or more	4.0%	1
	answered question	25
	skipped question	16

Question 22. What amount of your agency's current operating budget is devoted to ridesharing?		
Answer Options	**Response Percent**	**Response Count**
Under 1%	38.5%	10
Between 1% and 4%	11.5%	3
Between 4% and 7%	7.7%	2
Between 7% and 10%	0.0%	0

10% or more	0.0%	0
Not applicable: We do not use operating funds for ridesharing.	26.9%	7
Don't know	15.4%	4
	answered question	26
	skipped question	15

Question 23. You indicated that you do not use operating funds for the ridesharing programs. How do you fund the ridesharing programs?		
Answer Options	**Response Percent**	**Response Count**
We use staff time only, not direct operating funds.	14.3%	1
Other agencies bear the cost	42.9%	3
We only use targeted grant funds as they are available: Average grant size:	57.1%	4
	answered question	7
	skipped question	34
5 mil x 2 years We use rider fees and various grants and rideshare subsidies. We have begun using some FTA funds that come to our UZA due to the reporting of vanpool passenger trips and miles through the NTD program. The amount we have generated is a little over $600,000 annually. We make a point of not using any traditional funding. There is approximately $500k annual set-aside of CMAQ funds for TDM projects, including ridesharing. Next year budget $15,000, not including staff salary. We are funded from multiple grant sources - all are through MPO, county, or state.		

Question 24. How do you coordinate with other entities regarding ridesharing? (Check all that apply.)		
Answer Options	**Response Percent**	**Response Count**
We report the results of our ridesharing program to another entity.	73.3%	11
We meet with public transit agencies in the area to plan and/or coordinate.	66.7%	10
We attend rideshare meetings with other kinds of agencies to plan and/or coordinate.	66.7%	10
We participate in activities sponsored by others, such as regional events and/or information tables at businesses.	80.0%	12
Our coordination is limited to occasional feedback on documents or programs.	6.7%	1
Not applicable	0.0%	0
Other (please specify):	20.0%	3
	answered question	15
	skipped question	26

Question 25. How do you determine if the amount spent on ridesharing is worthwhile? (Check all that apply.)		
Answer Options	**Response Percent**	**Response Count**
Through customer satisfaction surveys or other customer feedback	42.5%	17
Through the number of people subscribed to/ signed up for the ridesharing program	65.0%	26
Through the number of successfully matched rides	47.5%	19
Through achievement of our goal to increase mobility in our service area	42.5%	17
Through environmental measurements, such as decreased carbon emissions	40.0%	16
Through adherence to regulations	5.0%	2
By closing a service gap	32.5%	13
By avoiding the need to add another bus or train	10.0%	4
Through cost savings to the agency	2.5%	1
Other (please specify):	27.5%	11
	answered question	40
	skipped question	1

Question 26. If you indicated in the above question that ridesharing fills a service gap or avoids adding another bus or train, please tell us how. (Check all that apply.)		
Answer Options	**Response Percent**	**Response Count**
We use ridesharing to serve people who live in an area not dense enough to justify transit service.	84.2%	16
We use ridesharing to pilot a route as a test for potential ridership on transit.	21.1%	4
We substitute ridesharing for a transit route as a cost-saving measure.	31.6%	6
Other (please specify):	36.8%	7
	answered question	19
	skipped question	22

Question 27. The ridesharing program is located in the following department:		
Answer Options	**Response Count**	
	39	
answered question	39	
skipped question	2	
Service development		
We do not have ridesharing program, other than the paratransit program.		
Service planning		
Marketing		
N/A		
Planning and special services		
Transportation/operations		
It is located in our 511 Traveler Information program, which is managed from the "Operations" side of our MPO. (The other "side" is Policy.)		

Service delivery (note: was previously part of communications and marketing/customer service)
Planning
Business services are a separate department that reports to the chief of staff (deputy executive director).
Strategic services/ business development
Transportation development
Again, there are no ridesharing programs at [our agency]. There is a dedicated regional program at the MPO.
Marketing/communications
Just moved from transportation planning to transit services
Service development
Transportation demand management
[State] department of transportation
[Our agency's] ridesharing department reports to our chief development officer in charge of planning & customer service. Ridesharing is a separate budgetary cost center.
Planning
Planning and operations
The rideshare program is a service of the regional travel options program, which is housed in the regional transportation planning program, which is housed in [an agency's] planning and development department.
Transportation
Operations
Vanpool program
Customer care and planning
Transportation demand management department
Customer service
It is in the same department as the transit department. All costs are split through tracking of hours worked on each program. Overhead costs are divided between the two functions.
State department of transportation, bureau of public transportation, office of transit and ridesharing
[A county] department of transportation, transit division, paratransit/rideshare operations section
Marketing
Administered statewide by [a specific] council of governments, funded by [a state DOT] and [state] turnpike authority
Transit system
Planning and customer service
Operations
[A state] regional planning commission in [a city]
Administration

Question 28. How many person hours per week are devoted to the ridesharing program?		
Answer Options	**Response Count**	
	38	
Answered question	38	
Skipped question	3	
Less than 1		
3 FTE		
100		

25
0
60
One person, 40 hours
Here at the MPO, there is one full-time staff person and two part-time managers. This would equate to approximately 60 person hours per week. Our contractor staff totals approximately 14 FTEs.
Between agency and contractor, about 18 FTE's
160
The vanpool program is contracted out to VPSI but is housed within our south terminal and the rideshare program has been recent gone regional in District 5, a state--operated program.
We have 9 full-time staff members and one intern.
60, not counting vanpool administration
80
80
40 manager hours; 30 hours from two support staff
4
200
Unknown
90
About 5
45
30–35
360–375
There is not one person who handles this service. The schedulers handle all of the requested services, there is no division made based upon service types.
1
40
140 hours
20 hours for the vanpool program manager, 20 hours for the vehicle service and maintenance staff
Approximately 27
On-staff? About 200. By contractors? Maybe 1,000.
2,000
160
3.5 FTEs, 140 hours per week or less
30
20
20 hours
Average of eight

Question 29. Is the ridesharing program marketed cooperatively with transit?		
Answer Options	**Response Percent**	**Response Count**
No, the ridesharing program is marketed independently from transit.	37.5%	15
Yes, ridesharing and transit are marketed together.	62.5%	25
	answered question	40
	skipped question	1

Question 30. Who markets the ridesharing program? (Check all that apply.)		
Answer Options	**Response Percent**	**Response Count**
Our agency	85.4%	35
Other (please specify):	61.0%	25
	answered question	41
	skipped question	0

Question 31. Does the ridesharing program include any of the following components? (Check all that apply.)		
Answer Options	**Response Percent**	**Response Count**
Provide carpool and vanpool matching	87.8%	36
Help establish vanpools with vehicles our agency owns or leases	58.5%	24
Form vanpool through a third-party provider	53.7%	22
Provide parking for vanpools and carpools	39.0%	16
Provide guaranteed ride home	85.4%	35
Subsidize vanpool fares	51.2%	21
Market ridesharing to businesses	78.0%	32
Market ridesharing to transit riders	46.3%	19
Provide incentives (e.g., loyalty programs, Commuter Checks, prizes, recognition)	51.2%	21
Other (please specify):	17.1%	7
	answered question	41
	skipped question	0

Question 32. If you indicated in the above question that the rideshare program provides incentives, please check all incentive programs that you provide:		
Answer Options	**Response Percent**	**Response Count**
Direct cash subsidies	37.5%	9
Loyalty programs	20.8%	5
Commuter Checks (e.g., vouchers used for multiple transit providers and vanpool service)	20.8%	5
Prizes	66.7%	16
Recognition in print or web publication	37.5%	9
HOV parking	16.7%	4
Parking discounts	4.2%	1
Transit fare discounts	25.0%	6
Other (please specify):	45.8%	11
	answered question	24
	skipped question	17

Question 33. Comments:		
Answer Options	**Response Count**	
	2	
Answered question	2	
Skipped question	39	

Question 34. Do participants in the rideshare program receive vouchers or other credit toward their transit fares?		
Answer Options	**Response Percent**	**Response Count**
Yes	28.6%	10
No	71.4%	25
Comments		14
	answered question	35
	skipped question	6

Question 35. Do transit riders receive vouchers or other credit toward the ridesharing services?		
Answer Options	**Response Percent**	**Response Count**
Yes	8.1%	3
No	91.9%	34
Comments		10
	answered question	37
	skipped question	4

Question 36. How does technology play a role in supporting the integration of ridesharing with transit? (Check all that apply.)		
Answer Options	**Response Percent**	**Response Count**
The program has a trip planner that searches for both ridematching and transit options to satisfy a given query.	51.4%	19
The program has a link to ridematching for carpools and/or vanpools on our agency's website.	73.0%	27
Both the ridesharing program and transit operations are promoted on social media (e.g., Facebook, MySpace, LinkedIn, etc).	40.5%	15
Customers can obtain carpool and vanpool matches for our program on a social networking site (e.g., Facebook, My Space, LinkedIn, etc.).	13.5%	5
Transit and ridesharing programs are accessible via a mobile phone app.	8.1%	3
Other (please specify):	18.9%	7
	answered question	37
	skipped question	4

Question 37. If you indicated in the above question that you use social media in promoting ridesharing with transit, what sites do you use?		
Answer Options	**Response Percent**	**Response Count**
Facebook	84.2%	16
MySpace	5.3%	1
Twitter	63.2%	12
LinkedIn	0.0%	0
Other (please specify):	15.8%	3
	answered question	19
	skipped question	22

Question 38. How have you incorporated feedback from people who use the ridesharing program? (Check all that apply.)		
Answer Options	**Response Percent**	**Response Count**
The ridesharing program is part of our agency because of customer requests for service.	27.0%	10
The ridesharing program was initially designed through interaction with customers.	16.2%	6
Customers are surveyed periodically for feedback.	43.2%	16
The customer services department of our agency collects comments, which are used to improve the program.	37.8%	14
Not applicable	21.6%	8
Other (please specify):	21.6%	8
	answered question	37
	skipped question	4

Question 39. If you indicated in the above question that you surveyed customers, how often do you survey customers?		
Answer Options	**Response Percent**	**Response Count**
At least once a year	50.0%	10
Every 2 years	15.0%	3
Between 3 and 5 years	10.0%	2
Periodically—no set time frame	20.0%	4
Other (please specify):	5.0%	1
	answered question	20
	skipped question	21

Question 40. If you indicated that you surveyed customers, what survey mechanisms do you use for the ridesharing program? (Check all that apply.)		
Answer Options	**Response Percent**	**Response Count**
Postal mail survey	25.0%	5
Telephone survey	35.0%	7
E-mail survey	75.0%	15
Part of an overall agency survey	25.0%	5
Other (please specify):	25.0%	5
	answered question	20
	skipped question	21

Question 41. What specific performance measures, if any, do you use to evaluate the ridesharing program? (Check all that apply.)		
Answer Options	**Response Percent**	**Response Count**
We do not set specific performance measures for the ridesharing program.	26.3%	10
Number of participants measured against a goal	36.8%	14
Number of carpools and/or vanpools measured against a goal	42.1%	16
Avoided cost of transit service not required because of ridesharing program	2.6%	1
Number of residents and businesses included	21.1%	8
Increased miles or percent of service area covered because of ridesharing program	18.4%	7
Environmental goals reached, such as decreased carbon emissions	26.3%	10
Other (please specify):	28.9%	11
	answered question	38
	skipped question	3

Question 42. If you indicated on the previous page that you measure the number of participants as a performance measure, please specify the current number of participants served:		
Answer Options	**Response Count**	
	18	
Answered question	18	
Skipped question	23	
986		
1,300		
7,000		
Again, we are not a transit agency, so we are only measuring rideshare participants. Our current database size is 28,000.		
119 vanpools in the program and continuing to grow		
About 5,000		
Approx. 3,000		
3,540		
429 vanpoolers, 4,472 in carpool database, 13,552 families in Schoolpool database		
818 current van riders on 91 vans (as of January 2011) took 23,254 trips in January 2011. We make carpool matches but don't track them.		

600 program applicants to date FY11.
Our database currently has about 11,000 registrants. We have no idea how many of them are actually in carpools or otherwise use the system, again, due to limitations of the current system.
30,000—about 19K are in ridematching and 11 K are in guaranteed ride home
Over 4,000 registered
Rideshare Operations 2008 2009 2010 2009–2010 VanPools in Operation 1,031 937 933—0.43% Van Shares in operation 176 151 142—6% total commuter vans in operation 1,207 1,088 1,075—1% VanPool riders 2,770,711 2,829,104 2,554,353—10% Van Share riders 377,839 358,350 296,647—17% total commuter van ridership 3,148,550 3,187,454 2,851,000—11% RSOnline applicants (month end) 12,148 9,188 11,853 29%
30,000 in database overall
9,000 commuters in statewide database
108

Question 43. What is the goal that you have set for the number of participants served?		
Answer Options	**Response Percent**	**Response Count**
A policy goal	15.8%	3
A quantifiable goal	84.2%	16
Comments		14
	answered question	19
	skipped question	22
1,200		
200 new registrations each year		
Average annual 10% growth, subject to market conditions		
We use "Clients placed into car/vanpools". This goal is a smaller subset of the number of people who sign up in our system. Of those that sign up, approximately 36% begin car/vanpooling. We call those successes "Clients placed". We have a "Clients placed" goal of 8,965.		
2,000 new users added in 2011		
In increase of 1–5% per year		
Increase participation by 3 percent or more each year.		
100 vans in operation maximizing the combination of fare revenue and federal formula capital dollars		
1,300 program applicants in FY11		
Provide information and services to support increased use of travel options for all trips		
For ridematching: 2,370 daily vehicle trips reduced, 62,339 daily VMT reduced, 0.0031 daily tons of NOx reduced, and 0.017 daily tons of VOC reduced. For GRH: 12,593 daily trips reduced, 355,135 daily VMT reduced, 0.177 daily tons of Nox reduced, and 0.097 daily tons of VOC reduced. We also capture PM2.5, PM 2.5 Precursor, and CO2 reductions but there are no goals set.		
Number of reg. per region served, number of new van pools, different type of contacts with employers		
5% increase over previous year end for commuter vans—20% increase in ridematch active registrants		
2011: exceed 10,000.		

Question 44. If you indicated on the previous page that you measure the number of carpools and vanpools served as a performance measure, please specify the current number of carpools and vanpools served:		
Answer Options	**Response Count**	
	18	
Answered question	18	
Skipped question	23	
116		

310 vanpools
27
68 carpools 17 vanpools
700 vanpools
119
275 vanpools about 150 carpools
percentage increase from previous year typically in the 4–10% range
94 vanpools in service, estimated 500 carpoolers, 3,930 estimated Schoolpool families carpooling
91 current vanpools. We have provided a peak of 102 in the past 12 months
128 active vanpools
16 vanpools; unknown number of carpools
46
We measure VT, VMT, NOx, and VOC reductions.
Carpools estimated from registered....van pools 11
See above—do not monitor carpools formed only active registrants at month end in ridematch system
3,700 car pools 60 vanpools (max. 75)
1,500 carpoolers, 42 vanpools (355 riders)

Question 45. What is the goal that you have set for the number of carpools and vanpools served?		
Answer Options	**Response Percent**	**Response Count**
A policy goal	16.7%	3
A quantifiable goal	83.3%	15
Comments		19
	answered question	18
	skipped question	23
120		
3% growth per year		
30		
20 vanpools and continued expansion of carpools		
To serve 10% rider growth, average annual		
We don't measure car/vanpools served. We measure how many we have created. We serve any carpooler, whether we assisted in creating them or not.		
Between 5% and 10% but a lot is agency vanpools		
50 new vanpools, 100 new carpools		
Percentage increase from previous year typically in the 4–10% range		
Increase participation and/or VMT reduction by 3 percent or more each year		
100 sustainable vans at current fares.		
130 active vanpools		
Provide information and services to support increased use of travel options for all trips		
52		
An additional 5 per year.		
Currently we're satisfied if we can maintain our historical number of ridesharers.		
See chart in first question		
Avg. 3,500 carpools and max 75 vanpools		
See previous statement.		

Question 46. Casual carpooling, also known as slugging, is an informal system for carpooling without prearrangement. Drivers who want to add passengers, usually to take advantage of pricing incentives or commuter HOV lanes, invite strangers who are lined up at a stop to ride with them. Passengers are often picked up at transit stations. What is your agency's practice regarding casual carpooling/slugging? (Check all that apply.)		
Answer Options	**Response Percent**	**Response Count**
There is no casual carpooling or slugging in our area.	69.2%	27
We tolerate the activities but do not encourage them.	15.4%	6
We prohibit these activities on our property.	0.0%	0
We encourage these activities by allowing pick up and drop off on our property.	5.1%	2
We encourage these activities by installing signs to formally designate pick up and drop off points on our property.	2.6%	1
We encourage these activities by promoting them in our written materials and transit announcements.	2.6%	1
We encourage these activities through information on our website.	5.1%	2
Other:	20.5%	8
	answered question	39
	skipped question	2

Question 47. Dynamic (or flexible) ridesharing, also an informal system for carpooling, involves ridematching in real time, where riders match with drivers over the phone or internet to form same-day or even on-the-fly carpools. What is your agency's practice regarding dynamic ridesharing?		
Answer Options	**Response Percent**	**Response Count**
We do not view it as part of our mission.	30.0%	12
We are interested but not currently involved in dynamic ridesharing.	45.0%	18
We offer or are participating in dynamic ridesharing.	2.5%	1
Other (please specify):	22.5%	9
	answered question	40
	skipped question	1

Question 48. You indicated that you are offering or participating in a dynamic ridesharing program, please describe it.		
Answer Options	**Response Count**	
	1	
Answered question	1	
Skipped question	40	
Daily on-line matching through NuRide		

Question 49. What challenges have you faced integrating ridesharing as a complement to transit? (Check all that apply.)		
Answer Options	**Response Percent**	**Response Count**
Not everyone considers ridesharing important to our mission.	40.0%	14
Some consider ridesharing as competition for transit riders and resources.	45.7%	16
Customers do not easily accept ridesharing as a substitute for full transit service.	28.6%	10
Staff competency does not include ridesharing.	8.6%	3

Staff competency does not include transit expertise.	2.9%	1
Another agency provides ridesharing and/or transit services.	11.4%	4
Other (please specify):	28.6%	10
	answered question	35
	skipped question	6

Question 50. Is there anything else you'd like to add about your ridesharing program or about the general topic of ridesharing as a complement to transit?		
Answer Options	**Response Count**	
	15	
Answered question	15	
Skipped question	26	
A rising tide lifts all boats. We promote and facilitate a full menu of TDM options, so commuters and employers can use what works best for them.		
[Our agency] does not operate a rideshare program itself other than the paratransit program, which is operated jointly with [another transit agency] . We do use the MTC 511 program. If we did operate a rideshare program it would be more focused on getting people to our stations.		
There is a problem with funding replacement vehicles when the vans get old and need to be replaced. Funding for vehicles seems biased to starting new groups, not to helping replace vans for older groups operating already.		
We have made a lot of progress in the past 3 years making vanpooling a much more visible service of the transit agency with a more active acceptance of vanpooling as an important service of our agency at management and board levels.		
Ridesharing and transit should go hand-in-hand. The purpose of ridesharing is to improve air quality, save money and enhance quality of life - just like transit. The notion of integrating services that encourage people to not use an SOV just makes sense from a user's perspective. Users should have a one-stop shop in which to learn about other ways to travel.		
A small percentage of our vanpool program includes vans that are parked at train stations for groups to complete the first/last mile of their train commute		
I am a strong advocate of keeping the rideshare program separate from the transit provider. My experience when they are combined and run by the transit agency is that rideshare options like carpool and vanpool are considered secondary options. Most of the money and staff time is directed toward transit. By placing the rideshare program in an MPO or other independent organization, all the modes receive equal treatment and the commuter is able to make an informed choice based on their needs.		
We have an amazingly good relationship with our local transit agency, which is supportive to the point of including carpool/vanpool in its marketing and providing fare subsidies to vanpool riders within its boundaries. We greatly appreciate their partnership.		
Rideshare mode split numbers continue to decline nationally, as well as in our region. The majority of 2+ car trips are comprised of family members. It has proven very difficult to encourage strangers to share rides, for a wide variety of reasons. While ridesharing is important to keep in the mix, it is not the primary regional focus of our program.		
Ridesharing and transit work together. The notion that ridesharing compliments transit may work in some areas, but it's more efficient to provide all modes and let the commuter decide what's best for their situation.		
The importance of park and ride facilities should be explained in the study.		
Funding for vanpools can be generated through the counting and reporting of passenger trips and vehicle miles. The funding comes in the form of STIC funding to small UZA and direct funding to large UZA based on riders and miles. For example a vanpool traveling 90 miles 5 days per week will generate an additional $17,000 per year in FTA section 5307 funding to the agency. Small UZA can receive up to $900,000 a year in 5307 funds based on the number of STIC (Small Transit Intensive Cities) points achieved.		
A compliment to bus and light rail service that offers another public transportation choice to the public which strengthens transit agency image as providing solutions to congestion and greenhouse gas emissions.		
An example would be we do not have rideshare signs as other larger agencies, where we see a lot of commuters from our county traveling to the other counties. We need signage for ridesharing as well but do not relieve them.		
Other than vanpooling works!		

Question 51. Do you have any questions about ridesharing as a complement to transit that we could address in this study?		
Answer Options	**Response Count**	
	12	
Answered question	12	
Skipped question	29	

Question 52. How could this or future studies about the interface of ridesharing and transit better help your system?		
Answer Options	**Response Count**	
	14	
Answered question	14	
Skipped question	27	
As stated previously, ridesharing seems to be on a decline. Short of paying people, are there other best practices that we should be implementing, both from the U.S., as well as other countries? Is transit really preferable to ridesharing? It seems to be here, but I haven't seen any research that actually addresses this. The mode split numbers seem to bear this out, though.		
I would like to see other practical applications of this program and suggestions that can improve this type of service in small urban and rural area. I believe this could be of great benefit if we can gather more data.		
Transit systems need to realize that ridesharing complements transit and is not competitive. We should focus on mobility management, no matter what means the commuter uses to get from point A to point B.		
Identify other successful or best practices to help us improve		
Appropriateness of marketing the ridesharing services together with transit—i.e., on the transit website. Should it only be on its own website with a link on the transit site?		
Identifying what seem to be implemented practices of overlapping rideshare and transit services as well as key coordination techniques with MPOs and TMAs		
Gaining understanding of other provider's successes, and tribulations.		
Provide information for business managers to understand how promoting rideshare helps the workforce and community		
Future studies need to present the possibilities in funding to transit agencies that may want to operate vanpools as a part of their transit fleet. In almost all cases they can provide a cheaper model than private operators.		
Place resources into educating and promoting to the public the low cost associated with carpooling as was done with recycling. Show how minimal funding (compared to transit) invested brings a huge return on investment for the appropriate technology tools needed.		
Strategies for more effective co-marketing		
Not sure		
Same as above		
Our region has a firm grasp on this topic.		

APPENDIX B

Profiles of Participating Transit and Non-Transit Agencies

Name	City/State	Type of Institution	Geographic Region	Service Area	Community Characteristic	Ridesharing Participants*	Transit Vehicles**
AC Transit	Oakland, CA	Transit agency	West	2 Counties	Major metropolitan	Unreported	913
Asotin County PTBA	Clarkston, WA	Transit agency	Northwest	Region	Rural	108	Unavailable
Baldwin Rural Area Transportation System	Robertsdale, AL	Transit agency	South	County	Rural	Unreported	Unavailable
Capital District Transportation Authority	Albany, NY	Transit agency	East	Region	Urbanized	Unreported	318
Capital Metro Transit	Austin, TX	Transit agency	South	Region	Urbanized	986	1,134
Centre Area Transportation Authority (CATA)	State College, PA	Transit agency	East	Region	Urbanized	1,300	75
Charlotte Area Transit System	Charlotte, NC	Transit agency	South	Region	Urbanized	Unreported	544
Clallam Transit System	Port Angeles WA	Transit agency	Northwest	County	Rural	Unreported	Unavailable
Connecticut Department of Transportation	Newington CT	DOT	Northeast	State	Statewide	Unreported	N/A
Denver Regional Council of Governments	Denver, CO	COG	West	Region	Regional	429 vanpoolers; 4,472 in carpool database; 13,552 families in Schoolpool database	N/A
Des Moines Area Regional Transit Authority	Des Moines, IA	Transit agency	Midwest	Region	Urbanized	818 current van riders on 91 vans	255
Greater Portland Council of Governments	Portland ME	COG	Northeast	State	Statewide	9,000 commuters in statewide database	N/A
Hillsborough (FL) Area Regional Transit Authority	Tampa, FL	Transit agency	South	County	Urbanized	Unreported	274
Kansas City Area Transportation Authority	Kansas City, MO	Transit agency	Midwest	Region	Urbanized	Unreported	429
Keep Middlesex Moving, Inc	New Brunswick, NJ	TMA	East	County	Regional	Unreported	N/A
King County Metro Transit	Seattle, WA	Transit agency	Northwest	Region	Major metropolitan	2.85 million commuter van ridership; 1,075 commuter vans in operation	3,024
Kings County Area Public Transit Agency	Hanford, CA	Transit agency	West	Region	Rural	Unreported	240
Kitsap Transit	Bremerton, WA	Transit agency	Northwest	County	Urbanized	Unreported	305
Mason County Transit	Shelton, WA	Transit agency	Northwest	Places of employment	Rural	Unreported	Unavailable
Metro Transit	Minneapolis, MN	Transit agency	Midwest	Region	Major metropolitan	30,000 in database	960
Metropolitan Transit Authority (Houston)	Houston, TX	Transit agency	South	Region	Major metropolitan	7,000	3,078

Metropolitan Transportation Commission	Oakland, CA	MPO	West	Region	Regional	28,000 in database of rideshare participants	N/A
Metropolitan Washington Council of Governments	Washington, DC	COG	East	Region	Regional	30,000 (about 19,000 are in ridematching and 11,000 are in Guaranteed Ride Home)	N/A
Nashville Metropolitan Transit Authority/Regional Transportation Authority	Nashville, TN	Transit agency	South	Region	Urbanized	Unreported	388
New Jersey Transit	Newark, NJ	Transit agency	East	State	Major metropolitan	Unreported	5,121
Orange County Transportation Authority	Orange, CA	MPO	West	County	Urbanized	Unreported	1,358
Pace Suburban Bus	Arlington Heights, IL	Transit agency	Midwest	Region	Urbanized	Roughly 5,000	1,774
Pima Association of Governments	Tucson, AZ	MPO	Southwest	County	Regional	3,540	N/A
Potomac and Rappahannock Transportation Commission	Woodbridge, VA	Transit agency	East	County	Urbanized	600 program applicants	129
Regional Transportation Authority	Nashville, TN	Transit agency	South	Region	Urbanized	Unreported	57
Rhode Island Public Transit Authority (RIPTA)	Providence, RI	Transit agency	Northeast	State	Urbanized	Unreported	308
Salem–Keizer Transit	Salem, OR	Transit agency	Northwest	Region	Urbanized	Roughly 3,000	229
San Francisco Bay Area Rapid Transit (BART)	Oakland, CA	Transit agency	West	Region	Major metropolitan	Unreported	669
San Joaquin Council of Governments	Stockton, CA	COG	West	Region	Regional	More than 4,000 registered	N/A
Santee Wateree Regional Transportation Authority	Sumter, SC	Transit agency	South	Region	Rural	Unreported	76
Space Coast Area Transit (Brevard County)	Cocoa, FL	Transit agency	South	County	Rural	119 vanpools in program	205
Valley Metro/Regional Public Transportation Authority	Phoenix, AZ	Transit agency	Southwest	County	Major metropolitan	Unreported	680
Votran	South Daytona, FL	Transit agency	South	County	Urbanized	Unreported	161
Washington Metropolitan Area Transit Authority	Washington, DC	Transit agency	East	Region	Major metropolitan	Unreported	3,744

*As reported in survey.

**2009 National Transit Database.

N/A = Not applicable, non-transit agency. COG = council of governments; DOT = department of transportation; MPO = metropolitan planning organization; PTBA = Public Transportation Benefit Area; TMA = transportation management association; TMO = transportation management organization.

Community Characteristic Definitions: Major metropolitan area; Urbanized: core city surrounded by suburbs; Rural: low population surrounded by open country.

APPENDIX C

Transit Modes Operated by Respondents

Which of the following does your agency operate? (Mark all that apply)	Count	Percent
Demand-response or flexible route service, including ADA paratransit	26	93
Regular local fixed-route buses (including shuttles and trolley buses)	23	82
Express/limited/commuter buses	23	82
Other bus (please specify)	9	32
Commuter/passenger rail	8	29
Bus rapid transit	7	25
Light rail	5	18
Heavy rail (e.g., subway, elevated railway)	3	11
Streetcar, trolley, or other fixed guideway rail service	2	7
Other (please specify)	1	4
Total responses	28	100

APPENDIX D

Ridesharing Placement Within Agencies

Survey respondents were asked which department housed their ridesharing program. Of the twenty-seven transit agencies responding, the largest category with four responses was customer service followed by service planning, ridesharing/vanpooling, marketing, and operations, which each had three responses.

Departments Cited by Category
Customer service (4)
Service planning (3)
Ridesharing or vanpooling (3)
Marketing (3)
Operations (3)
Planning (2)

All others:
Business services (1)
Service delivery (1)
Transit (1)
Transportation development (1)
Other or N/A (5)

Master List of Departments Cited

Response	Category
Business Services is a separate department that reports to the chief of staff (deputy executive director).	Business services
Customer service	Customer service
Customer care and planning	Customer service
DART's Ridesharing Department reports to our chief development officer in charge of planning and customer service. Ridesharing is a separate budgetary cost center.	Customer service
Planning and customer service	Customer service
Marketing	Marketing
Marketing	Marketing
Marketing/communications	Marketing
Again, there are no ridesharing programs at Metro. There is a dedicated regional program at the MPO...contact [content excluded for anonymity]	N/A

Response	Category
N/A	N/A
We do not have ridesharing program, other than the paratransit program.	N/A
Operations	Operations
Transportation/operations	Operations
Planning and operations	Operations
NJ Department of Transportation	Other
South Alabama Regional Planning Commission in Mobile, Alabama (CommuteSmart)	Other
Planning	Planning
Planning and special services	Planning
King County Department of Transportation, Transit Division, Paratransit/Rideshare Operations Section	Ridesharing or vanpool department
State Department of Transportation, Bureau of Public Transportation, Office of Transit and Ridesharing	Ridesharing or vanpool department
Vanpool program	Ridesharing or vanpool department
Service delivery (note: was previously part of communications & marketing/customer service)	Service delivery
Service development	Service planning
Service development	Service planning
Service planning	Service planning
It is in the same department as the transit department. All costs are split through tracking of hours worked on each program. Overhead costs are divided between the two functions.	Transit
Transportation development	Transportation development

Abbreviations used without definitions in TRB publications:

AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI–NA	Airports Council International–North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	Air Transport Association
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation