Mode Choices of Millennials

How Different? How Enduring?

A study by Robert Case and Seth Schipinski

Presented to TTAC

By Robert Case, PhD, PE

July 1, 2015

the heartbeat of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

History

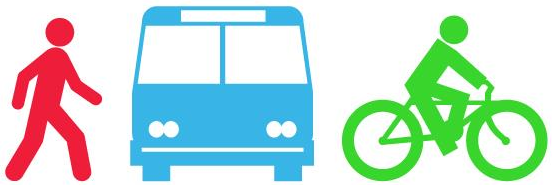
- HRTPO has a 50 year history of supporting active transportation—bike and walk—and public transportation.
  - HRTPO Board allocated **$86m** toward Norfolk LRT
  - HRTPO staff has prepared **bike and ped plans**
  - HRTPO staff is preparing **Active Trans webpages**
  - Since 1992, HRTPO Board has allocated **to transit**:
    - approx. **30% of RSTP**
    - approx. **35% of CMAQ**

Impetus

- Recent Reports:

  "Millennials use alternative modes."

  - Born 1982 thru 2000
  - Bike, walk, transit



- Ensuing Question:

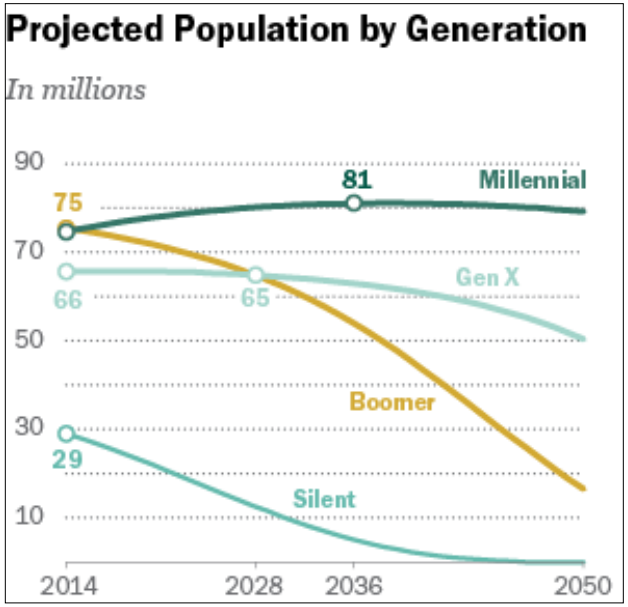
  "Given these Millennial reports, should we plan for **much higher demand** for alt trans in the future?"

  – Two Precedent Questions:

  1. "How different are Millennials?"
  2. "How enduring will usage of alt trans be?"

1. How Different?

Millennials are the **largest** generation.



Projected population by generation, U.S.
Note: *Millennial* refers to those aged 18-34 as of 2015.

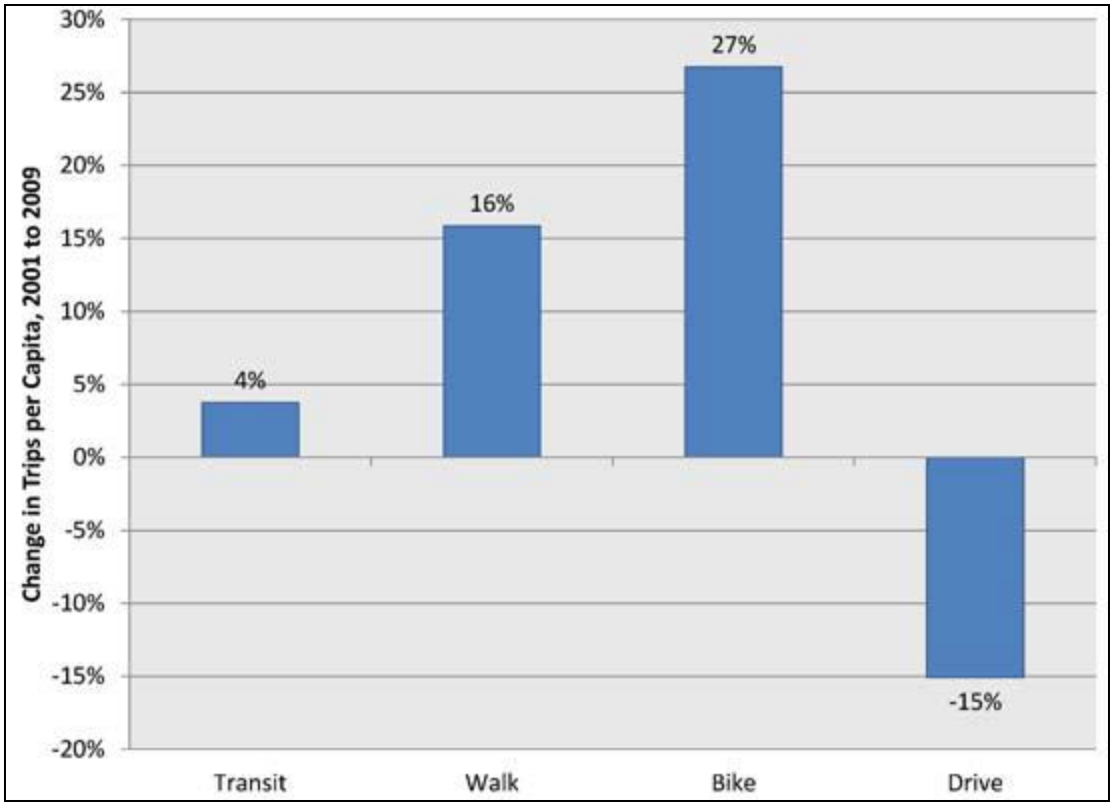
Source: Pew Research Ctr. tabulations of U.S. Census Bureau population projections released Dec. 2014

1. How Different?

In 2009,

16-34 year-olds favored **alt trans** more than

16-34 year-olds did in 2001.*



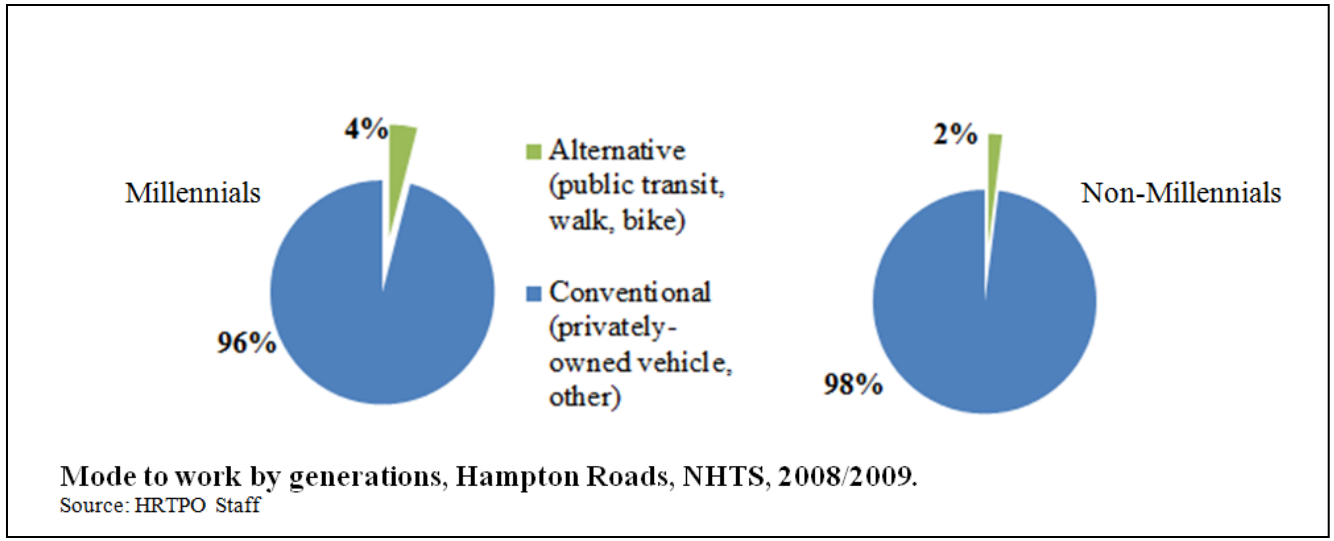
Change in Number of Trips per Capita among 16 to 34 year-olds, 2001 to 2009

Source: "Millennials in Motion", US PIRG, 2014, p. 11 (using NHTS data)

* In both 2001 and 2009, 16-34 year-olds were a mixture of Gen X and Millennials.

1. How Different?

HRTPO analysis of unweighted 2008/09 NHTS data:
Millennials in Hampton Roads use alt trans
twice as frequently as **Non-Millennials**.



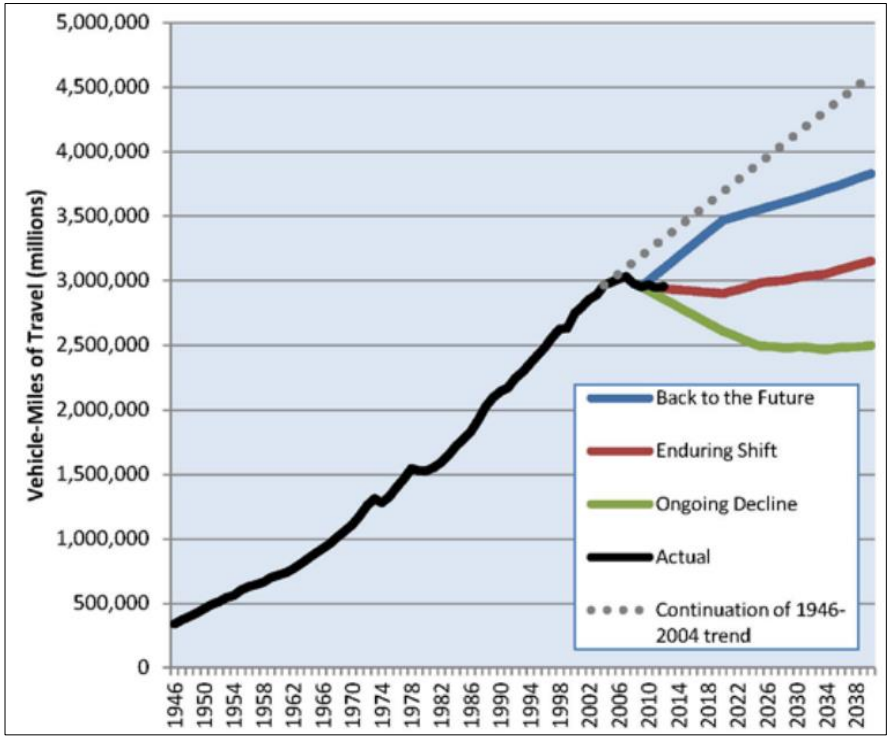
Mode to work by generations, Hampton Roads, NHTS, 2008/2009.
Source: HRTPO Staff

Note: unweighted data

2. How Enduring?

As they age? As economy changes? Next generations?

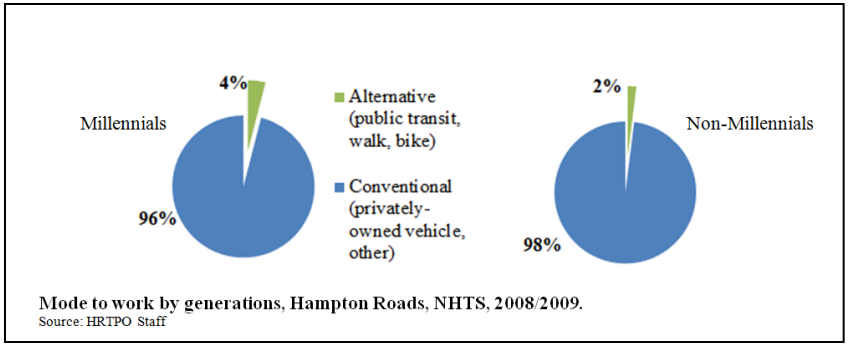
In the literature, the **future** of VMT —and alt trans—is **unclear**.



Vehicle-miles traveled under three scenarios, U.S.
Source: A New Direction (U.S. PIRG, 2013) (5, p. 30)

2. How Enduring?

- 16-27 year olds used alt trans **twice as frequently** as others in 2009 in HR.



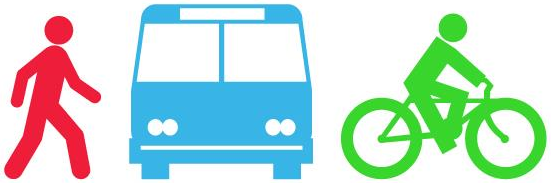
Note: unweighted data

- Is that difference due to:
  - Their **Age**? (will change)
  - Their **Generation**? (**won't change**) **key to the future**
  - Their **Income**? (will change)

Solution

Multiple Regression Analysis

- Performance Measure:
  - usage of **alt trans** (yes:1, no:0)



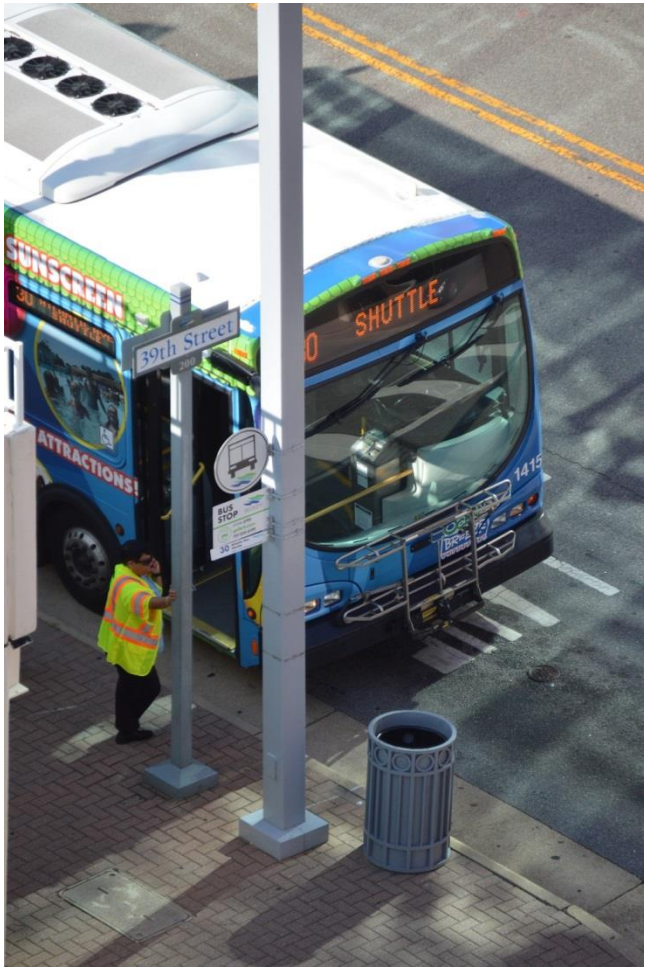
- Factors related to mode choice:
  - Age
  - Generation
  - Era (multiple eras needed to separate age and generation)
  - Gender
  - Income
  - Location (degree of urbanization)
- Type: Logistic (due to performance measure being binary [0,1])

Data

- National Household Travel Survey (NHTS)
  - Owner: USDOT
  - Data Sets: 1983, 1995, 2009 (for eras)
  - Coverage: U.S. (not enough HR data in pre-2009 surveys)
  - Records: 22,483 person records

Data

- Eras:
  - "Reagan Era" (1983)
  - "Clinton Era" (1995)
  - "Bush/Obama Era" (2008/2009)
- Generations
  - Lost Generation (b. 1883-1900) thru…
  - Millennial Gen. (b. 1982-2000)
- Location
  - MSA Status
    - Not in MSA
    - In MSA < 1 million
    - In MSA 1-3 million
    - In MSA 3+ million
  - Urbanized Area Status
    - In Urbanized Area
    - Not in Urbanized Area
- Mode to Work:
  - **8%** used alternative transportation (unweighted)
    - **0.5% bike**
    - **3.0% walk**
    - **4.6% public trans**

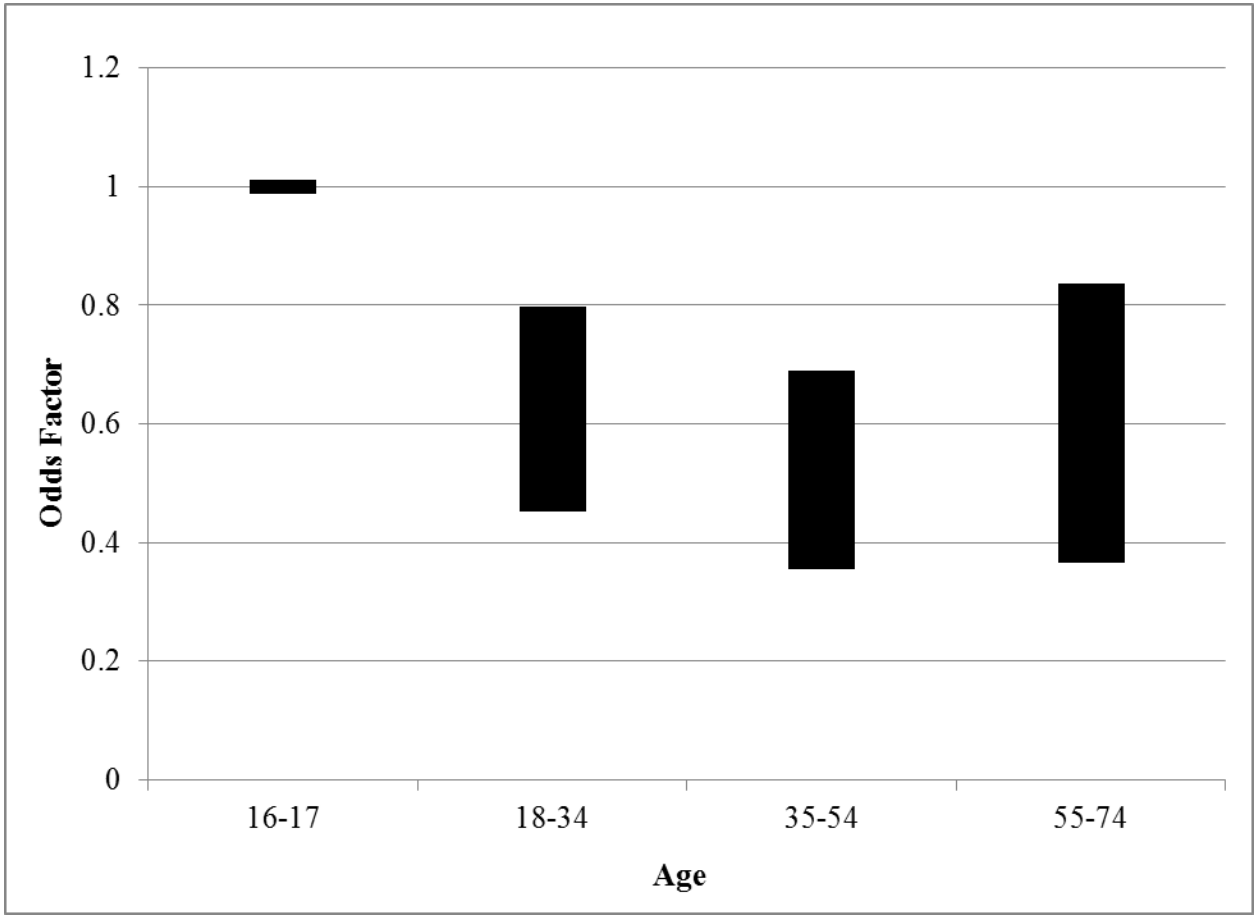


Regression Results

- Usage of alt trans being binary (0,1)
  - regression results are "odds factors".
- "Odds":
  - e.g. 4:1 odds (no:yes) -> 1yes/5total or 20% chance
- "Odds Factors" **increase odds**
  - e.g. (4:1 odds) * (odds factor 2.0) -> 4:2 odds or 33% chance

Findings

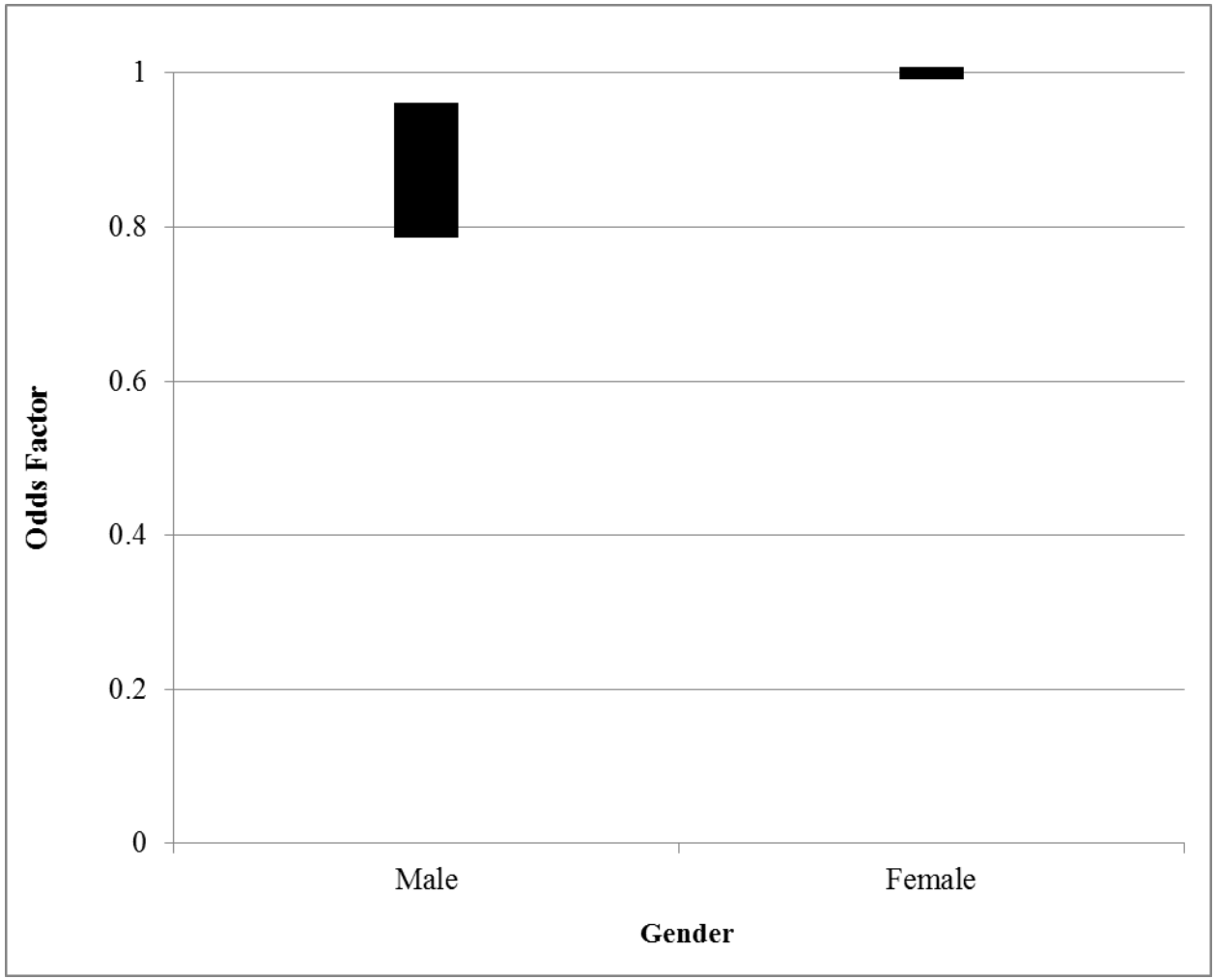
<u>All other things being equal</u> (income, era, generation, etc.), **16-17 year olds** have a **higher** predisposition to use alt trans than other ages.



Note: Bars show 95% confidence interval.

Findings

<u>All other things being equal</u> (income, era, generation, etc.), **females** have a **higher** predisposition to use alt trans than males.



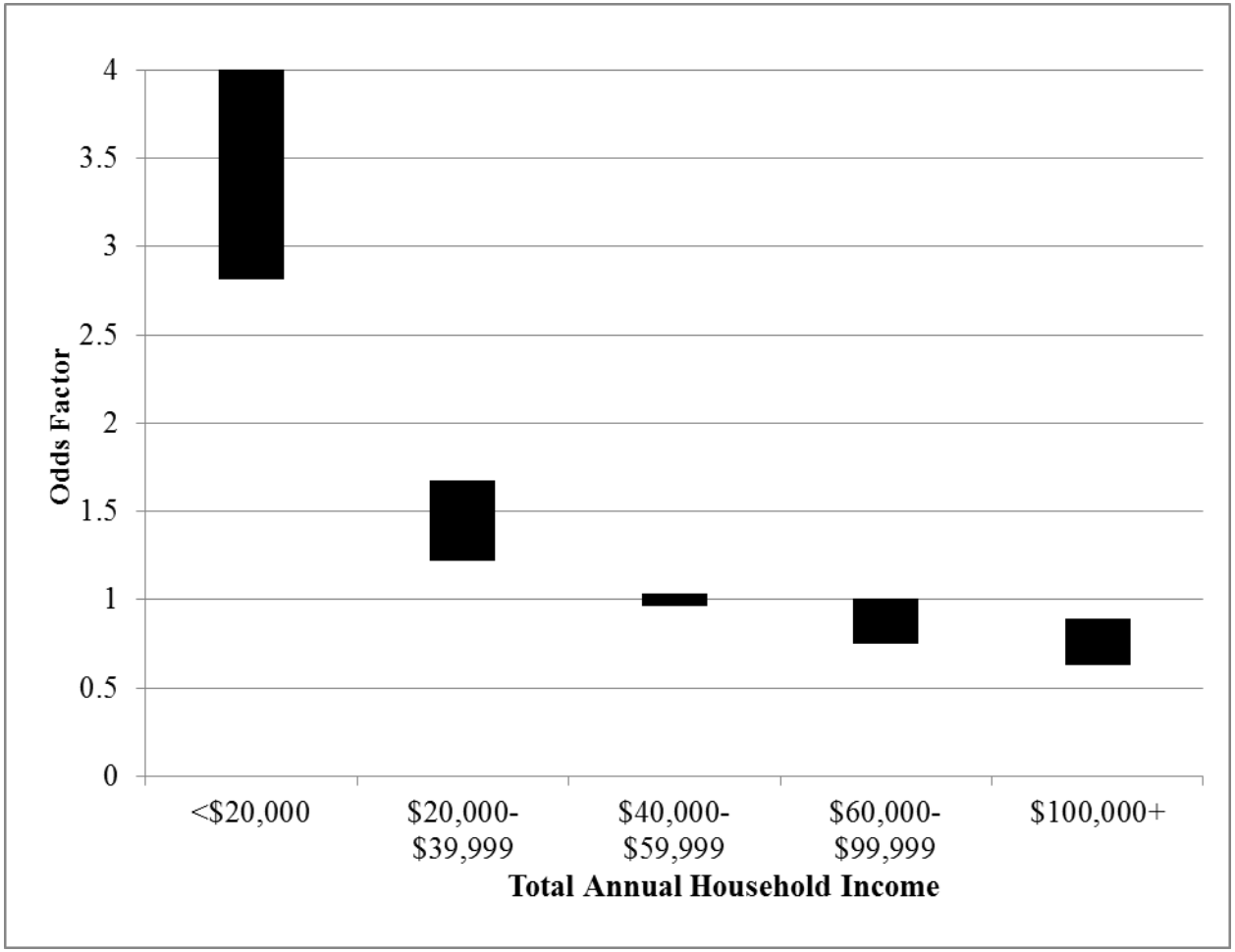
Note: Bars show 95% confidence interval.

Findings

All other things being equal (age, era, generation, etc.), workers in

low-income HH's

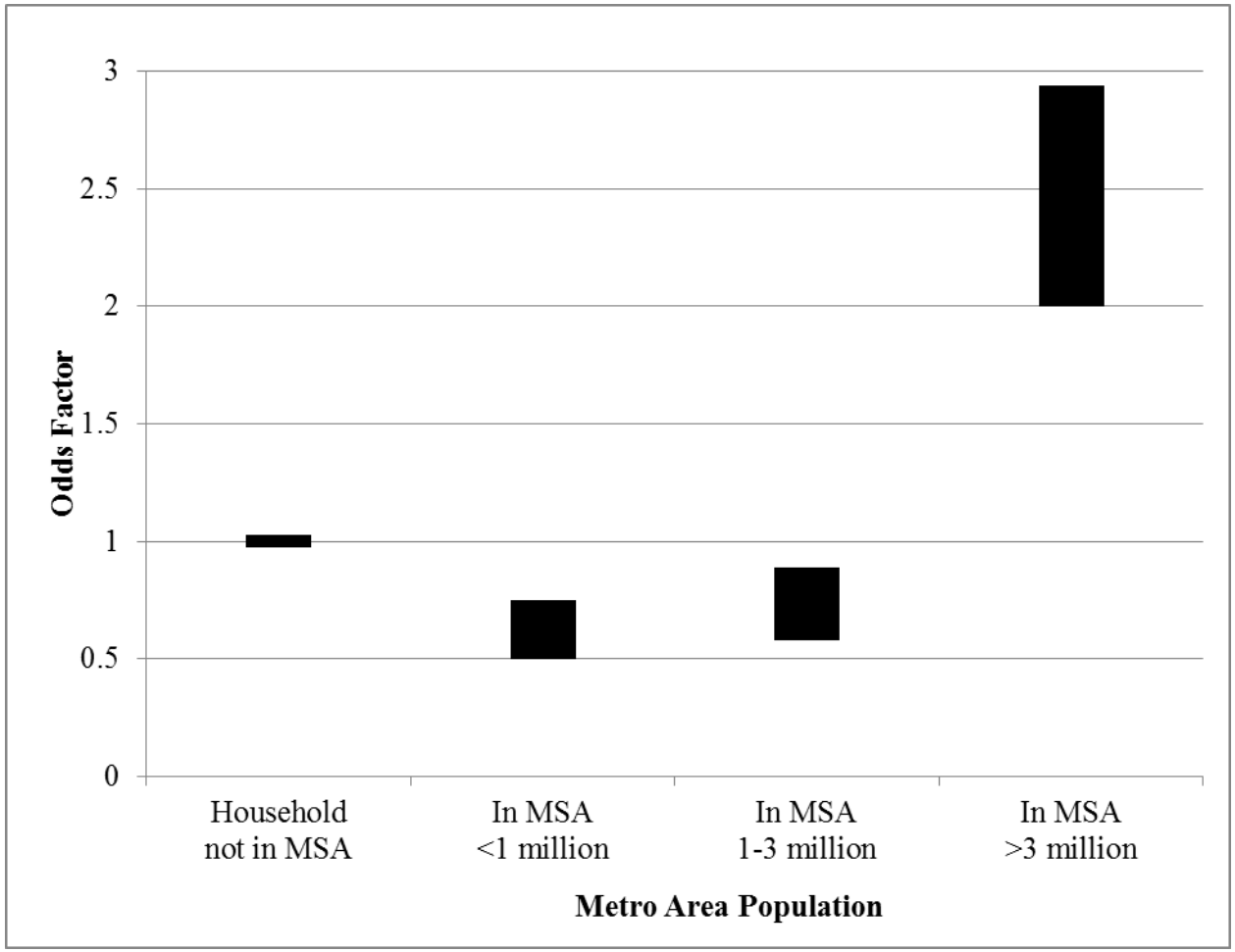
have a **much higher** predisposition to use alt trans than others.



Note: Bars show 95% confidence interval.

Findings

All other things being equal (age, era, generation, etc.), workers in **large MSAs (>3m)** have a **higher** predisposition to use alt trans than others.



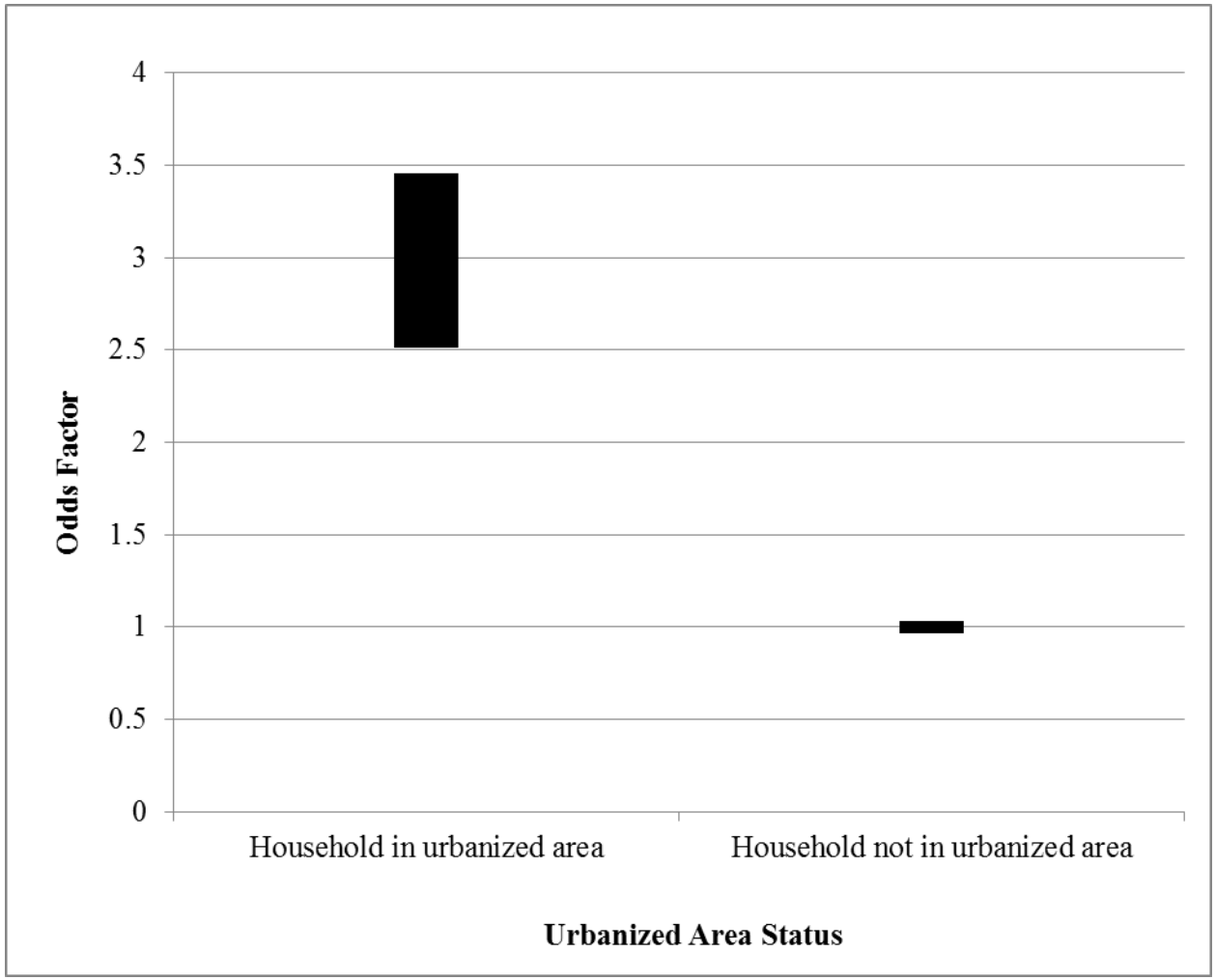
Note: Bars show 95% confidence interval.

Findings

All other things being equal (age, era, generation, etc.), workers in

Urbanized Areas

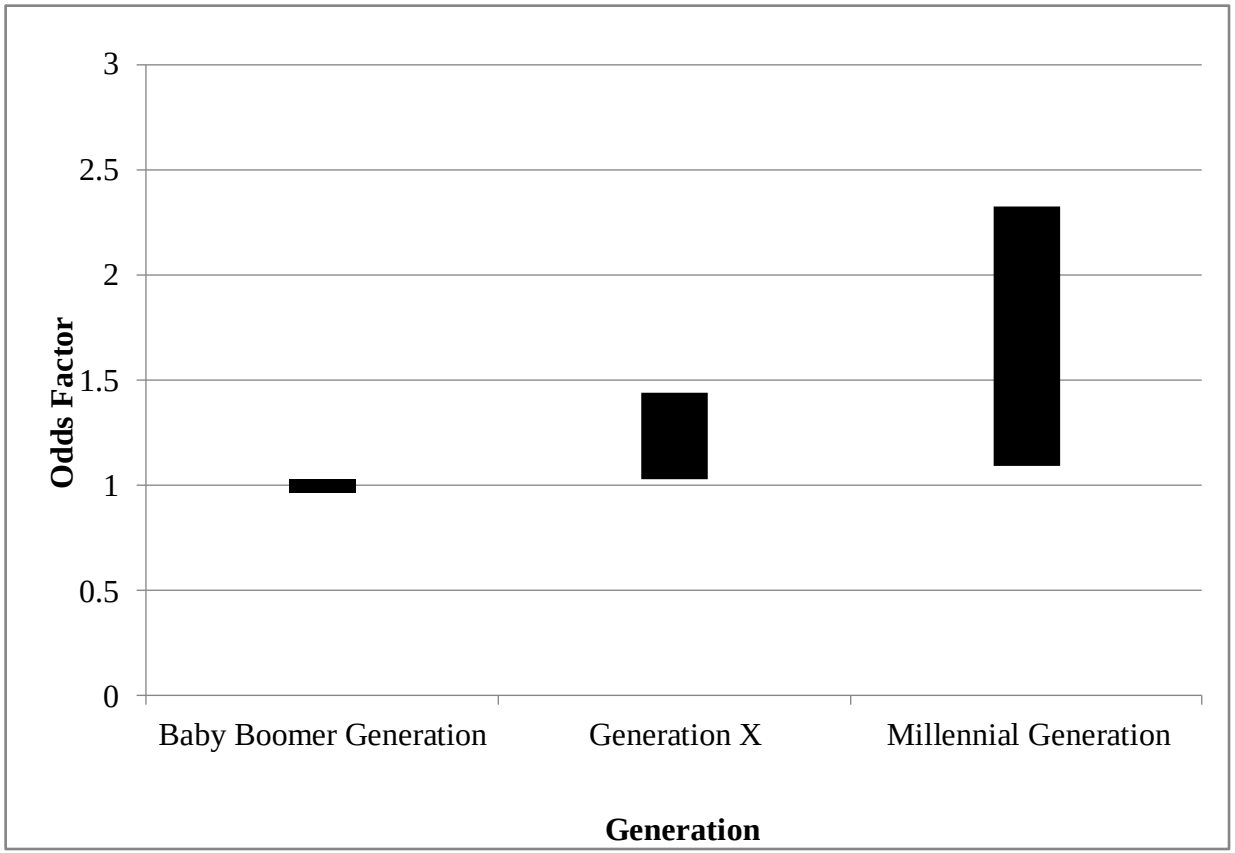
have a **much higher** predisposition to use alt trans than persons in non-urbanized areas.



Note: Bars show 95% confidence interval.

Findings

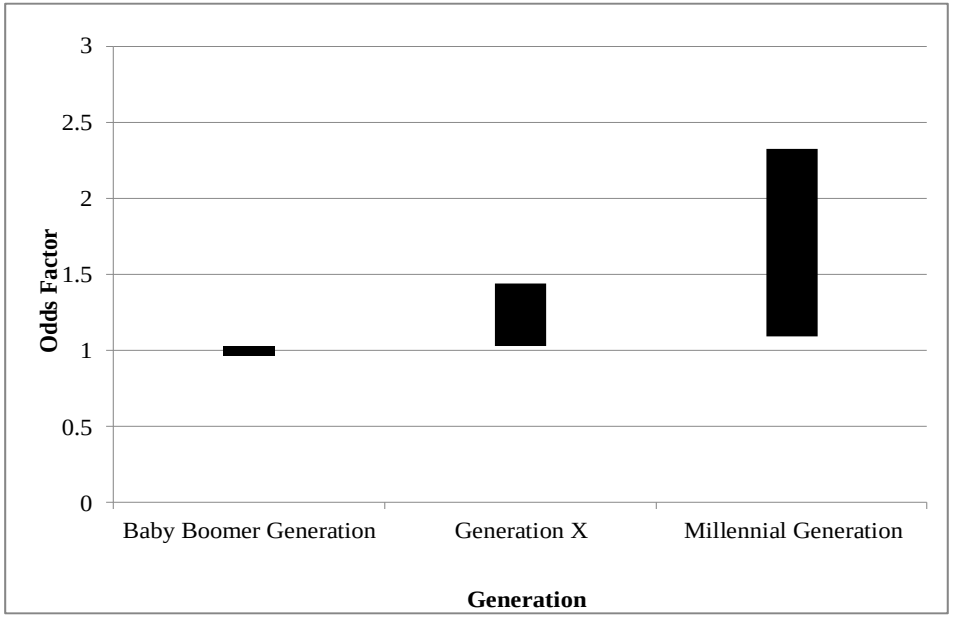
All other things being equal (income, era, age, etc.), **Millennials** have a **somewhat higher** predisposition to use alt trans than the two preceding generations.



Note: Bars show 95% confidence interval.

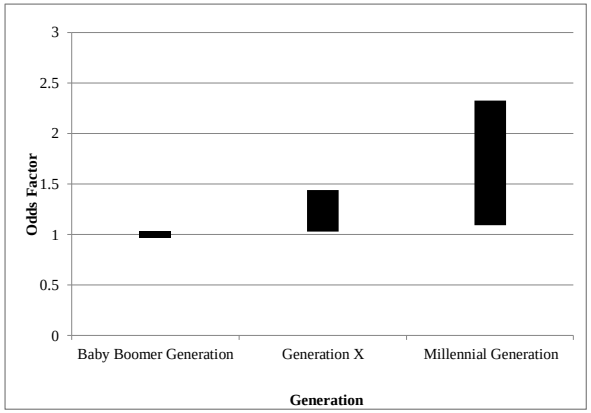
How strong is gen.?

- Model Workers
  - "Bill **Boomer**"
  - "Mark **Millennial**"
  - Both:
    - Male
    - Age 35-54
    - HH income $40-60k
    - Urbanized Area
    - MSA 1-3 million (like HR)
    - Bush/Obama era
  - Only difference is **generation**



How strong is gen.?

- Model Workers — Alt. Trans.
  - "Bill **Boomer**" — **2.8%**
  - "Mark **Millennial**" — **4.3%**
  - Only difference is generation
  - Bottom Line:
    - **Generation is a moderate factor**



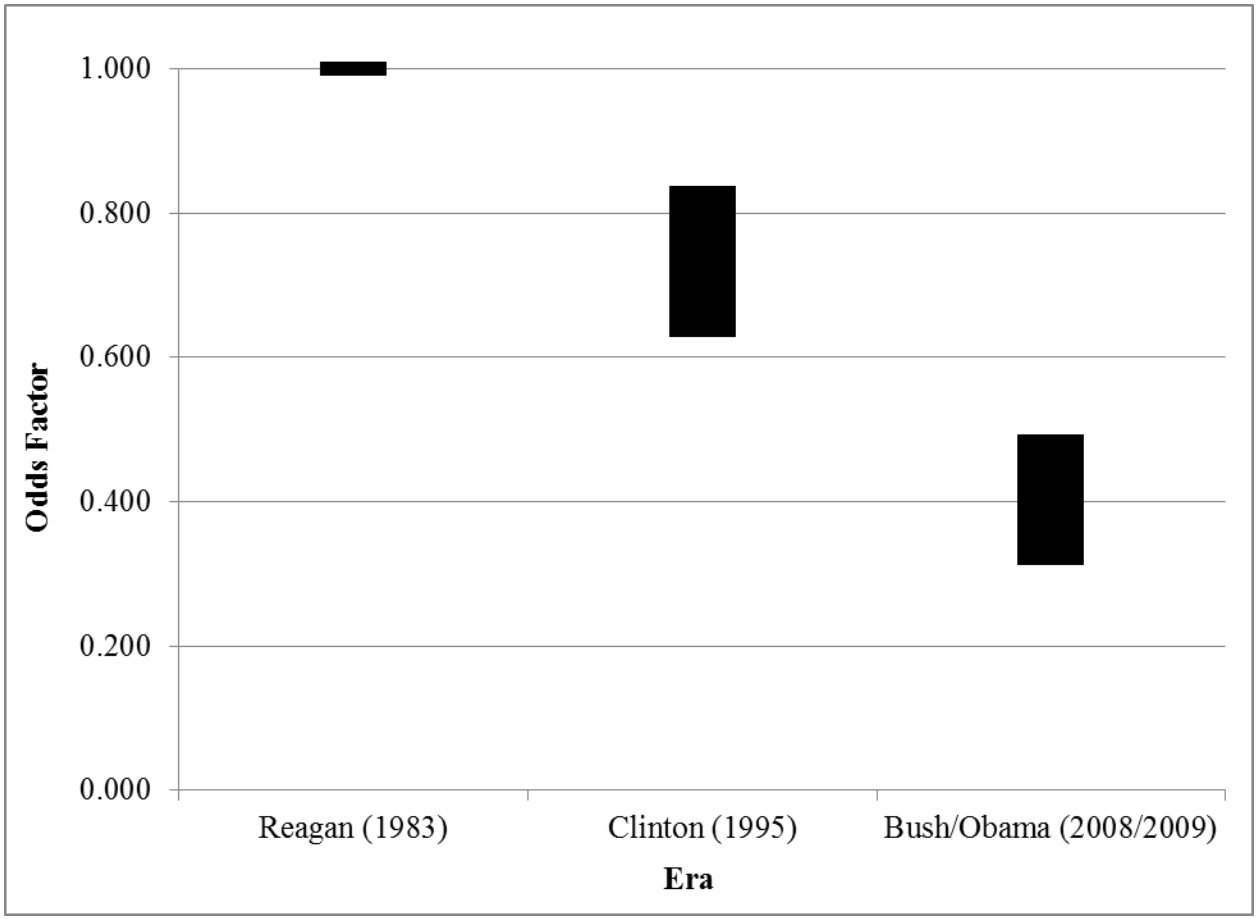
  - The increase **may continue** in the future.

Findings

All other things being equal (age, income, generation, etc.), workers in

Bush/Obama Era

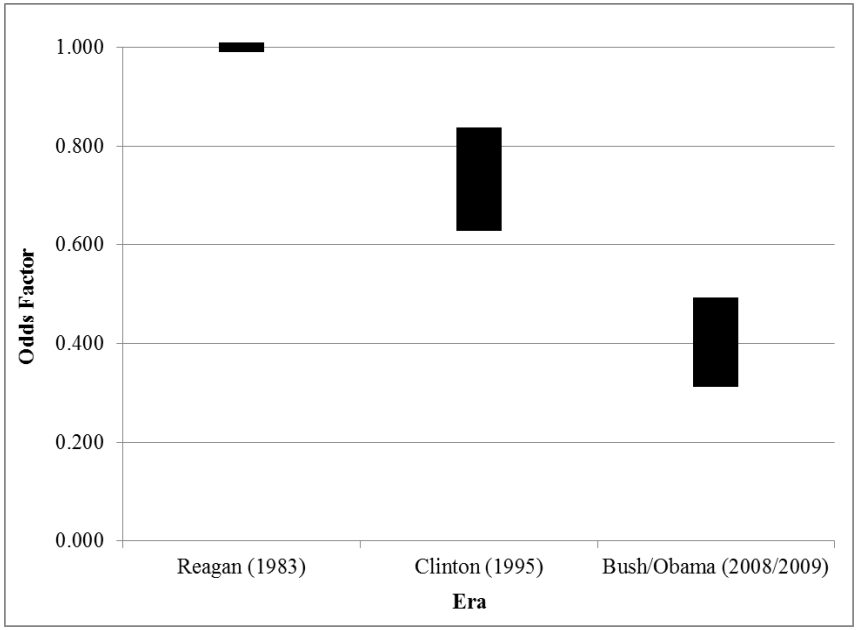
have a **much lower** predisposition to use alt trans than others.



Note: Bars show 95% confidence interval.

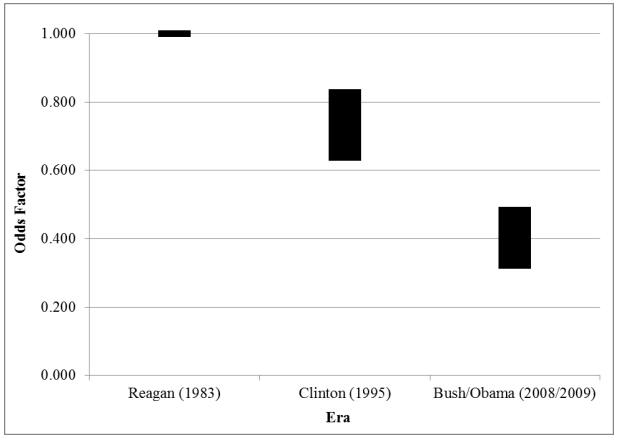
How strong is era?

- Model Workers
  - "Reba **Reagan**"
  - "Olive **Obama**"
  - Both:
    - Female
    - Age 18-34
    - HH income $20-40k
    - Urbanized Area
    - MSA 1-3 million (like HR)
    - Generation X
  - Only difference is **era**



How strong is era?

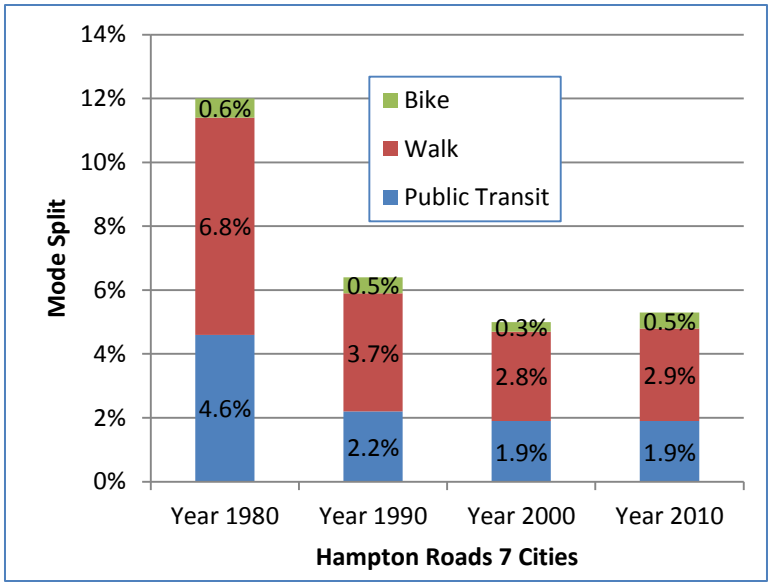
- Model Workers — Alt. Trans.
  - "Reba **Reagan**" — **15%**
  - "Olive **Obama**" — **6%**
  - Only difference is era
  - Bottom Line:
    - **Era is a strong factor**.



- The decline **may continue** in the future, and it **may negate** the above generational trend.

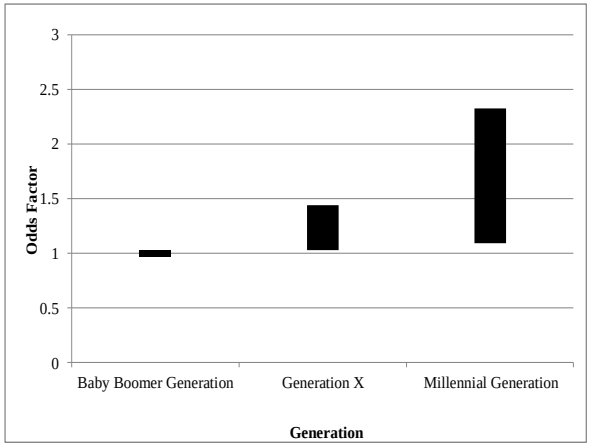
Mode Choice Trend

In Hampton Roads, alternative transportation has **declined significantly** since 1980, with a 0.3% rebound in 2010, (and down 0.8% since 2010).

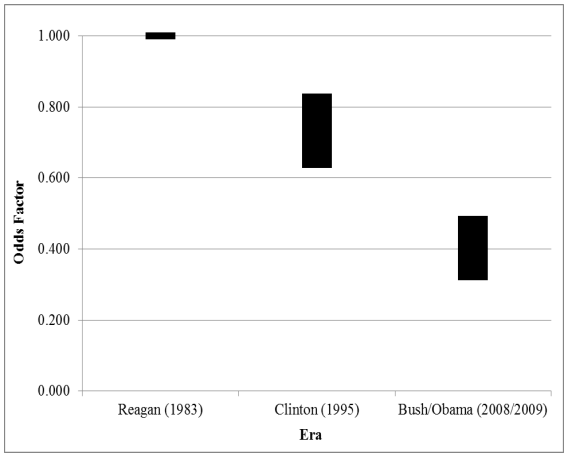


Result of **all trends**, over time

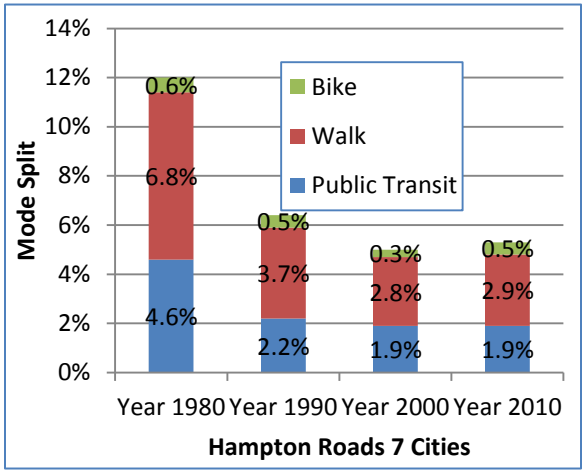
Demand Forecast



Moderate generational trend



Strong era trend



Result of all trends, over time

1. The Millennial generation is **inherently different** from preceding generations.

2. Given **strong era trend** possibly negating **moderate generational trend**, it appears unlikely that 1980 levels of alternative transportation usage will return to Hampton Roads.

Next Steps

- Public/TTAC Review
  - July 1 thru July 14
  - Email rcase@hrtpo.org
- Further review of the literature by staff
- Peer review by TRB
- Presentation to HRTPO Board, Sept. 17, 2015