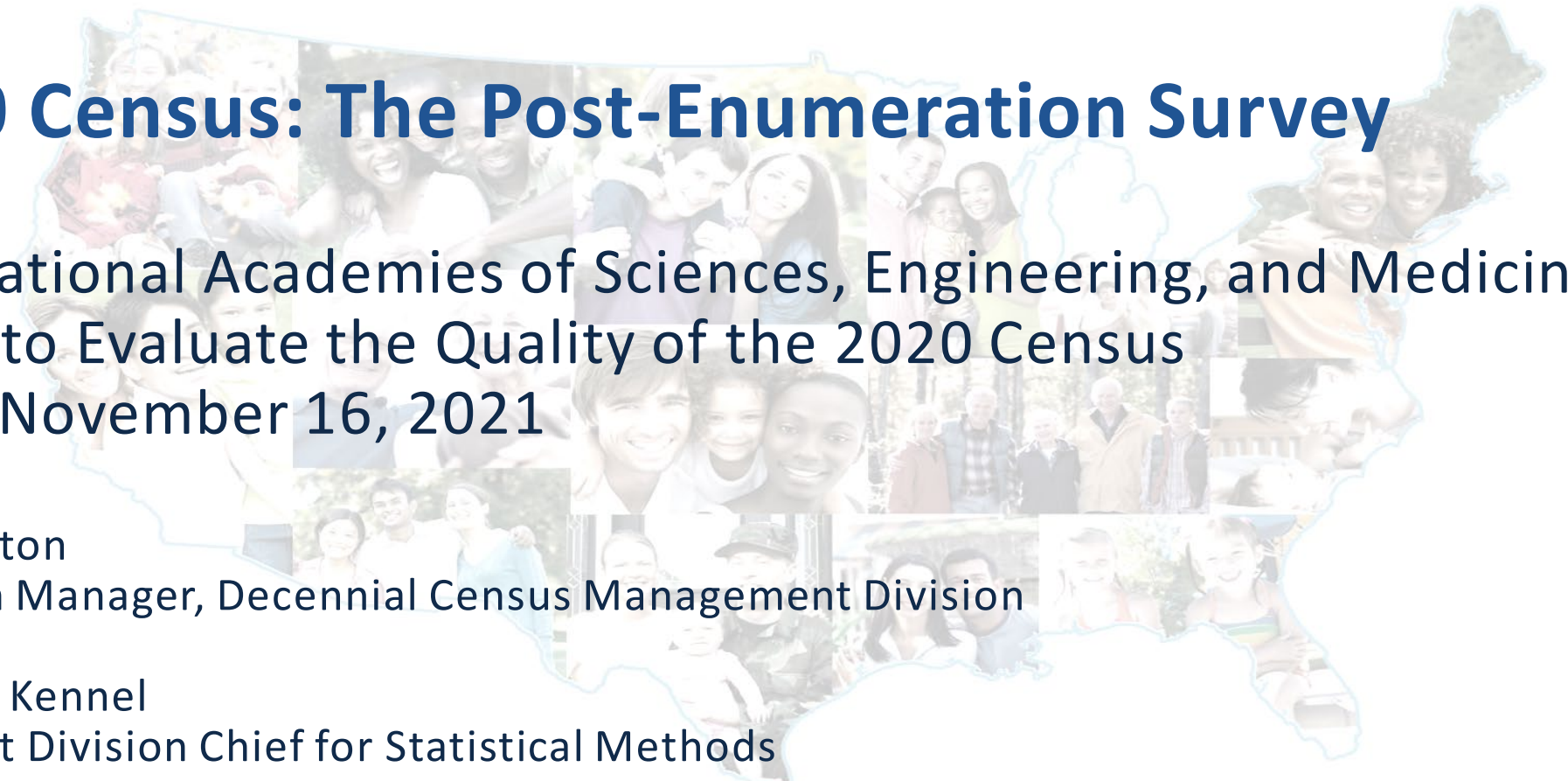




2020 Census: The Post-Enumeration Survey

The National Academies of Sciences, Engineering, and Medicine:
Panel to Evaluate the Quality of the 2020 Census
Date: November 16, 2021

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Cleared for Release

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Outline

1. Overview
2. Operational Challenges
3. Survey Errors and Mitigation

2020 Decennial Census

What is the Post-Enumeration Survey?

Goal

- Measure coverage of people and housing units in the decennial census
- Measure net coverage error and components of coverage

How are the data used?

- To assess the success of the current census
- To provide information to improve the coverage of future censuses

How is coverage estimated?

- Conduct a sample survey
- Match people in the PES independent survey with enumerations in the census to determine who was missed or counted in error

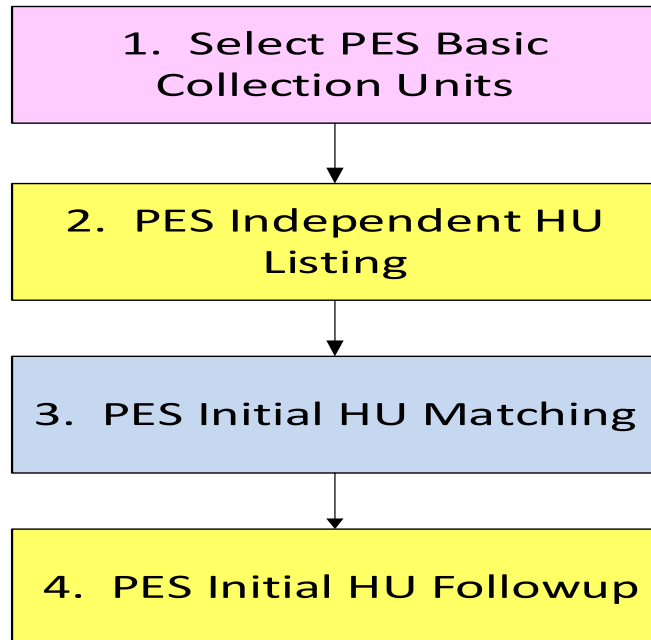
History

- Used in the United States census since 1950

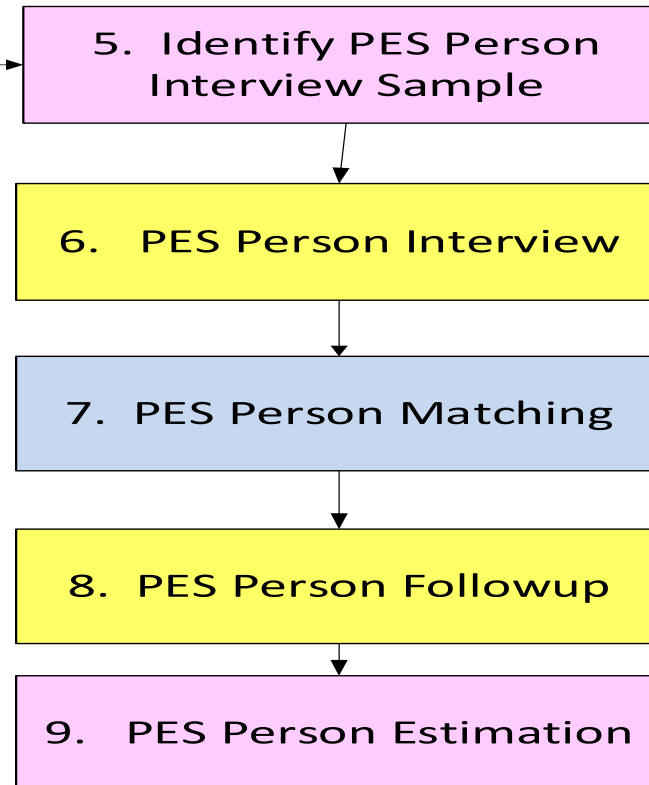
2020 Decennial Census PES Operations

Sampling and Estimation - Pink
Field Operations - Yellow
Matching Operations - Blue

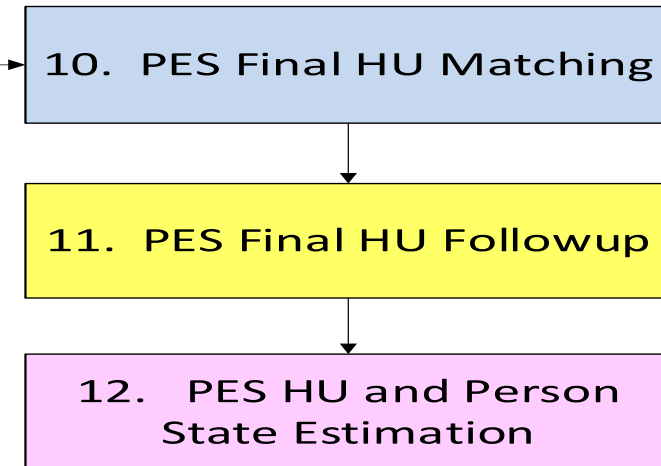
Initial Housing Unit Operations



Person Operations



Final Housing Unit Operations



2020 Decennial Census

Revised Field Milestone Schedule

Operation	Planned Dates		Revised Dates	
	Start	Finish	Start	Finish
Independent Listing	1/16/2020	3/13/2020	1/16/2020	3/20/2020
Initial Housing Unit Followup	5/6/2020	6/19/2020	7/30/2020	9/21/2020
Person Interview	6/17/2020	9/18/2020	9/23/2020	12/18/2020
Person Interview Reopen			2/11/2021	3/20/2021
Person Followup	2/3/2021	3/26/2021	6/14/2021	9/17/2021
Final Housing Unit Followup	5/19/2021	6/18/2021	Nov 2021	Mar 2022

First report with national person estimates of coverage will be release in the first quarter of calendar year 2022.
Domain person, housing unit, and Puerto Rico coverage estimates will be released in the summer of 2022.

Operations in **blue** are complete. All operations include quality control reinterviews.

Operational Challenges

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COVID-19 Effect on Field Operations

Hiring

Challenge:

- Requirement to interview people face-to-face decreased retention and made it harder to recruit

Response:

- Increased recruitment efforts
- Provided personal protective equipment for interviewers

COVID-19 Effect on Field Operations

Training

Challenge:

- Large regional trainings could not be done in person
- Onboarding of field staff could not be done in large groups

Response:

- In-person training was replaced with virtual training. Initial plan was to have a mix of in-person and online training
- Alternative sites were found to distribute laptops and tokens
- Small groups were scheduled for onboarding instead of large meetings in conference rooms and hotels

COVID-19 Effect on Field Operations

Contact Strategies

Challenge:

- People were reluctant to participate in face-to-face interviews

Response:

- Initial Housing Unit Followup was more tolerant of interviews by observation, although person visits were still encouraged
- Nonresponding people were called in the Person Interview when phone numbers were available
- Provided personal protective equipment for interviewers
- Encouraged social distancing for interviewers
- Only allow proxies after making numerous, well-spaced attempts

COVID-19 Effect on Field Operations

Travel Restriction and Nonresponse

Challenge:

- Travel was restricted in some areas (especially for the Initial Housing Unit Followup and Person Interview)
- Lower than desired response to the Person Interview

Response:

- Reopened Person Interview in February and March 2021
- Shifted timing of call attempts in some areas to abide by stay-at-home orders
- Worked with stakeholders to gain access to restricted areas

COVID-19 Effect on Matching Operations

Pause in Operations

Challenge:

- PES clerical matching activities were suspended early in the pandemic

Response:

- Abbreviated Initial Housing Unit Before Followup clerical matching to get back on schedule
- This resulted in larger Initial Housing Unit Followup and Initial Housing Unit After Followup workloads
- The increase in the IHU AFU workload led to additional schedule delays and ultimately resulted in deferring some work to the Final Housing Unit operations

COVID-19 Effect on Matching Operations

Virtual Workplace

Challenge:

- Clerical matching staff could not meet at the National Processing Center due to social distancing guidelines

Response:

- Set up virtual workplace for clerical matching staff
- Revised in-person training to be conducted using Skype
- Virtual environment slowed down production

COVID-19 Effect on Matching Operations

Item Nonresponse and Workloads

Challenge:

- Missing data from the Person Interview, drives down our ability to confidently determine computer matches. Since we send nonmatches to follow-up, missing items can increase the follow-up workloads
- Item missingness also drives up the after follow-up clerical matching workload since more cases are sent to follow-up

Response:

- Extend the schedule and budget to account for workload increases

COVID-19 Effect of Decennial Census Delays

Challenge:

- Decennial census files were delayed. PES operations that required these input files were also delayed until they could receive the input files

Response:

- Delays to the PES schedule

COVID-19 Effect on Budget

Challenge:

- Planned PES budget did not include increased workloads

Response:

- Used contingency funds to buy personal protective equipment and fund the additional work

Survey Errors and Mitigation

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Sampling Error

Challenge:

- Measures of size used for selecting initial sample were larger than the number of listed housing units
- Greater nonresponse than expected (increases sampling error)

Estimation Response:

- Accept larger standard errors

Undercoverage

Challenge:

- Undercoverage of housing units and people in the PES and census

Estimation Response:

- Use dual-system estimation. This estimator is robust to undercoverage, as long as it is independent for the PES and census
- Continue the historic practice of a correlation bias adjustment to reduce the impact of violations to the independence assumption

Note: PES and census undercoverage is not known at the present

Unit Nonresponse

Challenge:

- Delays in PES Person Interview might result in fewer responses because impact of census campaigns diminishes over time
- People don't want to open their doors to talk to interviewers during a pandemic
- Social, political, and other factors could suppress some groups from responding to the PES

Estimation Response:

- Continue the historic practice of using a nonresponse weighting adjustment
- Conduct a nonresponse bias analysis to communicate the amount of nonresponse and the potential impact of nonresponse bias

Item Nonresponse Imputation

Challenge:

- Missing items increase the imputation workload and put more pressure on the imputation procedure

Estimation Response:

- Continue imputing for item nonresponse
- Research improvements to imputation models

Item Nonresponse

Heterogeneity within Post-strata

Challenge:

- Characteristics are used to form implicit post-strata for the dual-system estimation. People put in the “wrong” post-stratum can undermine the assumptions of dual-system estimation

Estimation Response:

- Define broad imputation and estimation “cells” (such as collapsing across individual years of age) when necessary and appropriate
- Use well-established and researched imputation methods

Item Nonresponse Matching

Challenge:

- Matching relies on complete names and characteristics (such as age and sex). It is harder to follow up and match PES cases to the census, if key items are missing

Estimation Response:

- Uniformly apply detailed definitions of insufficient-information cases
- Impute match status for insufficient information cases

Measurement Error

Recall Bias

Challenge:

- Inmovers reporting they are “nonmovers”
- Inmovers reporting the wrong or vague search area of their census day address
- Nonmovers reporting they are “inmovers”

Operational Response:

- Conduct nationwide matching and extensive follow-up to correct errors

Questions