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ERRATA

“Casual Carpooling Focus Group Study”
Publication No. FHWA-HRT-13-053

Dear Customer:

Editorial corrections were made to this report after the report was originally published. The following table shows the modifications that were made to this report.

Location	Correction
Page i, Box 15	Add: "Department of the Navy Technical Contact: Marc Oliphant"
Page 1	Change: <i>Casual Carpooling Scan Report and Appendix B to the Casual Carpooling Scan Report</i> to: Casual Carpooling Scan Report and Appendix B to the Casual Carpooling Scan Report
Page 5	Change sentence to: "As shown in figure 1, casual carpooling occurs in the..."
Page 15, Table 3	Add: "No Response" to blank cell.

Federal Highway Administration

Exploratory Advanced Research Program



Casual Carpooling Focus Group Study

May 2013



U.S. Department
of Transportation
**Federal Highway
Administration**

Foreword

This report describes the results of a focus group study that explored the phenomenon of casual carpooling from the perspective of individuals who participate in such systems as drivers and/or passengers. Focus groups were held in three of the largest and longest running casual carpooling systems in the Nation: Washington, DC; Houston, TX; and San Francisco, CA. This study was conducted in tandem with a scan trip evaluation conducted in November and December 2010, which brought together a group of academics and transportation professionals to explore the mechanics, logistics, and success of the practice by visiting casual carpooling lines and observing and comparing practices among the three locations. Together, the findings and conclusions drawn from the focus group study and scan trip evaluation will be used to identify possible future research on the potential for and value of expansion or replication of casual carpooling.

Robert E. Arnold
Director, Office of Transportation
Management

Debra S. Elston
Director, Office of Corporate Research,
Technology, and Innovation Management

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16. Abstract Qualitative research in the form of focus groups was conducted from June 2012 through September 2012 to explore the phenomenon of casual carpooling (also called slugging, informal carpooling, and dynamic ridesharing). Eight focus groups were held in three regions with the largest and longest running casual carpooling systems in the Nation: Washington, DC; Houston, TX; and San Francisco, CA. At each location, the focus groups were held with drivers and passengers who are active participants in casual carpooling. The focus groups took place over 1 to 2 days on separate evenings with generally one or two groups being held each evening (one focus group in Washington, DC, was held midday). A total of 83 individuals participated in the focus groups. With the goal of enriching understanding of casual carpooling systems from the participants' perspective, this effort provided insights, results, and conclusions to the following research questions: 1. What are the underlying social-cultural dynamics that comprise the casual carpooling system? 2. What are the factors that attract participants to casual carpooling and influencers that motivate them to stick with the system? 3. What are the opportunities for system improvements that may improve the casual carpooling experience?			
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INTRODUCTION

This report documents a qualitative research study sponsored by the Federal Highway Administration (FHWA) Exploratory Advanced Research (EAR) Program that was conducted from June 2012 through September 2012 to explore the phenomenon of casual carpooling. FHWA's EAR Program addresses the need to conduct longer term and higher risk breakthrough research with the potential for transformational improvement to plan; build; renew; and operate safe, congestion-free, and environmentally sound transportation systems. This study is one component of a two-part study that explored the mechanics, logistics, and success of the practice. During November and December 2010, the EAR Program supported a team that consisted of transportation professionals, academic faculty, and business entrepreneurs who visited casual carpooling lines in Washington, DC; Houston, TX; and San Francisco, CA, to observe and compare practices among the three locations. The [*Casual Carpooling Scan Report*](#) is documented in a separate report, and [*Appendix B to the Casual Carpooling Scan Report*](#) is also available separately.^(1,2)

Casual carpooling is just like traditional carpooling in that a ride is shared between a driver and one or more passengers. The practice of casual carpooling, however, is a unique variation on the traditional form of carpooling with two distinct differences:

- ✓ Casual carpooling takes place without any prearrangement between driver and passenger(s).
- ✓ In casual carpooling, there is no ongoing commitment among the participants.

Other terms commonly used to describe casual carpooling include “slugging” and “dynamic ridesharing.” According to David LeBlanc, a veteran slug, author of *Slugging*, and creator of Slug-Lines.com, the term “slug” came from bus drivers who had to determine if there were genuine passengers at their stop or just people wanting a free lift, in the same way that they look out for fake coins—or “slugs” being thrown into the fare-collection box.⁽³⁾ Of these terms, “casual carpooling” and “slugging” describe an approach where there is a predetermined physical meeting place for the driver and passengers and there is no required use of technology to participate.

Though the authors recognize that there are connotative and denotative differences between these terms and that their use varies by region, for purposes of continuity, this report refers to the practice generally as “casual carpooling” and those who participate in it as “casual carpoolers.”

Background

As a response to the opening of high-occupancy vehicle (HOV) lanes in the Washington, DC–Northern Virginia metro area in the mid-1970s, a unique commuting phenomenon developed: slugging. This type of carpooling evolved from drivers and passengers coming together to fulfill each party's needs: drivers needed additional passengers to meet the HOV requirement of four occupants (in Washington, DC, this was later reduced to three) and passengers needed faster ways to reach their destination than public transit without the expense of driving. This win–win situation eventually spread from the original slug line in Springfield, VA, to roughly 24 sites in the region today.

Particularly in the Washington, DC, region, casual carpooling has not just continued but has thrived as an alternative to driving or using transit. After roughly 35 years, casual carpooling is still going strong in Washington, DC, and is taking hold in other metropolitan areas. Although some changes have occurred, by and large, people still wait in lines for cars going to a particular destination. They no longer wait at bus stops—today, casual carpoolers wait in parking lots (at retail locations, park-and-ride lots, etc.)—but the concept is not vastly different from when it began. Academic and entrepreneurial types alike are looking at ways to facilitate casual carpooling. Some suggestions for enhancing casual carpooling include Web-based forums that connect drivers with passengers, smartphone applications that would allow drivers and passengers to register and connect with each other, and other incentive-based programs.

Academics and transportation professionals have undertaken few studies about casual carpooling. This focus group study provides additional insights into the casual carpooling systems in the three locations (Washington, DC; Houston, TX; and San Francisco, CA) also toured by the Casual Carpooling Scan team during the winter of 2010. Two to three focus groups were held in each of the locations with drivers and passengers who are active participants in casual carpooling. The goal of the research was to gain additional insight and knowledge into the practice of casual carpooling and find opportunities for enhancing the process through technological means. The findings in this report, together with those found in the *Casual Carpooling Scan Report*,⁽¹⁾ document the current practices in three of the Nation’s largest and longest running casual carpooling systems.

Research Objectives

With an ultimate goal of enriching the transportation community’s understanding of casual carpooling systems from the participants’ perspective, this research held three key study objectives:

- Uncover underlying social-cultural dynamics that comprise the casual carpooling system.
- Identify the driving factors that attract participants to casual carpooling and influencers that motivate them to stick with the system.
- Explore participant-driven opportunities for system improvements and technological advances that may improve the current casual carpooling experience.

The research findings will inform future dialog and planning by FHWA and others interested in casual carpooling.

Research Limitations

The qualitative, focus group–based research method used in this study offers a number of benefits. It provides the opportunity to obtain a large, rich body of information, can be organized relatively quickly, and can be conducted almost anywhere. The open, flexible nature of focus groups also encourages participants to talk about topics they normally would not discuss with strangers. Qualitative research offers a flexible way of collecting data, and as new insights are gained or new leads open up, the observer can shift perspective quickly and explore new areas of inquiry. This is not possible using quantitative survey methods; once the survey questions are set, they are asked in the same way to all participants. The major limitation of this method, however, is that the findings are limited to descriptions of what happens in *small groups of people* that may not be fully representative of the population, which in turn, also limits the ability to generalize the

results. Consequently, the findings presented in this report are only representative of the opinions, attitudes, and behaviors of individuals who participated in the focus groups.

Report Organization

This report presents findings in three perspectives:

- First, in the next section, the research methodology is presented, including details on the study locations and characteristics of the casual carpooling programs in each region, a review of the research protocols, and a summary of the characteristics of the research participants.
- Second, a set of broad findings or themes are presented in broad context as it relates to the practice of casual carpooling as a whole. Each is discussed as an independent finding.
- Third, the findings by location are discussed in the context of the key discussion questions that guided the interviews and are organized by the role of the casual carpooling participant as rider or passenger (with some participants sometimes changing roles).

In the final section of this report, a brief set of conclusions and recommendations is presented.

METHODOLOGY

Research Design

The research approach selected for this study was qualitative research in the format of focus groups. This section describes the key design elements of the study including the limitations associated with qualitative research and the use of its findings.

Framework

General research design and the methods used to implement that design should flow naturally from an underlying conceptual model or framework. Our framework posits that system factors, individual factors, and environmental factors influence the outcome behavior of casual carpooling. *System factors* include the naturally occurring nature of the system, employer-based programs that support ridesharing, or other institutional factors that contribute directly or indirectly to the system. *Individual factors* include social identity, individual expression, culture, social bonding, attitudes and beliefs, and personal values. *Environmental factors* include community characteristics, such as geographic location, prevalence of transit, HOV and other managed lanes, and parking availability at homeside meeting places.

Target Population

With the aim of informing the practice of casual carpooling from the perspective of its participants, the research consultants targeted people who participate in such systems as a regular method of commuting, including both drivers and passengers.

The focus groups did not include people who might be instrumental to casual carpooling in general, such as the Casual Carpooling Scan Study participants, transportation or local government/quasi-government entities with interests in ridesharing and carpooling programs, other researchers from universities, or people who are associated with casual carpooling systems such as those who donate time and energy in facilitating the practice through the management of public Web sites and discussion boards. Rather, these individuals were consulted within the planning phases of the focus groups and were invited to observe the focus groups. They provided insights on the systems regarding study locations, options for recruiting focus groups, and locations for holding the focus groups.

Study Locations

Focus groups were conducted in three metropolitan areas: Washington, DC; Houston, TX; and San Francisco, CA. Several factors contributed to the evolution of each system in the respective locations; each is briefly presented within the next subsections.

Mapping Tools

Figures 1, 2, and 3, appearing in this section, were created using ArcGIS® software by Esri. The base map is the World Topographic map from Esri; the major road lines are data from the United States Census Bureau;

the park-and-ride and casual carpooling locations were manually created in ArcGIS by finding each location on the base map and creating a point; reference addresses are listed on each of the following Web sites and were retrieved in February 2013: www.slug-lines.com/Slugging/Map.asp (Washington, DC, region), www.ridemetro.org/SchedulesMaps/parkride.aspx (Houston, TX, region), and www.ridenow.org/carpool (San Francisco, CA, region). ArcGIS® and ArcMap™ are the intellectual property of Esri and are used herein under license.

Washington, DC

In the Washington, DC, area, casual carpooling is commonly referred to as “slugging.” As shown in figure 1, casual carpooling occurs in the Washington, DC, area primarily along Interstate (I) 95 and I-395 between Washington and Northern Virginia, extending as far south as the north side of Fredericksburg, VA. A few “slug lines” also operate along I-66 heading westbound out of Washington to Manassas, VA. Casual carpooling in this region is equally active during the morning (starting as early as 5:30 a.m. and lasting until 8:45 a.m.) and afternoon (starting as early as 3 p.m. and continuing until 6 p.m.) commutes.

Several dominant environmental features of the Washington area’s transportation network have contributed to the region’s casual carpooling system:

- HOV-3 lanes. The minimum number of occupants that is required for vehicles using HOV lanes along the I-95 and I-395 corridors south of Washington is determined.
- Park-and-Ride lots. Large park-and-ride lots are located along I-95 at key interchanges and suburban cities.
- Potomac River. The Potomac River creates a barrier between Washington and Virginia, limiting travel crossing between the city and Virginia to three bridges and Metrorail, the subway system.
- The Pentagon. The world’s largest office building by floor area, with over 30,000 employees and visitors on a daily basis, is also a natural hub for all transportation modes including personal vehicle, taxi, and passenger dropoff/pickup for bus and subway transit services.

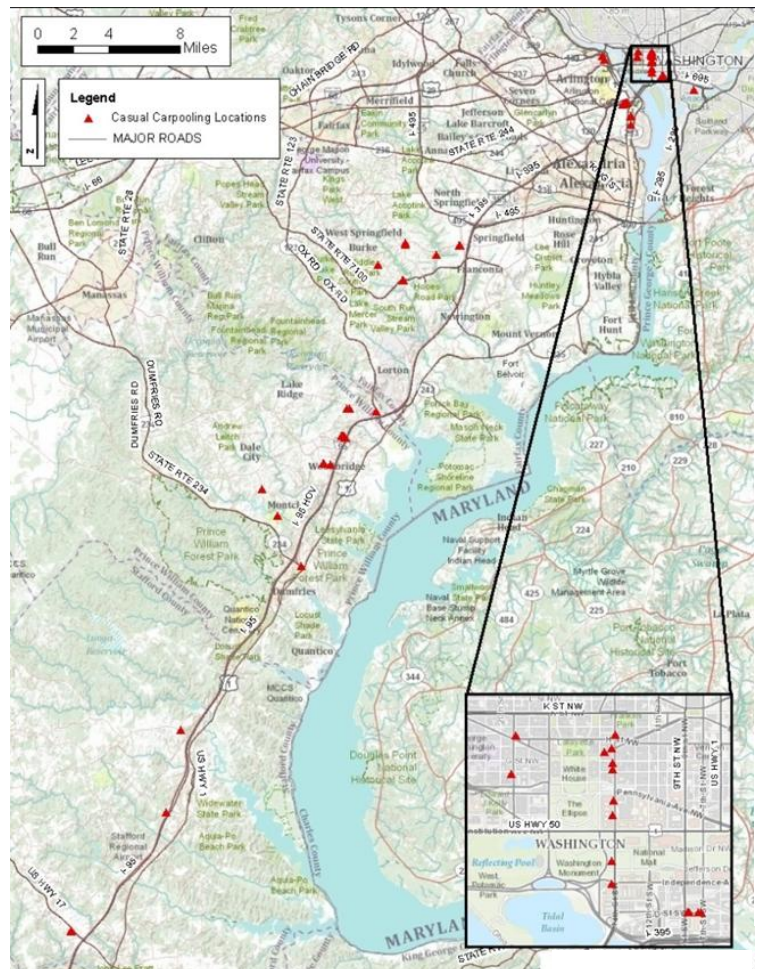


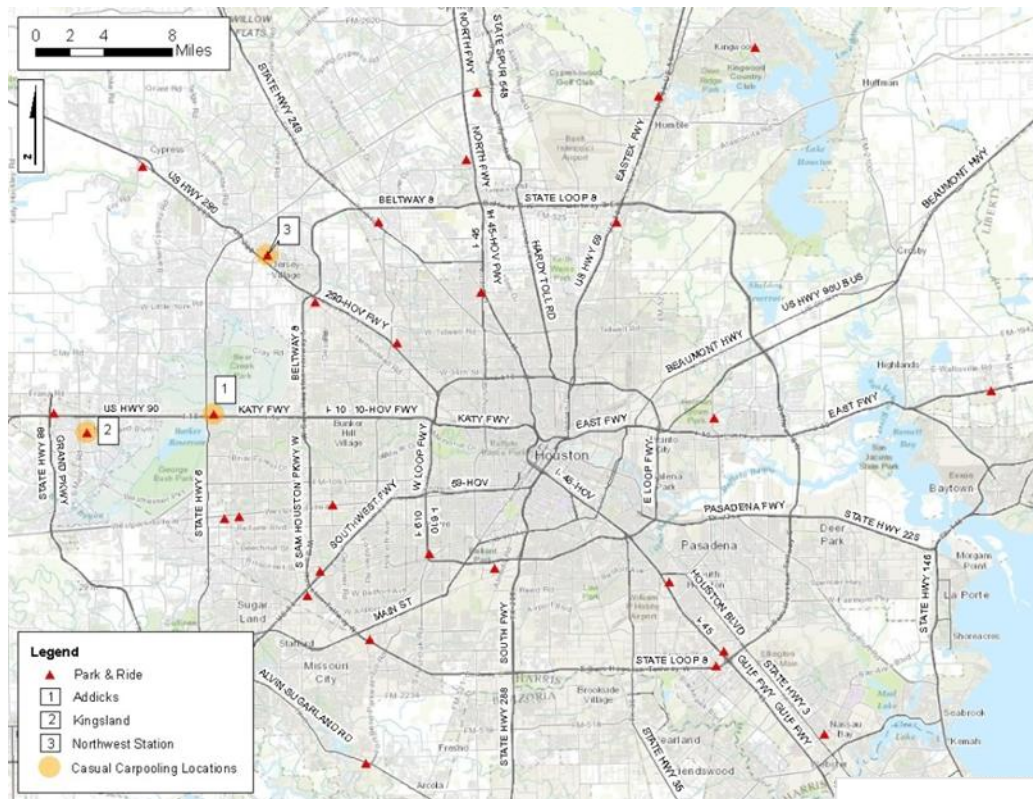
Figure 1. Map. Casual carpooling locations in the Washington, DC, region.

- High travel demand. The extremely large numbers of workers, students, and others needing to travel into or out of Washington on a daily basis creates high travel demand at or close to trip origins and destinations with readily available transit or parking (often expensive or limited).

Information on casual carpooling in the Washington–Northern Virginia region is available at www.slug-lines.com. This Web site contains comprehensive details on the morning and afternoon casual carpooling (or slugging) locations, etiquette and rules for casual carpooling, hints for getting started, a discussion board, and more. Unique to the site is a history of casual carpooling in the region and information on other casual carpooling programs in the United States and beyond.⁽⁴⁾

Houston, TX

As in the Washington, DC, region, some casual carpoolers in Houston also refer to casual carpooling as “slugging.” Casual carpooling occurs along two major corridors leading into Houston: the Katy Freeway (I-10) and the Northwest Freeway (US Highway 290). Along the Northwest Freeway, there is one morning casual carpooling location (Northwest Station Park-and-Ride lot), and along the Katy Freeway, there are two morning casual carpooling locations (Addicks Park-and-Ride and Kingsland Park-and-Ride lots).⁽⁵⁾ Figure 2 shows the park-and-ride locations that are listed on the Metropolitan Authority of Harris County Web site (www.ridemetro.org) and the three casual carpooling locations: Northwest Station, Addicks, and Kingsland.⁽⁶⁾



Map prepared by NuStats, L.L.C. Sources: U.S. Census, www.ridemetro.org. Portions of the map are used herein with permission. Copyright © 2013 Esri. All rights reserved. Copyright © 2013 NuStats L.L.C.

Figure 2. Map. Park-and-ride locations in the Houston, TX, region.

According to the *Casual Carpooling Scan Report*, casual carpooling activity in Houston has dropped an estimated 50 percent in volume in recent years.⁽¹⁾ This reduction is largely due to changes since 2010 along the Katy Freeway, the Houston region's major east–west highway, extending approximately 40 mi (65 km) from the central business district west to the Brazos River. The original highway was constructed in the 1960s with three lanes per direction and two frontage lanes, but in 2008 the Texas Department of Transportation completed a reconstruction of a 12-mi (19 km) section of the Katy Freeway from west of State Highway 6 to the I-10 interchange. The reconstruction added lanes in each direction, and the limited access portion was changed from HOV to a variable priced high-occupancy toll (HOT) lane. Now with nine lanes in each direction (three frontage lanes, four general purpose lanes, and two managed HOT lanes), the increased capacity has significantly reduced congestion on the general purpose lanes, making the associated time savings less significant. Additionally, drivers now have the option to drive alone and pay a toll on the HOT lanes. They are no longer required to have a passenger to benefit from the HOT lanes.

San Francisco, CA

Casual carpooling began in the East Bay area of San Francisco in the 1970s in response to congestion associated with crossing the San Francisco–Oakland Bay Bridge. While carpoolers using HOV lanes were spared having to pay the toll upon westbound crossings of the bridge, they also benefited by significant time savings over the general purpose lanes during peak commuting hours. In July 2010, carpool drivers began paying a reduced toll of \$2.50 (full fare is \$6 for passenger vehicles during commuting hours) to use the designated HOV lanes during specified times (between 5 and 10 a.m. and between 3 and 7 p.m.). Carpools must have three passengers to get the discounted toll. Because the toll is only charged in the westbound direction, there is significant morning congestion at the westbound bridge approach, and travel is oriented towards San Francisco for work, casual carpooling primarily occurs in the morning and passengers rely on transit for their evening, eastbound commutes. At the time of this report, the Bay Area had not yet implemented managed/priced lanes in the casual carpool corridor. Eventually, when managed/priced lanes are implemented in this corridor, carpoolers are expected to continue to be allowed to use these lanes at a free or reduced fare, providing for yet another incentive to carpool.

Based on the locations listed on www.ridenow.org/carpool, a Web site for casual carpoolers in the San Francisco region, casual carpooling in the region occurs as far north as Vallejo and neighboring cities in American Canyon, as shown in figure 3.⁽⁷⁾

People who initiate their commute from Vallejo and neighboring cities experience additional challenges not faced by casual carpoolers who travel from cities closer to San Francisco, such as Berkeley and Oakland. Such challenges include:

- Two tolls. In addition to the toll for the inbound trip on the Bay Bridge (described above), a toll is required for the return trip on the Carquinez Bridge, located on I-80 between Contra Costa and Solano counties near Vallejo. The cost for carpools (\$2.50) is half of the toll for single-occupant vehicles (\$5).
- Limited viable transportation options. Vallejo commuters have two other alternatives:

- Ferry—Since the summer of 2012, Baylink Ferry has offered weekday commuters five departure times from Vallejo to San Francisco from 5:30 to 10 a.m. For their return trip, commuters have up to four options from 5:15 to 7:15 p.m. Estimated travel time for a one-way trip is 60 minutes and costs \$13 for adults (ages 13 to 64).⁽⁸⁾
- Bay Area Rapid Transit (BART)/Bus—Alternatively, a combined bus and rail trip is another option for many traveling between Vallejo and San Francisco. According to its Web site, BART is a high-speed transit system that was constructed to ease the traffic congestion on Bay area bridges, including the Bay Bridge that connects Oakland to San Francisco.⁽⁹⁾

Research Protocols

To fully investigate the experiences, thoughts, and opinions of the target population on topics related to casual carpooling, the research design used focus groups. The consulting firm for this study held two to three focus groups in each of the three metropolitan areas of the study. Focus group participants included drivers and passengers who were current participants in casual carpooling or, in the case of Fort Belvoir, VA, which had no casual carpoolers, participants included drivers and passengers who had past experience or interest in casual carpooling.

A challenge in recruiting focus group participants was that because of the very organic and largely unstructured nature of casual carpooling systems, there are no readily available rosters or lists of participants. Therefore, recruitment of study respondents was conducted in consultation with local experts who assisted with recruitment, advised on recruitment approaches, and in some cases collaborated by assisting with recruitment through workplace emails.

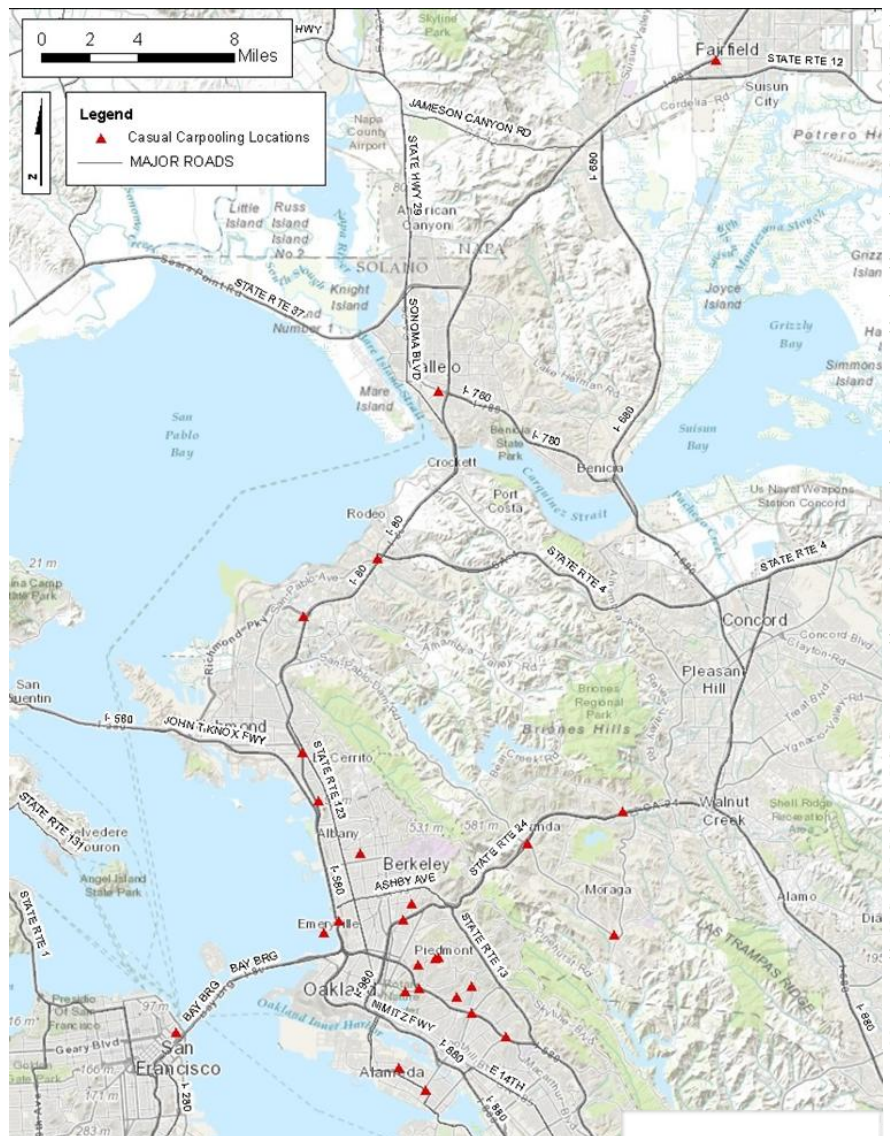


Figure 3. Map. Casual carpooling locations in the San Francisco, CA, region.

Map prepared by NuStats, LLC. Sources: U.S. Census, www.ridemow.org/carpool. Portions of the map are used herein with permission. Copyright © 2013 Esri. All rights reserved. Copyright © 2013 NuStats LLC.

A further complication in the research design was in deciding when and where to hold the focus groups. Focus group facilities are generally located in metropolitan area city centers and commercial/business districts and offer many benefits including handling of logistics and hosting, audio- and videotaping of sessions, providing refreshments and distributing incentives, and separate viewing for observers using a one-way mirror. Experience dictates that focus groups with those who work during the day are best held in the evening. The facilitator opted to hold the focus groups in locations that were close to the dropoff locations (or in the case of San Francisco, near transit or home destinations). Because there were no focus group facilities in these locations, the sessions were held in hotel meeting rooms, with observers viewing in an adjacent room via video connections to a television.

A summary of the research protocols follows:

- Focus group recruitment. The consulting firm that performed the focus groups for FHWA conducted recruitment via email invitation in Washington and San Francisco using discussion boards of Web sites dedicated to casual carpooling. The firm solicited participants via intercept recruitment at casual carpooling lines in Houston (where there were no Web sites/discussion boards dedicated to casual carpooling) and San Francisco. See appendix D for an example of an invitation to participate used in the intercept interviews.
 - Washington, DC–Dumfries, VA—Participants were recruited via email invitation to members on the www.slug-lines.com bulletin board. In addition, an advertisement was placed on the [slug-lines.com](http://www.slug-lines.com) Web site. Followup screening was conducted by telephone with people expressing interest in the focus groups and to collect basic demographic information (see participant summaries in the next section). Fort Belvoir participants were recruited through the Base Relocation and Closure (BRAC) program through email invitation and face-to-face recruitment. No followup screening was conducted with these participants; therefore, very little information about the participants was collected before the session.
 - Houston, TX—Participants were solicited using intercept recruitment at three slug lines located at the Northwest and Katy Freeway park-and-ride lots. For those expressing interest in participating in the focus groups, the consulting firm conducted followup to confirm participation using the preferred method of contact (email and/or telephone).
 - San Francisco, CA—Recruitment relied on the casual carpooling Web site, www.ridenow.org/carpool, and intercept recruiting at Oakland and Vallejo casual carpooling lines 1 week prior to the sessions. Followup to confirm participation was conducted using the preferred method of contact (e-mail and/or telephone).
- Focus group hosting. With the exception of the focus group session held in Fort Belvoir, which provided a meeting room for the lunchtime focus group, all sessions were held in meeting rooms at hotels that were conveniently located within proximity of casual carpooling dropoff locations. All rooms needed ample space to fit 10 to 12 individuals around a table and an adjacent room for remote viewing by observers.

- Discussion guide. Each focus group was limited to roughly 90 minutes in length and followed a discussion guide (see appendices A, B, and C). The discussion format was similar for all study locations with minor modifications to account for unique characteristics related to or affecting casual carpooling in a specific region.

For each session, light refreshments were provided. All focus group participants were offered a cash token in appreciation for their time. This research was conducted under the Information Collection Request OMB Control No. 2125-0629, ICR Reference No: 201111-2125-002.

Participant Summary

A total of 83 respondents participated in eight focus groups. Tables 1, 2, and 3 document the participation for the focus groups by location. No demographic goals were specified for this study, only a target number of respondents to gain sufficient participation; i.e., at least 12 respondents in each focus group. In the event that more than 12 participants arrived for the focus group, it was left to the moderator’s discretion to determine how many respondents would be invited to join the focus group. Qualitative research groups are limited in the number of participants to enrich the conversation. Groups of six to eight participants each are ideal and allow time to probe topics and reach a deeper level of understanding than is possible with a larger group. In focus group research, over-recruitment of participants is a standard practice to account for those who do not or cannot meet their commitment. Where demographic or carpooling behavior information is missing in the tables, this is generally either because the participant declined to provide the information or because the information was not collected during the intercept recruitment, when time available to talk to prospective participants—passengers standing in lines for a ride or drivers waiting for passengers to arrive—was often insufficient. The demographic information was self-reported by the participants and was not observed, collected, or validated through other methods.

Table 1. Participant summary (Washington, DC, region).

Region	Demographic Information				Casual Carpooling (CC) Behavior		
	Gender	Age	Education	Race	Role	CC to and from Work?	Frequency
<i>Fort Belvoir, VA May 22, 2012 11:30 a.m.– 1 p.m.</i>	Female	No response	No response	Black / African American	Neither	Neither	Never
	Female	No response	No response	Black / African American	Driver & passenger	Both	On occasion
	Female	No response	No response	Black / African American	Neither	Neither	No response
	Female	No response	No response	Black / African American	Neither	Neither	Never
	Female	No response	No response	White / Caucasian	Driver & passenger	Both	No response
	Female	No response	No response	White / Caucasian	Driver & passenger	Both	No response

Region	Demographic Information				Casual Carpooling (CC) Behavior		
	Gender	Age	Education	Race	Role	CC to and from Work?	Frequency
	Male	No response	No response	White / Caucasian	Former driver & passenger	Both	Daily
	Male	No response	No response	White / Caucasian	Former driver & passenger	Both	Daily
	Female	No response	No response	Black / African American	Neither	No response	No response
	Male	No response	No response	White / Caucasian	Driver & passenger	No response	No response
	Female	No response	No response	Black / African American	Former passenger	Both	On occasion
	Female	No response	No response	Black / African American	No response	No response	No response
Washington, DC May 23, 2012 5:30–7 p.m.	Female	52	Bachelor's or undergraduate degree	Black / African American	Driver & passenger	Both	About twice a week
	Male	42	Bachelor's or undergraduate degree	Black / African American	Driver & passenger	Both	Daily
	Female	35	Bachelor's or undergraduate degree	White / Caucasian	Driver	Both	Daily
	Female	58	Graduate / professional degree	White / Caucasian	Driver	Both	About twice a week
	Male	44	Bachelor's or undergraduate degree	White / Caucasian	Driver	Both	No response
	Female	35	Graduate / professional degree	Black / African American	Driver & passenger	Both	Daily
	Female	40	Some college credit	White / Caucasian	Driver & passenger	Both	Daily
	Male	43	Bachelor's or undergraduate degree	White / Caucasian	Driver & passenger	Both	Daily
	Female	33	Graduate / professional degree	Hawaiian / Spanish	Driver	Both	Daily
	Male	44	Graduate / professional degree	White / Caucasian	Driver	Both	About twice a month
	Female	No response	No response	No response	Driver	Both	No response

Region	Demographic Information				Casual Carpooling (CC) Behavior		
	Gender	Age	Education	Race	Role	CC to and from Work?	Frequency
<i>Washington, DC May 23, 2012 7:30–9 p.m.</i>	Male	46	Bachelor's or undergraduate degree	White / Caucasian	Passenger	Both	About twice a week
	Male	38	Bachelor's or undergraduate degree	White / Caucasian	Driver & passenger	Both	Daily
	Male	39	Bachelor's or undergraduate degree	White / Caucasian	Driver & passenger	Both	About twice a week
	Female	56	No response	Black / African American	Passenger	Both	Daily
	Male	50	Graduate / professional degree	White / Caucasian	Passenger	Both	About twice a week
	Female	25	Graduate / professional degree	White / Caucasian	Passenger	Both	Daily
	Male	46	Graduate / professional degree	White / Caucasian	Driver & passenger	Both	Daily
	Female	43	Graduate / professional degree	Black / African American	Driver & passenger	Both	Daily
	Female	39	Some college	Black / African American	Driver & passenger	Both	Daily
	Male	47	Some college	Black / African American	Driver & passenger	Both	Daily
	Male	No response	No response	No response	Driver & passenger	Both	Daily

Table 2. Participant summary (Houston, TX, region).

Region	Demographic Information				Casual Carpooling (CC) Behavior		
	Gender	Age	Education	Race	Role	CC to and from Work?	Frequency
<i>Houston, TX July 11, 2012 5:30–7 p.m.</i>	Female	51	Some college credit	White / Caucasian	Driver	Both	About twice a week
	Male	No response	No response	No response	Driver	No response	No response
	Female	54	High school graduate	White / Caucasian	Passenger	No response	No response
	Female	61	Bachelor's or undergraduate degree	Hispanic / Latino	Passenger	To work	Daily
	Male	63	Bachelor's or undergraduate degree	White / Caucasian	Passenger	To work	About twice a week

Region	Demographic Information				Casual Carpooling (CC) Behavior		
	Gender	Age	Education	Race	Role	CC to and from Work?	Frequency
	Male	No response	No response	No response	Driver & passenger	Both	Daily
Houston, TX							
<i>July 11, 2012 7:30–9 p.m.</i>	Male	No response	No response	No response	Primarily a passenger	No response	No response
	Female	No response	No response	White / Caucasian	Primarily a passenger	No response	No response
	Female	No response	No response	White / Caucasian	Primarily a passenger	No response	No response
	Male	No response	No response	White / Caucasian	Driver & passenger	No response	No response
	Male	No response	No response	No response	Driver & passenger	No response	No response
	Male	No response	No response	Asian / Pacific Islander	Primarily a passenger	No response	No response
	Male	56	No response	White / Caucasian	Primarily a passenger	Both	No response
	Female	No response	No response	Hispanic / Latino	Driver & passenger	No response	Daily
	Female	No response	No response	White / Caucasian	Driver & passenger	No response	No response
	Female	No response	No response	White / Caucasian	Driver & passenger	No response	No response

Table 3. Participant summary (San Francisco, CA, region).

Region	Demographic Information				Casual Carpooling (CC) Behavior		
	Gender	Age	Education	Race	Role	CC to and from Work?	Frequency
Oakland, CA <i>August 22, 2012 5:30–7 p.m.</i>	Male	31	No response	No response	Driver	To work	Daily
	Male	49	No response	Black / African American	Driver	To work	Daily
	Male	30	Graduate / professional degree	Asian / Pacific Islander	Driver & passenger	To work	Daily
	Female	No response	Bachelor's or undergraduate degree	Hispanic / Latino	Passenger	To work	Daily
	Female	44	Bachelor's or undergraduate degree	No response	Passenger	To work	No response
	Male	No response	No response	No response	Primarily a passenger	No response	No response

Region	Demographic Information				Casual Carpooling (CC) Behavior			
	Gender	Age	Education	Race	Role	CC to and from Work?	Frequency	
	Female	32	Bachelor's or undergraduate degree	Black / African American	Passenger	No response	About twice a month	
	Male	No response	No response	No response	Passenger	To work	Daily	
	Male	32	Bachelor's or undergraduate degree	Asian / Pacific Islander	Primarily a passenger	To work	About twice a week	
	Male	No response	No response	No response	No response	To work	Daily	
	Female	36	Bachelor's or undergraduate degree	Black / African American	Passenger	To work	Daily	
	Male	35	Bachelor's or undergraduate degree	Hispanic / Latino	No response	To work	Daily	
	Female	No response	No response	No response	Passenger	To work	Daily	
<i>Oakland, CA August 22, 2012 7:30–9 p.m.</i>	Female	No response	No response	No response	Primarily a driver	No response	No response	
	Male	No response	No response	No response	Driver & passenger	To work	Daily	
	Male	No response	No response	No response	Driver & passenger	To work	No response	
	Female	No response	No response	No response	Primarily a passenger	To work	Daily	
	Male	No response	No response	No response	Passenger	To work	About twice a week	
	Female	No response	No response	No response	No response	No response	No response	
	Male	50	Bachelor's or undergraduate degree	White / Caucasian	Primarily a passenger	No response	No response	
	Female	No response	No response	No response	Passenger	No response	No response	
	Female	No response	No response	No response	Asian / Pacific Islander	Primarily a passenger	No response	No response
	Female	46	Bachelor's or undergraduate degree	Black / African American	Primarily a driver	To work	No response	
	Male	56	Graduate / professional degree	White / Caucasian	Primarily a passenger	To work	No response	
Male	33	No response	No response	No response	Primarily a driver	To work	No response	
<i>Vallejo, CA August 23, 2012 7–8:30 p.m.</i>	Male	No response	Bachelor's or undergraduate degree	Asian / Pacific Islander	Primarily a passenger	Both	Daily	
	Female	49	Some college	Asian / Pacific Islander	Primarily a passenger	Both	Daily	

Region	Demographic Information				Casual Carpooling (CC) Behavior		
	Gender	Age	Education	Race	Role	CC to and from Work?	Frequency
	Female	27	Bachelor's or undergraduate degree	Hispanic / Latino	Primarily a driver	No response	Daily
	Female	No response	No response	No response	Primarily a passenger	No response	No response
	Male	No response	No response	Hispanic / Latino	Primarily a passenger	No response	No response
	Male	No response	No response	No response	No response	To work	Daily
	Female	No response	No response	Hispanic / Latino	Primarily a passenger	No response	No response
	Male	No response	No response	No response	Primarily a passenger	No response	About twice a month

KEY FINDINGS BY BROAD THEMES

This research led to the development of five broad findings:

1. While casual carpooling exists in multiple regions, the culture of those who participate is not uniform across all areas, but varies both across and within regions and by the role of the participant.
2. Overall, casual carpoolers are satisfied with the organic nature of casual carpooling (that is, informality and lack of government involvement). There is a strong relationship between certain congestion policies (e.g., HOV-3 facilities and park-and-ride lots), and the development of and participation in casual carpooling systems.
3. Hearing about casual carpooling does not in itself inspire first-time participation, and safety-related issues are among top concerns of new participants; however, an added sense of security (e.g., from riding with a friend for a period of time or familiarizing oneself with the route) may encourage participation among first-time casual carpoolers.
4. The relationship between casual carpoolers varies by role and among and within regions.
5. Possible enhancements to casual carpooling through technological tools (e.g., ride-matching and other smart phone or Web-based applications, and alerts when a parking lot is full or waiting times are long), incentives to drivers or riders, and other services appeal to some casual carpoolers as ways to make the system more convenient and easy to use and to enhance their sense of personal safety.

Each of these findings is discussed below:

1. While casual carpooling exists in multiple regions, the system culture is not uniform across all areas, but varies both across and within regions and by the role of the participant.

Across the three systems (Washington, Houston, and San Francisco) that were studied there is some uniformity and there are also many ways in which the systems differ. With regard to similarity across the systems, the following features stand out:

- Unwritten rules and protocols. Generally, each of the systems operates under word-of-mouth rule setting and self-policing protocols. Participants do not sign contracts nor do they receive a “welcome packet” or other written document that outlines how the system functions. Rather, participants largely learn by hearsay or watching before or as they participate. There is some documentation of the systems in two of the regions (www.slug-lines.com in Washington and www.ridenow.org/carpool in San Francisco). Some government or advocacy programs (e.g., 511.org in the San Francisco region) that promote ridesharing also post information about casual carpooling. Generally, there is no obligation by the authors of these sites to do this or to keep the information current.

- Lack of structure. While there are unwritten rules and protocols that participants follow, generally, the unstructured approach to carpooling is what appeals to many of the participants. On any given day, a participant can opt to casual carpool or not without regard to commitments and obligations; in fact, it is this flexibility with regard to personal schedules that is highly valued by many participants.
- Existence of a HOV lane and/or combination of HOT lanes and tolls. Among the motivations for participating in casual carpools is the highly valued cost and time savings associated with sharing a ride as compared to driving alone or taking transit. This is largely due to the presence of one or more congestion mitigation tools, including HOV as a standalone tool (Washington) or in combination with HOT lanes (Houston) and in the case of San Francisco, reduced bridge tolls in combination with HOV-lane time savings.
- Little, if any, overt government intrusion. Aside from congestion mitigation tools and programs to enforce the HOV and HOT lanes, there is very little government involvement with the casual carpooling system. The exception to this may be in the provision of some signage at pickup lines and, in some cases, shelters to protect participants from weather. In contrast, organized rideshare programs, including traditional carpools and vanpools, do have government or advocacy group oversight and involvement.

Among the differences between programs, the following features stand out:

- Vernacular. In Washington and to some degree Houston, casual carpooling is referred to as “slugging.” In San Francisco, it is referred to simply as “casual carpooling.”
- Payment practices. One of the main motivators for participating in casual carpooling is the cost savings associated with the practice and whether or not passengers pay drivers a donation towards gasoline, tolls, or parking. In Washington and Houston, the practice of paying for rides is generally discouraged, and only on occasion will a driver accept payment. In contrast, in San Francisco, even with a driver paying a reduced bridge toll because of meeting the HOV requirements, passengers are often expected to contribute to the cost of the bridge toll.
- Evolution of the program. While each of the systems was initiated as a response to HOV lanes being introduced, over time there have been changes to the HOV programs that have affected the casual carpooling systems:
 - ✓ In Washington, the HOV occupancy requirements have been reduced over time from four to three people; this change has had a minimal impact on participation levels. However, casual carpoolers are concerned that new I-95 HOT lanes might have a negative impact on the system (e.g., reduce the number of willing drivers).
 - ✓ In Houston, a major roadway reconstruction and introduction of HOT lanes (in conjunction with allowing HOV for free in the peak period) along with increased lanes has reduced congestion, but has also reduced participation levels in casual carpooling. Among casual carpoolers at the Northwest Station Park-and-Ride lot, where the highest levels of participation now exist, there is concern that if HOT lanes are introduced, participation levels would begin to fall and affect the system.

- ✓ In San Francisco, the introduction of a carpool toll (albeit reduced) on all San Francisco–Bay Area bridges has impacted participation levels in the casual carpooling program. The HOV requirements to secure a lower toll make casual carpooling attractive to drivers, but not as much to passengers who now may be expected to contribute towards the toll.

2. Overall, casual carpoolers are satisfied with the organic nature (informality and lack of governance) of casual carpooling. Some participants' decisions to casual carpool appear to be related to congestion policies. There is also a strong relationship between certain congestion policies and casual carpooling.

Motivators to participate include, first and foremost, cost and time savings:

- Cost savings. Passengers can save money because they do not need to have access to a car to participate (in contrast many traditional carpools require members to alternate driving responsibility and therefore all must own a car). The cost savings can be incurred by not owning a car, or by avoiding wear-and-tear caused by daily commuting, gasoline costs, or parking fees at the final destination. Drivers, on the other hand, experience cost savings in the form of reduced tolls when in compliance with HOV restrictions, and may experience additional cost savings if passengers contribute towards the toll. Casual carpooling may also be less expensive than making the same trip by public transit.
- Time savings. Time savings are generally associated with the advantages of having enough people in the vehicle (at least three occupants are required for HOV lanes approaching the Bay Bridge, for example) to qualify for use of the HOV lanes, allowing the participants to bypass congested lanes.

The value of casual carpooling and participation levels is inherently and intrinsically tied to the cost and time savings relationship. As an example, and as observed in Houston, an impact of the Katy Freeway reconstruction was the reduction of congestion on the highway for all users and a reduction in participation levels in casual carpooling at that location.

A final motivator, although not listed quite as frequently as time and cost saving was “flexibility.” Most participants noted that casual carpooling afforded them increased flexibility as compared to participation in traditional carpools or vanpools. They do not have the responsibility that comes in an organized rideshare program to drive, share in the payment of parking fees, and update other members when they are sick or on vacation. Further, they are able to make last-minute decisions on what time they will leave home and which casual carpool location they will depart from, etc. Unlike with fixed-route transit, drivers have the ability to make diversions as needed in the case of an accident or unexpected traffic even in the HOV lanes.

3. Hearing about casual carpooling does not in itself inspire first-time participation, and safety-related issues are among top concerns of new participants. However, an added sense of security (e.g., riding with a friend for a period of time or familiarizing oneself with the route) may encourage participation among first-time casual

The majority of casual carpoolers first learned about the system through word of mouth from a friend or colleague, reading about it in the news, or observing people waiting in line for rides at park-and-ride lots and other locations.

While safety issues are among the top concerns of new casual carpoolers, they diminish over time. This is in part because participants share an attitude of literally watching over each other. Additionally, casual carpoolers' general sense of safety is guided by the norms established by those who participate in casual carpooling at a given location. If a person's behaviors or manner of dress, for instance, go against what is customarily seen at a pickup location, then he or she may be passed up for carpooling opportunities. For instance, casual carpoolers at the Northwest Station Park-and Ride lot in Northwest Houston are accustomed to seeing casual carpoolers in business attire heading to work. Casual carpoolers' overall sense of safety at the Northwest Houston location is threatened when a person's manner of dress is not in line with what is customary (business attire in this case) to that location. In contrast, how someone is dressed does not impact Oakland area casual carpoolers' sense of safety or their decision to participate in casual carpooling.

4. The relationship between casual carpoolers varies by role and among and within regions.

Casual carpooling attracts participants for a variety of personal reasons. The role of the driver and passenger is similar to that of a traditional carpool in that a ride is shared between a driver and one or more passengers, and it is not uncommon for relationships to develop between driver and passenger. However, the relationships between casual carpoolers vary by their roles—as drivers or passengers—and are often influenced by the norms or culture, which differ by region (and even within a region). Highlights of this observation follow:

- In the Berkeley/Oakland area, casual carpoolers overall differ in some ways from those in Vallejo and locations in the Washington and Houston regions. They are less interested in building relationships and more interested in reaching their final destination. Furthermore, in the other locations, participants shared that they are sometimes selective in their decisions to ride with a specific driver. At all locations, it is perfectly acceptable behavior for a driver to “call out” a specific passenger in the line to ride with them (even if that passenger was not the next in line). In the Berkeley/Oakland area,

drivers and passengers do not specifically seek out a specific “type” of person or people with whom they have previously traveled.

- In the Washington region, the system is more structured and the driver/passenger relationship is “symbiotic” in nature. Casual carpoolers considered themselves to be part of a special community, and the sense of that community derives from helping each other out. Nevertheless, interactions within the vehicles are less prevalent in Washington than in other regions.
- Vallejo and Houston demonstrate more sensitivity/consideration to individuals with whom they are casual carpooling (be it the driver or passenger). In Vallejo, casual carpoolers shared stories of building relationships with other casual carpoolers; these relationships were not conveyed as a motivation for participating in casual carpooling, but as an added benefit. In Houston, participants reported friendly behavior and etiquette with regard to engaging in conversation, sitting in the front seat next to the driver, and forming relationships.

5. Possible enhancements to casual carpooling through technological tools, incentives to drivers or riders, and other services appeal to some casual carpoolers as ways to make the system more convenient and easy to use and to enhance their sense of personal safety.

While study participants overall are very satisfied with the casual carpooling system they use, they readily offer suggestions for improvements. Learning what works and where the systems function best is a helpful exercise to inform efforts to create casual carpooling in locations where it does not exist.

When asked about opportunities to improve casual carpooling, technology-based tools were among the top opportunities cited for improving casual carpooling in each of the study areas, especially as related to communications for improving the system dynamics and safety. Participants expressed the desire for real-time information exchanges about casual carpooling lines (e.g., number of passengers in line and number of vehicles in a queue, wait time for passenger or driver, etc.), estimated commute time from casual carpool lots, alerts about traffic delays on highways, and whether or not the parking area adjacent to the line—where there is one—is full. This information would allow participants to make informed decisions about whether to delay their commute to their regular location or go to an alternative location that is less crowded; or in the case of passengers, to take transit instead of casual carpooling. Participants also saw a role for improvements at casual carpool locations that would improve safety (and contribute in some cases to communications) such as installing a Web camera viewing the line or waiting area.

When asked specifically about Web or smartphone applications that would provide the services mentioned above or provide additional services such as matching riders with drivers, for a fee, there was some initial concern among most participants. While not generally adverse to technology, participants expressed concerns about (1) the associated costs with many objecting to pay for something that is already free and worrying that the price might arbitrarily rise over time; (2) whether introducing the technology would “upset” a system already in place that works well by changing its dynamics and making it more formal or structured and

potentially reducing the number of drivers and passengers at the casual carpooling lines and locations; and (3) the user-friendliness of such an application.

Upon further reflection, however, some did see value in this type of ridesharing service in general. Being paid for driving appealed to some drivers and even some passengers felt the payment to drivers might encourage more drivers to participate (increasing their likelihood of getting a ride). However, in some locations, participants felt the number of drivers and riders was already well balanced and this might upset the balance. Several felt that a rideshare application might make the system safer, especially if drivers and passengers had to preregister and there would be a record of the ride match, thus deterring any misconduct.

Focus group participants saw possible benefits to offering rewards of some type to casual carpoolers who take action to make the system function better in cases where it is not functioning well. They also suggested services that would improve the convenience and reliability of casual carpooling. In particular, system enhancements and rewards were suggested under the following circumstances:

- ✓ Return trips—Passengers are sometimes willing to pay for reliable return trips (up to 50 percent of transit fare), especially in Houston, but also for return trips to some casual carpooling morning origination points in Washington, DC, and San Francisco.
- ✓ Parking—Rewarding passengers to use more remote parking that is still within walking distance to the pickup points (especially if additional nearby parking can be arranged) could help free up close-in parking at the park-and-ride locations, particularly for late arrivers.
- ✓ Sweep service—For casual carpoolers who need a ride near the time when HOV restrictions are ending at sites where backup transit service is inadequate, arranging for “last call” backup van or taxicab service, or rewarding drivers who pick up toward the end of the HOV period (when there are generally fewer drivers) would be helpful.
- ✓ Pre-matching—Pre-matching drivers and passengers may be a particularly beneficial option for those using meet-up locations where casual carpooling service is not reliable (for instance, if there is a shortage of drivers).
- ✓ Safety—Incorporating driver certification and ratings could make some passengers feel safer, especially where there is HOV-2 and thus less security than HOV-3 offers passengers. Alternative or supplemental security might also include using a Web camera (as noted above) or an app shared by the rider and driver to record shared trips.

SESSION FINDINGS BY LOCATION

In this section, findings are presented from two perspectives. The first set represent the insights drawn from the interviews with riders and passengers, regardless of their location and covers the knowledge levels leading to the decision to participate and attitudes and practices related to their current behavior. This is then followed by the key observations drawn from the interviews by study location. The topics covered in the latter section are organized as follows:

1. Knowledge leading to decision to participate.
2. Current behavior.
3. System guidelines or improvements.
4. Real-time ridesharing (RTR) pilot program (applies only to the Washington, DC, region participants whose commutes have been impacted by BRAC).

Washington, DC, Region

Participant Summary

As shown in table 1, 34 individuals participated in the Washington area focus groups (12 attended the Fort Belvoir discussion conducted on May 22, 2012, and 11 were in each of the two focus groups held on May 23, 2012). Experience with casual carpooling among participants ranged from a few months to more than 10 years. Most participants who considered themselves passengers also had experience as drivers.

The majority of the participants casual carpool daily to and from work. While work is the primary reason for casual carpooling, participants also casual carpool when traveling to the airport (and sometimes plan their flights around casual carpooling hours).

Key Findings

- Casual carpoolers are motivated to participate primarily because of the time savings and flexibility of the system.
- Safety is an initial concern among those who have not experienced casual carpooling; but for those who have already experienced the process, they express trust in the system and readily communicate confidence in its benefits to their friends and family.
- Casual carpoolers practice behaviors and unique language that demonstrate a sense of community. For instance, those in the Dumfries, VA, area described using or observing the use of “mercy” lines, that is, locations near the Pentagon where casual carpoolers stand in line after the HOV restrictions have been lifted with the hope that a driver will pick them up. The term “slug” is also a unique term to the casual carpooling community in the Washington, DC, and Houston regions.

Real-Time Ridesharing Pilot Program

In addition, the Washington region focus group participants were asked to write down their first reactions to a pilot program using an RTR software system that was going to enable real-time ridesharing along the I-95/395 corridor from Fredericksburg, VA, to Washington, DC—designed primarily to serve commuters relocated because of BRAC—that matches drivers and riders as they travel; riders would pay drivers via an electronic payment system based on distance traveled (for more information, see appendix A, section D). Participants were handed a sheet of paper, with a description of the program, and were then asked to (1) write down their initial reactions or thoughts about the pilot program; and (2) indicate whether they would use the real-time smartphone application.

- Initially, most participants said they would not use the program because they did not want to pay for a system that is currently free (where it exists) and were opposed to the program as a replacement for casual carpooling.
- Drivers believed such a program could reduce the supply of passengers because some may not want to pay the fee; and that fees could reduce the driver's control of the car environment (control of air conditioning, radio stations, etc.), as paying passengers would likely expect some control in return.
- Passengers believed it might improve their sense of safety with regard to riding with a random person they did not know.
- Once explained how the program would operate (see appendix A, section D), some participants were open to the idea of using a smartphone application—mostly those from Fort Belvoir lacking a casual carpooling option—if it were user-friendly and either free, low in cost, or eligible for the transit subsidy.
- Some believed the pilot program would reintroduce some of the structure of a traditional carpool or vanpool and recommended marketing the pilot to individuals who are unfamiliar with the concept of casual carpooling.
- A very few opined they might use the pilot program's application as an initial way to find and form a regular carpool and would stop using the program once a formal carpool was formed.

Discussion Summary

Knowledge Leading to Decision to Participate

- Phrases participants used to describe casual carpooling:
 - ✓ Noncommitted carpool.
 - ✓ Carpooling freestyle.
 - ✓ Formalized hitchhiking.
- New casual carpoolers:
 - ✓ The majority of participants learned about casual carpooling for the first time through word of mouth (e.g., coworker, friend, or family member).
 - ✓ Casual carpooling for necessity and under unforeseen circumstances, including interruption of service of the primary mode of transportation, encourages some to slug and those around them to learn about it in that moment.

- ✓ Safety is a primary concern among new casual carpoolers. This was especially the case among women, who experienced initial apprehension and nervousness, particularly over the prospect of being the only woman in a car with men. Participants minimized this concern by first:
 - Riding with a friend, relative, or colleague for the first few weeks or months.
 - Participating as a driver until familiar with the process and their commute.
 - Participating in HOV-3 rather than HOV-2 (which is normally a system requirement, except in Houston in most instances) or not riding in a two-seater in any of the cities. Riding with more people in the vehicle provided an increased sense of safety.
- Motivations to casual carpool:
 - ✓ It is free.
 - ✓ It provides the opportunity to do something else while commuting (e.g., read, or sleep in vehicle).
 - ✓ Only one family vehicle is available.
 - ✓ Carpooler has no access to workplace parking.
- Experienced casual carpoolers:
 - ✓ Those who are not new to casual carpooling (and are already familiar with the drivers and vehicles) do not share the same concerns as new participants (e.g., safety); their priority instead is to get to work or home.
 - ✓ Overall, participants do not casual carpool because of environmental concerns (i.e., emissions).
- Weather conditions impact casual carpooling operations. More drivers and fewer passengers were observed during bad weather.
- Longer passenger lines were observed when gas prices rose; longer lines resulted in longer wait times.
- Many casual carpoolers are “planners” (even though casual carpooling accommodates last-minute decisions), and they are willing to plan on a daily and weekly basis.
- Casual carpooling is a system “that works” and offers a mutual benefit to both the driver and passenger, including:
 - ✓ Flexible hours.
 - ✓ The opportunity to meet new people, network, and develop relationships.

- ✓ Camaraderie (casual carpoolers “watch out for each other”). More likely to get personal belongings back if lost while casual carpooling than when taking transit.
- Limitations of other modes of transportation when compared to casual carpooling:
 - ✓ Transit is “expensive” and “unreliable.”
 - ✓ Traditional carpooling is less flexible:
 - It requires that one wait for all passengers to be ready to leave.
 - It is not ideal for those who tend to relocate frequently (e.g., military personnel).
 - It does not offer drivers and passengers the opportunity to meet new people.
- However, participants outlined circumstances that have motivated them in the past to seek other modes of transportation. They include:
 - Long passenger lines (queuing casual carpoolers).
 - Weather conditions. If it is raining, some passengers may take the bus to avoid waiting in the rain, reducing the supply of riders.
 - Satisfaction with the bus system (e.g., previous good experience on the bus).
 - Reputation of certain lines and drivers. Some slug line locations are described as being less passenger “friendly” than others (the lines are too long or there is limited parking availability nearby). Similarly, passengers will pass on rides with drivers with whom they have previously driven and had an unpleasant experience.

Current Behavior

- Participants readily share stories with others. Casual carpooling is a great conversation starter among friends and family. It is customary and acceptable behavior for drivers to turn down passengers (and vice versa) on any given day. Proper casual carpooling etiquette is sought by both drivers and passengers. Drivers and passengers determine who they will pick up or ride with based on the following:
 - ✓ Drivers prefer passengers who:
 - Practice common courtesy (refrain from adjusting air conditioning, radio, visor, etc.).
 - Have good social skills.
 - Refrain from eating and drinking.
 - Are odorless (no perfume).
 - Do not carry too much luggage or a large load.

- ✓ Passengers consider the following:
 - Destination of the driver (preferring those who can drive them nearest to their destination).
 - Drivers who look like they might be distracted while driving (avoid drivers holding coffee, talking on cell phones, etc.).
 - Vehicle exterior (e.g., absence of dents or signs of accidents, clean and in good condition, no unusual sounds or smoke from the tailpipes).
 - Clean vehicle interior (e.g., avoid cigarette smell, prefer clean and tidy).
 - Vehicle size (some avoid small cars because of cramped seating area).
 - Drivers who use care and caution when driving (based on reputation of the driver).

- ✓ Why some drive:
 - Control (of schedule, speed, passengers, air conditioning, and radio).
 - Concern about riding with bad drivers.
 - Better to drive on the workdays of a 3- or 4-day holiday weekend because there are fewer drivers on those days from which to secure a ride.

- ✓ Why some ride:
 - Do not want the responsibility of being liable for passengers.
 - Cost of gas is too high.
 - Lack of parking.

System Guidelines and Improvements

- Overall, participants are very satisfied with the current carpooling system. The top reasons they gave to support their opinions included that casual carpooling is “self-policed,” people “watch out for each other,” and “it works.”
- Challenges and recommended improvements include:
 - ✓ Those picked up in the morning at Tackett’s Mill sometimes struggle to find a return trip to Tackett’s Mill (instead are dropped off on Horner Road).
 - ✓ New slug line locations; recommend maintaining bus and slug lines near each other.
 - ✓ Additional parking.

- ✓ Covered waiting areas.
- ✓ Extended HOV lanes.
- ✓ More designated stops and signs at other locations like those at the Pentagon.
- Opportunities to facilitate communication among casual carpoolers:
 - ✓ Use of texting group (e.g., groupme.com).
 - ✓ Email group.
 - ✓ Improve technology-based applications (those who have tried using them have had little success). Although casual carpoolers are willing to use technology, the cost for purchasing an application is a concern.
- The best ways to communicate casual carpooling to others are by word of mouth or via Web sites (e.g., www.slug-lines.com). Also recommended were flyers and radio station notices (e.g., WTOP).
- Casual carpoolers are part of a unique or special community. The sense of community is derived from helping each other out. Generally, participants are familiar with casual carpooling etiquette, value the opportunity to build relationships, and use terms that are unique to the casual carpooling community in a specific area or region (for instance, casual carpoolers in the Washington region may use terms like “slugging” and “mercy lines”).

General Feedback Regarding a Real-time Ridesharing Pilot Program

- Paying for a system that is currently free was the main reason casual carpoolers found RTR unappealing. Casual carpoolers recommend marketing the pilot to individuals who are unfamiliar with the concept of casual carpooling. Some said the pilot sounded like it was bringing back some of the formality of a traditional carpool or vanpool.
- Most participants said they would not use the pilot program for casual carpooling because a fee would be associated with it. Payment could increase passengers’ expectations, for instance, “please turn up the AC” or “please change the radio.” Other initial reactions to the program included:
 - ✓ Exchanging money would take away from the camaraderie.
 - ✓ It would benefit drivers more than passengers, thereby encouraging more to drive.
 - ✓ Introducing a fee will make passengers fear that the fee could increase at any time.
 - ✓ Why change a system that works?
 - ✓ Passengers may decide to drive themselves (pay for gas instead of paying the driver).
 - ✓ Using another mode of transportation may be less expensive.
 - ✓ “Why should I pay you to take me where you are already going?”

- ✓ Would not want to charge their friends.
- ✓ Would take away the “randomness” of casual carpooling.
- ✓ Some may find it confusing (to be able to travel to Crystal City, a traditional casual carpooling destination, for free, but then need to pay to go to Fort Belvoir, not a current casual carpooling destination).
- Perceived benefits of the program include:
 - ✓ The proposed program may be a good option to have in addition to casual carpooling, but not in place of it (e.g., in case of an emergency).
 - ✓ Could remove the fear of riding with someone you do not know.
 - ✓ May be willing to participate if someone else were to pay (e.g., if it would qualify under the transit subsidy).
 - ✓ If HOT lanes reduce casual carpooling, RTR might be an option.
 - ✓ Could be beneficial where casual carpooling is not occurring.

Houston, TX, Region

Participant Summary

A total of 16 individuals participated in the focus groups on July 11, 2012 in Houston; 6 participants attended the 5:30 p.m. session and 10 attended the second session at 7:30 p.m. Experience with casual carpooling among participants ranged from 1 to 25 years. Most participants who considered themselves passengers also had experience as drivers.

The participants in Houston included a mix of casual carpoolers who initiate their commute from the Addicks and Kingsland Park-and-Ride lots (Katy Freeway) or the Northwest Station Park-and-Ride lot (Highway 290) where riding the bus is also an option. Most travel to or near downtown for work.

Key Findings

Time and cost savings were most frequently cited as the motivations for participating in casual carpooling.

Casual carpooling is largely a morning practice; in the afternoon, passengers rely more on transit for their return ride to the park-and-ride lot.

Overall, participation levels in casual carpooling have dropped over time, particularly on the Katy Freeway, because of recent actions: highway reconstruction that widened the roadway (increased the number of lanes), the introduction of HOT lanes (and related fees), and maintenance of HOV restrictions (with waivers of toll for compliant vehicles). These actions combined had a significant impact on congestion, motivating former casual carpool passengers to drive.

Participants in Houston exhibit friendly behavior with other casual carpoolers. With the exception of the Vallejo groups, the casual carpool culture in Houston is more convivial than the culture described by the focus group participants in the San Francisco and Washington regions. That is, focus group participants readily shared that casual carpoolers regularly engage in conversation, sit in the front passenger seat next to the driver if no one else is in the vehicle, and form relationships outside of the casual carpool environment, both personal and professional. It was not an unusual practice for drivers to go out of their way to take a passenger to their final destination in bad weather; to open their trunk so that passengers could place luggage, boxes, and briefcases in it; and with regard to payment for a ride, it was frequently perceived as an insult to offer payment to the driver.

Very few, if any, disadvantages of casual carpooling were shared among participants, indicating overall satisfaction with the system.

Discussion Summary

Knowledge Leading to Decision to Participate

- New casual carpoolers:
 - ✓ The majority of participants learned about casual carpooling for the first time by seeing it firsthand while waiting in line for the bus, by word of mouth, or by necessity (e.g., during Tropical Storm Allison, 2001).
- Primary motivations to casual carpool:
 - ✓ Time and cost savings are the factors first mentioned. In fact, several shared that when gas prices and bus fares increased, passengers casual carpoled more regularly.
- When compared to other transportation options, casual carpooling offers multiple benefits:
 - ✓ Route flexibility—In a traffic jam, casual carpool drivers can change their course if needed; buses cannot.
 - ✓ Seating is guaranteed—Casual carpoolers are guaranteed a seat in the vehicle in contrast to a bus. When a bus is crowded, passengers have to stand.
 - ✓ Avoiding unpredictable issues associated with buses—Examples were given of delays in travel time because of buses breaking down or otherwise getting off schedule. Other issues cited included variable temperature inside the bus, talking by other bus riders, noises in general because of bus horns, cell phones, etc.
 - ✓ Personal schedule flexibility—A traditional carpool can be stressful because of its highly structured nature, including having to adhere to set schedules, keep members informed when ill or on vacation, and, often, share the driving responsibilities.
- Disadvantages of casual carpooling:

- ✓ Feeling an obligation to speak—Drivers and passengers may not be in the mood to talk; passengers may ride the bus on occasion for privacy (sleep, read, etc.).

Current Behavior

- When participants told their family members about casual carpooling for the first time, their family was typically apprehensive. Additionally, coworkers are often surprised, some calling casual carpoolers “crazy.”
- Factors that could deter participation:
 - ✓ Driver or passenger not headed to same destination (primary reason).
 - ✓ Dirty vehicle.
 - ✓ Unaccompanied male (mostly from the perspective of female passengers or drivers).
 - ✓ Driver or passenger who smokes.
 - ✓ Aggressive driver.
 - ✓ Driver applying makeup while waiting for passengers and/or driving.
- Factors adding to a sense of security between drivers and passengers:
 - ✓ Laminated signs, prepared by drivers for passengers, indicating destinations.
 - ✓ Signage at pickup location, giving legitimacy to casual carpooling.
 - ✓ Child seat visible in the vehicle.
 - ✓ A minimum of three people in the vehicle (more of a concern among female participants).
 - ✓ Professional attire (Northwest Station only, which seemed to attract passengers working in office settings requiring formal business attire).
- Why some drive:
 - ✓ Family responsibilities—If a child needs something or if there is a family emergency, the person may need his or her car to respond quickly to the situation.
 - ✓ Social activities—After-work activities encourage more driving (particularly on Fridays).

System Guidelines and Improvements

- Katy Freeway (I-10): Participants who commute from the Addicks Park-and-Ride lot were generally satisfied with their casual carpooling experience. They cited some initial challenges:
 - ✓ System breaks down during the holiday seasons when there are fewer drivers and passengers, but traffic is light enough for those who are usually passengers to drive.

- ✓ Riders would sometimes like more drivers to participate in casual carpooling.
- ✓ When the Katy Freeway was expanded to 12 lanes, more people became drivers because there was less road congestion overall. Still, drivers were incentivized to casual carpool to take advantage of HOT lanes, but it was not enough to meet people’s needs.
- Highway 290: Participants who commute from the Northwest Station Park-and-Ride lot were generally satisfied with their casual carpooling experience. The major challenge cited was the need for more drivers to support passenger demand.
- Return Trip: The return trip is markedly different from the commute toward downtown Houston, primarily for two reasons:
 - ✓ No designated casual carpooling area—Passengers suspect they see few drivers because it is illegal to stop in the bus lane on Louisiana Street in downtown Houston. Finding passengers downtown on the return trip is a challenge for drivers as well. “It’s much harder to get a rider going home just because there’s more traffic and there isn’t as much of a concentration of people,” expressed one passenger. Generally, drivers who offer to pick up find that people at the bus stops are not responsive to them; “a half dozen people look up but don’t move,” a driver stated.
 - ✓ Safety concerns—Some casual carpoolers have observed more of a safety concern on the return trip from downtown Houston, but overall are unsure why such a concern exists. “I could probably have two dead bodies in the back, an orange jumpsuit that says Harris County Jail, but if I drive on I-10 to 228 [Addicks Park-and-Ride lot], someone will get in. But I don’t know what it is about 290—they are very reluctant unless they already know you or recognize you standing in the [bus] line,” expressed a casual carpooler. Some drivers prepare signs to indicate their destination in an effort to secure return-trip passengers.

Because of such challenges, instead of picking up passengers, some drivers consider other options for their return trip, sometimes preferring to stay at work late to avoid the traffic or selecting an alternate route for going home. One driver, who lives in northwest Houston, on occasion, picks up passengers who are headed west toward the Addicks Park-and-Ride lot (along the Katy Freeway).

- Recommended improvements include:
 - ✓ Driver verification—stickers for drivers who have gone through a security check.
 - ✓ Additional parking.
 - ✓ HOV enforcement—For persons who do not adhere to the minimum number of people requirements.
 - ✓ Fix problems with HOV lane configuration, unclear roadway signage, and confusing interchange design.
 - ✓ Additional casual carpooling locations (e.g., Cypress Park-and-Ride lot along Route 217).

- Participants express some hesitation about marketing casual carpooling to everyone (fear doing so would attract criminals). Instead, they suggest, the best ways to communicate casual carpooling to others is to target specific populations, including:
 - ✓ Bus riders—Distribute brochures; collaborate with Metro to display information on its Web site.
 - ✓ Employers—Employees would need to be convinced it is a system that is safe and reliable.

San Francisco, CA, Region

Participant Summary

A total of 33 individuals participated in the focus groups (13 and 12 in each of two groups in Oakland conducted on August 22, 2012, and 8 in American Canyon, near Vallejo, on August 23, 2012). Experience with casual carpooling among participants ranged from less than a year to more than 25 years. Most participants who considered themselves passengers also had experience as drivers. Most of these participants were unfamiliar with the term “slugging.”

Key Findings

Casual carpoolers in the Oakland and Berkeley areas perceive the dynamic, organic nature of casual carpooling to be consistent with the area’s culture, in general, making participants value the system very highly. For Vallejo, the benefits of casual carpooling, including time savings and avoiding transfers, far exceed those of other available modes of transportation, including the ferry, bus, and BART.

The degree to which participants feel a sense of community varies by location. Those in Berkeley and Oakland find little opportunity to build relationships (it is less common to ride with the same driver or passenger on more than one occasion), and in some cases do not consider meeting new people a primary benefit of casual carpooling. In contrast, Vallejo participants feel a sense of community.

The driver and passenger relationship varies by location as well. While those initiating their trip from Oakland or Berkeley generally exhibit a lower level of sensitivity toward persons they are riding with, those originating from Vallejo demonstrate higher levels of sensitivity; for instance, they are unwilling to appear rude to the driver or other passengers.

Participants, particularly in Oakland and Berkeley, are very committed to the casual carpooling system and are dedicated users. In fact, participants stated if they had to move from their current residence, one of their critical criteria when selecting a new residential location would be its proximity to a casual carpool pickup/dropoff location. Furthermore, several participants in these areas travel on a bus or walk (or both) several blocks, up to 2 mi (3.2 km), to access casual carpool pickup/dropoff locations.

Casual carpoolers are motivated to participate because of time and cost savings associated with using the HOV lanes and time and cost savings associated with using the HOV lanes on the toll bridges. (Carpoolers pay a reduced toll charge when crossing Bay Area bridges; most of the casual carpoolers cross just one bridge, but Vallejo participants cross two bridges and save two bridge tolls).

The system primarily operates westbound (into San Francisco from Oakland and Vallejo) for several reasons:

- The San Francisco–Oakland Bay Bridge acts as a bottleneck for travelers commuting into San Francisco from the East Bay area, so there are significant time savings to be realized in that direction.
- The bridge tolls for the San Francisco–Oakland Bay Bridge are applied only in the westbound direction. As a result, fewer drivers are motivated to pick up passengers for their eastbound commutes.
- There is a critical mass of commuters traveling into San Francisco from the East Bay for work, as San Francisco is a center for business while the East Bay has a higher ratio of residential areas. Because San Francisco is a primary Bay Area job center, the Bay Bridge corridor is heavily traveled in the westbound direction during the morning (and in the eastbound direction during the evening) as workers commute from East Bay residential areas.
- Because there is an extensive system of HOV lanes leading westward to the Bay Bridge, significant time savings are realized by carpools in the highway corridors approaching the bridge and at the toll plaza (carpools are able to bypass the metering signals system). The time savings are less dramatic in the eastbound direction on the limited HOV system approaching the bridge in San Francisco.

Discussion Summary

Knowledge Leading to Decision to Participate

- New casual carpoolers:
 - ✓ Initially, some casual carpoolers were nervous about getting into a stranger’s vehicle. Safety was more of a concern among female participants (e.g., avoid getting in two-seaters with a male driver).
 - ✓ The majority of participants learned about casual carpooling for the first time through word of mouth (e.g., coworker, friend, or family member). TV and print advertisements were also cited as information sources in Hercules, about 25 mi (40 km) northeast of San Francisco. Some in the Oakland–Berkeley area were not surprised when first hearing about casual carpooling, which seemed to be consistent with the area’s counter-culture tradition.
 - ✓ Observing casual carpooling while waiting in line for the bus.
 - ✓ Flyers.
 - ✓ Internet:
 - Searches—Coworkers suggested performing Internet searches for “casual carpooling” for more information.
 - Casual carpooling Web site—While some are aware of the casual carpooling Web site (www.ridenow.org/carpool) and used it initially, most no longer refer to it.

- Motivations to casual carpool:
 - ✓ Initially, carpoolers were incentivized by not needing to pay a toll when crossing the Bay Bridge (the carpool toll was introduced in 2010).
 - ✓ Least expensive option, including riders not needing to pay for parking in San Francisco.
 - ✓ Significant time savings for commute to work (Vallejo).
 - ✓ More pleasant drive than BART; can enjoy the view.
 - ✓ Guaranteed a seat.
- Concern for the environment is generally not a big motivator for participating in casual carpooling; however, “Spare the Air” days sometimes remind those who already casual carpool that they are doing “their part” to help the environment.
- Most participants distinguish between casual carpooling and traditional carpooling, where casual carpooling offers flexibility in pickup times. Some, however, like the reliability a formalized carpooling program offers.
- When compared to other transportation options, casual carpooling offers multiple benefits:
 - ✓ Schedule flexibility—Unlike traditional carpooling, casual carpooling does not require that one be ready to commute to work at a specified time.
 - ✓ Cost and time savings—Offers an improvement over BART for the Oakland and Berkeley locations. However, if the casual carpooling line at the North Berkeley BART station, for instance, is too long, the person can easily take BART as a backup. For those in Vallejo, traveling into San Francisco would require multiple modes of transportation. “That’s why people will casual carpool to San Francisco but take the BART home, because taking casual carpooling to the East Bay is actually slower and people are willing to pay the money and not deal with the hassle of trying to get the right ride (it’s more of a hassle to find a car that’s going to where you need to go in the East Bay),” expressed one casual carpooler.
- Some participants are aware that www.ridenow.org/carpool exists; while some referenced it when first starting to casual carpool, most discontinue their use of the Web site once they become seasoned casual carpoolers.

Current Behavior

- For at least a few Bay area residents who have moved or plan to in the near future, casual carpooling locations are considerations when deciding on a new home.
- In the Berkeley/Oakland area, casual carpoolers typically travel on the bus or walk (or both) a distance of a few blocks, up to 2 mi (3.2 km), to access casual carpooling locations.

- Participants who commute from the Vallejo Park-and-Ride lot either drive their vehicles to the location or are dropped off.
- For Vallejo Park-and-Ride casual carpoolers, the return trip is a less favorable experience than traveling into San Francisco during the morning commute, namely because:
 - ✓ They experience longer eastbound wait times in line.
 - ✓ The afternoon return trip from San Francisco to Vallejo takes more time than the morning trip into San Francisco.
- Passengers determine who they will ride with based on the following:
 - ✓ The number of people in the vehicle—Women may be deterred from getting into a vehicle with two men or a two-seater with a male driver.
 - ✓ Functional and clean car.
 - ✓ Odorless vehicle and people in the vehicle.
- While drivers and passengers seek people who seem “generally okay,” they do not necessarily seek a specific “type” of person (e.g., professional) or people they have traveled with in the past. Moreover, many participants prefer to ride in the back seat; the social component is secondary to getting from point A to point B.
- Whether casual carpoolers feel part of a special community varies. For instance:
 - ✓ Berkeley/Oakland—There seems to be little opportunity to build a sense of community. Most participants do not see the same people frequently enough to develop relationships with fellow casual carpoolers, nor do they necessarily seek it.
 - ✓ Vallejo—Participants who casual carpool from the Vallejo Park-and-Ride location experience at least some sense of community with other casual carpoolers. Additionally, social gatherings among casual carpoolers have been observed in Fairfield, a city about 50 mi (80.5 km) northeast of San Francisco. While this sense of community is felt on some level, it is not the motivation behind casual carpooling.
- For many who have experienced casual carpooling, the ferry and BART/bus combination are considered inferior options. They do not offer the flexibility, cost savings, and in some cases, time savings of casual carpooling.
- Some participants felt very strongly about their commitment to casual carpooling with one sharing, “If casual carpooling suddenly became unavailable in the area where I currently live, I would move to where it was available.”

System Guidelines and Improvements

- Overall, most participants said the current casual carpooling systems works well, while some gave it less than perfect scores for diminished monetary incentive (because of the inclusion of the toll in the carpooling lanes), unpredictability of pickup and wait times at some locations (Oakland/Berkeley), lack of security at pickup locations that might sometimes—such as when it is dark outside—be unsafe (Vallejo), and specific instances of less than favorable trips with drivers or passengers. Still, the benefits (overall cost and time savings) outweigh such challenges.
- Passengers generally offer a contribution for the toll. In Vallejo, passengers typically pay the driver \$1.25 without being prompted by the driver and, in most cases, the drivers accept the monetary contribution. A few instances of drivers demanding payment were cited, particularly among participants in the Oakland groups. However, it was also noted in the Oakland groups that drivers at some locations did not expect contributions from passengers.
- Best way to market and communicate the concept of casual carpooling to others:
 - ✓ Messaging—Avoid words like “system,” “program,” “rules,” and “regulation,” which may turn off casual carpoolers who support the current, organic nature of casual carpooling.
- Opportunities to enhance the casual carpooling experience:
 - ✓ Vallejo Park-and-Ride location:
 - Additional parking—Some park on the street in nearby residential areas.
 - Sufficient security measures (e.g., vehicle theft prevention).
 - Designated pickup location where there is not a threat of being ticketed.
 - ✓ Oakland/Berkeley:
 - More parking for casual carpoolers (e.g., Oakland/Glenview district).
 - Carpool lane on I-80E going to the East Bay (to encourage more casual carpooling for the return trip/evening commute).
 - ✓ San Francisco (return trip):
 - Because drivers who pick up casual carpoolers in the morning have no incentive in some corridors to offer return lifts during the afternoon commute, some recommend a “sweep service,” where a shuttle or van would pick up casual carpool passengers. Those interested in this type of service were willing to pay \$5 or \$6 for it.
 - Establish ratings for casual carpool drivers.
- Recommended improvements include:

- ✓ Text-message alerts notifying casual carpoolers of anticipated wait times to get a ride (or the number of people in line waiting to be picked up).
 - ✓ Mobile application—An application for casual carpoolers that would provide estimated wait time (based on number of vehicles and people waiting in line), alert them of traffic delays, and provide estimated commute times. Some would be unwilling to pay for the application, while others said they would pay a small one-time fee.
 - ✓ Sheltered waiting area.
 - ✓ Web camera so that passengers can assess wait time and plan accordingly (run an errand before heading to the pickup location).
 - ✓ Volunteer coordinator to encourage drivers to accept more than the two required passengers in San Francisco. (Typically this is done by a volunteer rider who would otherwise be waiting in the passenger queue, and whose space in the queue is saved by another rider while he or she jumps to the front of the line to coax drivers to accept additional passengers until such time as it becomes his or her turn in the line to get a ride.)
 - ✓ Enhanced HOV enforcement.
 - ✓ Pickup locations—Establish pickup spots near public transit.
- While practicing proper casual carpooling etiquette is valued, casual carpoolers are wary about having a third party establish and enforce such rules.

CONCLUSIONS

These concluding observations are organized by the conceptual framework that guided this research study design (discussed briefly in the methodology section), that is, the system, individual, and environmental factors that influence casual carpooling behavior.

Environmental factors (community characteristics such as geographic location, prevalence of transit, HOV and other managed lanes, and parking availability at homeside meeting places)

When it comes to casual carpooling, regardless of the location, the researchers for this study found that for casual carpooling to begin in the first place requires several environmental factors: a centralized activity center for a destination location, a low-congestion HOV lane that provides a time-saving advantage (and sometimes cost-saving advantage as well), and readily available backup modes of transportation. Table 4 summarizes the environmental characteristics of the casual carpooling systems by each of the study locations.

Table 4. Characteristics by study region.

Study Regions	Casual Carpool Line Location	Person Requirement	Payment Required	Challenges	Alternate Modes of Transportation
Washington, DC	Fort Belvoir, I-95	HOV-3	No	No casual carpooling to Fort Belvoir	Metrorail (to Franconia) Metrobus Commuter rail (Virginia Railway Express)
	Dumfries, I-95			HOT lane conversion concerns	
Houston, TX	Northwest Station Park-and-Ride, SH 290	HOV-2 HOV-3	No	HOT lane conversion concerns Transit on return trip.	Bus
	Addicks Park-and-Ride, I-10	HOV on HOT lane	No	Road expansion, HOT lanes reduced congestion Transit on return trip.	Bus
San Francisco, CA	Downtown Oakland	HOV-3 on tolled bridge	Yes	Bridge toll Transit on return trip.	BART/Bus—Multimodal transportation (transfers required)
	Vallejo	HOV-3 on tolled bridge	Yes	Two bridges/two tolls Transit return trip.	Ferry BART/Bus—Multimodal transportation (transfers required)

The physical environment, however, can be a detractor to participate in casual carpooling—on rainy, icy, or otherwise inclement days, passengers would opt for transit rather than wait for a ride.

System factors (the naturally occurring nature of the system, employer-based programs that support casual ridesharing, or other institutional factors that contribute directly or indirectly to the system)

Overall, the primary benefits are the time savings for both passengers and drivers associated with the use of the HOV lanes by drivers, thereby avoiding congested traffic, and the cost savings associated with not paying tolls or paying lower tolls (passengers and drivers), parking (passengers), gas and car maintenance (passengers), and transit fares (passenger and driver).

The casual carpooling system is successful when participation levels by drivers and passengers are high enough to satisfy the travel needs of both groups. In essence, casual carpooling works when there is an adequate supply (vehicles with drivers) and demand (passengers). Therefore, it is easy to see how certain system factors can upset or “break” the casual carpooling system.

Individual factors (social identity, individual expression, culture, social bonding, attitudes and beliefs, and personal values)

For those who participate, the casual carpooling experience is not only a form of transportation, but one that encourages engagement on a personal level. Independently of whether one chooses to engage in conversation (initiated by the driver) or not, the option to do so (again, only with a willing driver) is a characteristic of casual carpooling that is valued among those who participate in it. Casual carpooling is viewed as something interesting, a conversation starter, and because those who participate in it also trust it, it is an experience they readily defend and share with their friends, family, and coworkers.

Being part of a unique community was viewed as a benefit expressed by participants in all locations, but those participating in Houston and Vallejo, especially, view their communities as being “special” to the degree that deeper relationships within and outside of the casual carpool are sometimes formed. These relationships include a more personal level of interaction during the commute (more talking, being courteous by offering the use of the car trunk, and dropping off passengers at their final destination during bad weather) and participating in social gatherings.

Overall, community and environmental factors do not drive participation. Instead the focus is more on the personal benefits of casual carpooling, for instance, time savings to commute to and from work, flexibility of one’s daily schedule, savings on cost, as well as, in some cases, the social component, like networking or developing friendships.

APPENDIX A: WASHINGTON, DC, REGION DISCUSSION GUIDE

This discussion guide has been tailored to the Washington, DC, region to account for unique characteristics related to or affecting casual carpooling in this region. Furthermore, this discussion guide contains a section about a pilot real-time ridesharing program not discussed in the other two regions.

Introduction

5 minutes

- ✓ Moderator's introduction.
- ✓ Statement of purpose/Objectives (mention viewers and video recording).
- ✓ Ground rules: everyone participates; no right/wrong answers; one at a time.
- ✓ Confidentiality.
- ✓ Participant introduction and warmup questions.
 - Name?
 - How long have you been casual carpooling?
 - Are you typically a driver or passenger?
 - Do you typically casual carpool in both directions (commute to/from destination)?

Section A: Knowledge leading to decision to participate

10 minutes

- 1) Define slugging. How did you first hear/learn about slugging? Probe on source(s) of initial information about system, word-of-mouth, seeing it in action, and employer's role.
- 2) What was it about slugging that most intrigued you, or intrigued you enough to consider it as a means of commuting? Probe on economic/financial, environmental, other personal values.
 - What effect have gas prices had on your decisions?
- 3) Did you have any initial concerns about it? What were they and what did you do to resolve them?
- 4) Do you consider slugging to be carpooling? Why or why not?
 - Why do you slug instead of using a traditional carpool?
- 5) How does slugging compare, both good and bad, to other transportation options that are available to you?

Section B: Current behavior

30 minutes

- 1) How long have you been participating in slugging?
 - Are you a rider or a driver?

- In which location(s) do you participate and why did you choose that (those)?
 - We recognize that you all participate in slugging for work. Have you ever used it or considered using it at a time other than for work (e.g., commuting to/from school or for some other purpose)? If yes, tell me about it.
- 2) Tell me about your first experience.
- Did you do any preparation work (email/talk to someone/Internet search) before you participated for the first time?
 - What did your family members, colleagues, or friends have to say about it when you first started slugging? Over time, have their opinions changed?
- 3) How often do you typically participate?
- Is it always as (refer to 1a) a driver or rider?
 - Do you participate every day or just certain days?
 - What kinds of considerations or decisions do you make when you decide to use slugging on a given day? Probe on participation preferences—weather, vehicle type, safety, commute time.
 - On days that you participate in slugging, are there any changes to your routine to support your participation? Probe on whether they have changed work hours, altered routes, used a park-and-ride lot, used public transit part of the way, etc.
- 4) What are the factors that drive or detract from *personal participation*?
- To what extent is or is not safety an issue? Probe on gender, age, and other sociodemographic differences?
 - What do you consider when you decide to accept a rider/ride? Probe on whether the riders/drivers are always someone new or whether they look for someone in particular.
 - ✓ Would you deviate from your regular route to meet the needs of a rider/driver?
 - ✓ Do you typically sit in a specific seat?
 - Do you ever decide not to accept or pass on a rider/ride? Why or why not? Probe on whether they look for certain characteristics of the rider/ride, vehicle type, or number of passengers, blue/white collar, etc.
 - ✓ To what extent do you “get to know” riders and drivers and make decisions on whether to ride with one based on past experience/hearsay?
 - What makes a ride/rider a “good one” and a “bad one”? Probe on conversation making, hygiene, dirty/clean vehicles, offer of payment, etc.

- Do you feel as part of a unique or special “community”? If yes, explain how? Do you think others would find this an attractive facet of slugging?

Section C: System guidelines or improvements

15 minutes

- 1) Overall, if you had to grade the slugging “program” in DC as it exists today, would you give it an A, B, C, D, or a failing grade of F? Explain why you gave it that grade.
- 2) Are the numbers of participants (riders and drivers) sufficient to support the program and in all locations?
- 3) What could or should be done to improve the program or the location at which you participate? Probe on:
 - What tools are in place or should be in place to facilitate slugging? Signage, electronic software, agency partnership?
 - What is the best way to market/communicate the concept of slugging to others?
- 4) Part of the allure, according to some participants, is the “organic nature” or unstructuredness of the program. Do you think formal rules should be adopted? Why or why not?
 - If yes, how should these rules be developed?
 - How would they be communicated?
 - What enforcement mechanisms (if any) would you support?

Section D: Fort Belvoir Group only

10 minutes

- 1) Hand out a sheet of paper with the following text and ask participants to read and then answer the two questions. Do not talk. Watch and record reactions as they read the sheet and answer the questions.

The Northern Virginia Regional Commission is administering a Real-time Ridesharing Pilot along the I-95/395 corridor from Fredericksburg, VA, to Washington, DC. The project goal is to provide commuters with a new, innovative transportation option that will help to bring relief from traffic congestion while reducing the number of cars on the road and getting into and out of the gates. This will allow commuters to save gas money, and wear and tear on their vehicles.

The project will pilot a breakthrough real-time ridesharing software system that matches drivers and riders in real time as they travel, so you can rideshare whenever you want, from wherever you are. With the real-time ridesharing smartphone app, commuters will be able to easily create carpools in real time, providing a marketplace for drivers to offer up their empty seats to other commuters. Riders will share the costs of the journey through an automated electronic transaction payment based on mileage. For example, each rider will pay the driver \$0.20 per mile for the first 10 miles, and \$0.10 per mile after. So

the riders sharing a 20-mile commute to Fort Belvoir would pay approximately \$3.80.

Once a match is made, the pilot will manage the journey from pickup to dropoff, providing real-time status updates, automated security features, and electronic micro-payments that allow riders and drivers to share the cost of a journey.

Question 1: What is your first reaction or thought about what you just read?

Question 2: If offered, do you think you would use the real-time ridesharing smartphone app? Explain why or why not.

- 2) What did you write down as your first reactions to the pilot project? Ask each person what they wrote and to explain why they felt that way.
- 3) Ask for a show of hands of who would and would not use the system. Ask each group why or why not.
- 4) There will likely be a fee for using the app. Write down on your sheet of paper what you think a fair cost to use the system would be? Discuss what they wrote.
- 5) Finally, there will be an incentive offered to those who use the system regularly. Examples are, use the application 10 times and get a ride for free. What do you think would be a good incentive? Probe those who said they would not use the application whether having such an incentive might change their minds.

Section E: Wrap-Up

5 or 10 minutes

The purpose of today's group was to explore your opinions on slugging, learn from your experience about slugging and how it operates in the region, and see if you have any ideas about how FHWA and others can create more awareness of slugging or provide tools to improve your experience. Do you have any final comments or suggestions?

The sponsor of this research from FHWA is also going to come into the room now and for anyone who has questions for him about slugging, feel free to stay on.

Thank for time and sign for incentives.

APPENDIX B: HOUSTON, TX, REGION DISCUSSION GUIDE

This discussion guide has been tailored to the Houston, TX, region to account for unique characteristics related to or affecting casual carpooling in this region.

Introduction

5 minutes

- ✓ Moderator's introduction.
- ✓ Statement of purpose/Objectives (mention viewers and video recording).
- ✓ Mention that will use "casual carpooling" though some areas use the term "casual carpooling" and "dynamic ridesharing."
- ✓ Ground rules: everyone participates; no right/wrong answers; one at a time.
- ✓ Confidentiality.
- ✓ Participant introduction and warmup questions:
 - Name?
 - How long have you been casual carpooling?
 - Are you typically a driver or passenger?
 - Do you typically use the NW Station, Addicks Park-and-Ride, or Kingsland Park-and-Ride?

Section A: Knowledge leading to decision to participate

10 minutes

- 1) How did you first hear/learn about casual carpooling? Probe on sources of initial information about system, word-of-mouth, seeing it in action, and employer's role.
- 2) What was it about casual carpooling that most intrigued you, or intrigued you enough to consider it as a means of commuting? Probe on economic/financial, environmental, other personal values.
 - What effect have gas prices had on your decisions?
- 3) Did you have any initial concerns about it? What were they and what did you do to resolve them?
- 4) Do you consider casual carpooling to be carpooling? Why or why not?
 - Why do you casual carpool instead of use a traditional carpool?
- 5) How does casual carpooling compare, both good and bad, to other transportation options that are available to you?

Section B: Current behavior

30 minutes

- 1) How long have you been participating in casual carpooling?

- Confirm roles as a rider or driver.
 - In which location(s) do you participate and why did you choose that (those)?
 - We recognize that you all participate in casual carpooling for work. Have you ever used it or considered using it at a time other than for work (e.g., commuting to/from school or for some other purpose)? If yes, tell me about it.
- 2) Tell me about your first experience.
- Did you do any preparation work (email/talk to someone/Internet search) before you participated for the first time?
 - What did your family members, colleagues, or friends have to say about it when you first started casual carpooling? Over time, have their opinions changed?
- 3) How often do you typically participate?
- Is it always as a driver/rider?
 - Do you participate every day or just certain days?
 - What kinds of considerations or decisions do you make when you decide to use casual carpooling on a given day? Probe on participation preferences—weather, vehicle type, safety, commute time.
 - On days that you participate in casual carpooling, are there any changes to your routine to support your participation? Probe on whether they have changed work hours, altered routes, used a park-and-ride lot, used public transit part of the way, etc.
- 4) What are the factors that drive or detract from *personal participation*?
- To what extent is or is not safety an issue? Probe on gender, age, and other sociodemographic differences.
 - What do you consider when you decide to accept a rider/ride? Probe on whether the riders/drivers are always someone new or whether they look for someone in particular.
 - ✓ Would you deviate from your regular route to meet the needs of rider/driver?
 - ✓ Do you typically sit in a specific seat?
 - Do you ever decide not to accept or pass on a rider/ride? Why or why not? Probe on whether they look for certain characteristics of the rider/ride, vehicle type, or number of passengers, blue/white collar, etc.
 - ✓ To what extent do you “get to know” riders and drivers and make decisions on whether to ride with one based on past experience/hearsay?

- What makes a ride/rider a “good one” and a “bad one”? Probe on conversation making, hygiene, dirty/clean vehicles, offer of payment, etc.
- Do you feel part of a unique or special “community”? If yes, explain how? Do you think others would find this an attractive facet of casual carpooling?

Section C: System guidelines or improvements

15 minutes

- 1) Overall, if you had to grade the casual carpooling “program” in Houston as it exists today, would you give it an A, B, C, D, or a failing grade of F? Explain why you gave it that grade.
- 2) Are the numbers of participants (riders and drivers) sufficient to support the program and in the location you use?
- 3) Have there been any changes in the past few years to the HOV rules or tolling that affected the casual carpooling system either positively or negatively? By affect the system I mean, for example, did the program participation (fewer or more drivers or passengers) change? Did it cause any other changes?
 - For Addicks/Kingsland and Katy Freeway users: In 2009, there was a move from one HOV lane to four managed lanes in which single-occupancy vehicles were allowed to use the HOV lane, but they have to pay for the use. Did that affect the system at all? If yes, tell me how.
 - For NW Freeway: There are HOV-2 and HOV-3 rules—do these affect the system?
 - ✓ 5 to 6:45 a.m., when HOV-2 is free?
 - ✓ 6:45 to 8 a.m., when HOV-2 vehicles pay \$2 toll and HOV-3 is free?
 - ✓ 8 to 11 a.m. and 2 to 7 p.m., when HOV-2 is free?
- 4) What could or should be done to improve the program or the location at which you participate? Probe on:
 - What tools are in place or should be in place to facilitate casual carpooling? Signage, electronic-software, agency partnership?
 - What is the best way to market/communicate the concept of casual carpooling to others?
- 5) Part of the allure, according to some participants, is the “organic nature” or unstructured-ness of the program. Do you think formal rules should be adopted? Why or why not?
 - If yes, how should these rules be developed?
 - How would they be communicated?
 - What enforcement mechanisms (if any) would you support?

Section D: Wrap-Up

5 or 10 minutes

The purpose of today's group was to explore your opinions about casual carpooling, learn from your experience about casual carpooling and how it operates in the region, and see if you have any ideas about how FHWA and others can create more awareness of casual carpooling or provide tools to improve your experience. Do you have any final comments or suggestions?

The sponsor of this research from FHWA is also going to come into the room now and for anyone who has questions for him about casual carpooling, feel free to stay on.

Thank for time and sign for incentives.

APPENDIX C: SAN FRANCISCO, CA, REGION DISCUSSION GUIDE

This discussion guide has been tailored to the San Francisco, CA, region to account for unique characteristics related to or affecting casual carpooling in this region.

Introduction

5 minutes

- ✓ Moderator's introduction.
- ✓ Statement of purpose/Objectives (mention viewers and video recording).
 - Mention that will use "casual carpooling" though some areas use the terms "slugging" or "dynamic ridesharing."
- ✓ Ground rules: everyone participates; no right/wrong answers; one at a time.
- ✓ Confidentiality.
- ✓ Participant introduction and warmup questions:
 - Name?
 - How long have you been casual carpooling?
 - Are you typically a driver or passenger?
 - Do you typically casual carpool in both directions (commute to/from destination)?

Section A: Knowledge leading to decision to participate

10 minutes

- 1) How did you first hear/learn about casual carpooling? Probe on sources of initial information about system, word of mouth, seeing it in action, and employer's role.
- 2) What was it about casual carpooling that most intrigued you, or intrigued you enough to consider it as a means of commuting? Probe on economic/financial, environmental, other personal values.
 - What effect have gas prices had on your decisions?
- 3) Did you have any initial concerns about it? What were they and what did you do to resolve them?
- 4) Do you consider casual carpooling to be carpooling? Why or why not?
 - Why do you casual carpool instead of use a traditional carpool?
- 5) How does casual carpooling compare, both good and bad, to other transportation options that are available to you?

Section B: Current behavior

30 minutes

- 1) How long have you been participating in casual carpooling?
 - Confirm roles as a rider or driver.
 - In which location(s) do you participate and why did you choose that (those)?

- We recognize that most of you participate in casual carpooling for work. Have you ever used it or considered using it at a time other than for work (e.g., commuting to/from school or for some other purpose)? If yes, tell me about it.
- 2) Tell me about your first experience.
- Did you do any preparation work (email/talk to someone/Internet search) before you participated for the first time?
 - What did your family members, colleagues, or friends have to say about it when you first started casual carpooling? Over time, have their opinions changed?
- 3) How often do you typically participate?
- Is it always as a driver/rider?
 - Do you participate every day or just certain days?
 - What kinds of considerations or decisions do you make when you decide to use casual carpooling on a given day? Probe on participation preferences—weather, vehicle type, safety, commute time.
 - On days that you participate in casual carpooling, are there any changes to your routine to support your participation? Probe on whether they have changed work hours, altered routes, used a park-and-ride lot, used public transit part of the way, etc.
- 4) What are the factors that drive or detract from personal participation?
- To what extent is or is not safety an issue? Probe on gender, age, and other sociodemographic differences? Probe on vehicle safety and the added security at some Vallejo locations.
 - What do you consider when you decide to accept a rider/ride? Probe on whether the riders/drivers are always someone new or whether they look for someone in particular.
 - ✓ Would you deviate from your regular route to meet the needs of a rider/driver?
 - ✓ Riders: Do you typically sit in a specific seat?
 - ✓ Drivers: Who decides where the passengers sit? Is it acceptable to take the front seat?
 - Do you ever decide not to accept or pass on a rider/ride? Why or why not? Probe on whether they look for certain characteristics of the rider/ride, vehicle type, or number of passengers, blue/white collar, etc.
 - ✓ To what extent do you “get to know” riders and drivers and make decisions on whether to ride with one based on past experience/hearsay?
 - What makes a ride/rider a “good one” and a “bad one”? Probe on conversation-making, hygiene, dirty/clean vehicles, offers of payment, etc.
 - Do you feel as part of a unique or special “community”? If yes, explain how. Do you think others would find this an attractive facet of casual carpooling?

- 1) Overall, if you had to grade the casual carpooling “program” in and around the San Francisco region as it exists today, would you give it an A, B, C, D, or a failing grade of F? Explain why you gave it that grade.
 - Is there a difference in the system as it operates within San Francisco (for your trips home) from where you originate your commute (Oakland/Vallejo)? If so, what is it?
- 2) Are the numbers of participants (riders and drivers) sufficient to support the program and in the location you use?
 - Drivers: What would you do if there were not enough passengers to support the system—would you continue driving alone, join an official carpool or rideshare program, or find a way to take transit? Something else?
 - Riders: What would you do if there were not enough drivers to support your commute—would you considering joining an official carpool or rideshare program or take transit? How would you commute?
- 3) Let’s talk specifically about the changes in the past few years to the requirement for those qualifying as HOV having to pay the bridge toll and how that affected the casual carpooling system either positively or negatively? By “affect the system” I mean, for example, did the program participation (fewer or more drivers or passengers) change? Did it cause any other changes?
 - Tell me about how the change affected you personally, from the perspective of a driver or passenger? Probe on how this has affected the incentive or motivation to casual carpool—time savings from HOV remains the same, but now there is not the cost savings if passengers help pay the toll.
 - How is it determined whether or not the passengers will contribute to the toll?
 - Talking with drivers, we learned that some only casual carpool on the way into San Francisco but not on their return when they don’t have to pay the bridge tolls. Does this affect your ability to get a return ride?
- 4) I’m going to read you three statements. Tell me which you agree with most and then why:
 - I like the casual carpool system just the way it is, do not change a thing—it operates just fine.
 - I like the casual carpool system, but it could use some improvements over how it currently operates.
 - The casual carpool system could use a lot of improvement over how it currently operates.
- 5) What could or should be done to improve the program or the location at which you participate? Probe on:
 - What tools are in place or should be in place to facilitate casual carpooling? Signage, electronic software, agency partnership?
 - Right now, the system works pretty much without the involvement of a government agency, advocacy group, or private sector service. Do you see a role for any of these organizations to “take over” or assist with the system? Probe on how

(communications, providing/covering the costs for security at parking lots, providing the tools discussed earlier).

- What is the best way to market/communicate the concept of casual carpooling to others?
- 6) Part of the allure, according to some participants, is the “organic nature” or unstructured-ness of the program. Do you think formal rules should be adopted? Why or why not?
- If yes, how should these rules be developed?
 - How would they be communicated?
 - What enforcement mechanisms (if any) would you support?

Section D: Wrap-Up

5 or 10 minutes

The purpose of today’s group was to explore your opinions about casual carpooling, learn from your experience about casual carpooling and how it operates in the region, and see if you have any ideas about how FHWA and others can create more awareness of casual carpooling or provide tools to improve your experience. Do you have any final comments or suggestions?

The sponsor of this research from FHWA is also going to come into the room now and for anyone who has questions for him about casual carpooling, feel free to stay on.

Thank for time and sign for incentives.

APPENDIX D: INVITATION TO PARTICIPATE

Invitation to Participate in Focus Group About Casual Carpooling

On behalf of the US Department of Transportation Federal Highway Administration, NuStats Research and Consulting is conducting focus group sessions about casual carpooling. The research will inform efforts to better understand the casual carpooling experience among system users here in the Oakland region; the findings will also benefit other regions of the country who are introducing a casual carpooling system. Similar focus group sessions are also being conducted in Washington, DC and Houston.

Those who participate will receive \$75 for their time. Light refreshments will also be served. If you are interested in participating, please complete one of the following steps:

Fill in your contact information in the space provided below and return to the person who handed you this form.

Name: _____

Phone Number: _____

Email: _____

Your contact information will remain confidential and be used for research purposes only.

OR

Contact Claudia Rojo of NuStats by Tuesday, August 21, 2012.
phone: 512-279-4149
email: crojo@nustats.com

August 22, 2012	MTC Offices, Oakland 5:30 p.m. to 7:00 p.m. 7:30 p.m. to 9:00 p.m.
August 23, 2012	American Canyon (near Vallejo) 7:00 p.m. to 8:30 p.m.



Figure 4. Illustration. Example of the study’s invitation to participate in the focus groups.

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About the Exploratory Advanced Research Program

FHWA's Exploratory Advanced Research (EAR) Program focuses on long-term, high-risk research with a high payoff potential. The program addresses underlying gaps faced by applied highway research programs, anticipates emerging issues with national implications, and reflects broad transportation industry goals and objectives.

To learn more about the EAR Program, visit the EAR Web site at www.fhwa.dot.gov/advancedresearch. The site features information on research solicitations, updates on ongoing research, links to published materials, summaries of past EAR Program events, and details on upcoming events.

For additional information, contact David Kuehn, FHWA, 202-493-3414 (email: david.kuehn@dot.gov); or Terry Halkyard, FHWA, 202-493-3467 (email: terry.halkyard@dot.gov); or Zachary Ellis, FHWA, 202-493-3193 (email: zachary.ellis@dot.gov).

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