

The Judicious Use of ACS Citizenship Estimates in Political Redistricting

Jeanne Gobalet, Ph.D. and Shelley Lapkoff, Ph.D.

**Lapkoff & Gobalet Demographic Research, Inc.
Saratoga, California**

www.demographers.com

ACS Data Users Conference
May 11-13, 2015

Agenda

- *Why investigate citizenship when redistricting?*
- *Only source of citizenship estimates = ACS*
- *Recommended procedures for making the estimates useful*
 - *Compute citizenship rates by ethnicity by using a combination of the ACS special tabulation (numerator) and the regular ACS (denominator).*
 - *Decide which geographical level to use when computing citizenship rates*
 - *Apply citizenship rates to the decennial Census populations.*
 - *Calculate confidence levels after aggregating population estimates into election districts*
- *Conclusions*

Why investigate citizenship when redistricting?

- ***Citizen voting age population (CVAP)*** is an indicator of groups protected under the federal Voting Rights Act (VRA) level of potential to elect candidates of choice).
- When districting plans are challenged under the VRA, a CVAP share of **50 percent** or more for protected groups is the **gold standard** used by the courts to evaluate VRA compliance.

In one districting case, the plaintiff's (non-demographer) plan-maker computed Hispanic CVAP differently, with quite different results.

Election district	Plaintiff's Estimate	Our Estimate	Difference
1	31%	36%	-5%
2	59%	68%	-9%
3	32%	40%	-8%
4	53%	60%	-8%
5	24%	26%	-2%
Total	38%	45%	-7%

Hypotheses:

He used CVAP estimates directly (without computing rates)

He used block group estimates (ignoring MOEs)

It matters to be careful that you do it right (even if it takes a lot longer) because there can be very different conclusions when inferior procedures are used. This is especially true if litigation is involved.

The latest CVAP estimates

http://www.census.gov/rdo/data/voting_age_population_by_citizenship_and_race_cvap.html

Voting Age Population by Citizenship and Race (CVAP) 2009-2013 American Community Survey 5 year estimates (a special tabulation)

Available for:

- Nation
- State
- County
- Place
- MCD (Minor Civil Division - only for CT, ME, MA, NH, RI, VT, MI, WI, NJ, NY, MN, and PA)
- **Tract (only CVAP estimates, no VAP estimates)**
- **Block Group (only CVAP estimates, no VAP estimates)**

Older CVAP estimates (special tabulations)

http://www.census.gov/rdo/data/voting_age_population_by_citizenship_and_race_cvap.html

Voting Age Population by Citizenship and Race (CVAP) ACS 5-year estimates (for tracts and block groups, only CVAP estimates, no VAP estimates)

2008-2012

2007-2011

2006-2010

2005-2009 (for Census 2000 geographical units)

Census 2000 Special Tabulation (STP 76): Citizenship by Race & Hispanic Origin (both VAP and CVAP estimates provided)

(for Census 2000 geographical units, including tracts and block groups)

Recommended procedure for making the ACS estimates useful

- 1. Compute citizenship rates using ACS estimates.**
- 2. Choose geographical units that minimize error, yet reflect CVAP variations within the jurisdiction.**
- 3. Apply citizenship rates to decennial Census population counts.**
- 4. To compute margins of error, Follow Census Bureau recommendations when aggregating estimates across geographic areas or population subgroups.**

1. Recommended procedure:

Compute citizenship rates, then apply to actual counts

Apply estimated citizenship rates for tracts to the block-level VAP counts from the decennial census.

Rates are computed by dividing:

- **special tabulation ACS estimates of citizenship, by race/ethnicity, for the VAP**
by
- **regular ACS estimates of the VAP, by race/ethnicity.**

Complicated, but necessary!

Jorge Chapa, PhD, et al. Ana Henderson, JD, Aggie Jooyoon Noah, MA, Werner Schink, Robert Kengle, JD, "Redistricting: Estimating Citizen Voting Age Population." The Chief Justice Earl Warren Institute of Law and Social Policy, University of California, Berkeley Law School, September 2011.

https://www.law.berkeley.edu/files/Redistricting_PolicyBrief4_forWeb.pdf

Case Study:

Task was to design single-member election districts for the governing board of a jurisdiction in San Benito County, CA



San Benito
County

2010 total population = 55,269

Large Hispanic population, with some areas of concentration

Five single-member election districts

Copyright 2005 digital-topo-maps.com

Part of the block file (PL94-171 data) with CVAP and HCVAP estimates from ACS 2008-2012

HVAP = Hispanic origin voting age population			
HCVAP = Hispanic origin citizen voting age population			
	PL94-171 counts		Estimates based on ACS rates
BLOCK ID	HVAP	County HCVAP rate (HCVAP/HVAP)	est total HCVAP based on county rate
060690002004096	2	0.694	1.4
060690002004078	0	0.694	0.0
060690002004062	0	0.694	0.0
060690002004033	22	0.694	15.3
060690002004081	0	0.694	0.0
060690002005013	15	0.694	10.4
060690002005016	0	0.694	0.0
060690002005014	8	0.694	5.6
060690002006015	0	0.694	0.0
060690002004053	16	0.694	11.1
060690002006017	0	0.694	0.0
060690002006006	2	0.694	1.4
060690002004058	0	0.694	0.0
060690002004051	9	0.694	6.2
060690002004050	2	0.694	1.4
060690002004044	8	0.694	5.6
060690002004089	20	0.694	13.9

(from our Case Study)

Part of the block file (PL94-171 data) with CVAP and HCVAP estimates from ACS 2008-2012

BLOCK	HVAP	*	rate	=	est. HCVAP
060690002004096	2		0.69395		1.39
060690002004078	0		0.69395		0.00
060690002004062	0		0.69395		0.00
060690002004033	22		0.69395		15.27
060690002004081	0		0.69395		0.00
060690002005013	15		0.69395		10.41
060690002005016	0		0.69395		0.00
060690002005014	8		0.69395		5.55
060690002006015	0		0.69395		0.00
060690002004053	16		0.69395		11.10
060690002006017	0		0.69395		0.00
060690002006006	2		0.69395		1.39

(from our Case Study)

2. Recommended procedure:

Choose geographical units that minimize error

- Election districts are usually constructed by combining Census blocks.
- Goal is to develop CVAP estimates that reflect spatial variations in citizenship patterns.
- Citizenship estimates for block groups have error margins that are much too large to be reliable. In most cases we prefer to use tract-based rates. Sometimes we use county rates because of large MOEs at the tract level.

Very large error margins for this county's census tracts made it potentially very difficult to determine the share of Hispanics eligible to vote in various districting plans.

Tract Number	Estimated Hispanic CVAP		
	# Citizens	MOE +/-	% MOE +/-
5.02	2,525	501	20%
4	2,090	332	16%
6	1,940	368	19%
3	1,640	263	16%
7.02	1,330	262	20%
2	1,305	321	25%
7.01	1,170	273	23%
1	1,070	212	20%
5.01	1,060	192	18%
8.01	520	138	27%
8.02	395	144	36%

(from our Case Study)

A Solution = use countywide estimates (although this eliminates geographic variation)

Countywide
HCVAP share of
HVAP = 69%

(from our Case Study)

	Estimated Hispanic CVAP		
Tract Number	# Citizens	MOE +/-	% MOE +/-
5.02	2,525	501	20%
4	2,090	332	16%
6	1,940	368	19%
3	1,640	263	16%
7.02	1,330	262	20%
2	1,305	321	25%
7.01	1,170	273	23%
1	1,070	212	20%
5.01	1,060	192	18%
8.01	520	138	27%
8.02	395	144	36%
Countywide	14,115	839	6%

**3. Recommended procedure:
Follow Census Bureau
(Compass Guide)
recommendations when
aggregating estimates
across geographic areas or
population subgroups.**

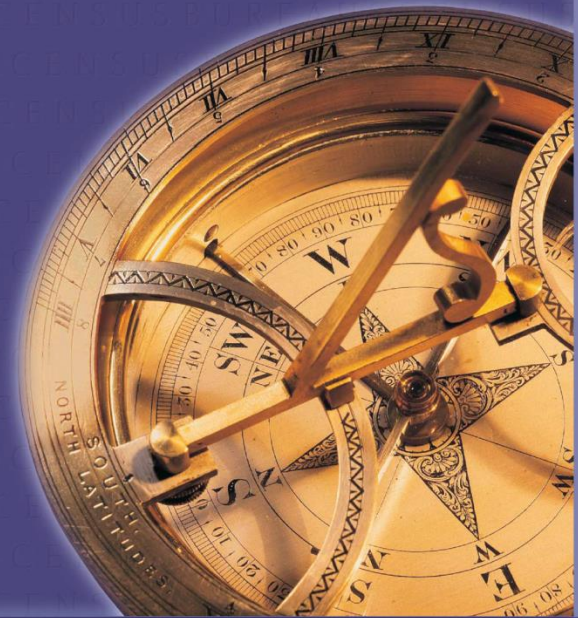
(especially under litigation)

<http://www.census.gov/acs/www/Downloads/handbooks/ACSResearch.pdf>

**A Compass for Understanding and Using
American Community Survey Data**

What Researchers Need to Know

Issued
May 2009



U S C E N S U S B U R E A U

Helping You Make Informed Decisions

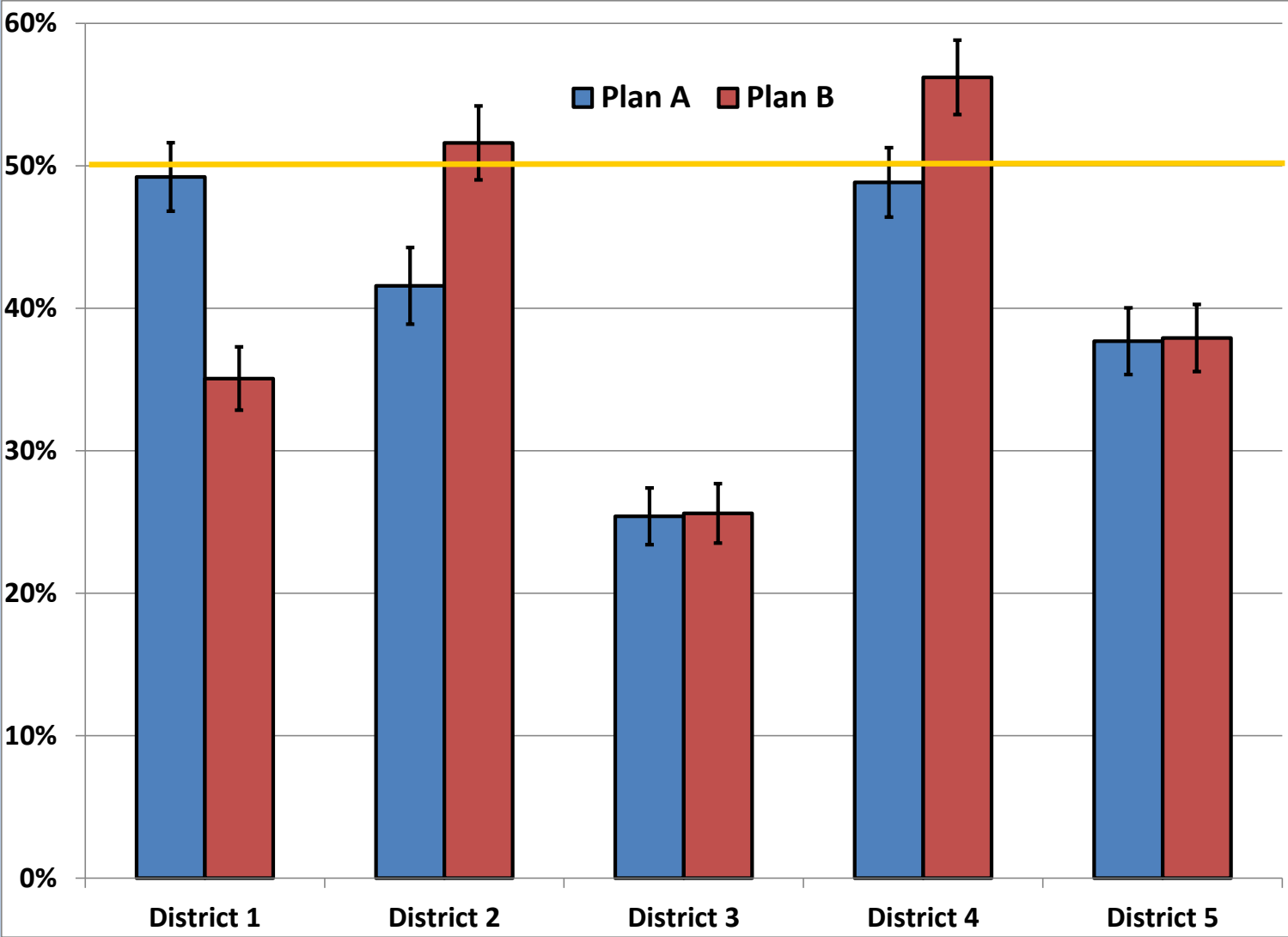
U.S. Department of Commerce
Economic and Statistics Administration
U.S. CENSUS BUREAU

United States
Census
2010

Example

- **Districting plan under litigation**
- **Need to be able to compare plans and assess compliance with VRA**
- **Need to compute confidence intervals for the estimates**
- **As a result of calculating CVAP rates carefully, being aware of MOEs, and computing confidence intervals, one can develop a chart like this.....**

Example of confidence intervals used to compare two possible plans (for litigation)



Estimated Hispanic Share of CVAP, with 90% Confidence Intervals

Conclusions

ACS citizenship estimates can be used in various ways, and our work emphasizes the importance of making choices based on a detailed understanding of the characteristics and limitations of the survey.

But it's really complicated to use the estimates properly!

The Census Bureau should consider:

- *adding VAP estimates to the ACS Special Tabulation files for Census tracts and block groups*
- *Offering 10-year ACS releases to reduce errors for Census tracts and block groups*

The Judicious Use of ACS Citizenship Estimates in Political Redistricting

Jeanne Gobalet

gobalet@demographers.com

**Lapkoff & Gobalet Demographic
Research, Inc.**

www.demographers.com