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Census 2010: What We No Longer Know About Small and Rural Places

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CORNHUSKER ECONOMICS

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Market Report	Yr Ago	4 Wks Ago	4/6/12
Livestock and Products, Weekly Average			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight	$123.34	$129.25	$121.99
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb.	166.11	184.17	178.64
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb.	136.92	155.93	152.14
Choice Boxed Beef, 600-750 lb. Carcass	191.36	196.65	180.79
Western Corn Belt Base Hog Price Carcass, Negotiated	88.70	84.98	81.49
Pork Carcass Cutout, 185 lb. Carcass, 51-52% Lean	94.64	84.55	78.73
Slaughter Lambs, Ch. & Pr., Heavy, Wooled, South Dakota, Direct	179.50	145.00	147.50
National Carcass Lamb Cutout, FOB	399.22	377.61	376.90
Crops, Daily Spot Prices			
Wheat, No. 1, H.W. Imperial, bu.	7.89	6.07	5.80
Corn, No. 2, Yellow Nebraska City, bu.	7.44	6.38	6.55
Soybeans, No. 1, Yellow Nebraska City, bu.	13.69	12.92	13.95
Grain Sorghum, No. 2, Yellow Dorchester, cwt.	12.38	11.00	11.13
Oats, No. 2, Heavy Minneapolis, MN , bu.	3.93	3.15	3.58
Feed			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton	140.00	225.00	225.00
Alfalfa, Large Rounds, Good Platte Valley, ton	72.50	145.00	145.00
Grass Hay, Large Rounds, Good Nebraska, ton	*	100.00	97.50
Dried Distillers Grains, 10% Moisture, Nebraska Average	222.50	220.00	216.50
Wet Distillers Grains, 65-70% Moisture, Nebraska Average	74.50	76.00	77.50

*No Market

The release of data from the Decennial Census always creates a "buzz" for people interested in knowing what is happening in their communities. The 2010 Census was no exception, allowing residents of any state, county, community, zip code or neighborhood to know with confidence how many people reside in their area of interest; along with their age, gender, race, ethnicity, household and family size and composition, group quarters arrangements and home ownership status. These data reflect the characteristics of the population with relatively high reliability for the theoretical reporting date of April 1 of the Census year, and allow an accurate comparison to any other Census year.

Historically, the Census has also provided data on an array of socio-economic characteristics including income, poverty status, educational attainment, school enrollment, veteran status, employment status, occupation, industry, home values and expenses and disabilities. This was, however, not the case in 2010. This is because the long form of the Census (reported as Summary File 3 or SF3) from which such socio-economic data had been derived for decades has been eliminated. Instead, we will obtain such information from a monthly random sample survey of American households known as the American Community Survey (ACS). The first ACS surveys were delivered in 2005 and included 25,458 (just over 2,000 per month) Nebraska households, resulting in 18,002 returned surveys. Similar numbers have been collected each year since.

Organizations primarily concerned with rural areas argued that this change was inappropriate in that it would severely limit our understanding of small communities, but to no avail. The Census Bureau response was that the ACS would in fact be a better and more usable data base over time, because the decennial snapshot becomes dated a few years after the data are collected. Theoretically, once the ACS sample reaches sufficient size it will provide more

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relevant annual profiles of all Census geography, albeit based on an average of observations taken over several years.

Data from the ACS are now available from the Census Bureau's American Fact Finder website, but they are not exactly comparable to the traditional SF3 data base. As predicted, the differences are most apparent when looking at small populations such as those found in rural communities. Currently, one must choose between estimates based on a single year's survey (available only for populations of 65,000 or greater), estimates based on three years of data (reported for places larger than 20,000) and data based on five years of data for everyone else.

One of the theoretical advantages of the ACS is that a new question or variable, such as a new occupational category, can be introduced to the survey at any time. Obviously, however, that question would have to be repeated for five consecutive years before the data would be applicable to any place with a population smaller than 20,000. This is because sampling error in small places is relatively large. As a result, those data are suppressed until the error is theoretically overcome by repeated sampling.

The rate of returned surveys is currently accounting for about 1-in-55 American households annually, or about 1-in-11 over a five year period. The old Census long form questionnaire reached roughly 1-in-8 households. But in the smallest places, that delivery rate could approach 100 percent in order to maintain statistical reliability. Even then reliability was not perfect, but it was assumed to be close enough that margins of error (MOE) were not routinely reported. The ACS on the other hand, does report the MOE for every variable in the data base.

In the end, if your interest is primarily in "big picture" analysis at the national, state or metropolitan level, you are likely to find the new format to be quite acceptable. But if you are a student of small rural communities or even rural counties, you are likely to be much less impressed. An example may help to illuminate this problem. Assume that you are a researcher interested in women with educational attainment of a bachelors degree or beyond, and want to compare several Nebraska communities of various sizes. ACS data for one, three and five year estimates along with their corresponding MOE are shown in Table 1 (on next page).

As seen in the table, data from the one-year sample are only available for Omaha and Lincoln, Nebraska's two metropolitan core communities. In Lincoln, the one-year sample results in an estimated 23.7 percent of women age 25 and older holding a college degree or more, with an MOE of +/- 2.3 percent. In the larger city of Omaha, the MOE is reduced to +/- 1.5 percent.

In the three-year sample, communities with populations of 20,000 and greater are included. In this example, data become available for the Micropolitan core cities of Norfolk and North Platte, with MOEs of +/- 3.3 and +/- 3.0 percent, respectively. Note also that the MOE for both Lincoln and Omaha is reduced by the addition of two more years of data.

In the five-year sample, data for smaller communities are reported. This includes places like Ord and Osceola, both with an MOE greater than +/- 5 percent. Again, the additional data reduces the MOE for the four larger communities. In the case of Lincoln and Omaha, the MOE falls below +/- 1 percent.

So one could say with some confidence that among adult females in Lincoln, between 23 and 25 percent hold a college degree or beyond. But, when reporting the same data for Ord the range would be between 5.3 and 16.3 percent. That appears to be much more speculative if it is to be used for planning or programmatic purposes.

The MOE issue becomes more important when the variable in question is used for something like a grant application. For example, many community development grants require applicants to report the poverty level found in their community as a demonstration of need. Let's suppose that one or more rural communities in Lancaster County, Nebraska are applying for a grant in which one of the measures of eligibility is poverty among families. The applicants would like to demonstrate that the poverty level among families in their community is significantly greater than that found in the core city of Lincoln or in Lancaster County or in Nebraska as a whole. The ACS data available for demonstrating that condition are found in Table 2 (on last page).

Of the fourteen smaller Lancaster County communities identified in the table, only two (Denton and Sprague) are estimated to have family poverty rates in excess of those found in Nebraska, Lancaster County and Lincoln. However, the reported MOEs for those communities create a potential range for the actual family poverty rate that puts them outside of both the high and low end of the estimated range of family poverty rates for all three of the comparison populations. In fact, for thirteen of the fourteen communities in the table, the MOE is greater than the actual estimate.

So given the margins of error in these data, can any of the smaller Lancaster County communities demonstrate with confidence that the level of family poverty found there exceeds that found in the state, the county or the city of Lincoln? Not really.

Are we then better off with the ACS than we were with the old SF3? For states and counties or communities with populations greater than 65,000, the ACS provides us with a set of new, updated data every year. Even with five years of data, those annual updates will be an indicator of short-

term change that was not available from the decennial Census format. That will almost certainly be an improvement over using nearly decade old Census data as a proxy for current conditions. The sampling error may be greater than that found in the old decennial snapshot format, but it is arguably well within an acceptable range (less than +/- 1 percent in the Table 2 example).

However, not many counties or communities in Nebraska have populations of that size. Nor, in fact, do many places in Nebraska reach the 20,000 threshold for inclusion in the three year ACS reports. Thus, those of us who are primarily interested in rural places will find only the five year ACS summaries to be available. Even then, the margins of error accompanying estimates for small and rural places are large enough to make the data essentially unusable for most programmatic and planning purposes.

In some cases, we will probably be able to make adjustments to these limitations. However, the bottom line for those of us requiring reliable socio-economic data for small populations of the kind found in Nebraska's rural communities, is that the ACS is simply not good news.

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Table 1. Females Age 25 Years and Older: Percent with Bachelors Degree or Higher

		Females Age 25 Years and Older				Percent with Bachelors Degree or Higher			
				Range				Range	
ACS Sample	Geography	Estimate	Margin of Error	Low	High	Estimate	Margin of Error	Low	High
One Year	Lincoln	81,038	1,207	79,831	82,245	23.7	2.3	21.4	26.0
	Omaha	134,773	1,501	133,272	136,274	21.9	1.5	20.4	23.4
	Norfolk	X	X	X	X	X	X	X	X
	North Platte	X	X	X	X	X	X	X	X
	Ord	X	X	X	X	X	X	X	X
	Osceola	X	X	X	X	X	X	X	X
Three Year	Lincoln	79,486	368	79,118	79,854	24.1	1.3	22.8	25.4
	Omaha	134,132	616	133,516	134,748	21.5	1.0	20.5	22.5
	Norfolk	8,016	272	7,744	8,288	15.8	3.3	12.5	19.1
	North Platte	8,764	280	8,484	9,044	12.0	3.0	9.0	15.0
	Ord	X	X	X	X	X	X	X	X
	Osceola	X	X	X	X	X	X	X	X
Five Year	Lincoln	77,931	228	77,703	78,159	23.9	0.9	23.0	24.8
	Omaha	133,807	470	133,337	134,277	21.5	0.7	20.8	22.2
	Norfolk	7,984	172	7,812	8,156	14.1	2.5	11.6	16.6
	North Platte	8,655	173	8,482	8,828	12.4	2.2	10.2	14.6
	Ord	863	88	775	951	10.8	5.5	5.3	16.3
	Osceola	359	47	312	406	13.4	5.6	7.8	19.0

X = Data Suppressed
Source: American Community Survey

Table 2. Families in Poverty: Lancaster County Communities

	All Families					
	Total		Percent Below Poverty Level			
Geography	Estimate	Margin of Error	Estimate	Margin of Error	Range	
					Low	High
Nebraska	467,250	2,588	7.9	0.2	7.7	8.1
Lancaster County	69,373	1,015	7.7	0.7	7.0	8.4
Lincoln City	61,371	968	8.5	0.8	7.7	9.3
Bennet Village	194	37	3.1	4.4	0.0	7.5
Davey Village	37	17	5.4	8.9	0.0	14.3
Denton Village	65	21	12.3	9.3	3.0	21.6
Firth Village	151	36	7.3	9.6	0.0	16.9
Hallam Village	44	21	4.5	9.5	0.0	14.0
Hickman City	402	67	4.0	4.0	0.0	8.0
Malcolm Village	125	27	7.2	7.6	0.0	14.8
Panama Village	60	22	0.0	30.3	0.0	30.3
Raymond Village	37	13	0.0	40.6	0.0	40.6
Roca Village	83	27	7.2	11.1	0.0	18.3
Sprague Village	50	15	10.0	20.1	0.0	30.1
Walton CDP*	77	42	0.0	24.9	0.0	24.9
Waverly City	938	62	2.0	1.8	0.2	3.8
Yankee Hill CDP*	47	39	0.0	35.7	0.0	35.7

*CDP indicates a "Census Designated Place." These are unincorporated places with populations of sufficient size and density to be reported as places in Census data.
Source: American Community Survey Five Year Sample.