

# 2020 ACS Data Products

Mark E Asiala  
US Census Bureau

20 May 2021  
2021 ACS Data Users Conference

# Outline

- Data Collection Challenges
- Housing Unit and Household Population Estimation
- Group Quarters Population Estimation
- Impacts on Data Products
- 2020: ACS Compared to Census

# Data Collection Challenges

# 2020 Housing Unit Data Collection

- Impacts on Self-response:
  - March: Internet but only partial mail questionnaire
  - April – June: Canceled the general self-response modes for the full sample
  - July – December: Limited contact strategy reduced our self-response rates
- Impacts on Nonresponse Follow-up
  - April – June: No in-person interviews, telephone-only everywhere
  - July – August: Telephone-only for some states
  - September – December: Telephone-only for isolated pockets
  - Reduced contact rates for telephone-only follow-up
  - Option to respond online still available to households

# Take-aways From Housing Unit Data Collection

- Number of annual interviews for 2020 was  $\sim 2/3^*$  of number in 2019
- Data collection changes were complex:
  - Every monthly panel in 2020 was impacted in a different way
  - Telephone only follow-up depended both on month and geography
- Conducting follow-up operation using only telephone introduced additional issues

# Impact of Telephone-only Follow-up

- The in-person follow-up operation is our principal method for identifying vacant housing units (HUs)
- Using only the telephone to conduct follow-up operation limits our ability to identify vacant HUs
- Early results show that our field staff were able to identify some types of vacant housing units better than others (e.g., for sale vs. seasonal)
- Overall impact:
  - Reduced identification of vacant housing units
  - Bias in type of vacant housing unit

# Group Quarters Data Collection

- During April–June group quarters (GQ) data collection was suspended
- For July–December, our data collection challenges were often specific to the type of facility
  - Nursing homes had strict visitor requirements
  - Bureau of Prisons (BOP) had a blanket no-access policy for all BOP-managed federal prisons
  - Many college dorms were vacant in the fall months

# Housing Unit and Household Population Estimation

# Housing Unit Estimation Strategy

- We focused on the two principal issues:
  - Mitigate the reduced identification of vacant housing units in the field and the skewed distribution of type of vacant
  - Mitigate the potential increase in non-response bias
- Our work was guided by the following principles:
  - It is important that the methodology could be explained and understood by both internal and external stakeholders
  - The methodology cannot introduce undue risk into our processing systems that could cause schedule delays or unintended consequences

# Why is the vacancy rate so important?

- The ACS has relatively few tables concerning vacant housing units
- Two important relations:
  - $\text{Vacancy Rate} + \text{Occupancy Rate} = 100\%$
  - $\text{occupied housing units} = \text{households} = \text{householders}$
- Thus, improving the vacancy rate improves all other estimates
- ACS has many tables based on households and householders

# Vacant Housing Units and Vacancy Rate

- The non-contacted housing units included both occupied and vacant
- We created a model to predict which units were vacant
  - Used a variant of the same model that was used for the 2020 Census
  - Built using administrative records, postal service and ACS data
  - Imputed about half of the expected missing vacant HUs
- Weighting adjustments to account for remainder
  - Use county-level ACS-measured vacancy rate from the months which had full data collection as our benchmark
  - Adjust vacancy rate for telephone-only months to be equal to the benchmark
  - Similarly, we also adjust the distribution of type of vacant

# Additional Non-Response Bias Steps

- Our standard procedure involves two steps to address non-response bias:
  - Non-interview adjustment within census tract by single-/multiunit dwelling
  - Coverage adjustment using the annual population estimates as controls adjusts both for coverage and for non-response bias by demographics
- We will expand the second step to improve our estimation for 2020
  - Make use of sub-annual state and national population estimates for our coverage adjustments
  - Goal is to make each sub-annual period more representative so that the annual estimates are more representative

# Group Quarters Population Estimation

# General Group Quarters Estimation

- Since 2011, our estimation methodology performs whole record imputations of interviewed GQ persons into not-in-sample GQs
  - Used to stabilize the GQ component of the total population
  - Improves substate characteristic estimates for the total population
  - Donors preferentially come from same GQ type and same area
- For 2020, we will use this methodology to impute into GQ facilities where we did not gain access using interviews we did obtain
- This will allow use to stabilize the GQ component of the total population and improve the characteristic estimates

# BOP-Managed Federal Prisons

- For the BOP-managed federal prisons, we obtained administrative records for all sample persons
  - Base demographics
  - Limited additional characteristic information
- Fill in remaining ACS characteristics using our standard edit and imputation operation that fills in for item nonresponse
- Use of administrative records helps ensure:
  - Unique demographic characteristics captured
  - Federal prisons are represented in our estimates for total population

# College Dorms

- GQ estimation uses population estimates as controls
  - These estimates were not adjusted for COVID-19 impacts
  - At odds with ACS period estimates that found many dorms vacant in the fall
- What could we do?
  - We did not have information to adjust the population estimates because we did not know where that population had been displaced.
  - Our standard methodology would have caused large under- or over-representation of the dorm population in local areas
- To avoid these distortions, we treated the vacant dorms as occupied within our standard estimation methodology

# Impacts on Data Products

# Overall Impacts on Data Quality

- Generally, margins of error will be ~20-30% larger based on the reduced number of interviews
  - e.g., an estimate of 1,000 +/- 100 would become 1,000 +/- 120
- The estimation is not a silver bullet: it can help improve the estimates, but it cannot remove the limitations of the data collection
- For this reason, 2020 may be an outlier in the time series because of:
  - Real changes that occurred
  - Limitations of the data collection
- Impact will be greater for the 1-year estimates than the 5-year

# Expectations: Housing Units and Household Population

- Vacancy rates
  - Expect the gross vacancy rate as well as home-owner/rental vacancy rates to be improved
  - Rates will reflect what was measured early Jan – Feb and Jul – Dec
- Base demographics (i.e., race, Hispanic, age, sex)
  - Base demographic estimates that are controlled to population estimates should be minimally impacted
  - Characteristics strongly correlated with base demographics should be improved
- Other characteristics will need individual review:
  - More information will be available on release day
  - Local knowledge can be useful to judge reasonableness

# Expectations:

## Group Quarters Population

- GQ population will be properly reflected as part of the total population
- The college dorm population may look more “normal” than you would expect

# Public Use Microdata Sample (PUMS) Files

- We typically release a public use file that contains a 1% sample of the total housing units in each state.
- Given that the reduced number of interviews for 2020, the PUMS files for some states may be smaller than 1%
- We will provide additional guidance with the PUMS data release

# Sources of Information on Data Quality?

- Pay attention to the margins of error!
- Reference our Quality Measures Page\* for information on:
  - Sample size and interview counts
  - Response rates including reasons for noninterview
  - Coverage rates
  - Item nonresponse rates
- More information available on release day in September
  - Data release page
  - User notes

\*See: [www.census.gov/acs/www/methodology/sample-size-and-data-quality/](http://www.census.gov/acs/www/methodology/sample-size-and-data-quality/)

# 2020: ACS Compared to Census

# Geographic Definitions

- ACS and 2020 Census will generally use the same definitions\*
- Exceptions are three summary levels below:
  - ZIP Code Tabulation Areas (ZCTAs)
  - Urban Areas
  - Public Use Microdata Areas (PUMAs)
- Same release schedule as 2010 Census
  - 2021: ZCTAs
  - 2022: Urban Areas, PUMAs

\*See: [www.census.gov/programs-surveys/acs/geography-acs/geography-boundaries-by-year.html](https://www.census.gov/programs-surveys/acs/geography-acs/geography-boundaries-by-year.html)

# Population Estimates as Controls

- ACS uses population estimates as controls even in census years\*
  - The population estimates used for 2020 will not be informed by 2020 Census due to census processing delays
  - They are informed only by the 2010 Census
- Impact
  - National total resident population is ~2 million lower than Census population
  - Expect differences between ACS and Census population totals to be greater in 2020 than they were in 2010
- 2021 ACS data products will be the first products to make use of population estimates informed by 2020 Census

# Thank You!

## Resource Links

- Main ACS Home Page:  
[www.census.gov/acs](http://www.census.gov/acs)
- Quality Measures Page:  
[www.census.gov/acs/www/methodology/sample-size-and-data-quality/](http://www.census.gov/acs/www/methodology/sample-size-and-data-quality/)
- Geographic Boundaries by Year:  
[www.census.gov/programs-surveys/acs/geography-acs/geography-boundaries-by-year.html](http://www.census.gov/programs-surveys/acs/geography-acs/geography-boundaries-by-year.html)
- Population Controls for the 2020 ACS:  
[www.census.gov/programs-surveys/acs/technical-documentation/user-notes/2021-01.html](http://www.census.gov/programs-surveys/acs/technical-documentation/user-notes/2021-01.html)