

Federal Highway Administration

Exploratory Advanced Research Program



Appendix B to the Casual Carpooling Scan Report

Washington, DC; Houston, TX; and San Francisco, CA

November 17–December 8, 2010



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

The Federal Highway Administration's (FHWA's) Exploratory Advanced Research (EAR) Program addresses the need to conduct longer term and higher risk breakthrough research with the potential for transformational improvements to plan, build, renew, and operate safe, congestion free, and environmentally sound transportation systems. 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.

During November and December 2010, the EAR Program supported a team that consisted of transportation professionals, academic faculty, and business entrepreneurs who visited informal carpool lines (also called *slug lines* or *casual carpool lines*) in Washington, DC; Houston, TX; and San Francisco, CA, to observe "slugs" and to compare practices among locations. The team also met with private ride-match providers, regional planners, carpool participants, and transportation planners and engineers, with the overall goal of studying these ridesharing systems to evaluate whether to fund research on the potential for and value of expansion or replication. The observations of the individual team members at each slug line location are included in this appendix.

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Appendix B: Personal Observations from Scan Participants

Washington, DC

Jim Morris

I am interested in seeking ways smart phones could help several people who said they look for particular people to ride with. I have been thinking of a rendezvous application (app) that people could use during short windows of time to find specific people. This app would be much more specialized than Google Latitude or Facebook Places applications.

Many of us heard that word-of-mouth was the most common way for people to be introduced to slugging, but we are looking at a fully mature system. The billion-dollar question (for would-be viral apps) is how one gets such a dynamic ridesharing program started. Slugging in DC began before the Web and had a long time to climb the exponential curve. How or what would we use today in a place where it doesn't exist?

The looming question, “What can cell phones do to help promote ridesharing?,” is still unanswered. Even AVEGO says it will take years to arrive at a good answer. In the meantime, I'm going to create a simple app called “Meet Me” or “The Chaperone” that slugs could use to coordinate linking up with their preferred partners. It would start with one person starting the app and designating who they want to meet with. Anyone else running the app would receive the message. If they agree to meet, the app would then track their two (or more) locations and estimate the time and place of meeting. Another suggestion would be a Twitter account for each line that describes the current state of the line for people deciding whether to go to a rideshare location.

Marc Oliphant

- Relatives and friends often convince others to try slugging for the first time via “testimonials.”
- Horner Road: Forty-five people are in line at 6:30 a.m. for a ride to the L’Enfant/Navy Yard destination, and six cars are waiting at the Pentagon line at the same hour. Why more passengers in the one line and drivers in the other? This probably has to do with parking availability at the destination.
- It costs one fellow in line \$18 per day to park his car at his office in Crystal City, VA, which is why he slugs.
- Slugging volume is lighter on Mondays and Fridays.

- Taxi drivers are only required to take one passenger.
- One person, over the years, left four separate items behind when slugging and had recovered them all.
- There is great diversity in age, sex, race, and socio-economic status among participants waiting in slug lines.
- One person had tried many different ways of commuting over the years. Slugging is the best option for this individual because of its variety and flexibility.
- The HOV lanes are usually open (not clogged), and cars move fast on these lanes.
- The length of time ridesharing participants had been slugging varied (e.g., 1 month, 5 years, 20 years, 20+ years).
- Ridesharing participants weighed many different factors in their decision to slug.
- Background checks for organized slugging would increase liability.
- We met with Peggy Tadej of Northern Virginia Regional Commission and Pat Atkins of George Washington University. We discussed various messy commute situations—I am amazed at the troublesome commutes that people will tolerate.

Peter Valk

Replicating slugging will be a challenge, because it has evolved from a very specific need and was cultured in an environment with the right conditions (see Phil's and Eric's comments). It will be interesting to see how the conditions and processes for slugging in Houston, TX, and San Francisco, CA, compare with Washington, DC. I think there may be an opportunity for slugging to emerge in regions where tolling will be introduced; the toll will be significant enough to change travel behavior. There are HOV lanes (3+ will be much easier, but 2+ may work), and there are few other roadways to choose from when making trips.

Slugs felt that the presence of transit service at both ends of the trip was essential, because many used it on days when the weather was inclement. Slugs do not consider themselves carpoolers and would unlikely participate in a more structured carpool because of schedule constraints (i.e., slugging does not require communicating with others on how you will be traveling compared with carpools and certainly vanpools).

I recognize the potential value of developing slugging guidelines (as suggested by Phil) but am challenged about how guidance can be introduced without compromising the organic nature that seems to be at the heart of slugging's success; folks seem to be able to work things out without much

guidance. I may be reading more into the tone of our conversations with slugs, but there appears to be an appreciation for how slugging has developed on its own. The trick for planners is to determine how slugging can be sparked where it best seems to make sense without damaging the informal evolutionary development.

I think that the best chance of creating new slugging opportunities (in communities with no slugging history and no HOV 3+ lanes) will be to work with a large employer (where workers have an established association) that is looking to mitigate the effects of new tolls or to reduce SOV use. The employer would have the means to provide a catalyst of informal action amongst a core group and to facilitate initial slugging (e.g., create digital communication channels and identify onsite slugging locations).

Eric Schreffler

- On Thursday morning, I drove the rental van alone from the Horner Road Park-and-Ride lot to downtown Washington, DC. My travel time was approximately 1.5 hours. It was valuable to experience the congestion and to watch the HOV lanes travel freely through the Springfield interchange and the approaches to the District through Arlington, VA.
- In meeting with the representative from DDOT, I was impressed with the agency's willingness to accommodate both slugging and commuter bus service while maintaining safe and reasonable traffic flow.
- On Thursday afternoon, I slugged from the Pentagon with a driver who worked for the Smithsonian at the National Zoo. He travels about 15 minutes to the Pentagon to pick up slugs. He waited in a queue of about 40 cars to pick up his two riders. With the travel time in the HOV lanes back to Horner Road, his commute time was about 1 hour. When I asked about his travel time savings as a result of avoiding the general purpose lanes, rather than quoting me a comparative travel time, he said that the trip could take 2 to 2.5 hours and that it was highly variable. Therefore, the benefit to him, worthy of waiting for slugs at the Pentagon, was *travel time reliability*, rather than time savings, per se.
- On Thursday evening, the dinner with the founder of www.slug-line.com, David LeBlanc, was illuminating in the self-organizing nature of the whole phenomenon. LeBlanc mentioned that the Web site had over 18,000 registered users, and that the message board was used to inform other slugs about experiences and even warnings about drivers who did not follow common etiquette and safe practices. I was most impressed to learn that the *Web site is used to create new slug lines* (destinations) by announcing trials and providing guidance on how to do so.
- On Friday morning, I slugged from Potomac Mills, VA, to Rosslyn, VA, with a driver who talked with me as we waited for a third rider. After we departed, he increased the volume on his radio

and all conversation ceased. Two interesting comments he made were (1) to note that Fridays were often lighter in ridership because of compressed work weeks at many work sites, including Federal agencies; and (2) to be suspicious of the car in front of us that had Maryland plates, wondering why someone from Maryland would be in Virginia picking up riders.

- In general, I was very impressed with how cooperative and collaborative the slugging experience was with the use of “callers” and “haulers.” “Callers” help inform other members in the line of the destination of cars toward the front of the queue, while “haulers” are drivers. In addition, slugs also had personal preferences, as witnessed when one slug refused to get into a car with a driver who was identified as a driver who speeds and weaves.
- As a final thought, one of my personal desires in participating in this scan was to learn about whether slugging could be replicated in regions that are implementing HOT lanes that require a vehicle occupancy of two people. My initial conclusion is that slugging would only occur to help form HOV 3+ ridership if the process remains informal. Requirements that cars register as eligible to carpool and thus to use HOT lanes for free (as is being implemented in Miami, FL, and Atlanta, GA) serves as a deterrent to slugging. In my opinion, the effort needed to form three-person carpools is exponentially more difficult than the effort to form two-person carpools. Anything that restricts organized, even spontaneous, ridesharing will be counterproductive to increasing occupancy. Therefore, planners of HOT lanes should not rely on casual carpooling to help form three-person carpools if the technology aspects (need for a transponder) actually retard carpool formation.

Phil Winters

- The Web site www.slug-line.com is operated by a fellow slugger who manages the site with little financial support. Very little public money is used to support dynamic ridesharing. Managers of local transportation demand management programs may be reluctant to show that they are not entirely self-sufficient.
- Riders are not expected to chitchat like when participating in a regular carpool. My first two slug trips were with drivers who did not initiate conversation.
- Slugging may create more social opportunities than does transit (depending on what is agreed between the driver and other passengers). Our driver on Friday morning met his wife while slugging.

Base Realignment and Closure (BRAC) Commission:

- Parking shortfall, lack of transit, and no easy access to HOV lanes point to a pending transportation emergency.
- Lack of a common control (e.g., 39 agencies in Mark Center) means pain will be felt before actions are taken.
- The BRAC sites could:
 - Provide preferential parking.
 - Consider short-term financial incentives.
 - Support van pools and bus pools through Federal-qualified transportation fringe benefits per Section 132f of the Internal Revenue Code.
 - Promote a range of programs—no single solution will solve the problem.
 - Explore proximate commuting (job swapping).
 - Increase the use of alternative work schedules (compressed work weeks, flextime, and teleworking).

Additional observations:

- No use of social media (e.g., Facebook or Twitter) was mentioned. Email contact among slugs and drivers is infrequent.
- There is little known about slugging, for example, the number of active slugs (e.g., census), frequency, duration, etc. It would be worthwhile to check with the Metropolitan Washington City of Governments to see whether this information is captured in the State of the Commute survey.

Allen Greenberg

November 18, 2010: Telegraph Road–Woodbridge Slug Line

- At the 18th Street line, the lot fills up at 7:30 a.m. and requires more parking and signage. The line does not move well after 6:30 a.m. Riders sometimes leave lines to get cars and riders. Riders would consider electronic slugging; that is, using technology to coordinate meeting times. Park police have ticketed pick-ups and drop-offs.

- One woman finds riding in a car more comfortable than riding on a bus.
- Taking the bus is slower, too. Some participants would take it, though, if they were provided with a stipend. Cabs will sometimes pick up only one passenger and then are allowed to use the HOV lanes. Lines can be long, but HOV-4 lanes would be problematic for those drivers with child seats. In multi-destination lines, the first rider approaches a driver's side window and yells out driver destinations to the other riders until he or she finds a car that can take him or her to his or her destination. The 14th Street line has merged with 15th Street, which does not have a bus option.
- If passengers were offered a transit stipend from their respective employer, they would slug in to work but take transit back.
- If possible, it would be best to remove all parking between 14th and 15th Streets on New York Avenue, where slugs wait for a return trip home. Slugs would still be able to see the bus, thus enabling flexibility of transportation options.
- One slug suggested charging for parking; there were concerns about the potential of HOT lanes in the future.
- Slugs who ride the Pentagon–Fredericksburg, VA, line take the commuter train on Friday evening because of increased traffic on the roadways.
- The Potomac Mills line offers later rides. Parking is patrolled, and Friday slugging activity is light.
- Some slugs who rode the Washington, DC, line took the bus back but overall preferred slugging (would prefer it more if the reliability was better).
- Slugs rejected rides from a driver who was dubbed the “Nascar driver,” and drives a very dirty vehicle.
- Drivers become more flexible with the drop-off destination as they wait for riders.
- Drivers are more likely than riders to have less transit access to their work, are more likely to have parking privileges, and more likely to have afternoon appointments requiring car transportation.
- One driver met his wife as a result of giving her a ride.

November 19, 2010: Slugging/BRAC Meeting with Peggy Tadej

Six-thousand four-hundred employees will be moving from Crystal City to the transit-inaccessible Mark Center. There has already been made available \$7.5 million for nearby transportation improvements. By comparison, 23,000 employees work at the Pentagon, 26,400 at Fort Belvoir (13,300 new employees) plus 8,500 employees at the nearby Engineering Proving Ground (all new), and 19,000 at Quantico (2,700 new). Work location moves are inspired by security needs. Each Federal employee also brings contractors. There is reduced parking at all BRAC-affected facilities. Each department or agency gets an allotment of parking spaces, and reverse commutes do not have HOV lanes. Fort Belvoir and Quantico are situated in remote locations, relatively far from Washington, DC.

Houston, TX

Marc Oliphant

- One lady exchanges phone numbers with other regular riders and drivers. This same lady's first time slugging was with her sister (who had already slugged before).
- The rules for drop-off in Houston are that you follow the bus stops. You are required to take any of your passengers as far as the buses go, unless a driver specifies in advance that he or she is not going that far.
- Most drivers pick up only one passenger. People have used the Washington, DC, slugging Web site as a resource for slug protocol and behavior.
- Carpool lane on the Katy Freeway is open from 5 a.m. to 8 p.m.
- Most of the cars that were observed picked up one passenger, some took two, and one car took three.
- One guy accidentally left his bus pass at home, so he decided to get in the slug line. The amount of time that people in the passenger line had been slugging ranged from 3 months, to 4 years, to 7 years, to 8 years. Most people in line had a bus fare subsidy available to them from work.
- Slugs are encouraged to report out HOV violators.
- The Katy Freeway now has 18 lanes. On one side of the freeway, there are three frontage lanes, four general purpose lanes, and two managed lanes (for total lanes, double this lane amount).
- Mirjamali works specifically on the HOV program. Mirjamali sometimes participates in casual carpools.

- The Katy Freeway was changed from HOV-3 to HOV-2 in April 2009. The Addicks Park-and-Ride lot is served by Bus 228, and the Northwest lot is served by Bus 214. Slugging is tolerated by Houston Metro as long as there is plenty of parking. Bus 221 serves Kingsland.
- Met with Jim Schrader of HDR engineering and Vince Obregon of Metro's capital projects.
- Active traffic management is being conducted in Atlanta, GA; Seattle, WA; and Minneapolis, MN.

Mark Burris

At the Northwest Station, there was a steady stream of cars and people during the time I was there (from about 8 to 8:30 a.m.). The HOV-3+ time period had just ended, so most drivers (maybe all while I was there) were picking up just one passenger. The line of slugs was never more than four passengers long.

The driver that I rode with decides at the last second on a day-to-day basis whether he will pick up a slug. His drive to the Northwest Freeway gives him a glimpse of traffic on the freeway. If it looks bad, he heads for the park-and-ride lot to pick up a slug. If he leaves late (like he did on the day I rode with him), then it is a very high probability he will pick up someone. If he leaves early (say, 6:30 a.m.) then the odds are lower that he will pick up someone.

Another driver uses the slug line, mainly because the building where he works is the last in a series of stops for the bus (meaning he can avoid having to endure all the bus stops).

Jim Morris

Slugging is pretty sensitive to the conditions. In Houston, TX, an improvement to a highway that reduced congestion reduced slugging by 50 percent. In addition, very few people slugged home at night. The only explanation seems to be the uncertainty of destination.

A few days after I returned to Pittsburgh, PA, I had an informal interview with a woman in my downtown apartment building. She moved from an outlying suburb because she could not stand the 1.5-hour bus commute. When I explained my thoughts about opening a busway to carpools, she said it would work and that it would have kept her from moving. She would drive to her local park-and-ride lot, park or drive depending on the relative queue lengths, avoid the meandering bus to the busway, and avoid standing in the standing-room-only bus from there. She said the busway has plenty of space for cars, both widthwise and headroom-wise. A difficult issue she raised is the racial mix. She said that the small number of whites who wait for the bus appear uncomfortable; slugging might help increase the comfort level, although some passengers may initially be impeded by general fear. She also reported that there is

surplus parking at the bus stop entering the busway. I rode the busway one day to verify all this. It is one lane in each direction with cut outs for stops. The bus drivers I asked did not like the idea, of course; they are believed to be the highest paid drivers in the country.

Opening a busway seems obvious: previous cutbacks in service have made the buses too crowded and the busway pavement more open. However, I fear I am about to learn what you all know: there will be many financial and political impediments to making this change.

Susan Heinrich

At the Addicks Park-and-Ride lot, the woman I rode with said she usually likes to take two people because she feels safer, even though she only needs one person to use the HOV lanes. She said she made an exception with me because I was a female passenger. She does not pick up passengers every day, but does it regularly. She does not ever ride—just drives—because she likes to have her car. In most cases she picks up riders to save time, but she likes saving money, too. It “gets tiring” paying so much in tolls. The driver makes the riders listen to her music, jokingly commenting that the people in the back seat have to listen to her music more loudly. The main “wow factor” for me was how significant the park-and-ride lots are and how they provide such easy on-and-off access to the freeways.

Phil Winters

In terms of safety, although there was a security booth onsite, it was unmanned. Cameras with anomaly detectors were used, which were alerted to people wandering through the lot. There were locked gates after rush hour, and one would need a transit pass to access the lot even if carpooling from the lot.

Four-minute headways mean that slugs may have to wait longer to be picked up, but they also avoid the \$4.50-per-trip bus ride. The bulk discount for bus rides is only 55 trips for the price of 50. As a result, cost savings was a main issue in terms of choosing to rideshare. Trips back to the original destination were referenced by bus number (park and ride). Both the driver and rider knew other drivers and exchanged experiences. All slugs were friendly and willing to talk. The outstanding question is whether managed lanes increase people throughput (not vehicle).

METRO reps seem to think of slugs as “others” rather than what they are—part-time transit users. I find that view troublesome for expanding the concept of slugging. METRO reps (and others) seem to think plausible deniability is a good strategy (seems like a de facto rather than a deliberated strategy). It is unclear if they view slugging as a means to shave the number of travelers during peak demand times. Increased ridesharing may not be able to reduce the number of bus drivers because of labor unions. This might be a good topic for research.

I think focus groups might want to include transit riders who use the same park-and-ride lots as slugs. There may be people who tried slugging and stopped or those who refused to try it at all (e.g., if an employer pays for transit costs).

Ed Christopher

As everyone knows, for me, the highlight was getting into a vehicle with heated seats on a cold morning. Our driver was a dedicated driver and is never a passenger. However, many years ago (two jobs ago), she started out as a passenger when solicited at a bus stop. She has been doing the carpool thing (driving) for several years. I did not get the sense that she was doing it for the cost or time savings. Although it is hard to prove, I would bet that she is doing it more for the social experience. She lived by the lot and had to pass by it on her way to work. She also had other friends who are drivers, and they talk to each other about their carpool experiences. She never does the carpool thing on the way home.

My wow factor from Houston was that everyone I talked with had been involved with organized hitchhiking (I dislike the term *slugging*) for many years. I am sure that there are new entrants to the market, but based on my anecdotal evidence, 8 years was the average time span of participation. In addition, although Phil makes a good point about the carpoolers being part-time transit customers, I was very surprised that METRO “turned their head” and let the passengers park in their lots for free. What really surprised me is that parking was free for everyone. Come to think about it, my driver said that she had free downtown parking as well.

Peter Valk

I concur with Phil’s and Ed’s observation about METRO’s failure to recognize that commuter carpoolers are tax-paying citizens who have rights to use their facilities. I think commuter carpoolers will be moved off the park-and-ride lots if and when parking facilities reach capacity.

I think there are sufficient grounds, based on findings from our visits, to pursue a pilot project that seeks to catalyze ridesharing. We know that ridesharing can grow to where there are HOV-3+ lanes, reduced tolls, and back-up transit service. There are few circumstances like this. The challenge is to determine whether ridesharing could be successful in HOV-2+ conditions in which there is variable tolling with pricey peak fees. The key is how to initiate the spark and stimulate its natural growth.

I am inspired by how ridesharing has flourished without any government intervention and without a “technology” solution—a breath of fresh air.

Allen Greenberg

Rides to Commuter Destinations

- HOV-2: Many drivers will pick up a third person (i.e., a second passenger), but some drivers do not because of the time it takes to find a second passenger going to the same destination.
- Not everyone at the park-and-ride facility knows what slugging is. Slugging in the HOT lanes is faster than driving in the general-purpose lanes, and drivers save from not having to pay the HOT lane toll of \$4 during peak periods.
- A good deal more commuters are taking the bus (4-minute headways) than they are slugging, perhaps, in part, because some drivers will not travel to destinations as far as the bus will go.
- Kingsland Park-and-Ride lot has a security station, but it is unmanned.
- There are some complaints about very aggressive drivers, but passengers will get in these cars again.
- Drivers make the rules, but no drivers smoke, according to someone with 7 years of slugging experience.
- HOV hours are from 5 to 10 a.m. and from 2 to 7 p.m. Outside of those hours, all vehicles but buses must pay.
- Passengers can get a lift all the way to the far side of town, unless the driver specifies otherwise in advance. The Addicks Park-and-Ride lot had a specific area for passengers. There was very little waiting time for slugs.
- At the Katy Park-and-Ride lot, the general purpose lanes moved fairly well. One driver said that traffic is reduced a little during December. Drivers indicate destinations by bus routes, although some drivers have printed signs.
- There is a dedicated 1-percent sales tax for transit.
- Only when parking is constrained (at park-and-ride lots) does METRO become concerned about slugging.

- Dual-managed lanes require HOVs in the left lane and HOT vehicles (i.e., paying vehicles) in the right lane when passing under toll gantries.
- There are plans to convert 133.6 km (83 mi) of HOV lanes to HOT lanes. The conversion is estimated to be completed by January 2013.

Reverse Ride Home

- Drivers have bus route signs.
- One woman was okay with accepting a lift home but only from a female driver.
- Drivers sweep bus stops for slugs.
- It does not seem to be difficult for drivers to get riders, but no passenger declines a ride on a bus to continue waiting for a lift as a slug. Some slugs were in part financially motivated, but a good number of slugs who received a full employer transit subsidy also slugged because of personal preferences, mostly because of time savings. One waiting bus passenger had slugged once without incident, but then considered herself crazy for doing so and has not slugged since. Another bus passenger said that there are too many dead bodies popping up around Houston for slugging to be wise.
- It would be worthwhile to research on the return commute whether anyone passes up a bus to slug. What percentage of drivers takes more than one passenger (especially returning from downtown); and for those who do not, is it because there is a space constraint?

San Francisco, CA

Marc Oliphant

North Berkeley BART

- One driver said that one-third of passengers offer money, but he does not take it.
- If the slug line gets too long, the cars queuing to pick up slugs can block traffic. Usually the police enforce keeping lanes open at the corner so that traffic is not blocked.
- You can park for free on the street west of Sacramento Street.

- Casual carpooling is 15 minutes faster than BART for the passenger in my car. This passenger reported that fewer passengers have been slugging since July 1. She would like to see afternoon casual carpooling move back to Berkeley.
- Riders often offer the driver \$1. Some drivers accept it, and some do not.
- There used to be a pickup spot in downtown Berkeley at Shattuck and Vine Streets. When the line was only downtown, passengers and drivers would use signs to communicate.
- A carpool violation costs \$270.
- HOV lanes are open from 5 to 10 a.m. and from 3 to 7 p.m.
- Although there is a \$381 fine if caught driving illegally in the HOV lanes, there is poor enforcement of HOVs on HOV lanes.
- Motorcycles split lanes (i.e., drive along and between lanes of cars in traffic).
- Work vans only need two passengers; passengers are sometimes scared by taking a ride offered by a driver of a work van.
- It was reported once that two black males driving an old dumpy car had a hard time getting a passenger at North Berkeley, so even though casual carpooling appears to be well integrated among races and income levels, some biases may still exist.
- One nice thing about casual carpooling is that you always have a seat. That is not always the case with BART.
- The trip from North Berkeley to the Civic Center costs \$3.70 on BART.
- Several years ago the *San Francisco Chronicle* conducted a race to see who could get into the city first (via different transportation modes). Mike Cavanatuan wrote the article (*San Francisco Chronicle* transportation reporter).
- It is rumored that Larry Page of Google is keenly interested in real-time ridesharing.
- City CarShare: Rick Hutchinson has been chief executive officer since 2005. The company is 10 years old and is the largest non-profit carshare company in the country (maybe in the world). More than 300 vehicles serve the North Bay.
- Mark Evanoff says some people drive to the Lafayette BART Station and park, then take BART to the Orinda station, get off, and carpool in.

- Jerry Robbins: Vallejo is a very popular destination. It is blue collar, and the carpool lane goes all the way. Alameda-Contra Costa Transit District (AC) Transit budgets for more afternoon capacity, because people do not usually carpool home (www.marincarpool.com). AC Transit serves Alameda and Contra Costa counties and predates BART.
- Vallejo riders pay \$1.25 each way. The Carquinez Bridge's toll applies to those traveling in the other direction. People start lining up as early as 2:30 p.m., and there is always a line by 3 p.m. There were 45 people in line at 4:05 p.m. Riders have gotten rides as early as 5 a.m. to travel into Vallejo.
- I casual-carpoled to Del Norte with a Hispanic male driver and two other passengers. The driver does not take money from passengers in the morning; he instead prefers to give rides as a favor. We were dropped off within 100 yards (300 ft) of a BART station.
- There is a communal feeling among casual carpoolers; they are different. Karen Frick and Betty Deakin are conducting a study on casual carpooling. This is a community that helps each other.
- One man keeps a car seat in his car even though he does not have a child. He picks up the same woman and her daughter most days, so he keeps the car seat (system optimal vs. user optimal).

Grand and Lakeview Morning Line

- A man rode up on a foldable bike and put it in the trunk of a car. There were 20 cars in line at 7:10 a.m. An active bus stops across the street(s) from the carpool line. The only parking allowed in the lot is for 4 hours and requires a permit. Who owns the lot? There is a bike rack at the lot, which had two bikes on it. Many riders were dropped off at the line. Two women casual-carpool together each day; they work at the same location. Whichever woman arrives first waits and calls the other on her cell phone.
- Several of the cars in line to pick up passengers had a young child in the backseat.
- Drivers will ask for \$1. Some drivers insist on the dollar.
- Allen's theory: *Microculture*, that is, there are more differences among people in the Bay Area carpool lines than there are among the three different cities.
- One of the AVEGO employees learned from his driver that only 10 percent of passengers offer the dollar.
- The expectation for Vallejo is that every passenger offers \$1.25, even if there are three passengers.

Mark Burris

- There were clearly many more drivers than there were slugs for the time we were there.
- The wait time for drivers at approximately 7:30 a.m. was 17 minutes. This appeared to be a bit shorter of a wait than at 7 a.m., because more slugs arrived at the later time.
- Bad weather may reduce the number of slugs. They seem to get dropped off or live nearby and walk to the slugging area, so weather can be an issue, despite the wait area being located under an overpass.

Jim Morris

Slugging is pretty sensitive to the conditions. In San Francisco, the transit authority put up signs to sort out the home-bound slugs and induced a rather robust evening slug culture, even though there is no toll on the Bay Bridge. It is still very sensitive, though: nobody will take you from San Francisco to the North Berkeley BART station, but they will take you about 16 km (10 mi) north to another station. It is all about of the length of the HOV path.

Susan Heinrich

The San Francisco Bay Area does not have the luxury of providing park-and-ride lots designed to provide easy on-and-off access to the freeways like Houston does, but if it did, I would think that casual carpooling would be more inclined to take off along corridors other than the Bay Bridge corridor.

Phil Winters

My first driver was driving his daughter to school. He did not pick up riders on the reverse trip because he often worked late. My other driver was a construction worker who drove a van with one seat and a cracked windshield. He carpooled for the time savings and to help others in a tough economy. This was the first time I heard anyone talk about altruistic motives being part of the equation.

No participants could think of how a technology application could improve the situation.

Ed Christopher

San Francisco was interesting, yet far different compared with the other cities. Both my drivers had free downtown parking through their employers. My driver on the first day has been carpooling since the 1970s and had even participated in the early ride-matching service. Although we offered money, it was like we had to force it on him. He said that he did not do it for the money. I got the sense he was very liberal and was carpooling for the time savings and the “doing his part for the environment” thing. He

drove all the time when he carpooled but rode his bike to work most of the time. Driving was just something he did maybe 2 days a week.

My driver the second day was a woman who had been carpooling for only a few months. She had just moved from Orange County (Los Angeles, CA, region), and her daughter told her about casual carpooling. She was most certainly doing it for the time savings. She, too, had free parking and never drove anyone home on the return trip. I would put her age in the early fifties.

My ride out of North Berkeley was not notable except for trying to get a picture of a violator in front of us. It looked like violating was the norm. I was also struck by the change in demographics. For both of my inbound trips, I would say that my drivers were “doing well” in terms of income. For my trip home, in regard to both the other passenger and the driver, I would put them in much lower economic strata. Although I can understand why people would want to be passengers, I could not figure out why my driver bothered to pick anyone up. There was a small time savings, but some empirical work would need to be done to determine whether the time savings erodes away when dropping people off. I could not ask the driver as I do not think he spoke English.

Dinner with Betty was great, and having her empirical evidence temper our anecdotal evidence was a real plus.

Peter Valk

I was impressed with how the City of San Francisco supports casual carpooling. San Francisco realizes that it is a legitimate means of commuting and has not shirked from its responsibility to provide a safe place for commuters to queue for rides home.

Allen Greenberg

North Berkeley BART Lot

- A two-seater vehicle only needs to take one passenger.
- Only about half or less of riders offer \$1 to their respective drivers; my driver did not ask for payment. Some drivers take the money, and others do not.
- Drivers save time by picking up passengers. For most drivers, there is an average 5–10 minute wait for a passenger, and more important, to gain reliability.
- The South San Francisco vanpool also meets at the North Berkeley BART lot.
- Drivers going to Pacific Heights could pick up either Downtown- or Civic Center-bound passengers.

- Driving in the HOV lanes allowed cars to bypass the toll queue, which had a wait of up to 30 minutes. Passengers also saved 10–15 minutes compared with riding BART (and they were guaranteed a seat).
- Tolls went from \$4/\$0 (non-HOV/HOV) to \$6/\$2.50; there are somewhat fewer cars now as a result.
- Early numbers reported one-third fewer HOV-lane users—instead many passengers took the BART— but now the numbers are getting closer to normal.
- Gerry Robbins (San Francisco MTA): Reverse-direction dynamic ridesharing came about in 1997 with the BART strike. Check out the link www.marincarpool.com for more information.

Return from San Francisco

- Line to Fairfield/Suisun: The ride in the HOV lane took 1 hour and 15 minutes compared with 2 hours or 2 hours and 15 minutes in the regular lane.
- Vallejo: Everyone gives the driver \$1.25. One woman is particular about who she rides with, that is, she avoids being surrounded by men and bad drivers.
- Richmond Parkway:
 - Bus park-and-ride lot. There is a bus alternative available at a big station across the street.
 - Because carpool passengers save the \$4 express bus fare, and the bus runs only every half hour, slugging is a better deal overall, but if the bus is there at a time that there is a queue of slugs, some will leave the queue and take the bus.
 - Both transportation modes (carpooling and the bus) are non-stop, but cars drive faster. The modes of transportation appear to be interchangeable.
 - Two women on this line never pass up a driver. Many women will pass up taking a ride with a male truck driver when there is only one seat available.
 - One van had “Please do not slam the door” sign taped to the glove compartment.

- Sign on ramp: “HOV only, \$381 minimum fine.”
- When I used the term *slug* while talking with the woman who picked me up, she seriously thought I was referring to SLUG, the San Francisco League of Urban Gardeners.
- One female driver only takes female passengers in the morning. This female driver may just drive past the line (and then loop back again) if it is led by a “scary” male. Her husband thinks she is crazy for picking up riders.
- It was about a 45-minute wait for me to be picked up by a driver. I was told that a 15–20-minute wait is more typical in the Del Norte line, the slowest of the lines.
- My driver did not formerly accept money but will now if it is offered.
- One woman removed a car seat and put it in the trunk to make room for a fourth passenger. Another passenger commented that he saw two regular drivers as passengers today, and I noted that our research group added about eight passengers to the line.
- Mark Burris’ observation: Del Norte line drivers mostly picked up three passengers because of a long (but mostly slow) passenger line. Vallejo drivers have a financial incentive (an additional \$1.25) to take an extra passenger and also a social reason (a long passenger line) to do so.
- Lake Merritt (2.4 km (1.5 mi) from BART Station)—in-bound slug line:
 - There are long lines of drivers; passengers never seem to wait. One driver said that with the wait, there is little time savings but that he also saves on the toll. One female driver said that a 15-minute wait gets her 30–45 minutes in travel-time savings.
 - One passenger folded his bike and put it in a driver’s car trunk.
 - One female passenger waited for second female passenger and colleague (called by phone) to slug together as passengers.
 - Passengers must offer \$1 to their respective drivers. Some drivers ask for the dollar if it is not offered. Drivers seem to always take payment from the passengers.
 - One woman tried to get a lift to the Civic Center to save the \$2 transit fare.
 - Many Asian participants are at this location.

- My driver, who drove a very nice Mercedes, started driving because the toll increase made commuting feel expensive to him (he switched the radio station from National Public Radio to music after we all began talking).
- An AVEGO representative slugged in from North Berkeley and confirmed the microculture of the North Merritt location as one in which a minority of passengers offered money to their respective drivers (one driver said that only 10 percent of passengers offer), and none of the drivers ask for payment.
- Drivers seem to need a car to get to either the destination of their trip or back to the origin of their trip (first/last mile issue).
- It was cool to watch the downtown drop-offs. It really shows the total volume and importance of casual carpooling.
- Vallejo line (return from downtown; “real community”):
 - “Drivers and passengers—we’re all working people.”
 - No complaints about the fairness of having to pay the driver, more so there were complaints about the fairness of charging HOVs when they did not used to be charged.
 - Many, but not all, cars seemed to take a fourth passenger (5 of the 12 cars that I observed).
 - One woman said that there are other women (none were there the evening of observation) who will have someone hold their place in line and will ask all drivers to take a fourth passenger. (Note that from a follow-up visit on March 7, 2011, we learned that no one is coaxing drivers any longer to take a fourth passenger.)
 - Some drivers do not take money, some will take \$1.25 from each of their three passengers, and still other drivers will only take \$1 (which still leaves them \$.50 ahead).
- Research Ideas (Vallejo): How many drivers take more than two passengers, and how many drivers take only two passengers because of space constraints, like a child seat, which forces that limitation? In addition, drivers in this line could be surveyed about their behavior (e.g., how many passengers and how much money they take) and whether earning extra money or someone asking them to take another passenger affects their behavior.

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