



**AMERICAN COMMUNITY SURVEY DECISION MEMORANDUM SERIES**

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**MEMORANDUM FOR:** The Record

From: James B. Treat  
Chief, American Community Survey Office

Subject: Selection of ACS Content Review Weighting Algorithm

**Purpose**

The purpose of this memorandum is to document which weighting approach will be used in the ACS Phase I Content Review.

**Background**

In August 2012, the Interagency Council of Statistical Policy (ICSP) Sub-Committee for the American Community Survey (ACS) was formed to advise the Office of Management and Budget (OMB) and the Census Bureau from the perspective of the federal statistical system. The Sub-Committee is co-chaired by the Director of the Census Bureau and by the Chief Statistician of OMB. The ICSP Sub-Committee's mission includes overseeing and managing the content and respondent burden of the ACS. The Sub-Committee charter (*Charter of the Interagency Council on Statistical Policy: Subcommittee on the American Community Survey*, August 10, 2012) states, "Each year there will be an annual review of questions to consider any deletion or addition of questions." In 2013, the Census Bureau initiated the first comprehensive examination of every question on the ACS form, resulting in the first comprehensive ACS Content Review project undertaken since the ICSP Sub-Committee was established. Because of the complexity, the analysis is conducted in phases. Phase I reflects results based solely on the decision criteria and weighting approach discussed below.

**Decision Criteria**

To guide the Content Review, the ICSP Subcommittee identified 19 criteria to use in decision-making (*ACS Content Review Decision Criteria*, August 2013). These criteria included 13 benefits and 6 costs to consider and to weight in the analysis. The table below is taken directly from the design criteria. Whereas the ICSP discusses "variables," our analysis focuses on the question and question subpart.

Benefits	Description
Number of Uses at Block Group / Tract Level – Mandatory (i.e., Statutory)	Number of uses at the block group/ tract level is defined as the number of occasions a federal agency cited that this variable satisfied the requirement for block groups or tracts. Mandatory is defined as “federal law explicitly calls for use of Census Bureau, decennial census or ACS data on that variable.”
Number of Uses at Block Group / Tract Level – Required	Number of uses at the block group/ tract level is defined as the number of occasions a federal agency cited that this variable satisfied the requirement for block groups or tracts. Required is defined as “A federal law (or implementing regulation) explicitly requires the use of data and the decennial census or the ACS is the historical source; or the data are needed for case law requirements imposed by the U.S. federal court system.”
Number of Uses at Block Group / Tract Level – Programmatic	Number of uses at the block group/ tract level is defined as the number of occasions a federal agency cited that this variable satisfied the requirement for block groups or tracts. Programmatic is defined as “the data are needed for program planning, implementation, or evaluation and there is no explicit Mandatory or Required requirement.”
Number of Uses at Place/County/MSA Level – Mandatory (i.e., Statutory)	Number of uses at the place level is defined as the number of occasions a federal agency cited that this variable satisfied the requirement for places, counties, and Metropolitan Statistical Areas (MSAs). Mandatory is defined as “federal law explicitly calls for use of Census Bureau, decennial census or ACS data on that variable.”
Number of Uses at Place/County/MSA – Required	Number of uses at the place level is defined as the number of occasions a federal agency cited that this variable satisfied the requirement for places, counties, and MSAs. Required is defined as “A federal law (or implementing regulation) explicitly requires the use of data and the decennial census or the ACS is the historical source; or the data are needed for case law requirements imposed by the U.S. federal court system.”
Number of Uses at Place/County/MSA Level – Programmatic	Number of uses at the place level is defined as the number of occasions a federal agency cited that this variable satisfied the requirement for places, counties, and MSAs. Programmatic is defined as “the data are needed for program planning, implementation, or evaluation and there is no explicit Mandatory or Required requirement.”
Number of Uses at State/National Level – Mandatory (i.e., Statutory)	Number of uses at the national level is defined as the number of occasions a federal agency cited that this variable satisfied the requirement for states and the nation. Mandatory is defined as “federal law explicitly calls for use of Census Bureau, decennial census or ACS data on that variable.”
Number of Uses at State/National Level – Required	Number of uses at the national level is defined as the number of occasions a federal agency cited that this variable satisfied the requirement for the states and the nation. Required is defined as “A federal law (or implementing regulation) explicitly requires the use of data and the decennial census or the ACS is the historical source; or the data are needed for case law requirements imposed by the U.S. federal court system.”
Number of Uses at State/National Level – Programmatic	Number of uses at the national level is defined as the number of occasions a federal agency cited that this variable satisfied the requirement for the states and the nation. Programmatic is defined as “the data are needed for program planning, implementation, or evaluation and there is no explicit Mandatory or Required requirement.”
County-Level Interquartile Range in Values	One “value of interest” (i.e., estimate) will be chosen for each variable (for example percentage of population with high school diploma or percentage of population who are Hispanic) and the inner quartile range of the geographic distribution throughout counties (based on 5-year estimates) will be calculated.
Used to Select Frame for a Federal Survey	This variable is used to select the sampling frame for a federal survey.
Other Data Sources Exist	Substitute or alternative information on this variable is currently available or could be obtained with minimal effort from another data source.

Benefits	Description
Median County-Level Coefficients of Variation	One “value of interest” will be chosen for each variable (for example population with a high school diploma or Hispanic population) and the coefficient of variation at the 5-year county-level will be calculated. The median value of all county-level coefficients of variation will be scored.

Costs	Description
Cognitive Burden Score	The CATI Telephone Operator or the CAPI Field Representative (FR) identified that: <ul style="list-style-type: none"> <li>- Respondents find the question confusing</li> <li>- Requires probing, or</li> <li>- Respondents have to retrieve information to answer</li> </ul>
Sensitivity Score	The CATI Telephone Operator or the CAPI Field Representative (FR) identified that: <ul style="list-style-type: none"> <li>- Respondent was reluctant to answer, or</li> <li>- Interviewer was uncomfortable asking</li> </ul>
Overall Difficulty Score	This score is composed of responses to any or all of the following questions about this variable: <ul style="list-style-type: none"> <li>- Ranked 4 or 5 on overall difficulty, and</li> <li>- Voted in top three most difficult questions</li> </ul>
Number of Complaints to Census Bureau HQ	This value is comprised of counting the number of complaints on this variable that have been received at call centers and via letters, emails or phone calls to the Census Bureau or program directors.
Median Seconds to Answer	The median value for the time (in seconds) used by respondents to provide information for this variable in the Internet, CATI, CAPI data collection modes.
Median County-Level Item Response Rate	The mid-point of values of the 5-year county-level estimates for the rate at which responses were received for this question/variable.

## Weighting Options

The ICSP Sub-Committee considered two potential weighting options for the Phase I analysis, which focuses on the results of assessing ACS questions relative to benefits and costs (*Assigning Weights to the ACS Content Review Scoring Criteria*, January 2014). (Phase II will assess the potential candidate questions for removal using supplemental information and consultation.) Option 1 provided higher scores for higher numbers of uses. Under this option, uses at the block group/tract; place/county/Metropolitan Statistical Area; or state/national level that are Mandatory, Required, or Programmatic are assigned a score of 0 to 1.0 points based on the number of separate stated uses of the survey question of that type at that level of geography. For example: 0 points for no uses, 0.2 points for 1-5 uses, 0.6 points for 6-10 uses, 1.0 points for more than 10 uses. This option gives the opportunity for higher scores for questions that have more uses. A potential drawback is that although weighting can give higher priority to low levels of geography or mandatory uses, a low number of uses leads to a lower score in that block, which could dilute the weighted score. This could potentially result in a question with more uses at higher levels of geography or with more Programmatic uses may outscore a question with fewer mandatory uses or fewer uses at low levels of geography.

Option 2 provides full scores for any use of a type. Under this option, each level of geography that is Mandatory, Required, or Programmatic would be assigned a score of 0 or 1 points based on the presence of any stated uses of the survey question of that type at that level of geography. The weighted score is not diluted when there are a low number of uses of that type. The

weighting scheme solely determines the relative merit of different types of uses at different levels of geography. This option does not give the opportunity for higher scores for questions that have more uses, which could possibly result in a question with fewer uses outscoring a question with more uses.

The Sub-Committee voted 3 to 2 for Option 1. The Director of the Census Bureau selected Option 1 and the Chief Statistician selected Option 2, which required the two to come to consensus on the approach.

### **Director's Decision and Analysis Implications**

After consultation with the other Sub-Committee members, the Census Bureau Director and OMB's Chief Statistician selected Option 2. Because the Department of Commerce General Counsel must validate over 300 uses as Mandatory, Required, or Programmatic in a short analytic timeframe, Option 2 supports a more focused validation approach. We only need one use that is Mandatory to exclude it from consideration for removal. Additional validated uses will only add to the question's benefits. The additional validation and other supplemental information will be examined during Phase II of the project. The culmination of all analysis, research, and testing will comprise Phase III in the coming years.

cc: Frank Vitrano, AD2020  
Stephen Buckner, ADCOM  
Jeannie Shiffer, ADCOM  
Enrique Lamas, ADDP  
Eloise Parker, ADDP  
Burton Reist, 20RPO  
Patricia McGuire, 20RPO  
ACS Division Chiefs' Forum  
Barbara M LoPresti, TMO  
Brian Monaghan, FLD  
David Hackbarth, NPC  
Victoria Velkoff, SEHSD  
Fern Bradshaw, FLD  
Jeffrey D Sisson, DSCMO  
Marian E Brady, DSCMO  
Michael R Ratcliffe, GEO  
Patrick J Cantwell, DSSD  
Robert A Kominski, SEHSD  
Ruth Ann Killion, DSMD  
Steven Werner Tornell, TMO  
Timothy F Trainor, GEO  
Timothy P Olson, DIR  
Tommy Wright, CSR  
Victoria A Velkoff, Acting POP  
W Neil Tillman, PIO  
ACS Senior Staff  
Agnes S Kee, ACSO  
Anthony G Tersine Jr, DSSD  
Arumugam Sutha, ACSO  
Cheryl V Chambers, ACSO  
Dameka M Reese, ACSO  
David A Raglin, ACSO  
Deborah L Ambill, ACSO  
Donna M Daily, ACSO  
Gail M Denby, ACSO  
Gary B Chappell, ACSO  
Grace L Clemons, ACSO  
Jennifer Guarino Tancreto, DSSD  
Judy G Belton, ACSO  
Kai T Wu, ACSO  
Karen E King, DSSD  
Kenneth B Dawson, ACSO  
Mark E Asiala, DSSD  
Matthew A Zimolzak, ACSO  
Nicholas M Spanos, ACSO  
Steven P Hefter, DSSD  
Tasha R Boone, ACSO  
Todd R Hughes, ACSO