

The ACS: Quality & Utility of Multi-Year Estimates Data for Small Governmental Units

Paul R. Voss

Applied Population Laboratory
Department of Rural Sociology
University of Wisconsin-Madison

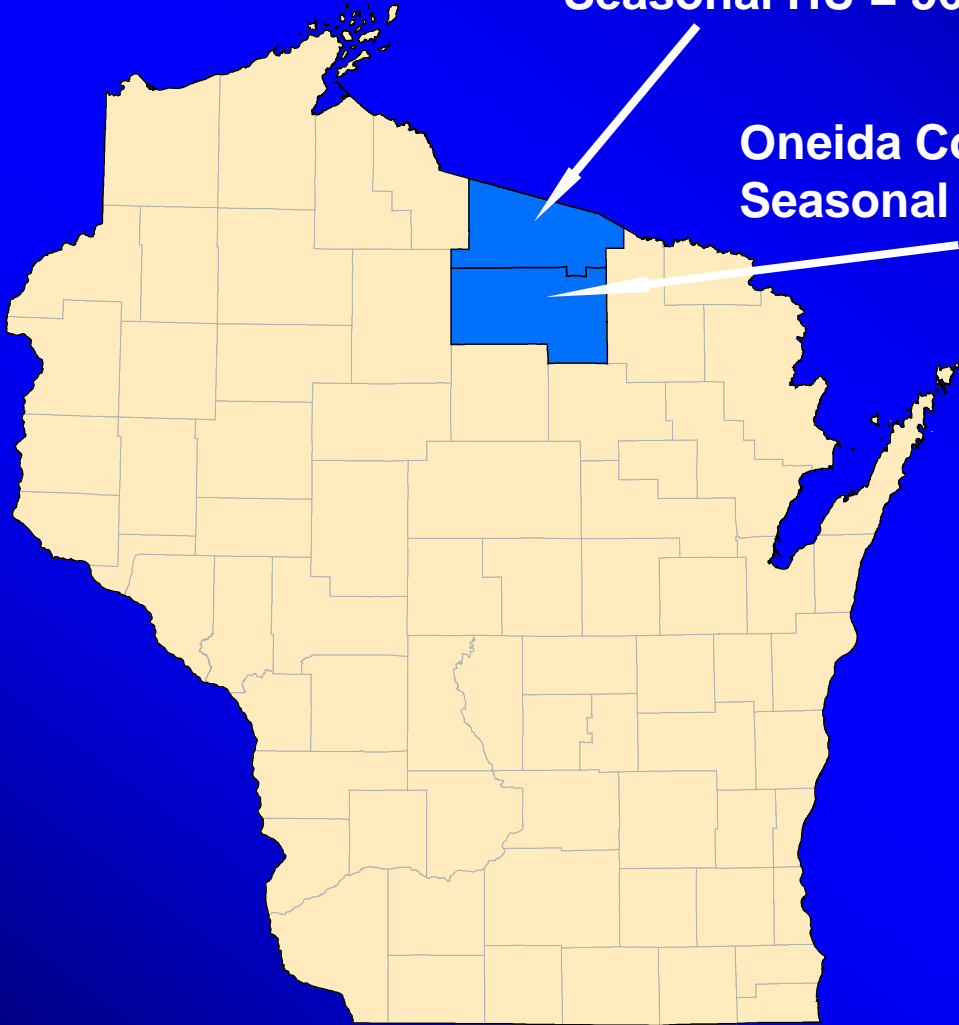
Research support provided by the U.S. Census Bureau
Opinions expressed are solely those of the authors

Objectives: Per work order...

- Examine the ACS multi-year estimates for Oneida & Vilas counties in northern Wisconsin (all levels of geography)
- Comment to the Census Bureau on the “quality and utility” of these data
- (The logical question should be, “Compared to what?”)
- Brief introduction: These are small, mostly rural counties, that are affected by large seasonal swings in population

**Vilas Co: Pop. (2000) = 21,033;
Seasonal HU = 56.7%**

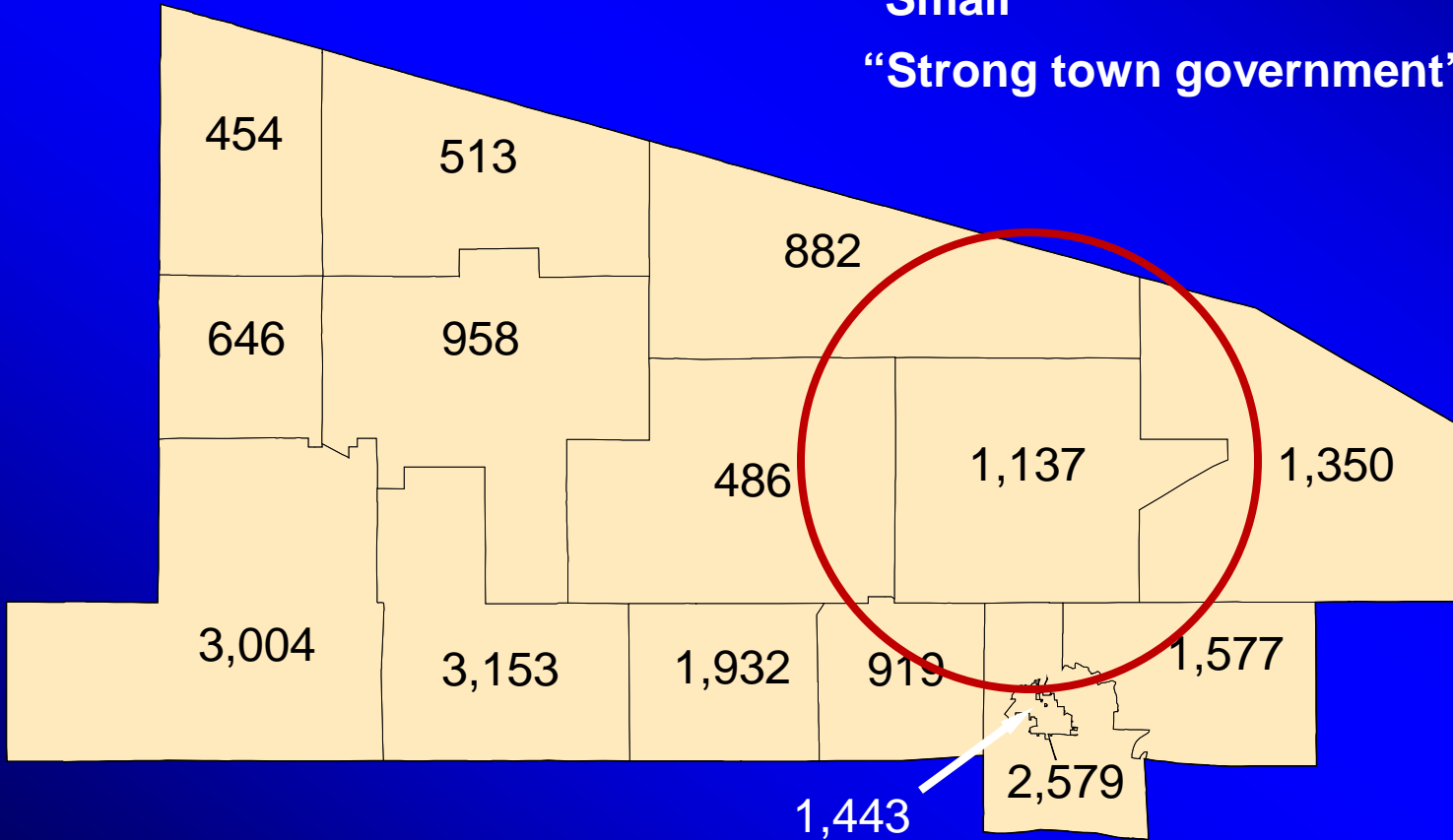
**Oneida Co: Pop. (2000) = 36,776;
Seasonal HU = 39.1%**



Vilas Co. MCDs

Fifteen
Small

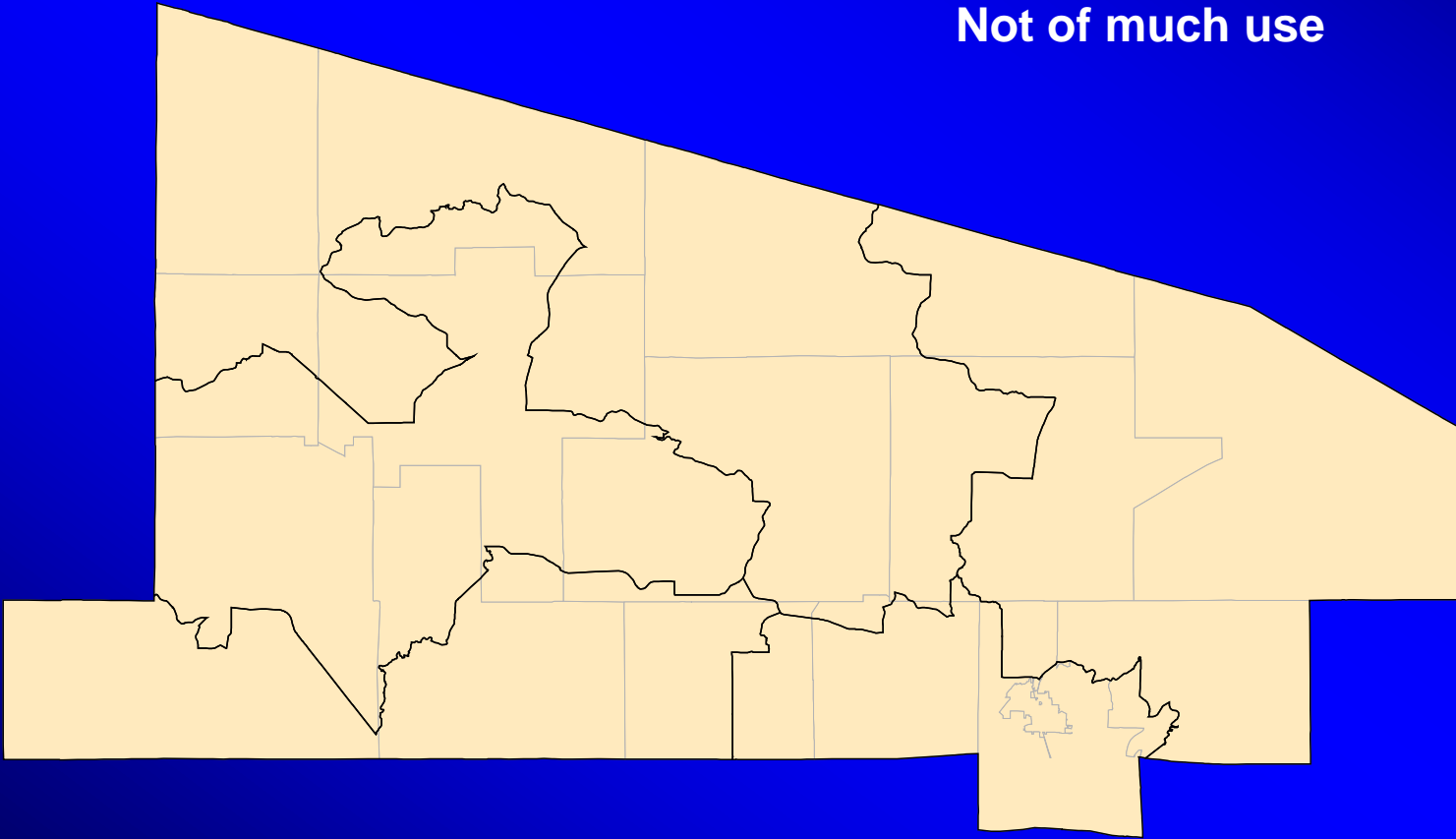
“Strong town government”



Census Tracts in Vilas Co.

Five

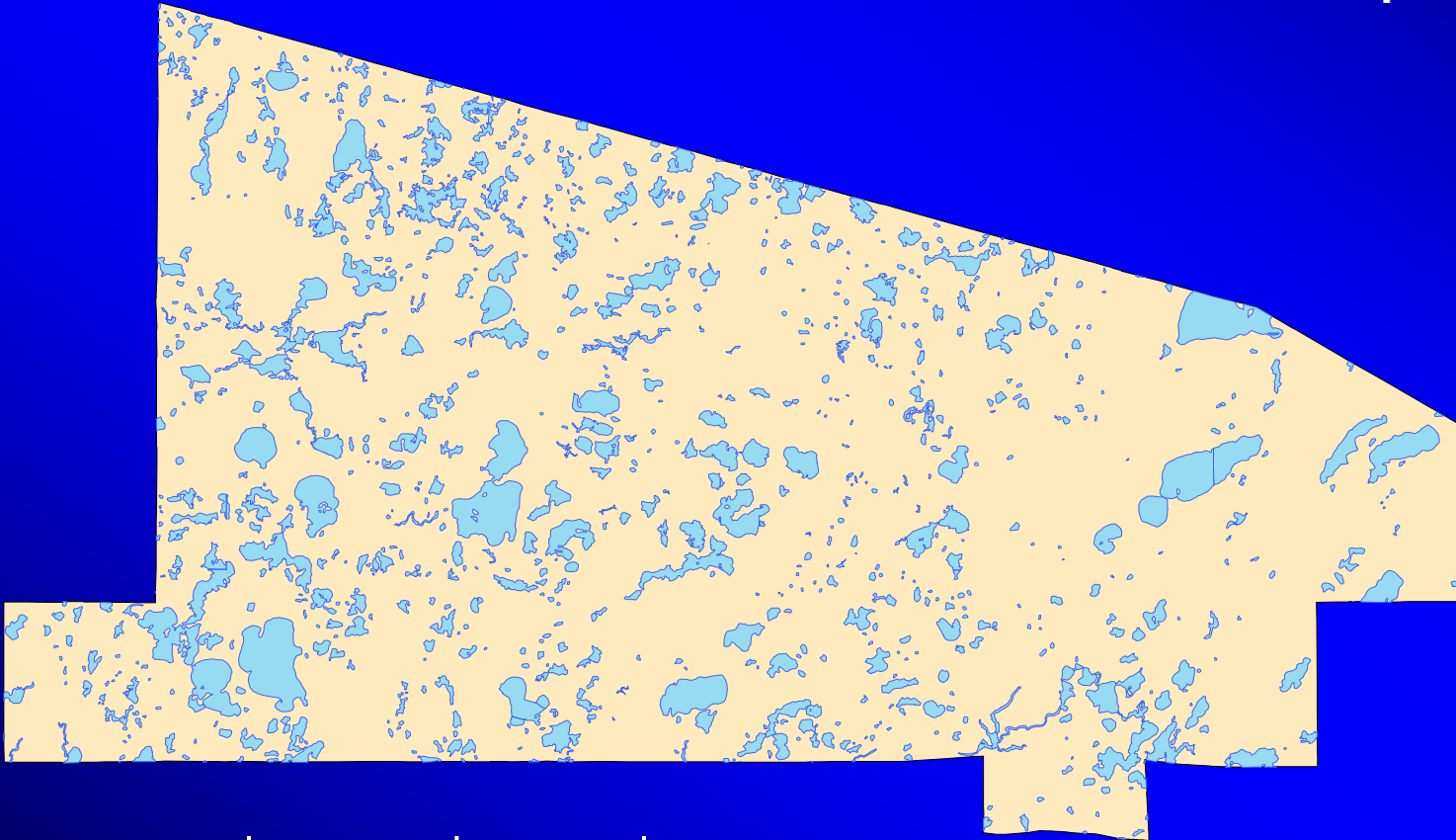
Not of much use



Lots of water in Vilas Co.

Total Area: 1,018 sq. mi.

Water area: 144 sq. mi. (14.2%)



0 10 20 mi.





Data Made Available for the MYES Study...

Comparison of Geographic Areas Available in Multi-Year Estimates

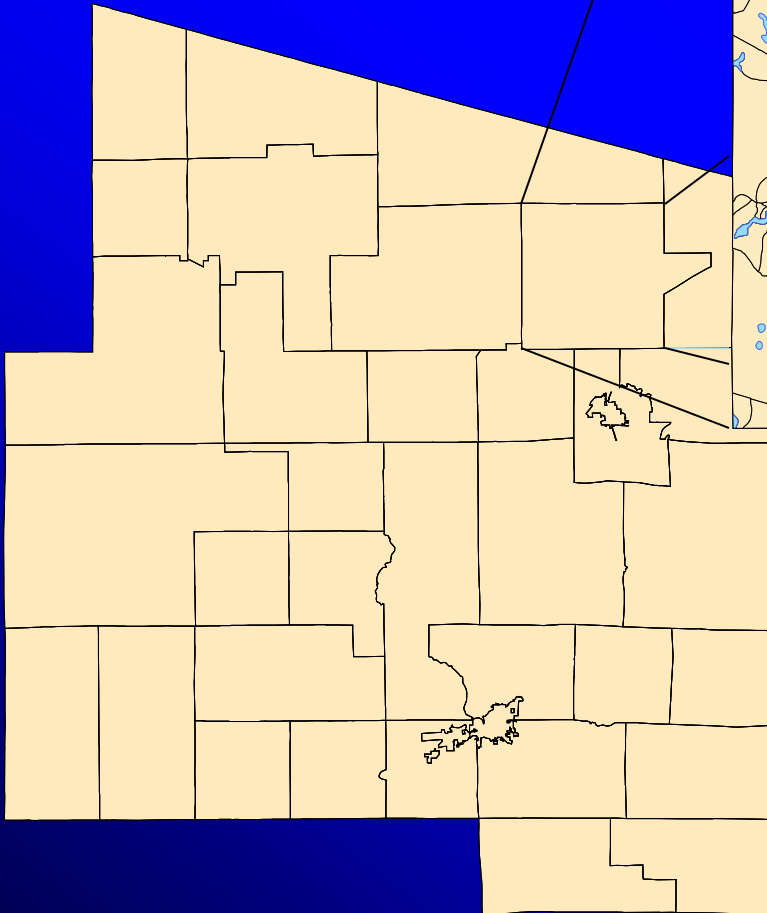
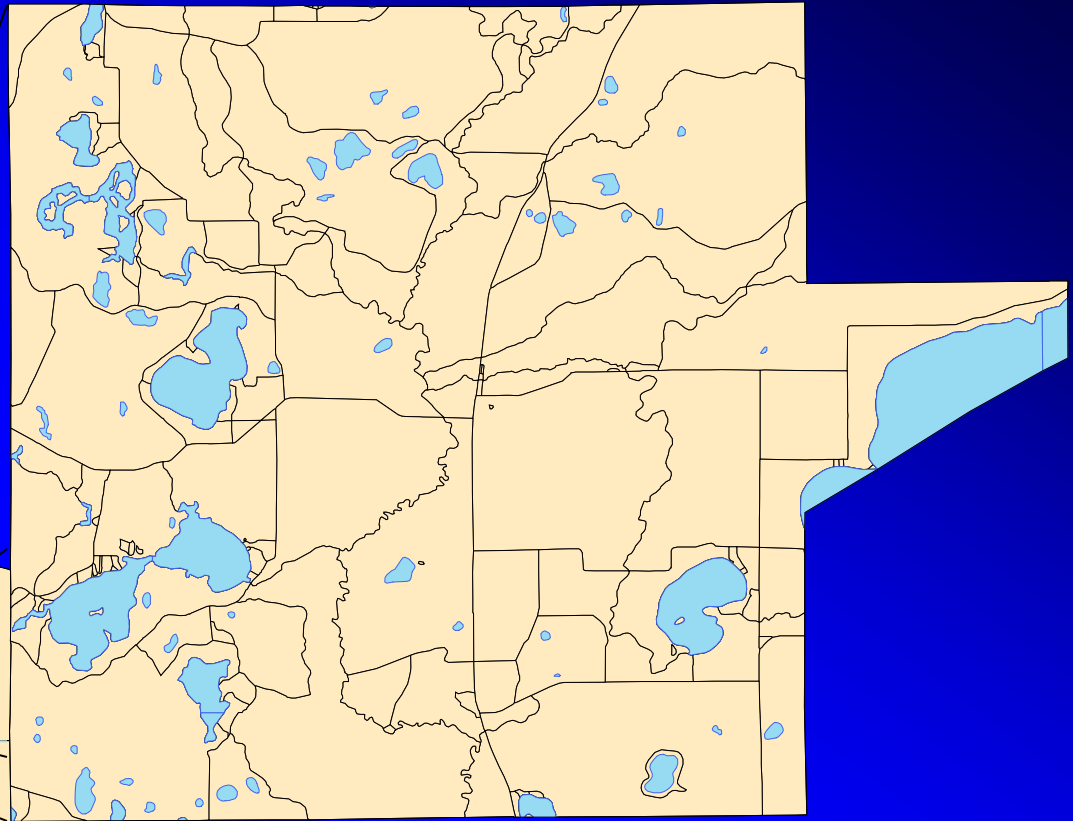
| Available Geographic Areas | Oneida County | | | Vilas County | | |
|-------------------------------|---------------|--------|--------|--------------|--------|--------|
| | 5-Year | 3-Year | 1-Year | 5-Year | 3-Year | 1-Year |
| County | 1 | 1 | | 1 | 1 | |
| County Subdivision (MCD) | 21 | | | 15 | | |
| Census Tract | 11 | | | 5 | | |
| Block Group | 32 | | | 16 | | |
| Place pt* | 1 | | | 2 | | |
| AIAN, Hawaiian Home Land | 0 | | | 1 | | |
| PUMA (5%) | 0 | | | 0 | | |
| Zip Code | 4 | | | 7 | | |
| School District (Elementary) | 1 | | | 2 | | |
| School District (Secondary) | 0 | | | 0 | | |
| School District (Unified) | 1 | | | 1 | | |

* Places available vary by 5-, 3-, and 1-year estimates based on population size

Analysis Strategy...

- Even for these few geographic entities there's simply far too much data to analyze thoroughly
- I chose just a single MCD (Conover Town in Vilas County) and tried to analyze all the data for this town
- Conover is a town at the median population level for the towns in these two counties (2006 est. = 1,260 population)
- For each set of related attributes, I chose the largest cell in the table to analyze

Conover Town



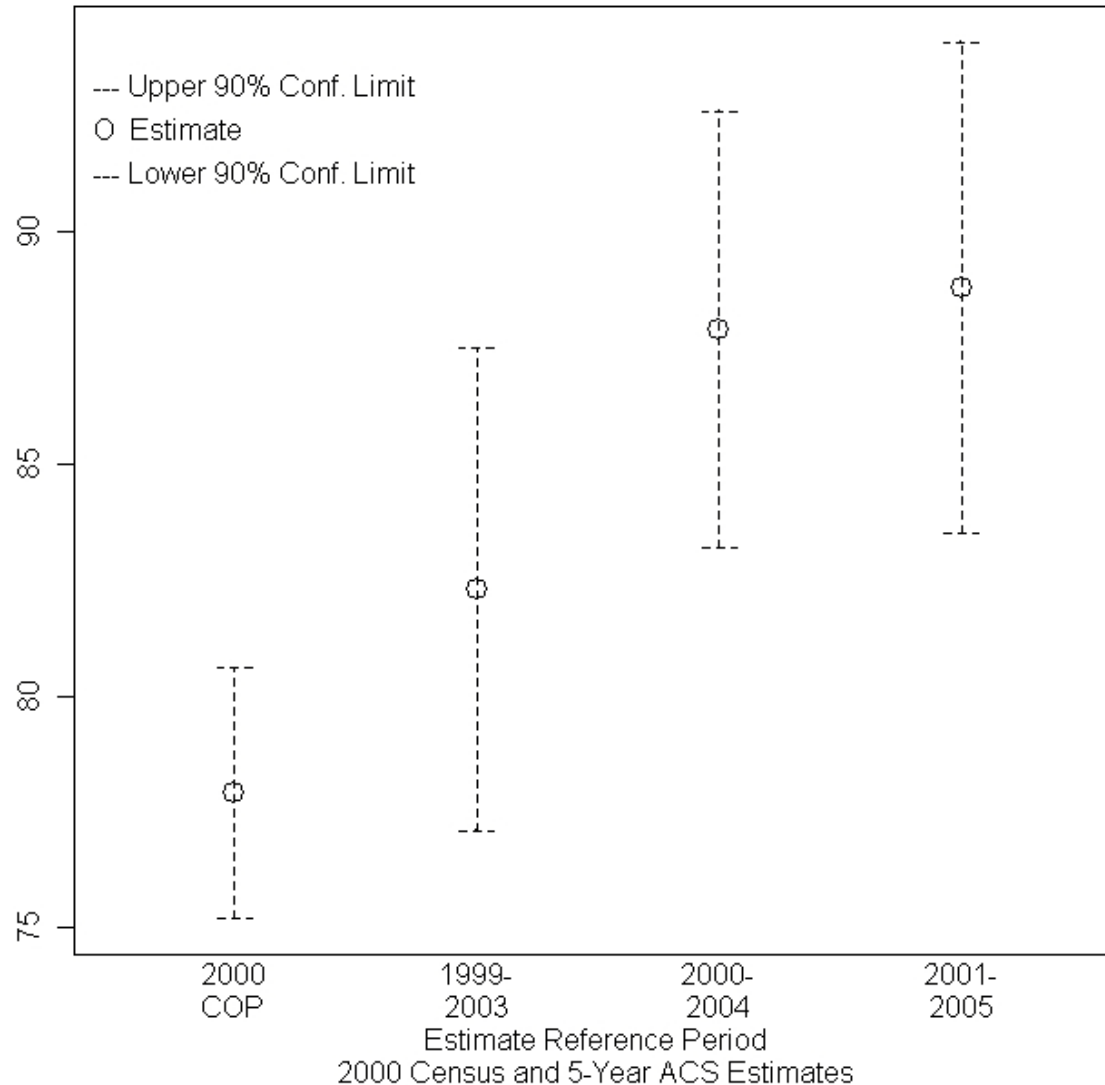
Pertinent data

(2000 Census):

| | |
|---------------|-------|
| Housing Units | 1,440 |
| Occupied | 483 |
| Vacant | 957 |

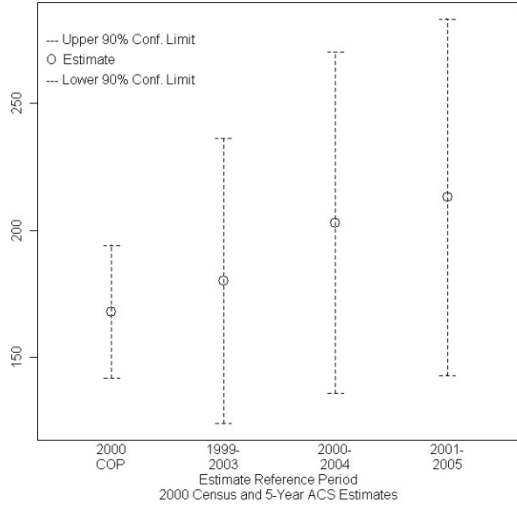
Typical Chart...

**Percent of Persons 18 Years of Age and Over
Conover Town, Vilas County, Wisconsin**

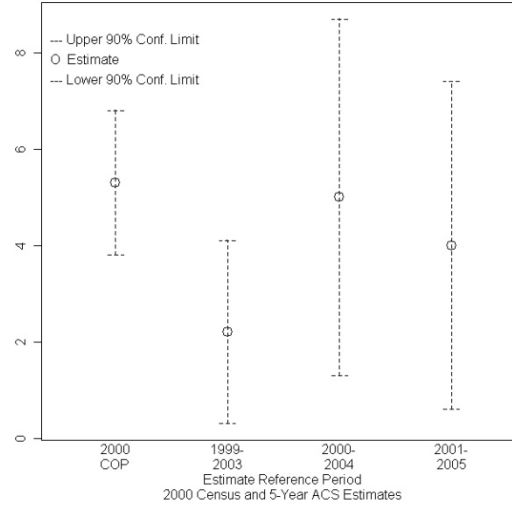


I've got lots of them

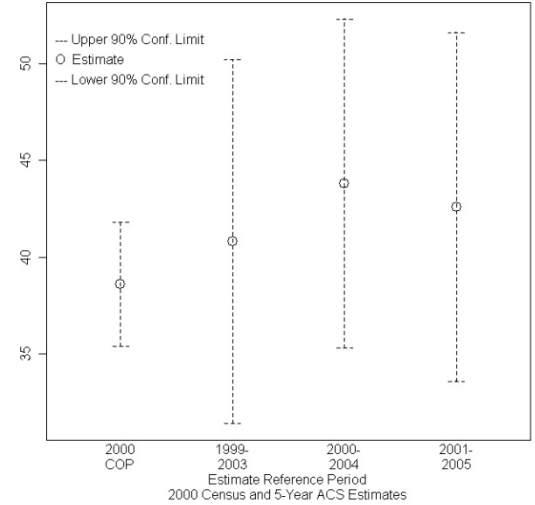
**No. of Veterans (Civilian Pop. 18+)
Conover Town, Vilas County, Wisconsin**



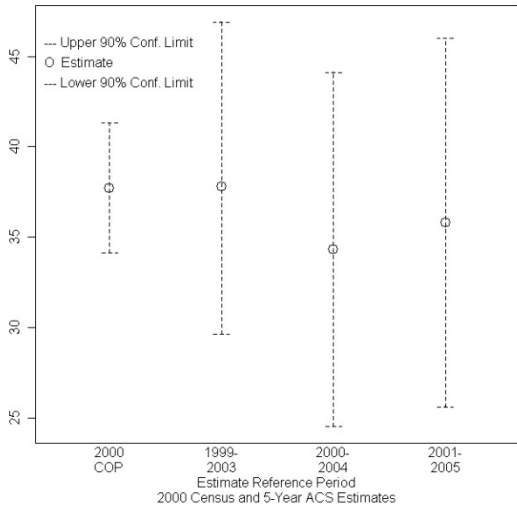
**Language other than English Spoken at Home (Pct of Pop 5+)
Conover Town, Vilas County, Wisconsin**



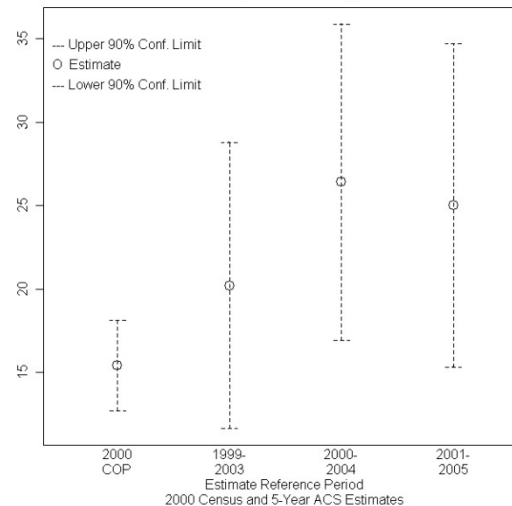
**Percent of Population Reporting German Ancestry
Conover Town, Vilas County, Wisconsin**



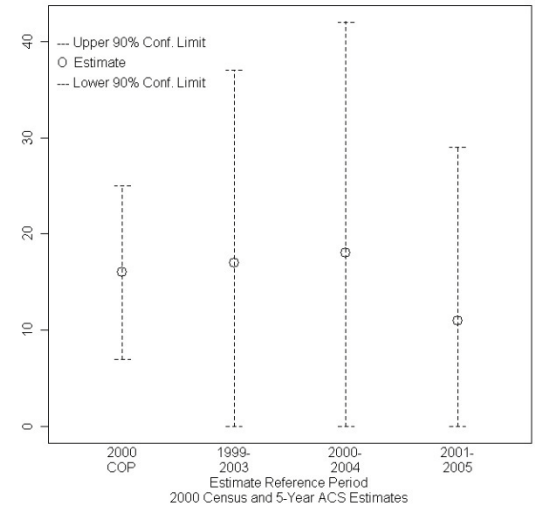
**Pct HS Graduate (or Equiv.) (Highest Grade, Pop. 25+)
Conover Town, Vilas County, Wisconsin**



**Percent Bachelors Degree or Higher (Pop. 25+)
Conover Town, Vilas County, Wisconsin**



**No. of Grandparents Living with Own Grandchildren under 18
Conover Town, Vilas County, Wisconsin**



One answer to the question about the unexpectedly large levels of uncertainty attached to the ACS estimates in the Town of Conover is that...

for the data made available for this study, the Census Bureau had not yet achieved its stated goal regarding the ACS oversample for small governmental units

A few details...

2000 Census Long Form Sampling Plan

- Sampling unit: Housing Unit
- LF sampling entities (LFSEs):
 - Counties
 - Cities
 - Places
 - CDPs (Hawaii only)
 - MCDs (12 states only)
 - School districts
 - American Indian Reservations
 - Tribal jurisdiction statistical areas
 - Alaska Native village statistical areas
- 4 sampling rates:
 - 1-in-2
 - 1-in-4
 - 1-in-6
 - 1-in-8
 - <800 occupied HUs in LFSE
 - 800-1,199 occupied HUs in LFSE
 - All remaining census blocks
 - 2,000-plus occupied HUs in LFSE
- Assignment of rate based on pre-census estimates of *occupied* HUs (from decennial MAF)

The ACS Intended Sampling Plan: Emulate the 2000 long form strategy

But, the early ACS actual sampling implementation failed to meet this goal

1) The algorithm for determining the sampling entity omitted MCDs in “strong MCD” states until 2003.

Only beginning in 2003, were MCDs in states like Wisconsin included as sample design areas.

2) In the early years of the ACS, assignment of the specific sampling rate was based on *total* HUs.

Only beginning in 2005 was the size of the geographic entity base on the number of occupied HUs.

ACS Sampling Rates 1999-2005*

| Sampling Rate Category | 1999-2001 | | 2002-2003 | 2004 | 2005 |
|--|--|----------------|--------------|--------------|--------------|
| | San Francisco, Broward, Lake (IL), Bronx, Franklin | Other Counties | All Counties | All Counties | All Counties |
| Blocks in smallest GUs (GUMOS < 200) | | | | 10% | 10% |
| Blocks in smaller GUs (200 ≤ GUMOS < 800) | 9% | 15% | 7.5% | 7.41% | 6.9% |
| Blocks in small GUs (800 ≤ GUMOS ≤ 1200) | 4.5% | 7.5% | 3.75% | 3.705% | 3.5% |
| Blocks in large tracts (GUMOS > 1200, TRACTMOS ≥ 2000) where mailable addresses ≥ 75% and predicted levels of completed mail and CATI interviews prior to CAPI subsampling > 60% | 2.25% | 3.75% | 1.875% | 1.81545% | 1.6% |
| Other blocks in large tracts (GUMOS > 1200), TRACTMOS ≥ 2000) | | | | | 1.7% |

MCDs not treated as design areas for sampling purposes ->
 GUMOS based on all HUs ->

*Based on Table 2 from "Accuracy of the Data (Multi-Year Estimates Study)"

What Does This Mean for Conover Town?

Housing Units (Addresses) in Sample
Conover Town, Vilas County Wisconsin

| | Number | Percent |
|----------------|--------|---------|
| 2000 Census LF | 659 | 45.8 |
| ACS 1999-2003 | 261 | 15.4 |
| ACS 2000-2004 | 216 | 14.0 |
| ACS 2001-2005 | 260 | 15.8 |

So, what might we conclude, based on this investigation, regarding the quality & utility of ACS data for small governmental units like the Town of Conover?

- It's difficult not to conclude that the particular estimates examined in this study for the early part of the decade simply aren't of very high quality or utility when compared to similar sample estimates derived from the 2000 Census long form sample.
- The problem mostly lies with the misapplication of the sampling design that was intended for the ACS.

So, what might we conclude... (cont.)

- If the overall sampling design and specific sampling rates used in 2005 are continued for the remaining years of the decade, the 5-year ACS estimates for small governmental units released in 2011 likely will be of acceptable statistical quality compared to similar estimates from the 2000 long form.
- But we have already reported this finding to the Bureau based on our examination of the 1999-2001 county-level data, so it's not such a big deal; moreover, the problems have been fixed.

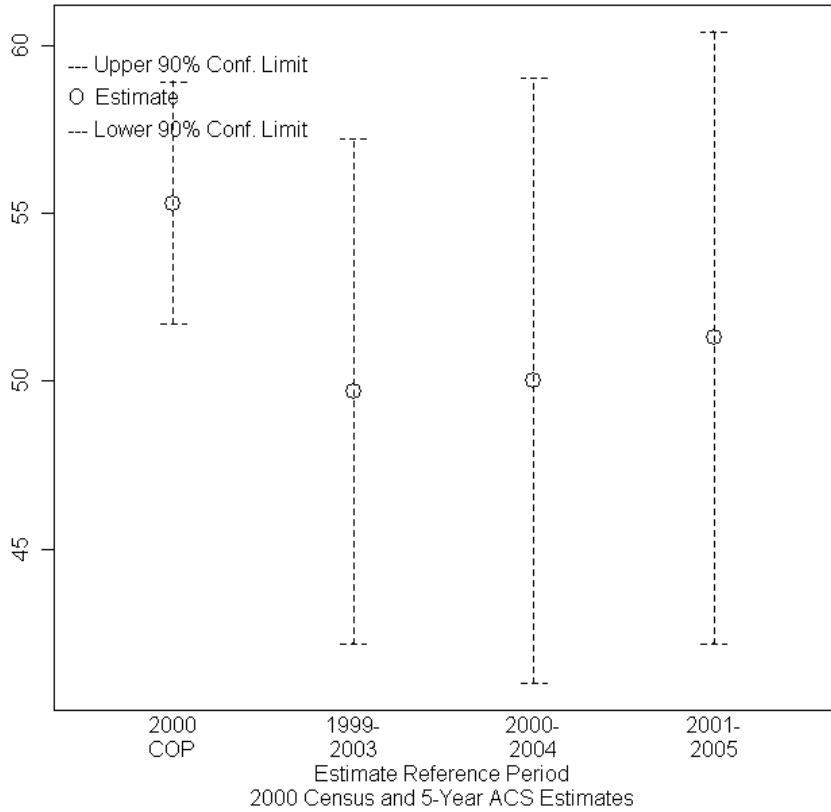
So, what might we conclude... (cont.)

- So... what else might we say about these multi-year estimates based on our study so far?
- The following comments are some things we've learned from our examination of these data...

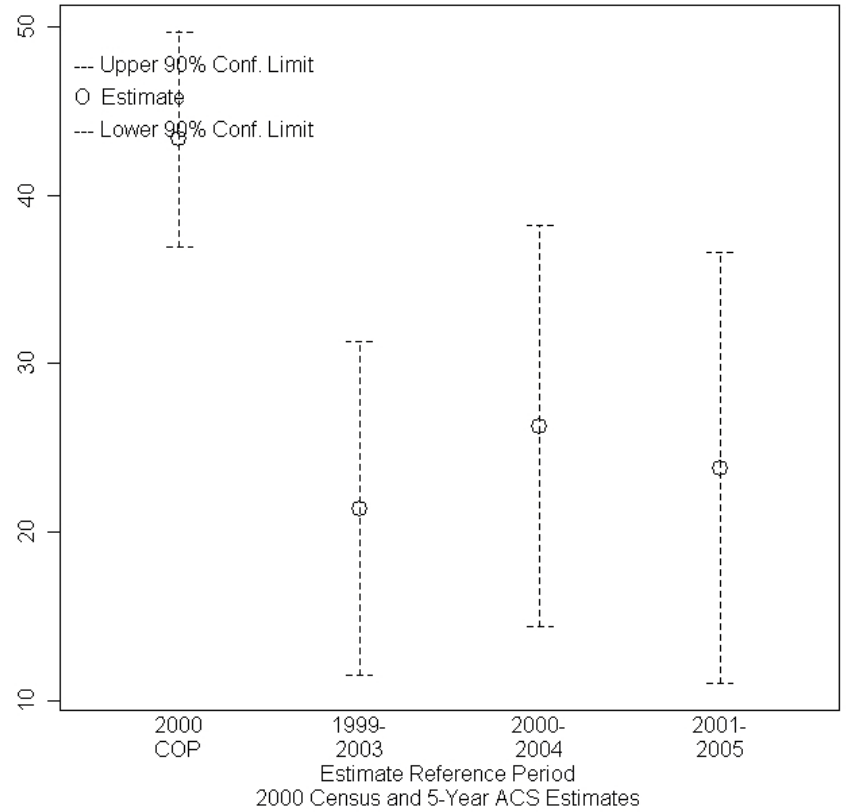
Miscellaneous things we've learned about the ACS multi-year estimates

- For counties and MCDs that have summer populations that are different from April populations, the ACS estimates can differ quite a bit from the 2000 Census long form estimates.

Pct Employed in Civilian Labor Force (Pop 16+)
Conover Town, Vilas County, Wisconsin



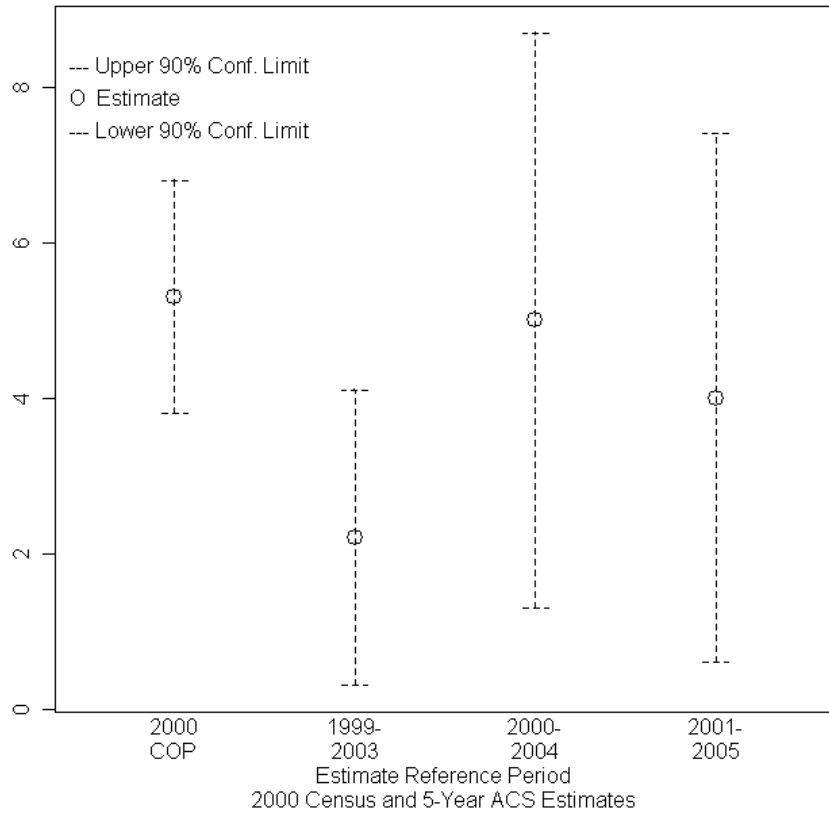
Pct of Owner Occ HUs Valued at \$50,000 to \$99,999
Conover Town, Vilas County, Wisconsin



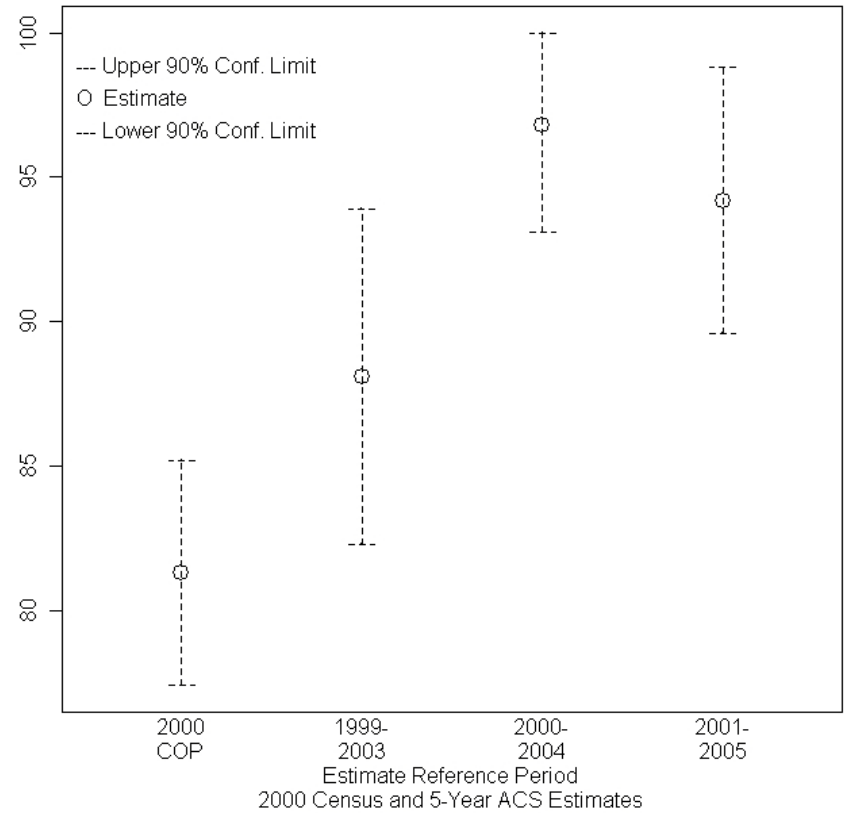
Miscellaneous things... (cont.)

- Despite large sample overlap in the 5-year estimates from one year to the next, the point estimates can still bounce around quite a bit.

**Language other than English Spoken at Home (Pct of Pop 5+)
Conover Town, Vilas County, Wisconsin**



**Pct Drove Alone to Work in Car, Truck or Van (Workers 16+)
Conover Town, Vilas County, Wisconsin**



Miscellaneous things... (cont.)

- The data tables made available for this study are similar to the “Profile Tables” made available from the census.
- Thus, they’re not very rich in content or detail. Certainly they don’t meet the expectations most data users hold to based on the ACS promise: “Fresh long form results every year.”
- The outcome of product development efforts resulting from the August Federal Register Notice likely will yield data that meet data user expectations based on the Census 2000 SF3 files.
 - Federal Register notice August 28, 2007 (Vol. 72, No. 166) “ACS Data Products”

Conclusions

- The “quality and utility” of the ACS for data users can’t really be determined based on this study
- However, now that the implementation of the sampling design has been corrected, the data for MCDs in counties like Oneida & Vilas should, in the future, be of reasonable statistical quality
- The outcome of the product development efforts for multi-year period estimates also should yield a range of products that data users will welcome and support