

# The Critical Role of Use Cases in Creating 21<sup>st</sup> Census *Curated Data Enterprise (CDE)* Infrastructure and Capabilities

Edward Wu & Stephanie Shipp

Vicki Lancaster, Joseph Salvo, and Cesar Montalvo

University of Virginia, Biocomplexity Institute

A4: Statistical Products First – A Paradigm Shift for Federal Statistics

FCSM 2023

October 24, 2023 @ 9 am

# Supporting Census Bureau for 2030 and beyond

Extending Data Commons to create Census Curated Data Enterprise

- Census Bureau collaboration
- Alignment with Census Bureau's
  - IT Enterprise modernization and transformation
  - *Statistical Products First* approach



“We are moving towards a **single enterprise, data-centric** operation that enables us to **funnel data from many sources** in a single data lake using common collection and ingestion platforms ...

This is the **essence of a curated data approach** — **assemble, assess and fill in the gaps to create quality statistical data.**”

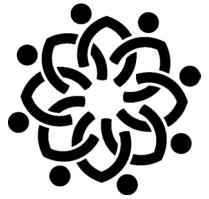
**Rob Santos, US Census Bureau Director**

# Use Cases Guided by the Curated Data Enterprise



# What are some purposes and uses?

## Disseminating products to meet data user needs



Equity and Inclusion



Counting Children



Family Units



Rural Communities



Local Businesses



Tribal Areas



Vulnerable Populations



Elderly Residential Care



The Unhoused



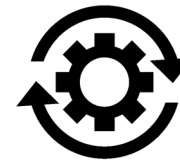
Migration



Climate Change



Gig Economy



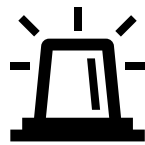
Workforce Automation



Differential Undercount



Broadband Deployment



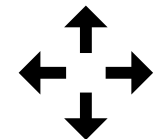
Emergency Preparedness



Economic Mobility



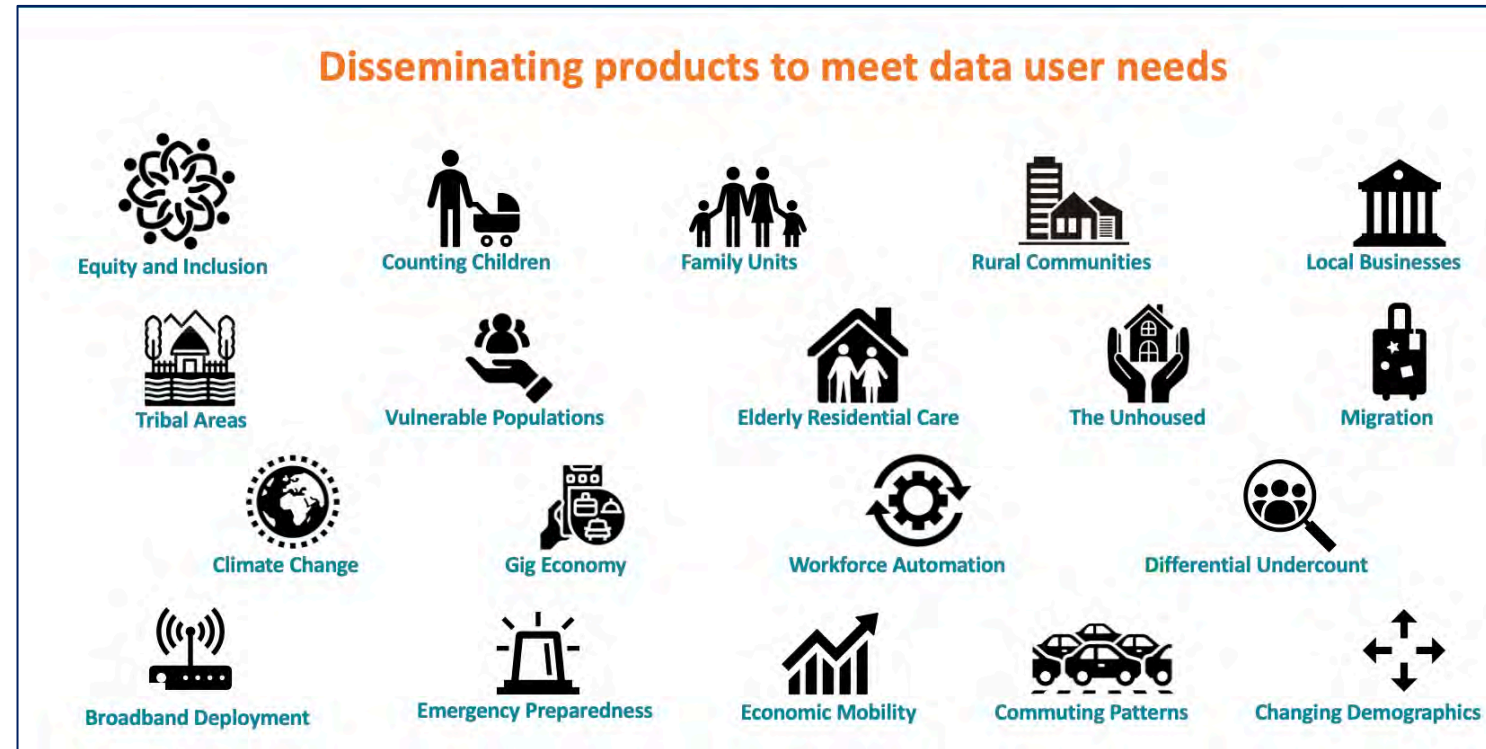
Commuting Patterns



Changing Demographics

# Purposes and Uses

- **Research questions**
  - stakeholder-driven
  - grounded in practical applications
- Address demand for **timely and geographically granular data**
- **Integrating multiple data sources** can allow for more comprehensive statistical products



# CDE Framework – Guiding Principles & Research Steps

The Curated Data Enterprise approach goes beyond statistical products derived from single surveys, employing data re-use and integration to allow for timely and granular statistical products that help to answer pressing societal needs

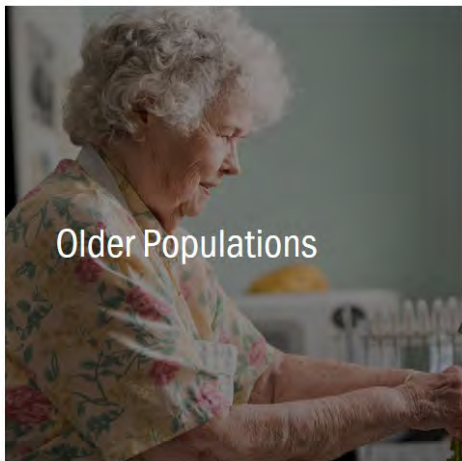
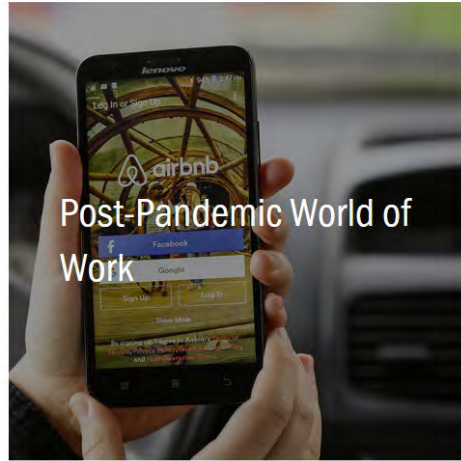
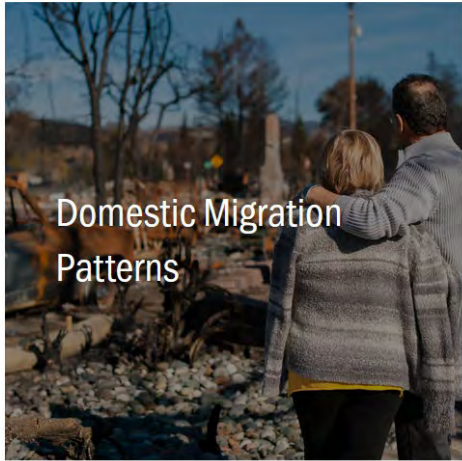


Curated Data Enterprise Framework

Use Cases are  
CDE Building Blocks  
guided by the  
CDE Framework.  
1. Art of the Possible  
2. Demonstration



# Art of the Possible Use Cases – What are they?



## Art of the Possible Use Cases

- Explore topics and related research questions that address pressing social needs identified by stakeholders
- **Characteristics**
  - Explore the current state of the topic
  - Discover data sources
  - Identify gaps and issues associated with existing data
  - Propose the feasibility of a **Demonstration Use Case**
    - Identifies the capabilities needed to develop and deploy the CDE

# Art of the Possible Use Cases

- During **Listening Sessions**, we socialized the CDE concept with researchers and data users
- This feedback led to an initial set of *Art of the Possible* Use Cases that identified purposes and uses
  - Nursing Homes
  - Gig Economy
  - Migration due to climate events
  - Housing Affordability
  - Undercount of Young Children

## **Listening Sessions** **Stakeholder Groups**

- Applied Demographers
- Advocates
- Economic Developers
- Economists and Business Leaders
- Public Policy Analysts
- Researchers

## **Topics**

- Use Cases as CDE building blocks
- Curation of statistical product development
- Local Data Partnerships
- Third-party (private sector) Partnerships
- Use of ECIDS to address Undercount of Young Children



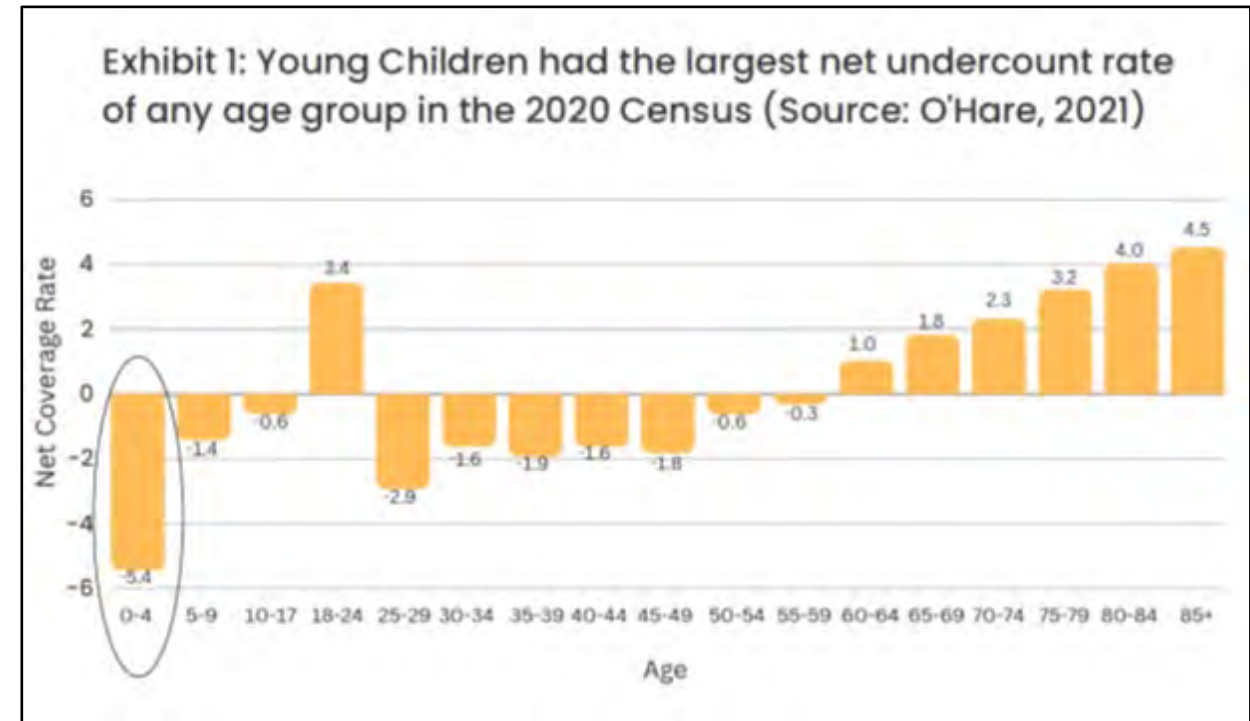
# Addressing the Undercount of Young Children

## *Art of the Possible Use Case*

### Purposes and Uses

- **Baseline:** What data and methods can be used to improve the undercount of young children?
- What policy areas can be addressed with a better count of young children?
- How does the distribution of federal funds change if the counts of young children are more accurate?
- How successful is an early childhood vaccination program?
- What is the cost of implementing a pre-K program today and moving forward?
- How to best allocate grant resources to support childcare for mothers of young children?

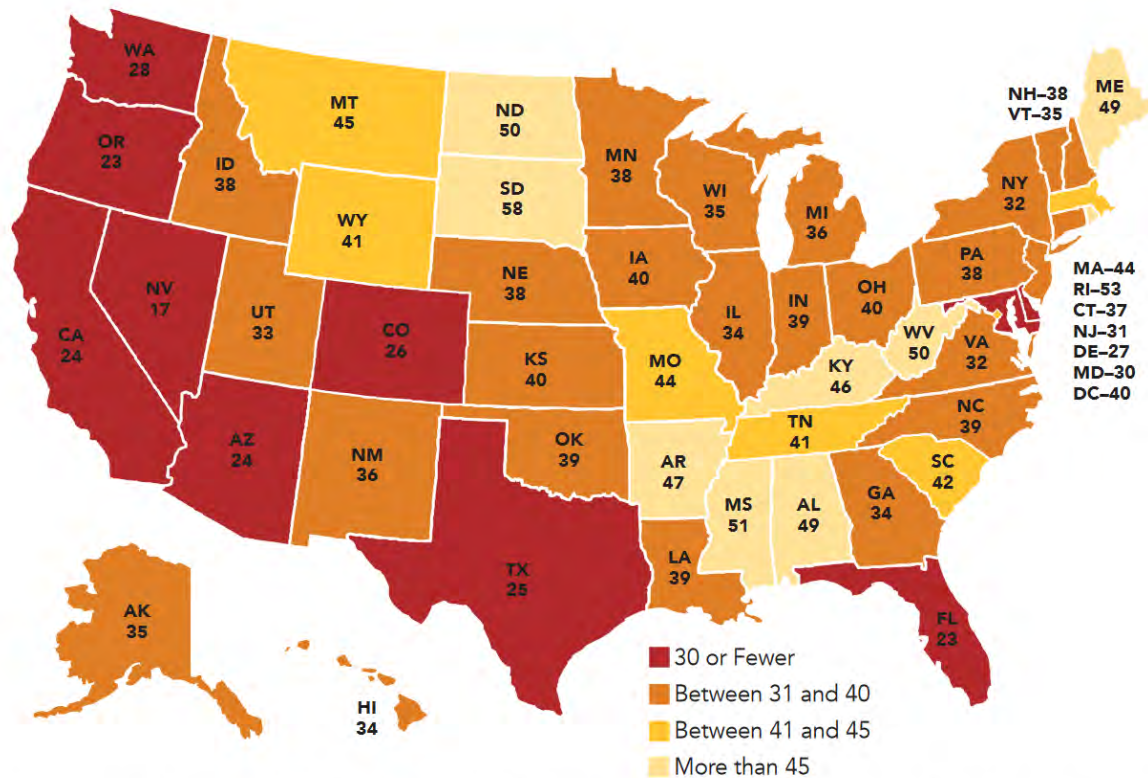
The **undercount of young children, ages 0-4**, is a persistent problem in the decennial census and the largest net undercount of any age group.



# Rental Housing Affordability

## *Art of the Possible Use Case*

### National Low Income Housing Coalition Calculations for Rental Homes Affordable and Available per 100 Extremely Low-Income Renter Households



Note: Extremely low-income (ELI) renter households have incomes at or below the poverty level or 30% of the area median income. Source: NLIHC tabulations of 2021 1-Year ACS PUMS Data.

### Issue

- There is a nationwide shortage of affordable housing
- Nearly half of renter households spend more than 30% of their income on housing

### Purposes and uses - examples

- How would a change in **housing subsidies** affect the proportion of households burdened by housing costs?
- What are the effects of policies aimed to regulate **short-term rentals**?
- Which areas are most vulnerable to **increased energy bills** due to climate change? How will this affect the proportion of households burdened by housing costs?
- After accounting for income and wealth, are **eviction rates different across demographic groups**?

# CDE Use Case Research Program

## Curated Use Case characteristics (to be tested)

- Engage the **research community**
- Promote **methodological research** to develop and implement CDE capabilities
- Develop an **end-to-end curation process** for the CDE
- Make **curated documentation available and searchable publicly (transparency)**



## Program is designed to support the rapid development of statistical products

1. Criteria for selecting, deploying, and evaluating Use Cases to identify CDE capabilities
2. An End-to-End Curation process
3. Selection and invitation of researchers to participate in the CDE Use Case program.
4. Creating a research agenda for the US Census Bureau
  - Synthesize CDE capabilities
  - Propose statistical products
  - Assess the E2E Curation Process