# Improving Reliability of Small-Area ACS Data

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# Agenda

1. The need for, and problems with, small-area ACS data
2. A solution: the ‘touch method’
3. Future trends

# The Need for Small-Area Data

- Equity analyses: Title VI, EJ
- Corridor studies
- Development reviews
- Travel demand model inputs

# MPO Model in 1990

**Software: UTPS**

**Modeled area:**

- 986 TAZs
- 887 Census tracts
- 3,623 Census block groups

# MPO Model in 2002

**Software: EMME/2**

**Modeled area:**

- 2,727 TAZs
- 894 Census tracts
- 3,324 Census block groups

# MPO Model in 2014

**Software: TransCAD**

**Modeled area:**

- 2,727 TAZs
- 976 Census tracts
- 3,341 Census block groups

# Statistical Testing and the ACS

Two useful publications:

- Multiyear Accuracy of the Data
- Instructions for Applying Statistical Testing

# Statistical Testing and the ACS

Important statistics:

- Margin of error (MOE): published with data
- Standard error (SE)
- Coefficient of variation (CV)
- Z statistic

# Example: HH by Income Quartile

- Re-state the ACS estimates as proportions
- Apply the proportions to 2010 Census counts
- Allocate the resulting estimates to TAZ using factors derived from 2010 Census block statistics

# Example: Using Block Group Data

**Percentage of table cells with CV <= 0.3:**

- **2000 Census SF3: 85%**
- **2006-2010 ACS: 41%**

# Example: Using Tract Data

**Percentage of table cells with CV <= 0.3:**

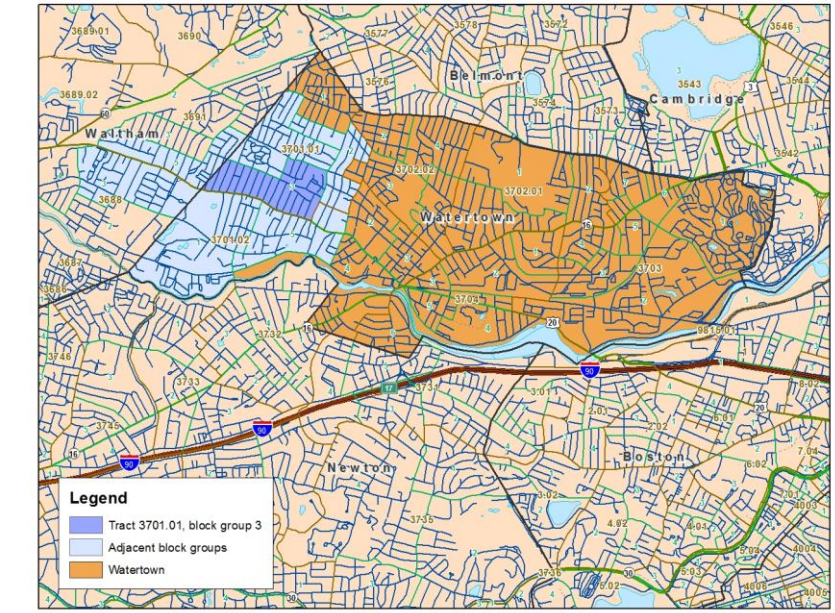
- **2000 Census SF3: 92%**
- **2006-2010 ACS: 87%**

# Solution: the Touch Method

2014 ACS Users Conference Presentations by:

- Ken Hodges, Nielsen Company
- Ben Horwitz: Greater New Orleans Community Data Center

# Solution: the Touch Method




**Combine each block group's estimates with those of its neighbors.**

# Example: Touch Method

Percentage of table cells with CV <= 0.3:

- 2010 ACS published: 41%
- 2010 ACS touch method: 76%

# Example: Compare Estimates

- The touch method has produced block group estimates with better margins of error
- The next step: evaluate whether the differences between estimates are statistically significant
- How? The Z statistic

# Example: Compare Estimates

- Difference is statistically significant if Z is less than -1.645 or greater than +1.645
- We can use the touch method if the vast majority of its estimates do not differ significantly from published estimates
- In this example, the difference is insignificant for 89% of cells in the table

# Future Trends

- ACS Sample size was increased beginning in 2011
- Improvements in margins of error and other statistics are already showing up

# Example: 2012 ACS Block Group

**Percentage of table cells with CV <= 0.3:**

- **2006-2010 ACS published: 41%**
- **2008-2012 ACS published: 68%**

# Conclusions

- Small-area 2010 ACS estimates have been shown to be less reliable than corresponding 2000 Census estimates
- The touch method may provide more usable ACS estimates at the block group level
- Increased sample size beginning in 2011 has had positive results