

A photograph of a city street scene. In the foreground, a silver sedan is parked on the side of the road. Two men are standing near the car, one looking at the other. To the right, a woman in a purple top and black pants is walking, holding a map and pushing a bicycle. The background shows modern buildings, trees, and other vehicles, including a yellow taxi. A green parking sign is visible on a pole to the right.

Dynamic Ridesharing: Carpooling Meets the Information Age

August 5, 2010

Presented By:

Marc Oliphant & Andrew Amey

Questions To Answer

- What Is Dynamic Ridesharing
- Why Is It Important?
- Where Is It Occurring?
- What Makes It Work?
- How Can We Promote It?

Carpooling Is:

- Inexpensive
 - No buses, trains, drivers, mechanics, bridges, tracks, etc
- Environmentally Friendly
 - Less emissions per passenger mile
 - Fewer vehicles = faster speeds = less pollution
- A Congestion Reducer
 - Fewer vehicles to make same trips
- Light on infrastructure
 - Less road space & parking needed
- Socially Beneficial

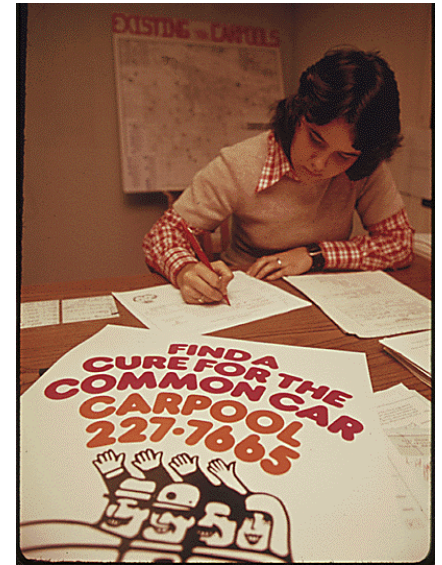
Background on Carpooling

- 1940's
 - First Conceived
 - WWII: Carpool for War Effort
- 1970's
 - Oil Embargo
 - First Vanpools @ 3M, Chrysler
 - Organic Dynamic Ridesharing
 - “Slugging” in D.C. and Houston
 - “Casual Carpooling” in San Francisco



Background on Carpooling

- On Decline For Past 30 Years
 - 1980: 19.7%
 - 1990: 13.3%
 - 2000: 12.2%*
- Future: New Era of Ridesharing
 - Technology: Smartphones, GPS, Social Networking, Intelligent Transp. Systems (ITS)
 - Incentives: High Occupancy Toll (HOT)



Fundamental Ridesharing Requirement

*Two Individuals Who Are Proximate in Time and
Space and Share a Common Destination*

That's all it takes

Five Elements of *Successful* Ridesharing

- 1. Logistics**
- 2. Reimbursement**
- 3. Incentives**
- 4. Safety**
- 5. Power**

Evolution of Carpooling

1. Traditional Carpools/Vanpools

*Interpersonal Relationships

STATIC

2. Slugging/Casual Carpooling

*Meeting Places

DYNAMIC

3. Technology Facilitated Dynamic Ridesharing

* Virtual Framework

Traditional Carpooling

- Recurring, Consistent Arrangement
- Set Members
- Fixed Schedule

A Few Disadvantages:

- Rigid schedule
- Limited # of partners
- Difficult to make changes on short notice
- Awkward reimbursement

The Trouble with Traditional Carpooling:

Just before quitting time a man was called into an unplanned meeting. He couldn't find anyone from his carpool to notify so he left a note for one fellow saying "*I have a last minute meeting, leave without me.*" At 7 p.m., when his meeting finally ended, he found a note on his chair that read:

***"Meet us at the restaurant
across the street, you drove!"***

Dynamic Ridesharing

*No Commitment

*No Pre-Arrangement

Advantages

- No rigid schedule or departure time
- Large supply of potential partners
- No obligation to any partner or arrangement
- Pre-arrangement is unnecessary

The Dynamic Ridesharing Umbrella

Dynamic Ridesharing



Slugging/Casual Carpooling

- Proven
- Organic
- Limited to 3 Cities
- Unique Circumstances Needed

Technology Facilitation

- Un-Proven (so far)
- Organized
- Unlimited Locations
- Still Requires Incentives

Slugging/Casual Carpooling

- No Money Exchanged*
- A Mutually Beneficial Relationship Between Passengers and Drivers
- Participants Cooperate to Save TIME and MONEY
- Driven by Incentives
- A Transit System that Goes of Itself.

*Change in San Francisco within the past month

How Slugging/Casual Carpooling Works



- Lines of People and Lines of Cars

- Create Instant Carpools Based on Common Destinations

(Horner Road Commuter Lot)
I-95 Exit 158 in Northern VA



The Return Trip

- Similar Afternoon System



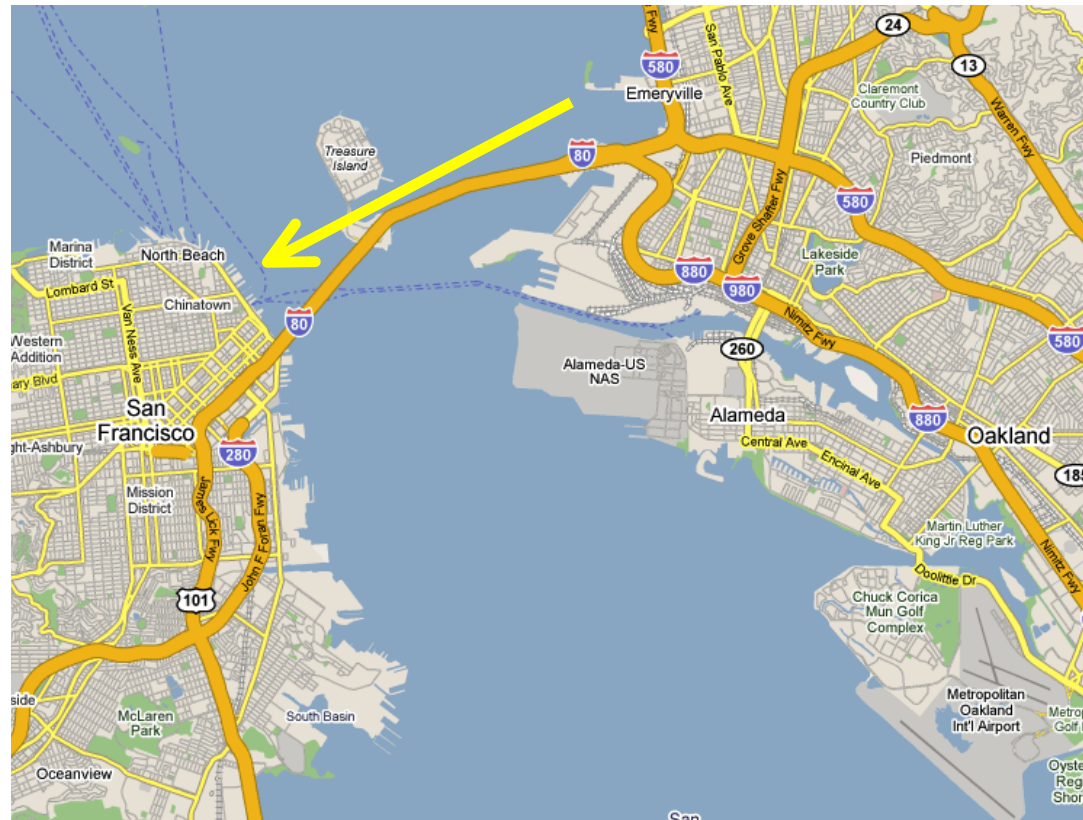
14th Street and New York Avenue
Downtown Washington, D.C.

Slugging/Casual Carpooling Three Metro Areas

- San Francisco
- Houston
- Washington, D.C.

Casual Carpooling in San Francisco

- Reduced toll for west-bound HOV-3 vehicles
- Most slugging occurs in the A.M.





STARTING JULY 1 CARPOOL TOLL \$2.50



Changes in San Francisco

New Tolls a Huge Topic of Debate on
RIDENOW.ORG (<http://www.ridenow.org/carpool/discussion.html>)

- Hundreds of Opinions on Message Board
 - Riders Should Pay: Get Benefit
 - Riders Should Not Pay: Give Benefit
 - Drivers Should Ask for \$1
 - Riders Should Offer \$1, \$.75, \$.78
 - Etc...

Changes in San Francisco

San Francisco Chronicle, July 29, 2010

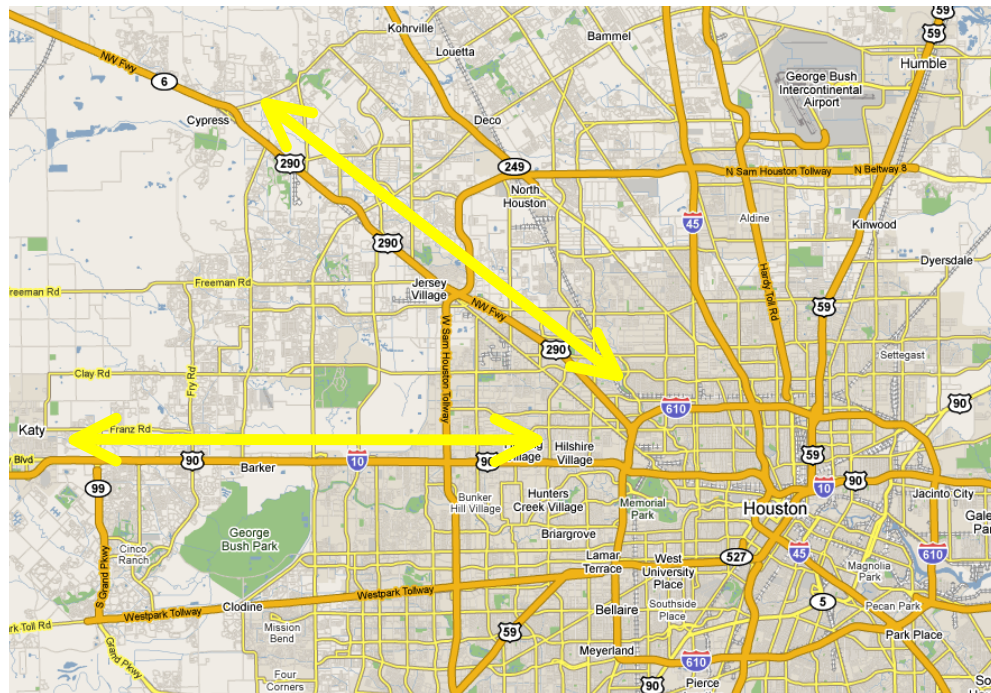
Bay Area bridge tolls take a toll on commuters

By: Will Kane, Chronicle Staff Writer

- “30 percent fewer people are using the carpool lane since July 1 toll change.”
- “It is disincentivizing now that I have to pay.”
-Michael Corr, former casual carpool rider

Slugging in Houston

- Slugging occurs on two HOV corridors:
 - Northwest Freeway (Route 290)
 - Katy Freeway (I-10)

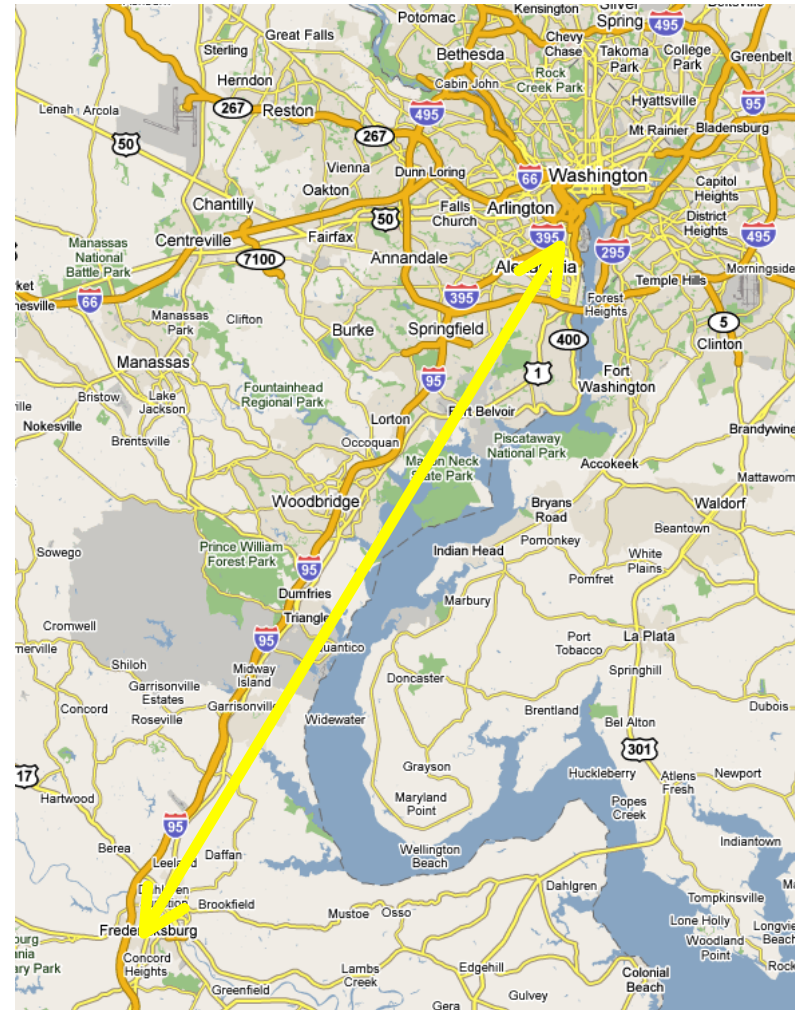


Slugging in Houston

- April 2009: Katy Freeway HOV to HOT Change
 - Reduced Requirement from HOV-3 to HOT-2
 - Changed Slugging Dynamic
 - Riding w/ 1 Stranger is More Awkward than 2
 - Result: Less Slugging

Slugging in Northern Virginia

- Slugging began in the 1970's with HOV laws
- Most extensive system
- Centered on the I-95/395 corridor
- 6,500 people slug each weekday (VDOT 2006)



Recent D.C. Headlines

WTOPNEWS.COM

DC Police Chief: No crackdown on slug lines

July 5, 2010

Chief: 'No change' in slug enforcement

June 17, 2010

NBC Channel 4

Save the Slugs!: D.C. should create official slug lines

By P.J. Orvetti , June 21, 2010

WAMU, 88.5 FM

Some Commuters See Increase in Tickets for Picking up Slugs

By Natalie Neumann, June 17

A Recipe for Slugging/Casual Carpooling Success

Systems need the majority of the following characteristics in order to succeed:

- HOV-3 or greater vehicle occupancy restrictions
- Strict enforcement of HOV laws
- Large numbers of commuters living and working together
- Long commute distances/times
- Convenient transportation alternatives
- A choke point to eliminate substitution

Implications

- Slugging/Casual Carpooling is great, however, it only occurs “naturally” in a few places
- What if we could artificially create the conditions that drive slugging/casual carpooling in other cities and corridors?

SLUGGING 2.0

EMAIL BASED DYNAMIC RIDEMATCHING
IN WASHINGTON, D.C.

Two Listservs (that we know of)

- “eSLUG”

- Origin: Navy Yard Area of Washington, D.C.

- Major Employers: U.S. Navy, USDOT, NGIA

- <http://groups.yahoo.com/group/eslug/>

- Destination: “Horner Road” Park and Ride Lot

- “RosslynSlugs”

- Origin: Rosslyn Area of Arlington

- Major Employers: State Department, Gannett Media (USA TODAY)

- <http://finance.groups.yahoo.com/group/RosslynSlugs/?m=0>

- Destination: “Route 17” Park and Ride Lot

Commonalities

- Both Groups Managed by Volunteers
- Unofficial
- Exclusively Used for Afternoon Ridematches
- Motivated by Ability to Use 2 Dedicated HOV lanes on I-95/395

Navy Yard eSLUG System

- <http://groups.yahoo.com/group/eslug/>
- Provides PM Ridematch to Horner Road Park & Ride in Prince William County (24 miles)



Navy Yard eSLUG System

- Founded in August 2002
- 351 Members (as of July 1, 2010)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 2010 | 441 | 321 | 503 | 480 | 474 | 592 | 517 | | | | | |
| 2009 | 447 | 488 | 527 | 555 | 527 | 478 | 536 | 490 | 585 | 501 | 478 | 392 |
| 2008 | 466 | 374 | 361 | 346 | 361 | 425 | 422 | 295 | 469 | 374 | 365 | 406 |
| 2007 | 291 | 263 | 286 | 288 | 376 | 485 | 319 | 437 | 392 | 423 | 389 | 381 |
| 2006 | 434 | 287 | 328 | 293 | 309 | 274 | 276 | 312 | 326 | 324 | 269 | 213 |
| 2005 | 403 | 467 | 450 | 462 | 534 | 632 | 628 | 628 | 572 | 416 | 377 | 300 |
| 2004 | 543 | 552 | 803 | 754 | 549 | 688 | 561 | 574 | 596 | 622 | 462 | 405 |
| 2003 | 329 | 325 | 381 | 364 | 328 | 449 | 436 | 472 | 433 | 495 | 389 | 474 |
| 2002 | | | | | | | | 217 | 238 | 345 | 294 | 261 |

Graphic: Number of Messages Sent to the Listserv Per Month Since Inception

Navy Yard eSLUG System

| From | Subject | Received |
|--------------------------------|--|-----------------------|
| Date: Today | | |
| bill chang | [WNY E-Slug] Have my 4:00 ride to Horner from 300M | Wed 6/30/2010 9:44 AM |
| Centeno, Gilberto CIV NAVAU... | [WNY E-Slug] Still seeking a 3:30 ride to Horner. If you have room, let me know. Thank you! | Wed 6/30/2010 9:44 AM |
| nestoco | [WNY E-Slug] Need a ride to Horner at 4:00-4:15 | Wed 6/30/2010 9:31 AM |
| Coleman, Rachel E | FW: [WNY E-Slug] I HAVE MY RIDE! Seeking a 3:30/4:00 ride to Horner Road (flexible) | Wed 6/30/2010 9:29 AM |
| Ridgway, Phillip [USA] | [WNY E-Slug] Still need a ride, if you have room please email or call RE: Need a ride to Horner Rd today between ... | Wed 6/30/2010 9:19 AM |
| khines09@vt.edu | [WNY E-Slug] Need 1 rider to Horner at 4:00 | Wed 6/30/2010 9:14 AM |
| Will, Alex CIV SEA07, PMS394 | [WNY E-Slug] I have my ride....Need Ride to Horner @ 4:00-4:30 (flexible) | Wed 6/30/2010 8:52 AM |
| Hall, Judith A CTR SEA 05 | I HAVE MY RIDE~~~~~FW: [WNY E-Slug] Ride Needed from WNY to Horner Road 3:00 - 3:15 | Wed 6/30/2010 8:36 AM |
| Markus, Joanne R. | [WNY E-Slug] Still need ride to Horner Rd today between 3-3:30 (Flexible) | Wed 6/30/2010 8:35 AM |
| Centeno, Gilberto CIV NAVAU... | [WNY E-Slug] I need a ride to Horner Rd. at 3:30. If you have room, give me a call or email. Thank you. | Wed 6/30/2010 8:24 AM |
| bill chang | [WNY E-Slug] Need 4:00 ride to Horner from 300M | Wed 6/30/2010 8:21 AM |
| Hall, Judith A CTR SEA 05 | [WNY E-Slug] Ride Needed from WNY to Horner Road 3:00 - 3:15 | Wed 6/30/2010 7:39 AM |
| Will, Alex CIV SEA07, PMS394 | [WNY E-Slug] Need Ride to Horner @ 4:00-4:30 (flexible) | Wed 6/30/2010 7:37 AM |
| Jan.Downing@dot.gov | [WNY E-Slug] Need 3:30 Ride to Horner | Wed 6/30/2010 7:36 AM |
| Ridgway, Phillip [USA] | [WNY E-Slug] Need a ride to Horner Rd today between 3:00 and 3:30 | Wed 6/30/2010 7:33 AM |
| Coleman, Rachel E | [WNY E-Slug] Seeking a 3:30/4:00 ride to Horner Road (flexible) | Wed 6/30/2010 7:32 AM |
| ejones51763 | [WNY E-Slug] I need a ride to Horner Rd. today @ 4:00 | Wed 6/30/2010 7:30 AM |
| Centeno, Gilberto CIV NAVAU... | [WNY E-Slug] Need a ride at 3:30 tor Horner Rd. Call or email. Thank you! | Wed 6/30/2010 7:18 AM |
| Markus, Joanne R. | [WNY E-Slug] Need RIDE to Horner today at 3:30 | Wed 6/30/2010 7:09 AM |
| Centeno, Gilberto CIV NAVAU... | [WNY E-Slug] Looking for a 3:30 ride to Horner. Email or call 202.433.6659. Thank you! | Wed 6/30/2010 6:44 AM |

[WNY E-Slug] Still seeking a 3:30 ride to Horner. If you have room, let me know. Thank you!

eslug@yahoogroups.com on behalf of Centeno, Gilberto CIV NAVAUDSVC [gilberto.centeno@navy.mil]

[Click here to download pictures.](#) To help protect your privacy, Outlook prevented automatic download of some pictures in this message.

Sent: Wed 6/30/2010 9:44 AM
 To: eslug@yahoogroups.com

Typical Daily Emails Sample

These emails were sent as of 9:45 a.m. Wednesday, June 30, 2010

Navy Yard eSLUG System Stats

From 3/29/10 to 6/25/10 (13 Week Period)

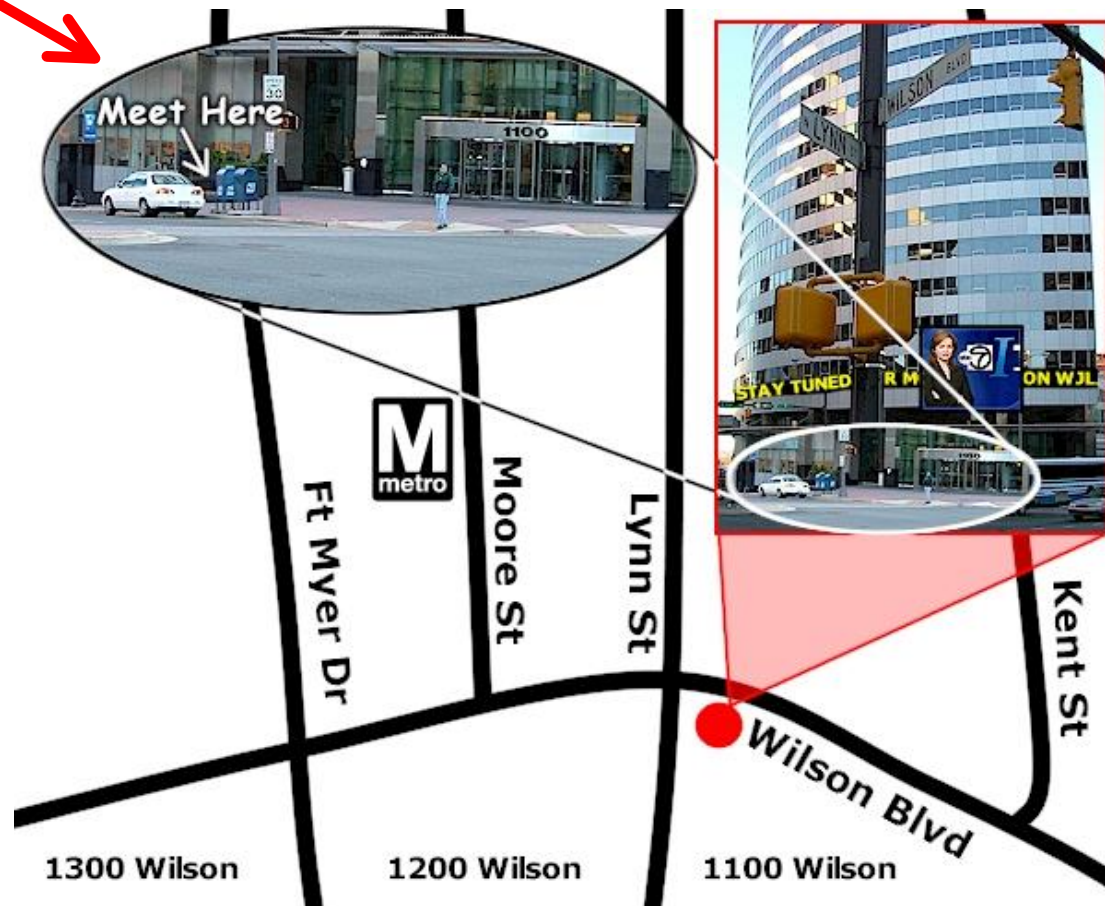
- # of Messages Posted Per Week
 - High: 138
 - Low: 93
 - Average: 115
- Unique Users Per Week
 - High: 38
 - Low: 24
 - Average: 31

Navy Yard eSLUG System Conclusions

- Effective but Inefficient
- Quick and Dirty
- No Official Meeting Place

“RosslynSlugs” System

- <http://finance.grouops.yahoo.com/group/RosslynSlugs/?m=0>
- Pickup Location



“RosslynSlugs” System

- Founded by Computer Programmer Mike Burkhart in the early 2000’s
- Created Yahoo Listserv- Feb, 2004
- Now Managed Through Personal Website www.mikeburkhart.com
- Serves Route 17 Park & Ride in Stafford County (45 miles, one way)

“RosslynSlugs” System

- How it Works...
- Participants Log-In to www.mikeburkhart.com

Michael G. Burkhart
Web Application Developer

Using Microsoft Technology!

Building Software that is Creative, Productive, and Easy to Use

Log In

NOTE: You will be logged out after 20 minutes of inactivity...

--- BIO ---

Mike started programming on a Time Share mainframe computer at age 15. The son of a programmer and mathematician, Mike immediately found his niche. At the computer programming contest at Southern Methodist University his senior year in High School, he beat out his school's valedictorian and placed in the top 8% of the contestants.

At the age of 19, while working at Texas Instruments, he starting programming practical applications that streamlined clerical procedure and made solving mathematical formulae easier for the engineering staff.

In addition to his natural programming abilities, Mike also has a strong background in art. An accomplished, award-winning photographer, he prides himself in developing software that's both easy to look at and easy to use. His programs have a natural flow to them, enabling new users to become proficient quite rapidly. Extra steps are taken so that redundant tasks are "learned" by the software and offered as shortcuts to users in the future.

Mike is currently working as a senior web developer for one of the bureaus of the U.S. Department of State in Washington, DC.

To reach Mike, please e-mail him at Contact@MikeBurkhart.com.

[Print Resume](#) [See Schedule of Classes that Mike is Teaching](#)

RideMatch
CLICK HERE
to request a new web account

“RosslynSlugs” System

- Daily Ride Request Page

Washington Slug RideMatch
Self-Service Website
Rosslyn to Rt.17 Stafford

Partnered with **Slug-Lines.com**

Providing a Commuting Alternative on Federal Work Days

Hello Marc Oliphant! [Edit](#) [Refresh Screen with latest information](#)
You have not yet submitted a request for today.

In-depth Virginia Tech Masters Thesis (1.5 MB) on Slugging by Marc Oliphant with **supporting data** (372 KB)

Reuters story: For some in Washington, commuting's a slug-fest

Free Lance-Star story: **UPDATE on status of High Occupancy Toll lanes (January 29, 2008)**

Today I am a **Rider**

Requested Time Range

Absolute Earliest Time: (optional)

Preferred Early Pickup Time: (format -- h:mm)

Preferred Late Pickup Time: (format -- h:mm)

Absolute Latest Time: (optional)

Cell Phone: Work Phone:

Email Address(es):
(Separate email addresses with commas)

Text Msg Address:
(Only short match messages sent to wireless devices)

Public comments for others matched with you:

Private rider comments to the Ride Coordinator:

Email Options:

| | | | |
|---|-------------------------------------|------------------------------|-------------------------------------|
| Use HTML Format: | <input checked="" type="checkbox"/> | Receipt for Today's Request: | <input checked="" type="checkbox"/> |
| Send Summaries: | <input checked="" type="checkbox"/> | Include Driver Details: | <input checked="" type="checkbox"/> |
| Include Contingency Plans: | <input checked="" type="checkbox"/> | Include Points: | <input checked="" type="checkbox"/> |
| Send me Summaries even when I'm not on that day's list: | <input checked="" type="checkbox"/> | | |

LOG OUT

Change Pwd

FAQ

Phone List

Car Photos

Donate
Why Donate?

Active Members: 359
Number of people having donated so far: 22

“RosslynSlugs” System

- Daily Ride Request Page (Detail View)

Today I am a Rider ▼

Requested Time Range

Absolute Earliest Time: (optional)

Preferred Early Pickup Time: (format -- h:mm)

Preferred Late Pickup Time: (format -- h:mm)

Absolute Latest Time: (optional)

Cell Phone: Work Phone:

Email Address(es):
(Separate email addresses with commas)

Text Msg Address:
(Only short match messages sent to wireless devices)

Public comments for others matched with you: ▲▼

Private rider comments to the Ride Coordinator: ▲▼

Email Options:

| | |
|---|--|
| Use HTML Format: <input checked="" type="checkbox"/> | Receipt for Today's Request: <input checked="" type="checkbox"/> |
| Send Summaries: <input checked="" type="checkbox"/> | Include Driver Details: <input checked="" type="checkbox"/> |
| Include Contingency Plans: <input checked="" type="checkbox"/> | Include Points: <input checked="" type="checkbox"/> |
| Send me Summaries even when I'm not on that day's list: <input checked="" type="checkbox"/> | |

[CLICK HERE to Submit Request for Wednesday](#)

Don't forget to click this button after you fill in your information **BEFORE 3PM**

[Click here to update your information WITHOUT submitting a request](#)

DRIVERS

| ID | Pickup | Min | Max | Car | Comments |
|-------|--------|-----|-----|----------------------------|---|
| BillC | 4:45 | 2 | 2 | silver 2007 Volkswagen GTI |  |

-- THE FOLLOWING IS FULLY IMPLEMENTED --
YOU MAY START ADDING PEOPLE...

Do not match me with the following...

Select ▼
at any time ▼
▼
Add

“RosslynSlugs” System

Emails:

- Morning Reminder
- Personal Reminder (if you have been matched)
- Final Daily Summary

“RosslynSlugs” System

- System is Highly Automated
- Final Carpool Match is Hand Approved by Mike Burkhart (System Administrator) Each Afternoon.
- Takes Admin. 15 Minutes Total Per Day (For Matching/Emailing, Etc.).
- Estimates \approx 40-50 Unique Participants Per Week (Depending on Season)

PART III: Moving Forward

Supply Side Interventions

i.e. How to Supply More Ridesharing Connections

| | |
|-----------------------|--|
| Technology | Smart Device (phone/PDA) Applications |
| | Hardware (RFID Cards, transmitters, receivers) |
| | Ridematching Databases |
| | Social Networking Applications |
| | List Serves (Email) |
| Infrastructure | Designated Commuter Parking Lots |
| | Signage Designating Line Locations |
| | Funding to Disseminate Information & Marketing |
| | Direct Access from Commuter Lots to HOV Lanes |
| | Convenient Backup Transportation Options |

Demand Side Incentives

i.e. How to Increase Ridesharing Participation

| | | | |
|--|---|-----------------------------|--|
| Incentives For Ridesharing | Parking Incentives for HOV | Preferred locations | |
| | | Free/reduced fees, cash-out | |
| | Designated HOV lanes to create time savings | | |
| | Tolls reduced or eliminated for HOV vehicles | | |
| | Subsidies / tax write-offs for carpooling costs | | |
| | Prizes, drawings, etc (NuRide model) | | |
| Disincentives For SOV | Reduce non-HOV lanes | | |
| | Toll SOV's during peak hours | | |
| | Existing barriers | Congestion | |
| | | Long commutes | |
| | | Cost to own/operate vehicle | |
| | Fuel price increases | | |
| Targeted taxation, Pay As You Drive (PAYD) | | | |

What Slugging Can Teach Us About Implementing Technology Facilitated Dynamic Ridesharing

- Strong Incentives
- Convenience
- Flexibility
- Critical Mass
- Framework
- Wide & Varied Participation
 - i.e. Not Just One Employer

Dynamic Ridesharing's Vulnerabilities

- Safety
 - Slugging/Casual Carpooling : Quite Safe
 - Caution & Common Sense Prevail
- Liability
 - Slugging/Casual Carpooling: Nobody Is In Charge
 - Organized Dynamic Ridesharing: Raises Questions
- Incentives- CRITICAL!
 - Direct Funding, Political Will, Tax Policy, HOV/HOT

Contact

- Andrew Amey
 - amamey@alum.mit.edu

- Marc Oliphant
 - marc.oliphant@navy.mil
 - or marcoliphant@hotmail.com

Thanks to: American Planning Association's Transportation Planning Division, APA Utah Chapter, Dr. Evans Cowley & Cody Price of Ohio State, & Naval Facilities Engineering Command

Dynamic Ridesharing: Carpooling Meets the Information Age

Andrew Amey

Student Researcher, MIT Real-Time Rides Research Project

American Planning Association Monthly Webcast

August 5, 2010



Outline

- MIT's Current Research on "Dynamic Ridesharing"
 - Goals / Activities
- Outlining "Dynamic Ridesharing" (Technology Focused)
 - Technology
 - Selection of Providers
 - Opportunities
 - Challenges
 - Current Activities
- Research Recommendations
- MIT's Next Research Steps
 - Rideshare Viability at MIT
 - Design a "Real-Time" Trial for MIT/Kendall Square



MIT “Real-Time” Rides - Goals

- Scan the Rideshare ‘Market’ and Identify New Trends and Innovative Service Providers
- Identify & Categorize Existing Rideshare Challenges
- Evaluate “Real-Time” Ridesharing
 - Which Challenges Does it Address? Which does it Exacerbate?
 - How have Previous “Real-Time” Initiatives Fared?
- Encourage Greater Interaction between Rideshare Stakeholder Groups



MIT “Real-Time” Rides - Activities

- Initially, a Two-year Research Project
- Compiled a List of Major Rideshare Service Providers
- Interviewed 15 Rideshare Stakeholders
- Organized the Real-Time Rides Workshop (Apr. 2009)
- Developed a Website to Share Research results (www.realtimerides.org)
- Designed a Model to Estimate Rideshare Viability at MIT and the VOLPE Transportation Center
- Proposed a Preliminary Design for an MIT Rideshare Trial



Defining “Real-Time” Ridesharing

- “A single, or recurring rideshare trip with no fixed schedule, organized on a one-time basis, with matching of participants occurring as little as a few minutes before departure or as far in advance as the evening before a trip is scheduled to take place”
- Key Aspects of the Definition
 - Occasional Nature of the Trips
 - Differing Trip Arrangement Timeframes



Some Enabling Technologies & Features

- Enabling Technologies
 - Smart Phones
 - User-Friendly Interfaces - iPhone, Android (Apps)
 - Constant Data Network Connections
 - GPS-Functionality
 - Ride Matching & Routing Algorithm
 - Database

- Features
 - Social Network Integration (Facebook, Institution)
 - Stored User Profiles
 - Rideshare User Evaluation (eBay)
 - Automated Financial Transactions
 - Incentives / Loyalty Rewards



Providers Interviewed for our Research

- Avego (<http://www.avego.com/st/index.php>)
- Carticipate (<http://www.carticipate.com/>)
- Commuter Connections - DC (<http://www.mwcog.org/commuter2/>)
- GoLoco (<http://www.goloco.org/>)
- Goose Networks (<http://www.goosenetworks.com/home>)
- Liftshare UK (<https://www.liftshare.com/uk/>)
- MassRides - MA (<http://www.commute.com/>)
- NuRide (<http://www.nuride.com>)
- PickUpPal (<http://www.pickuppal.com>)
- Piggyback Mobile (<http://www.piggybackmobile.com/>)
- Rideshare Online - WA (<http://www.rideshareonline.com/>)
- Zimride (<http://www.rideshareonline.com/>)

Major Rideshare Challenges

- Social/Behavioral
 - “Stranger Danger”
 - Lack of Mutual Benefit
 - Service Reliability
 - Schedule Flexibility
 - Consistency of Expectations
- Institutional
 - Public/Private Sector Roles
 - Business Model
- Economic
 - Little Incentive to Maximize Occupancy
 - Imperfect Information
 - High Transaction Costs
- Technological
 - Measuring Successful Trips
 - Common Database Specification

Benefits & Drawbacks of “Real-Time”

- Social/Behavioral
 - “Stranger Danger”
 - Lack of Mutual Benefit
 - Service Reliability
 - Schedule Flexibility
 - Consistency of Expectations
- Institutional
 - Public/Private Sector Roles
 - Business Model
- Economic
 - Little Incentive to Maximize Occupancy
 - Imperfect Information
 - High Transaction Costs
- Technological
 - Measuring Successful Trips
 - Common Database Specification



Benefits & Drawbacks of “Real-Time”

- Social/Behavioral
 - “Stranger Danger”
 - Lack of Mutual Benefit
 - Service Reliability
 - Schedule Flexibility
 - Consistency of Expectations
 - Data Privacy
- Institutional
 - Public/Private Sector Roles
 - Business Model
- Economic
 - Little Incentive to Maximize Occupancy
 - Imperfect Information
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 - Measuring Successful Trips
 - Common Database Specification

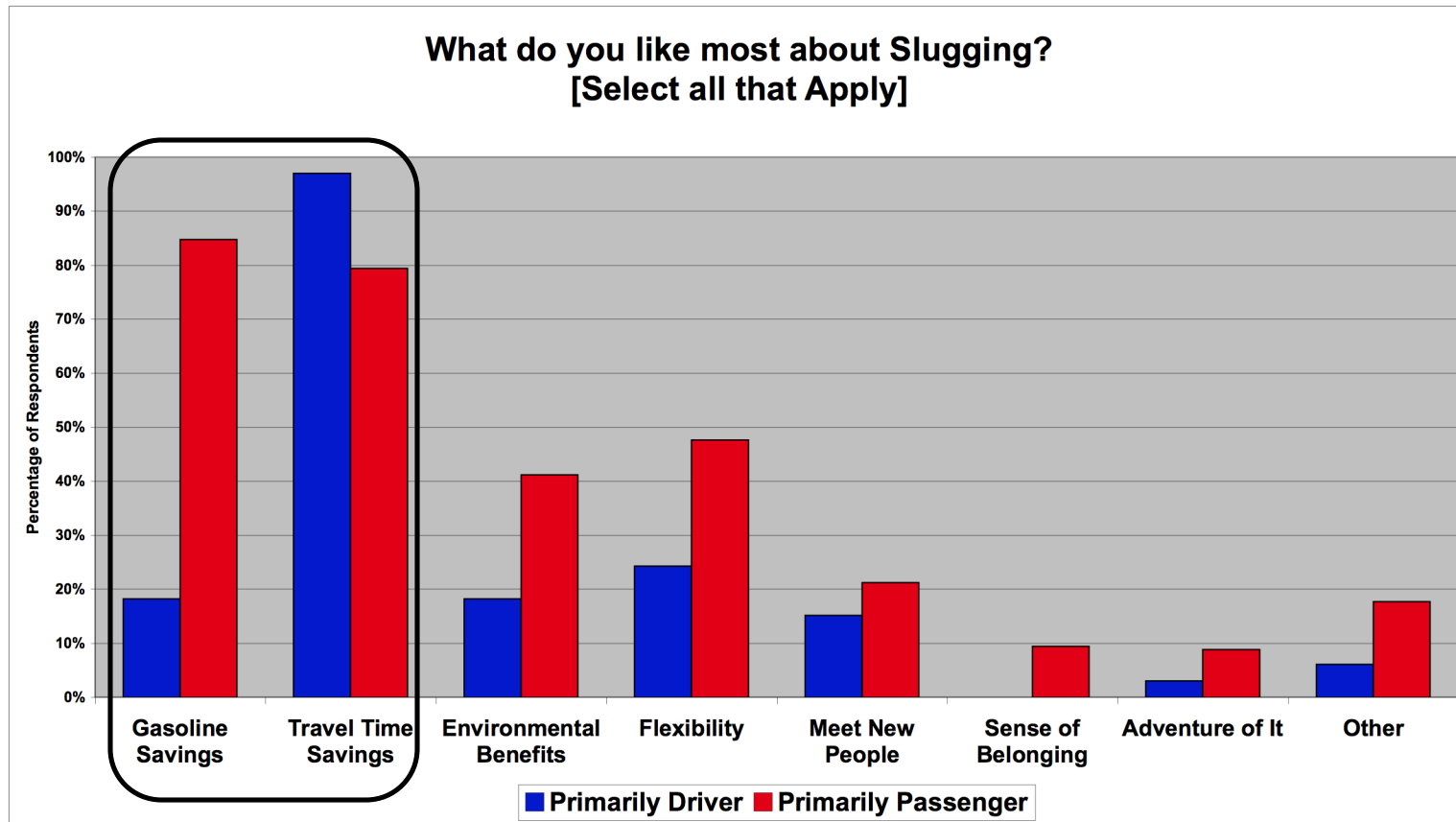


Flexibility vs. Reliability...

- Berkeley Research - Need for “Flexible Reliability” (Deakin, Frick & Shively, 2010)
 - Focus Group held with 60 participants to discuss Dynamic Ridesharing
 - Less than 5 interested in arranging ‘last minute’, or ‘instant’ trips. Not perceived as reliable enough.
 - Greater Interest in Occasional Trips, Booked in Advance, with Trip Match Confirmation at Specific Time
- Dynamic Ridesharing Enables Multiple Trip Types
 - Instant Trips (One-Time, Short Lead-Time)
 - Occasional, Pre-Planned (One-Time, Medium Lead-Time)
 - Traditional, Long-Term (Recurring, Planned in Advance)



...but Time & Money are Most Important



3rd

Source: Marc Oliphant Slug Line Survey, 2008



Current Activities

- Service Upgrades
 - Myriad of Private Providers
 - Rideshare Online (2009/2010)
 - MassRides (2010?)
- Demonstrations / Pilots
 - WSDOT Dynamic Rideshare Pilot (July 2010)
 - 6-Month Trial, Fall 2010, SR 520 Corridor in Seattle
 - Avego, Univ. of Washington, Nelson/Nygaard
 - Recruitment focused on large employers, TMAs
 - Driver History, Criminal History & Sex Offender Registry Checks
 - FHWA Value Pricing Grant - Santa Barbara Dynamic Ridesharing (Aug 2010)
 - Announced Very Recently, Santa Barbara Community Environmental Council
 - Combines Dynamic Ridesharing with Evaluation of Pricing



Key Research Recommendations

- Focus on Large Employers
 - Greatest Peak Period Congestion Reduction Potential
 - “Many-to-Many” to “Many-to-One” Matching Relationship
 - Social Network (Safety/Liability) Benefits
- Integrate Multi-Modal Travel Information
 - In general, people are becoming more multi-modal (+30% of Staff & Faculty use Multiple Modes to Commute to MIT in a Single Week)
 - Ridesharing, in particular, relies heavily on transit presence (DC, SF)
- Personalized Travel Planning
 - Family Members are the Largest Group of Participants
 - ~10% VMT Reduction from More Targeted Travel Information (Australia, Portland, OR)

Are Commute Trips Important?

- Why focus on Journey-to-Work Trips when they are only 1 in 6 of Total Trips Made?
- Insufficient Free Capacity to make a Difference?
- What are we trying to Improve through Ridesharing?
- Commute Trips are 16% of Person Trips, but...
- ...22% of Vehicle Trips (heavier reliance on auto)...
- ...27% of VMT (longer trips)...
- ...33% of Empty Seat-Miles (lower occupancies), and...
- ...46% of Peak Period Empty Seat-Miles!
- Do we have a Free Capacity Problem??



Next Steps at MIT

- Refine Rideshare Viability Estimates at MIT
 - Conducted a Preliminary Rideshare Viability Analysis among MIT Staff & Faculty
 - Modeling suggests that 50% to 77% could rideshare on a daily basis without significant changes in behavior. Max Effort VMT reductions were 9% - 27%.
 - Driver incurs no more than a 5 minute addition to their commute, 83% of matches require less than a 2 mile travel deviation
 - Follow Up will include Focus Groups with potential Participants
- Preparation for an MIT “Real-Time” Trial
 - Application for MIT Community Members
 - Integrated Multi-Modal Information (MBTA, Shuttles, etc.)
 - Parking Policies / Transit Subsidies
 - Possible Expansion to Other Kendall Square Organizations



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MIT “Real-Time” Rideshare

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