



Improving Reliability of Small-Area ACS Data

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Transportation Research Board 94th Annual Meeting

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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 \leq 0.3:

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

Example: Using Tract Data

Percentage of table cells with $CV \leq 0.3$:

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

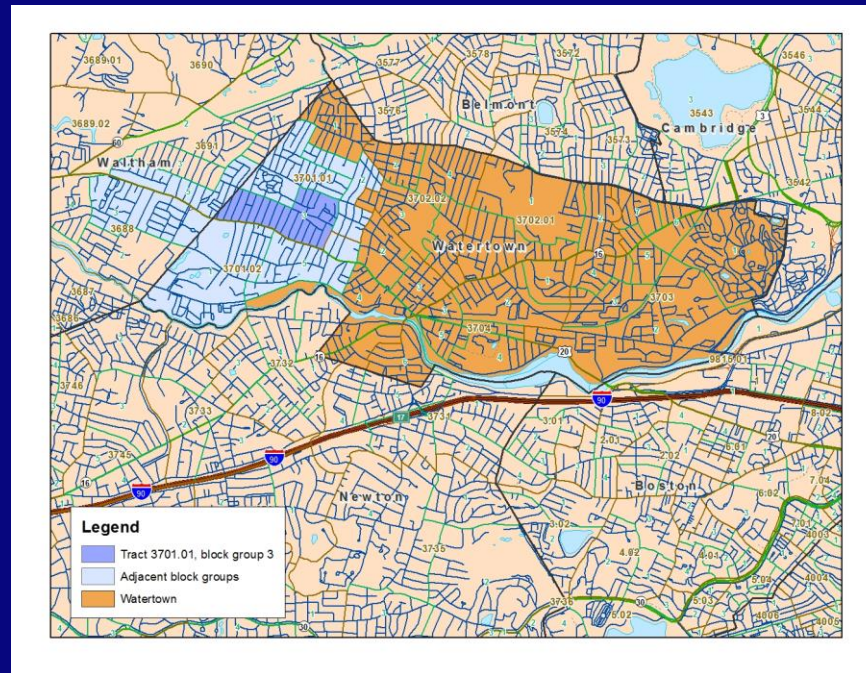
Solution: the Touch Method

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 \leq 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 \leq 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**