Impact

A regulatory impact analysis must accompany every economically significant federal rule or regulation. The Office of Policy Development and Research performs this analysis for all U.S. Department of Housing and Urban Development rules. An impact analysis is a forecast of the annual benefits and costs accruing to all parties, including the taxpayers, from a given regulation. Modeling these benefits and costs involves use of past research findings, application of economic principles, empirical investigation, and professional judgment.

Using American Community Survey Data for Formula Grant Allocations

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Abstract

This article discusses the use of census data to support grants from the federal government to state and local governments and shows how the Census Bureau's new American Community Survey affects grants through the Community Development Block Grant program.

Introduction

The U.S. Department of Housing and Urban Development (HUD) administers funding for a number of community development programs that rely on local entities (such as city or county governments, public housing agencies, and community-based nonprofits) to carry out the activities. These community development funds typically are distributed in one of two ways: by grant competition or by formula.

With a grant competition, HUD publishes a Notice of Funding Availability (NOFA) that establishes the purpose of the program and the criteria by which funds will be awarded. Interested organizations submit applications, and HUD staff review the applications using the criteria established

in the NOFA. HUD administers major programs such as HOPE VI, Choice Neighborhoods, and round 2 of the Neighborhood Stabilization Program on a competitive basis. Competitive programs enable HUD to influence the types of projects funded and to limit grants to high-quality projects and capable organizations. One challenge in administering these programs is determining accurately and fairly which projects are high quality and which organizations are capable.

Formula grant programs are designed to simplify the federal role and to allow grantees to make key decisions about which projects are appropriate. Formula grant programs also provide funds to all applicants that meet the specified qualification criteria. HUD's major formula grant programs include the Community Development Block Grant (CDBG) program, the HOME Investment Partnerships Program, and the Public Housing Capital Fund. Each of these programs has an established formula that specifies the variables and variable weights that HUD must use to distribute funding. Each year, HUD updates the underlying data and the total funds available, and the results of the formula determine how much each particular grantee gets. Data used to run the formula must be available and consistently collected across the universe of potential grantees. As a result, the Census Bureau—and particularly the decennial census—has historically been the authoritative source.[1] The detailed survey component of the decennial census (the "long form") has been replaced by the American Community Survey (ACS), which will provide annual estimates of demographic, social, and economic characteristics of neighborhoods across the United States. For programs that are required to use census data for distributing formula grants, the ACS is likely to be the new standard. The rest of this article will address the transition from decennial census data to ACS data, particularly for HUD's CDBG program.

Introducing ACS Data Into the CDBG Formula

The Census Bureau released the first ACS estimates in 2010, based on surveys completed from 2005 through 2009. HUD is using these data in formula allocations for the first time in fiscal year (FY) 2012. A recent HUD report, *Redistribution Effect of Introducing 2010 Census and 2005–2009 ACS Data Into the CDBG Formula*, discusses how that transition affects grants under the CDBG program (Joice, Winter, and Johnson, 2011). This article presents the key findings and implications from that research.

HUD bases CDBG allocations on two formulas, Formula A and Formula B, which rely on five variables specified by Section 5306 of the Housing and Community Development Act: population, people in poverty, overcrowded households, housing units built before 1940, and population growth lag. Exhibit 1 shows the source for each of these variables for the CDBG allocations made in FY 2011 and the source that will be used in FY 2012. For each grantee, HUD computes these variables as a share of the nationwide total.[2] HUD then multiplies the grantee's share of that

[1] For more information about the use of formulas for distributing federal funding and the role of Census Bureau data in this process, see Reamer (2010).

[2] The three basic CDBG grantee types are entitlement city, urban county, and state-administered nonentitlement. HUD computes the shares of each variable differently for different grantee types and different variables. For a full explanation, see Joice, Winter, and Johnson (2011) and Richardson and Meehan (2003).

Exhibit 1

Comparison of Formula Variables and Data Sources From FY 2011 and FY 2012 Allocations

	Variables	FY 2011 Allocation	FY 2012 Allocation
Formula A variables	Population	2009 population estimates	2010 Census
	People in poverty	2000 Census	2005–2009 ACS
	Overcrowded households	2000 Census	2005–2009 ACS
Formula B variables	Population growth lag	2009 population estimates and 1960 Census	2010 Census and 1960 Census
	People in poverty	2000 Census	2005–2009 ACS
	Housing units built before 1940	2000 Census	2005–2009 ACS

ACS = American Community Survey. FY = fiscal year.

variable by the variable's weight and the overall allocation amount, adds the variables, and applies a pro rata reduction to get to the final grant amount.[3]

For several of these variables, the difference between the values used in FY 2011 and the values that will be used in FY 2012 are remarkable. Across all metropolitan areas, the 2005–2009 ACS estimate of overcrowding is 46.4 percent lower than the 2000 Census estimate of overcrowding. The number of people in poverty in metropolitan areas is estimated by the 2005–2009 ACS to be 16.3 percent higher than it was according to the 2000 Census. A substantial difference also exists in pre-1940 housing measurements; the 2005–2009 ACS estimate is 7.7 percent higher than the 2000 Census estimate. These figures and estimates of population change appear in exhibit 2, broken down by entitlement cities and the balance of metropolitan areas (which includes CDBG urban county grantees and some nonentitlement areas).

Exhibit 3 shows that trends are similar in entitlement communities and nonentitlement areas, with two exceptions. In nonentitlement areas, there is only a minimal difference between the 2000 Census and 2005–2009 ACS estimates of pre-1940 housing, and the difference in overcrowded housing is less extreme.

In the past, HUD updated most of the data in the CDBG formula with every decennial census. As shown in Richardson and Meehan (2003), substantial changes in CDBG variables are common with the introduction of new data. This time, however, is different. The new data not only reflect nearly a decade of changing neighborhood conditions, they also reflect one-time adjustments from the decennial census to the ACS. It is important to understand whether the apparent changes from the 2000 Census to the 2005–2009 ACS represent actual changes in conditions, or changes in measurement.

The methodology of the ACS differs from the methodology of the decennial census in some important ways. The most widely discussed difference is the sample size. Both the long form of the decennial census and the ACS are surveys, but substantially more households received the long form (1 in 6 households, which was approximately 18 million households in 2000) than receive the ACS

[3] The pro rata reduction is necessary because HUD runs Formula A and Formula B for each grantee, and the grantee gets whichever total is higher. This procedure leads the sum of individual grants to be greater than the total funds available. This article will not extensively discuss the mechanics of the CDBG formula; for more background, see Joice, Winter, and Johnson (2011) and Richardson and Meehan (2003).

Exhibit 2

Change in Formula Variables in Metropolitan Areas

	Entitlement Cities	Balance of Metropolitan Areas	Total Metropolitan Areas
Population			
2009 population estimates	126,330,750	134,795,096	261,125,846
2010 Census	125,843,466	136,008,672	261,852,138
Percent change	– 0.4	0.9	0.3
People in poverty			
2000 Census	18,401,833	10,308,189	28,710,022
2005–2009 ACS	20,671,664	12,724,840	33,396,504
Percent change	12.3	23.4	16.3
Overcrowded households			
2000 Census	3,861,310	1,813,634	5,674,944
2005–2009 ACS	2,002,160	1,037,538	3,039,698
Percent change	– 48.1	– 42.8	– 46.4
Housing units built before 1940			
2000 Census	8,338,128	5,032,353	13,370,481
2005–2009 ACS	9,320,169	5,084,319	14,404,488
Percent change	11.8	1.0	7.7

ACS = American Community Survey.

Exhibit 3

Change in Formula Variables in Entitlement and Nonentitlement Areas

	Entitlement Communities	Nonentitlement Areas
Population		
2009 population estimates	201,180,773	108,932,489
2010 Census	201,270,119	110,340,632
Percent change	0.0	1.3
People in poverty		
2000 Census	23,471,950	11,978,807
2005–2009 ACS	27,014,044	14,008,083
Percent change	15.1	16.9
Overcrowded households		
2000 Census	5,019,582	1,232,717
2005–2009 ACS	2,630,534	778,680
Percent change	– 47.6	– 36.8
Housing units built before 1940		
2000 Census	10,576,185	6,825,438
2005–2009 ACS	11,578,443	6,882,096
Percent change	9.5	0.8

ACS = American Community Survey.

(3 million households per year).[4] Indeed, the Census Bureau did not even publish margins of error for the numbers generated from the decennial census long form survey, giving some data users the false impression that they were true population parameters rather than survey estimates.

As a result of the smaller sample, the ACS is less precise than the decennial Census; that is, the ACS has higher sampling error. Thus, it is possible that differences between the 2000 Census and the 2005–2009 ACS are simply random variation. This concern applies to all ACS estimates, not only to those used for the CDBG formula. Differences between the two surveys may also relate to *accuracy* rather than to *precision*. The extent to which a survey accurately estimates a population parameter is known as nonsampling error. In the following sections, we discuss some of the variables in the CDBG formula and consider how nonsampling error in the 2000 Census and the 2005–2009 ACS influence apparent changes.

Poverty

Of all the significant changes in CDBG formula variables, the increase in poverty (16.3 percent across all metropolitan areas) seems the most likely to reflect real changes. Between the 2000 Census and the 2005–2009 ACS were two recessions and 6 years of growth that did not reach many of the most vulnerable in society.[5] *Across all metropolitan areas*, an increase in poverty—even an increase as substantial as 16.3 percent—seems accurate. When looking at particular places or metropolitan areas, however, changes in poverty might be partly the result of differences between the decennial census and ACS—in particular, the result of the "residence rule" used to determine who should respond to a survey. The decennial census required a household to respond based on its "usual place of residence." The ACS requires a household to respond if it has lived, or plans to live, for 2 months at the unit where the survey was mailed. This change in the residence rule can affect the population being surveyed in places with a large percentage of seasonal residents (Love et al., 2004). For example, if Arizona households residing in Maine during the summer are consistently high income, then the ACS would indicate higher household incomes in Maine and lower household incomes in Arizona when compared with the 2000 Census (independent of any actual change in income).

Overcrowded Housing

The change in overcrowding from the 2000 Census to the 2005–2009 ACS is remarkable for its size (a reduction of 46.4 percent for a national-level statistic in less than a decade) and for the fact that it happened over a period of great turmoil in the housing market. It is likely that this change is more reflective of differences in measurement from the decennial census to the ACS than it is of real changes between 2000 and the period 2005 through 2009. The Census Bureau thinks that, historically, survey respondents have been confused about how to respond correctly to the question of how many rooms are in a housing unit, based on discrepancies between the number of

[4] When the ACS began, 3 million households represented 2.5 percent of all housing units, but the sample size did not increase with the number of U.S. households. In FY 2011, the Census Bureau budget included funds to expand the sample size to approximately 3.5 million.

[5] The "Great Recession" officially began in December 2007 and is only partly reflected in the 2005–2009 ACS. Poverty will likely increase again in FY 2013 and FY 2014 with the introduction of 2006–2010 and 2007–2011 ACS estimates.

bedrooms and the total number of rooms respondents reported (Woodward, Wilson, and Chesnut, 2007). Residents of units with unusual layouts, such as small studio and efficiency units, may have been unaware in 2000 that they should count the kitchen as a room distinct from the attached living and sleeping area. Questions that confuse or mislead respondents are more problematic for the decennial census than for the ACS, because the decennial census relied more on mail-in responses. The ACS extensively uses telephone and in-person interviewers who are able to explain to respondents what does and does not count as a room. This follow-up likely played a large role in the fact that the percentages of units with one and two rooms declined 36.8 and 42.3 percent, respectively, from the 2000 Census to the 2005–2009 ACS.

The estimated overcrowding rate from the 2005–2009 ACS (3 percent) is also very similar to the estimated overcrowding rate from the American Housing Survey (AHS) (2.4, 2.5, and 2.2 percent in 2005, 2007, and 2009, respectively). All of this evidence suggests that the apparent decline in overcrowding from the 2000 Census to the 2005–2009 ACS is largely the result of a technical change in measurement, but that technical change is a positive development that more accurately reflects actual conditions.

Housing Units Built Before 1940

The change in pre-1940 housing from the 2000 Census to the 2005–2009 ACS is also likely the result of methodological changes from the decennial census to the ACS. If these data were true population parameters, such an increase would hardly be possible; pre-1940 units can be removed from the housing stock through demolition but can be added in only a few circumstances. If a pre-1940 housing *structure* is renovated and additional units are added (such as splitting a four-bedroom apartment into two two-bedroom apartments), the number of pre-1940 housing *units* would increase. Also, because the census and ACS do not survey nonresidential buildings, converting an old industrial or commercial building to residential use could increase the number of pre-1940 housing units. These scenarios may explain part of the apparent increase in pre-1940 housing, but it is likely that the number of pre-1940 units removed from the housing stock each year substantially exceeds the number of pre-1940 units added to the housing stock. The Components of Inventory Change reports that HUD issues using data from the AHS confirm this conclusion. Between 2001 and 2007, a total of 726,000 pre-1940 housing units were added to the national housing stock, whereas 1,507,000 were removed from the housing stock. The net change of -781,000 suggests that, at a national level, the pre-1940 housing stock did not actually increase from the 2000 Census to the 2005–2009 ACS.

As with the measurement of overcrowding, the measurement of structure age is influenced by the fact that the ACS relies more heavily than the Census on telephone and in-person interviewers. Survey respondents may not immediately know the age of their building; one might expect this to be particularly true for renters in old multifamily buildings. ACS interviewers may be able to help respondents determine their building's true age. Administrative data from New York City show even higher levels of pre-1940s housing than those captured by the ACS, but the ACS estimates are much closer than the 2000 Census estimates (Salvo et al., 2007). As with overcrowding, the apparent changes in pre-1940 housing seem to be the result of a technical change in measurement, but again, that technical change is a positive development that more accurately reflects actual conditions.

Impact

The previous section discussed how certain variables changed—and speculated about why they changed—at the national level. This section will focus more on the effects of the new data on individual grantees and types of grantees, using the total appropriation amount and grantee universe from FY 2011. Exhibit 4 demonstrates how each variable affected principal cities, satellite cities, and urban counties. Exhibit 5 demonstrates how each variable affected grantees in the different HUD administrative regions (see exhibit 6).[6]

Exhibit 4

Change in Funding Allocated by Variable, by Grantee Type

Jurisdiction Type	Due to Switching Formulas	Percent Change by Variable					
		Formula A			Formula B		
		Population	People in Poverty	Overcrowded Households	Population Growth Lag	People in Poverty	Housing Units Built Before 1940
Principal city	– 0.4	0.0	0.1	– 0.2	0.2	– 0.9	1.3
Satellite city	0.2	0.0	– 1.1	– 1.1	– 0.8	0.0	– 0.3
Urban county	0.0	0.3	2.7	0.1	– 0.5	0.0	– 1.4

Exhibit 5

Change in Funding Allocated by Variable, by Region

Region	Due to Switching Formulas	Percent Change by Variable					
		Formula A			Formula B		
		Population	People in Poverty	Overcrowded Households	Population Growth Lag	People in Poverty	Housing Units Built Before 1940
New England	0.0	0.0	0.0	0.0	– 1.1	– 0.7	3.2
New York/ New Jersey	0.1	0.0	– 0.1	0.1	– 0.4	– 2.8	2.6
Mid-Atlantic	– 0.1	0.1	– 0.1	– 0.4	– 0.8	– 0.9	– 2.8
Southeast	– 1.3	0.1	3.9	– 3.3	0.6	– 0.2	0.2
Midwest	0.1	0.1	1.8	0.2	0.5	0.6	2.0
Southwest	0.0	0.1	4.2	0.6	0.0	– 0.7	– 0.7
Great Plains	0.4	0.1	2.3	0.4	0.7	0.8	2.1
Rocky Mountain	—	– 0.1	9.1	1.7	– 0.3	0.4	– 1.3
Pacific/Hawaii	0.0	0.0	– 4.0	1.0	0.0	– 0.2	0.0
Northwest/ Alaska	0.0	0.1	3.6	0.2	– 0.6	0.1	– 1.2
Puerto Rico	– 4.2	– 0.5	– 10.0	– 7.9	—	—	—
Total	**– 0.2**	**0.0**	**0.5**	**– 0.2**	**– 0.1**	**– 0.6**	**0.6**

[6] Satellite city is not an official HUD designation but is used here in reference to any entitlement city that is not the central city of its metropolitan statistical area. Puerto Rico is not officially a HUD administrative region, but it is grouped separately for this analysis.

Exhibit 6

Map of HUD Administrative Regions

Regarding poverty, three distributional changes are particularly notable. First, the ACS indicates that poverty is spreading out from central cities into suburban and exurban communities (Kneebone and Garr, 2010). Exhibit 2, which shows that poverty increased by 12.3 percent in entitlement cities, but nearly twice that amount (23.4 percent) in the balance of metropolitan areas (including urban counties and nonentitlement areas), corroborates this finding. Exhibit 4 shows that Formula A urban county grantees experience a 2.7-percent increase in funding as a result of the poverty variable. Funding increases only 0.1 percent for principal cities and goes down 1.1 percent for satellite cities as a result of the poverty variable. The second major change resulting from the poverty variable is the drastic reduction in funding for entitlement grantees in Puerto Rico. All 27 Puerto Rico entitlement grantees see their funding decrease because of the introduction of ACS data, by an average of 22.7 percent. Exhibit 5 shows that almost one-half of that decrease (10 percent) derives from the poverty variable, and overcrowding is responsible for another 7.9 percent. Richardson and Meehan (2003) found similar results from the introduction of 2000 Census data to the CDBG formula; 95 percent of jurisdictions in Puerto Rico experienced declines in CDBG funding in FY 2003, largely as a result of the poverty variable. Finally, the influence of the poverty variable—particularly in Formula A—varies widely by region. The 10-percent decrease in Puerto Rico is the most extreme example, but several other regions have significant changes. Exhibit 5 shows that Formula A grantees in the Southeast (Region IV), Southwest (Region VI), Rocky Mountain (Region VIII),

and Northwest/Alaska (Region X) regions see average funding increases of at least 3.6 percent as a result of the poverty variable. Formula A grantees in the Pacific/Hawaii (Region IX) region (which includes California, Nevada, and Arizona) and Formula B grantees in the New York/New Jersey (Region II) region have their average grant decrease by 4.0 and 2.8 percent, respectively, as a result of the poverty variable.

As discussed in the previous section, the declining measure of overcrowding appears to stem from more reliable information about unit size; considerably fewer households reported units with one or two rooms. This change has a minimal effect on Formula A principal cities and urban counties (-0.2-percent and 0.1-percent changes, respectively) but does cause satellite cities to lose a more substantial 1.1 percent. By region, the Southeast (Region IV) and Puerto Rico lose substantially (-3.3 percent and -7.9 percent, respectively), whereas no regions see their funding increase more than 2 percent as a result of the overcrowding variable. Individual grantees that lose a substantial amount of funding as a result of the overcrowding variable include several large grantees in Florida: Hialeah (-41 percent), Miami (-26 percent), Miami-Dade County (-27 percent), Miami Beach (-35 percent), and Tampa (-10 percent). At this point, the reason why the improved measurement of overcrowding would manifest itself differently in different regions and among types of grantees is not clear.

The pre-1940 housing variable is the one that most clearly has a systematic effect on certain types of grantees. Exhibits 4 and 5 show that the pre-1940 housing variable causes funding to increase by 1.3 percent in principal city entitlement grantees and by at least 2 percent in the New England (Region I), New York/New Jersey (Region II), Midwest (Region V), and Great Plains (Region VII) regions. Specific grantees that benefit from the changing measurement of pre-1940 housing include New York City, Chicago, Indianapolis, and Detroit, which would have their funding from the pre-1940 housing variable increase by 6.8, 6.7, 7.5, and 4.9 percent, respectively.[7] As described in the previous section, the jump in pre-1940 housing appears to be the result of improved information about the true age of multifamily buildings, specifically buildings inhabited by residents with limited knowledge of their building's age. Exhibit 7 shows that change in pre-1940 housing from the 2000 Census to the 2005–2009 ACS is positively correlated with multifamily rental stock and negatively correlated with owner-occupancy rate and single-family housing stock. Formula B grantees with a large multifamily housing stock, small single-family housing stock, and low owner-occupancy rate appear most likely to gain from the changing measurement of pre-1940 housing.

[7] These numbers are the change in funding from the pre-1940 housing variable divided by the total FY 2011 grant amount. These grantees would see their overall grant amount go up by 2.9, 6.5, 10.5, and 11.9 percent, respectively.

Exhibit 7

Correlation of Change in Pre-1940 Housing With Select Census 2000 Data[a]

		Change in Pre-1940 Housing
Owner-occupancy rate	Pearson correlation	– .254
	sig. (2-tailed)	.000
	N	3,215
Units in single-unit structures	Pearson correlation	– .232
	sig. (2-tailed)	.000
	N	3,215
Renter-occupied units in large multifamily buildings (10 or more units in structure)	Pearson correlation	.374
	sig. (2-tailed)	.000
	N	3,215

sig. = statistical significance.

[a] Using county-level data, I calculate correlation coefficients between these three variables and the change in pre-1940 housing units (calculated as the ACS value minus the 2000 Census value).

Conclusion

The 2005–2009 ACS data that HUD is using for FY 2012 formula allocations partially represent changes that have occurred since the 2000 Census in communities across the country. However, the ACS also measures some things differently than the 2000 Census. As shown by allocations through the CDBG program, these differing methodologies can play a substantial part in any changes observed from the 2000 Census to the 2005–2009 ACS.

The ACS methodology has been rigorously tested and justified. The benefits that the ACS offers—particularly its low nonsampling error and annual updates—are substantial, and the ACS is rightfully *the* authoritative and comprehensive data source from the Census Bureau. The CDBG allocation changes that may result in FY 2012 are substantial for some grantees, but FY 2012 may be the last time such drastic changes occur as the result of new data. By using annual updates of the ACS 5-year estimates, HUD expects future allocations to be stable and to accurately reflect conditions in communities across the country.

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