# Mega Commuting in the U.S.

## Time and Distance in Defining Long Commutes using the 2006-2010 American Community Survey

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## Introduction

With a changing employment landscape, some U.S. commuters are travelling long times and distances to get to work. One study by Moss and Qing (2012) noted that "super" commuters are on the rise in the U.S. where a super commuter is defined as working in the central county of a metropolitan area, but lives beyond the boundaries of that metropolitan area, commuting long distances by air, rail, car, bus, or some combination. This is a definition based on distance. According to the U.S. Census Bureau (2005), extreme commuters are also growing, defined as workers who travel 90 minutes or more to work, one-way – a definition based on time. As part of improving our understanding of the relationship of time and distance in a commute, this analysis looks at workers who deal with both extremes.

Using the 2006-2010 5-year American Community Survey (ACS), we examine the spatial patterns, demographic, and transportation characteristics of commuters who travel 50 or more miles AND 90 minutes or more to get to work, "mega" commuters, utilizing the mean travel times and average block-to-block distances traveled for individual home-to-work flows.

The analysis

- Evaluates the national, county-level and metropolitan area patterns of "mega" commuting
- Examines time and distance, first, independently, and then jointly
- Analyzes county-to-county flow pairs with the highest average distance and time; noting counties with the highest distance traveled, and extremes in inflow and outflow.
- Maps mega commutes by counties and metropolitan areas
- Examines the relationship to travel mode choice and demographic characteristics such as, age, marital status, presence of children, wages, gender, and occupation
- Compares Washington, DC, mega commuters to all other commuters and their national counterparts .

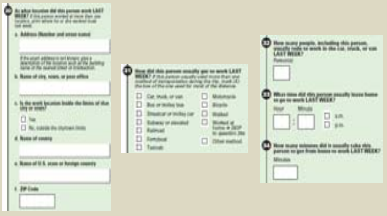
## Data and Methodology

The ACS is an ongoing survey conducted annually by the U.S. Census Bureau that captures changes in the socioeconomic, housing, and demographic characteristics of communities across the United States and Puerto Rico. The ACS questions related to travel focus solely on commuting and do not ask about leisure travel or other non-work trips. Respondents answer questions about where they live, where they work, what time they leave home for work, the means of transportation used to get there, the number of workers riding in a car, truck, or van, and how long, in minutes, it takes to travel to work (see ACS transportation-related questions below). The full addresses of a worker's residence and workplace are collected in the survey. They are each geocoded to the place-level, and the block-level where possible.

We use both travel time and distance to analyze commuting patterns for full-time workers in the U.S. We obtain travel time from reported values on the ACS (see Question #33). The ACS does not ask about travel distance to work. To obtain travel distance, we utilize geocoded residence and place of work information from the 2006-2010 5-year ACS to calculate the Census block centroid -to-Census block centroid distance variable for each individual home-to-work flow pair based on Euclidean distance (i.e., "as the crow flies"). From here, we delineate workers who commute 90 minutes or more and 50 miles or more as "mega" commuters, workers who commute 90 minutes or more as "extreme," and workers who commute 50 miles or more as "long-distance."

**Definitions**

**Extreme Commuting**: Traveling 90 or more minutes to work.
**Long-distance Commuting**: Traveling 50 or more miles to work.
**Mega Commuting**: Traveling 90 or more minutes and 50 or more miles to work.



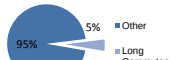
```
Straight Line Distance = 3949.99 * arcos(sin(LAT_res) *
sin(LAT_mig) + cos(LAT_res) * cos(LAT_mig) *
cos(LONG_mig - LONG_res))

Inflated Distance = Straight Line Distance * 1.25
```

## The Basics

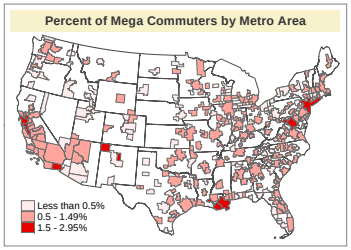
**Basic Statistics for Commutes**

| | Mean Travel Time (in min) | Mean Distance | No. of Commuters (in thousands) | % Drove Alone | % Public Transportation | % Carpool | % Nonwhite | % Hispanic |
|---|---|---|---|---|---|---|---|---|
| All | 26.1 | 18.8 | 71,203 | 81.9 | 5.0 | 9.5 | 22.4 | 12.9 |
| Extreme | 117.6 | 70.9 | 1,714 | 59.0 | 25.3 | 11.8 | 27.4 | 12.8 |
| Long-distance | 61.3 | 247.3 | 2,242 | 75.9 | 4.9 | 13.3 | 18.1 | 11.1 |
| Mega | 119.0 | 166.4 | 587 | 68.3 | 11.3 | 14.3 | 19.0 | 10.4 |

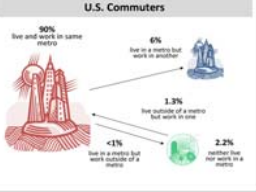



Of the 5% that are long commutes:

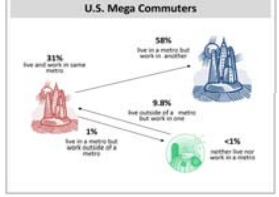

**Percent of Mega Commuters by Metro Area**




**U.S. Commuters**




**U.S. Mega Commuters**




## Top Tens

| Metro Areas with the Highest Mean Travel Time[1] | Percent Mega Commutes |
|---|---|
| San Francisco-Oakland-Fremont, CA | 2.06 |
| New York-Northern New Jersey-Long Island, NY-NJ-PA | 1.90 |
| Washington-Arlington-Alexandria, DC-VA-MD-WV | 1.89 |
| Trenton-Ewing, NJ Metropolitan Statistical Area | 1.40 |
| Los Angeles-Long Beach-Santa Ana, CA | 1.25 |
| Boston-Cambridge-Quincy, MA-NH | 1.17 |
| Atlanta-Sandy Springs-Marietta, GA | 0.90 |
| Chicago-Joliet-Naperville, IL-IN-WI | 0.81 |
| Philadelphia-Camden-Wilmington, PA-NJ-DE-MD | 0.80 |
| Seattle-Tacoma-Bellevue, WA | 0.57 |

| Metro Areas with Highest Mean Distance[2] | Percent Mega Commutes |
|---|---|
| San Francisco-Oakland-Fremont, CA | 2.06 |
| San Jose-Sunnyvale-Santa Clara, CA | 1.90 |
| Salinas, CA | 1.23 |
| Gulfport-Biloxi, MS | 0.94 |
| Hinesville-Fort Stewart, GA | 0.93 |
| Lawton, OK | 0.82 |
| Fayetteville, NC | 0.73 |
| Brunswick, GA | 0.64 |
| Anchorage, AK | 0.25 |
| Honolulu, HI | 0.08 |

**Top 10 Mega County Commuter Flows by Frequency[3]**

| State | County | POW State | POW County | Mean Travel Time | Mean Distance |
|---|---|---|---|---|---|
| California | San Bernardino County | California | Los Angeles County | 104.2 | 68.0 |
| California | Riverside County | California | Los Angeles County | 109.3 | 77.4 |
| New York | Suffolk County | New York | New York County | 114.2 | 64.5 |
| Connecticut | Fairfield County | New York | New York County | 104.2 | 60.4 |
| New York | Orange County | New York | New York County | 110.7 | 62.3 |
| New Jersey | Mercer County | New York | New York County | 104.6 | 59.3 |
| California | Riverside County | California | San Diego County | 102.3 | 75.5 |
| New York | Dutchess County | New York | New York County | 116.8 | 76.3 |
| California | San Joaquin County | California | Alameda County | 104.1 | 61.5 |
| Pennsylvania | Monroe County | New York | New York County | 120.5 | 91.1 |

**Mega Commuting Flows: Top Sending and Receiving Counties**


**Alaska[4]**
POW state with the highest mean distance.

**Cook Co., IL**
POW county among the highest number of mega receiving flows.

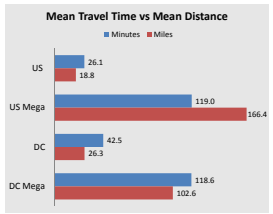
**Houma-Bayou Cane-Thibodaux, LA[5]**
POW metro area with the highest percent of mega commuters.

**DC[6]**
POW state with the highest mean travel time & percentage of mega commuters.

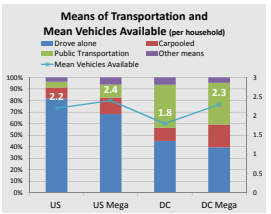
## Nation vs Washington, D.C.

### Transportation Characteristics

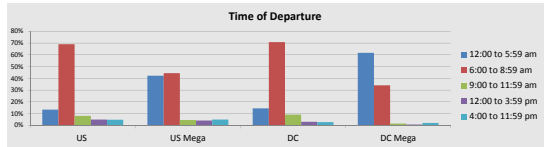
**Mean Travel Time vs Mean Distance**




**Means of Transportation and Mean Vehicles Available (per household)**

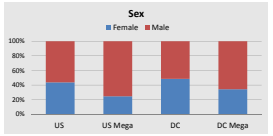



**Time of Departure**

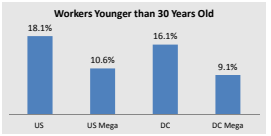



### Socio-economic Characteristics

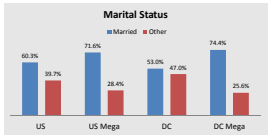
**Sex**



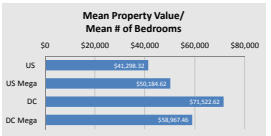

**Workers Younger than 30 Years Old**



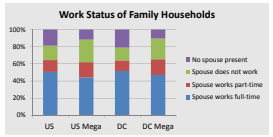

**Marital Status**



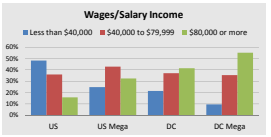

**Mean Property Value/ Mean # of Bedrooms**




**Work Status of Family Households**




**Wages/Salary Income**




### References & Footnotes

Mateyka, P. J., Rapino, M. A., and L. C. Landivar, 2012. "Home-based Workers in the United States: 2010," Household Economic Studies, U.S. Census Bureau, P70-132, October.

Moss, Mitchell L. and Carson Qing, 2012. "The Emergence of the Super-Commuter," Rudin Center for Rudin Center for Transportation, New York University Wagner School of Public Service, February.

U.S. Census Bureau. 2005 (http://www.census.gov/newsroom/releases/pdf/2005-03-30_Commute_extremes.pdf

U.S. Census Bureau. 2006-2010 5-year American Community Survey.

1 Not all metro areas on this list have statistically different mean travel times from those ranked lower. San Francisco, CA, Boston, MA, and, Seattle, WA metro areas have percent mega commuters that are statistically different from all other metro areas on the list at the 90 percent confidence level but not necessarily from metro areas excluded from the list.
2 Anchorage, AK and Honolulu, HI have statistically different mean distances from other metro areas at the 90 percent confidence level, but not from each other. None of the metro areas on the list have percent mega commuters that is statistically different from all other metro areas on the list.
3 San Bernadino Co., CA to Los Angeles Co., CA and Fairfield Co., CT to New York Co., NY have commuter flow counts that are statistically different at the 90 percent confidence level. The flow from San Bernadino Co., CA to Los Angeles Co., CA has a mean travel time that is statistically different from the next flow and a mean distance that is statistically different from the other flows in the table at the 90 percent confidence level.
4 Alaska as a POW state has the statistically highest mean distance, except for Hawaii, at the 90 percent confidence level.
5 Statistically different from other POW metro areas by percent mega commuters, except Santa Fe, NM metro area, at the 90 percent confidence level.
6 Statistically different from other place of work states for mean travel time and percentage of mega commuters at the 90 percent confidence level.
7 Statistically different from other place of work states at the 90 percent confidence level.
8 Statistically different from other place of work counties at the 90 percent confidence level.
9 Not statistically different from all other place of residence states for mega commuters.
10 Statistically different from other place of work CBSAs at the 90 percent confidence limit, except for the New York-New York-Northern New Jersey-Long Island, NY-NJ-PA metropolitan statistical area.
11 The number of mega commuters from Spotsylvania County, VA into Washington, DC is statistically different at the 90 percent confidence level from other county flows into Washington, DC.
12 Statistically significant at the 90 percent confidence level for full-time commuting US workers versus their mega counterparts.

## Study Area: Washington, D.C.

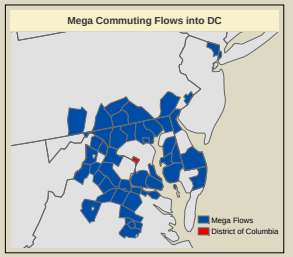
Washington, D.C. is located in the Mid-Atlantic region of the U.S. It is an ideal study area for extreme commuting because respondents have consistently reported long commutes in terms of time and it has a variety of transportation modes. Additionally, Washington, D.C. has a large geographic commuting shed due to the consistent and stable job opportunities located in the metro area and its distinct role as our nation's capital.

This research has shown that the District of Columbia

- Highest percent of mega commuters for place of work state[7] (2.15%)
- 4th highest number of receiving mega commuters for place of work counties[8]
- Among the highest average distance and time for place of residence state for mega commuters[9]
- Highest mean travel time for place of work CBSA (along with the NYC metro area) for all full-time working commuters[10]

In the graphs to the left we compared characteristics for all commuters and mega commuters in D.C. to national averages. There are significant differences among the groups.

The map of the mega commuter flows into D.C. shows a ring around the District of Columbia encompassing counties in Maryland, Pennsylvania, Virginia, West Virginia, and New Jersey. These flows contain at least 3 unweighted cases. Counties among the top five county mega commuter flows into the District of Columbia in terms of commuter frequency are: Spotsylvania Co., VA, Frederick Co., MD, Baltimore Co., MD, Stafford Co, VA, and Berkeley Co., WV.[11] Each of these flows have relatively high proportions of carpooling and public transportation usage but each county varies on the percent of mega commuters by means of transportation.




**Top 5 Mega Commuter County Flows into DC by Means of Transportation**

| State | County | Mode of Transportation | Percent Mega | Percent of Mode Share |
|---|---|---|---|---|
| Virginia | Spotsylvania County | Drove alone | 51.2 | 24.7 |
| | | Carpooled | 38.5 | 28.1 |
| | | Public Transportation | 84.0 | 47.2 |
| Maryland | Frederick County | Drove alone | 21.8 | 35.3 |
| | | Carpooled | 30.3 | 14.7 |
| | | Public Transportation | 49.3 | 50.0 |
| Maryland | Baltimore County | Drove alone | 18.5 | 43.1 |
| | | Carpooled | 15.8 | 5.9 |
| | | Public Transportation | 27.1 | 51.0 |
| Virginia | Stafford County | Drove alone | 14.0 | 32.7 |
| | | Carpooled | 9.2 | 24.5 |
| | | Public Transportation | 39.6 | 42.9 |
| West Virginia | Berkeley County | Drove alone | 73.7 | 35.9 |
| | | Carpooled | 100.0 | 10.3 |
| | | Public Transportation | 100.0 | 53.8 |

## Results and Conclusions

- Mega commuters are more likely to depart for work before 6 am, be male, older, married, make a higher salary, and have a spouse that does not work.[12]
- Mega commuters are more likely to travel to another metro or micro area for work, as opposed to the one in which they reside.[12]
- Mega receiving flows are geographically concentrated in populous cities, while sending flows are more geographically dispersed.
- D.C. mega commuters have different characteristics from D.C. commuters as a whole, as well as their U.S. counterparts.

Time and distance are two different measures for examining commutes. Each paints a different picture regarding the obstacles along the journey to work. Extreme times tend to highlight areas that tend to have more density and therefore, congestion, while areas with long distance travel may be in more remote areas of the U.S. with geographically clustered employment opportunities.

Additionally, further research is needed to better understand whether mega commuting is a choice or a necessity for workers. Mega commuters may choose to commute to an onsite location part of the week and work from home other days (see Mateyka, Rapino, and Landivar 2012). Or, mega commuters may be a result of the changing employment landscape, meaning workers have to travel further and longer to existing job opportunities.



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