

2015 Census Address Validation Test (AVT) Commentary on Partial Block Canvassing

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Partial Block Canvassing (PBC)

- A form of targeted address collection that limits the geographic footprint for field work to sub-units (blocks, e.g.)
- Stated role is for update rather than validation
 - Database update IS a form of validation – don't sell this effort short, particularly in areas where population may be declining, or changing in demographic structure
 - The method overall is sound, and classically applied in many types of database uncertainty reduction
 - Compare two independently compiled versions of the data and where the two sources are inconsistent → higher uncertainty)

Pre-canvassing operations to identify PBC blocks

- Master Address File (MAF) compared to imagery to select blocks
 - Reason is pragmatic, not statistical (not a random sample)
- “Multiple versions” of imagery
 - For what dates? At what spatial resolution? From what sources? Captured when? These metadata could be significant, but are not provided
 - The issue of housing unit visibility could potentially introduce regional inconsistencies:
 - Urban vs. rural areas (this is mentioned in the Ratcliffe paper – provide more details?)
 - Compare humid with dry regions of the country (tree cover variations) – not discussed

Pre-canvassing operations to identify PBC blocks

Role of automation for roughly 17% (1.9 million) addresses to check

1. Automated block classification based on 2009 MAF housing unit type and number of addresses (challenges with smaller mobile home and multi-family units)
2. Manual imagery review for built-out blocks (amt. vacant space?)
3. Manual comparison of classification and number of units visible in imagery to identify discrepancies

Why can't all or part of operations 2 and 3 be automated?

Improves speed/labor of identifying PBC blocks, reduces potential for systematic error or blunders

Possible Avenues for Automation

- GIS-based methods involve use of ancillary data sources
 - Could be especially helpful in areas of dense tree canopy cover
 - Zoning and zoning variations (urban areas)
 - Parcel databases (updated locally and often at cycles < 1 year)
 - NLCD impervious surface? Might be too dated (~5 year update cycle)
- More sophisticated options applied to imagery (art, science, voodoo)
 - Automated pattern recognition of imagery (Shih 2010)
 - Pattern Classification (Duda, Hart, Stork 2001) – [statistical pattern recognition](#)
 - Fuzzy algorithms to detect change (Keller, Krisnapuram, Pal, 2005; Springer)
- Disciplinary strengths to solicit: computer vision, remote sensing, change detection, image preprocessing