
Better Data and Measurement for Local Public Policy Decisions

Data Science for the Public Good Symposium 2022

Joseph Salvo, Institute Fellow
Social and Decision Analytics Division
Biocomplexity Institute & Initiative
University of Virginia

Applied Demography: The NYC Perspective

1. Being proactive about getting people counted in the census.
2. Empower communities through access to quality data.
3. Apply scientific methods to data development and analyses in support of informed decisions.
4. Learn from colleagues, evolve, and mentor the next generation.

WHAT'S AT STAKE?



Billions in federal funds for public education and housing, roads and bridges, and more.



The number of seats New York City has in Congress.



Your community. Your voice.

Being Proactive Using Local Data and Knowledge: A Case in Point



Simplified, the Decennial Census Needs To:

1. Create a list of addresses (NO address, NO mailing/questionnaire, NO count)
2. Check addresses in the field or in office (Address Canvassing)
3. Mail to addresses with a request to respond via the internet/mail back their questionnaire
4. Follow-up on all nonresponding households (NRFU)

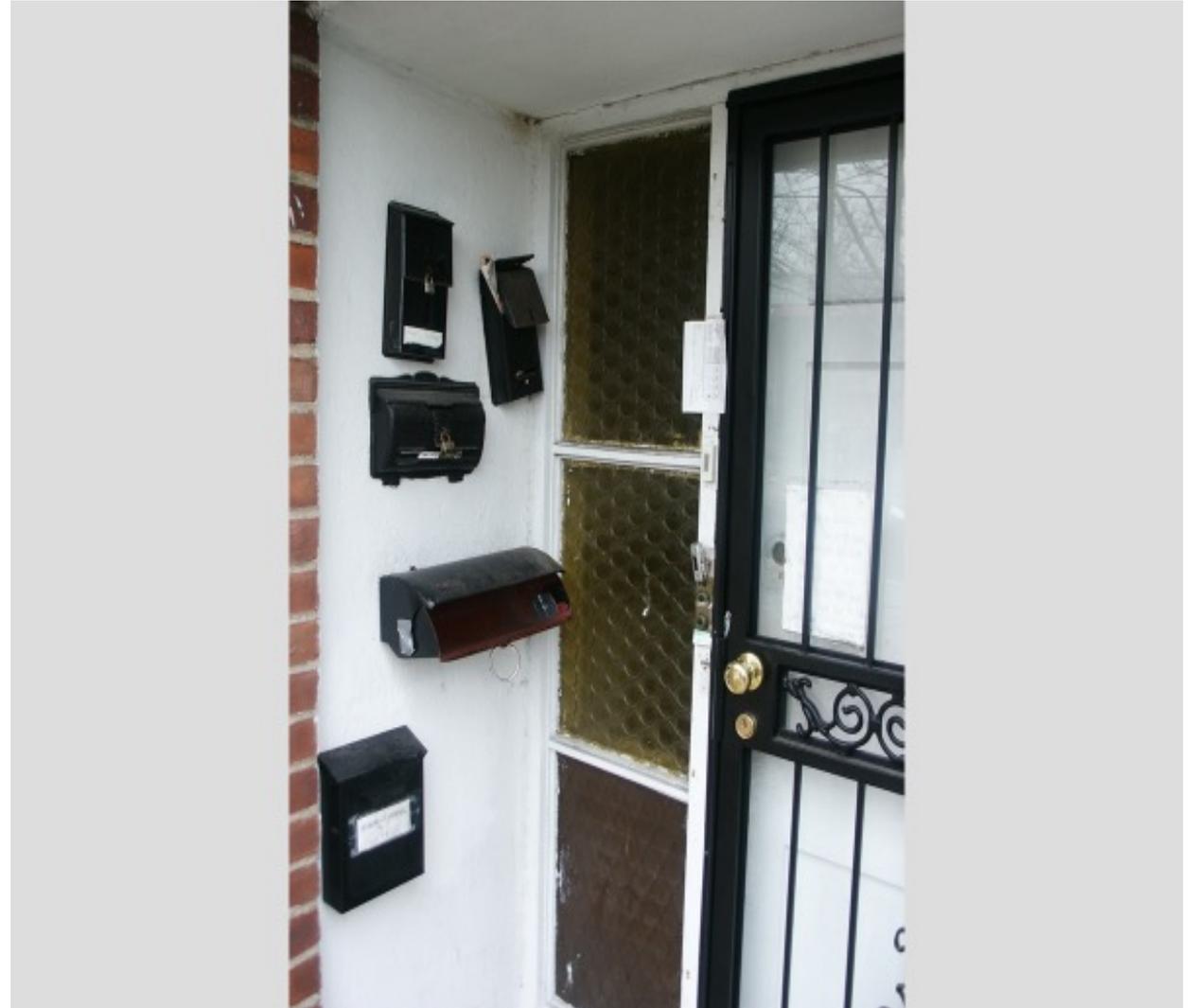


The Origins of the Local Update of Census Addresses (LUCA) Program

- The 1990 Census had an undercount of 244,000 persons in New York City, or 3.2 percent of the population.
- The LUCA program was created by Congress in 1994 to bring local knowledge to bear on the conduct of the census.
- LUCA authorizes the Census Bureau to share the list of addresses for the census from their Master Address File (MAF) with local governments. The locals must sign an agreement to keep the addresses confidential.
- Local governments can use a variety of data sources to update the address list.

Administrative Records: 2000 LUCA

- Bell Atlantic Telephone Data
- Consolidated Edison Electrical Accounts
- Finance Department Real Property Address Directory
- Buildings Department Certificates of Occupancy
- Building Violations
- Fieldwork (evaluation and verification)



THE CENSUS/NEW YORK; CITY POPULATION TOPS 8 MILLION IN CENSUS COUNT FOR FIRST TIME

By SUSAN SACHS MARCH 16, 2001

	Total NYC	Bronx	Brooklyn	Manhattan	Queens	Staten Island
Total "Added" Addresses	439,069	58,310	126,127	69,772	161,027	23,833
As a Percent of Housing Units	13.1	11.4	12.9	8.4	18.6	14.2



Purpose and Use



Making Sense of the Headlines

Gig Workers

“Racial and ethnic differences stand out in the U.S. Gig workforce.” *Pew Research Center*, December 2021.

“The Wild West: Gig workers on the front lines of the coronavirus pandemic lack basic worker protections.” *Economic Policy Institute*, April 2020.

Migration Patterns

“In 2020, fewer Americans moved, exodus from cities slowed.” *Pew Research Center*, December 2021

“New census data shows a huge spike in movement out of big metro areas during the pandemic.” *Brookings*, April 2022

Nursing Homes

“COVID-19 crisis advances efforts to reimagine nursing homes,” *JAMA Network*, October 2021.

“Covid awakened Americans to a nursing home crisis. Now comes the hard part.” *Washington Post*, April 2021.

Introducing the Curated Data Enterprise

The U.S. Census Bureau has begun modernization activities towards creating a **universal frame** that could form the foundation for a transformative capability to **integrate** the Bureau's demographic and economic **surveys and censuses with administrative and third-party data**.

This new innovative state is called the **Curated Data Enterprise (CDE)**.

CURATED DATA ENTERPRISE

*The Census Bureau
of the Future*

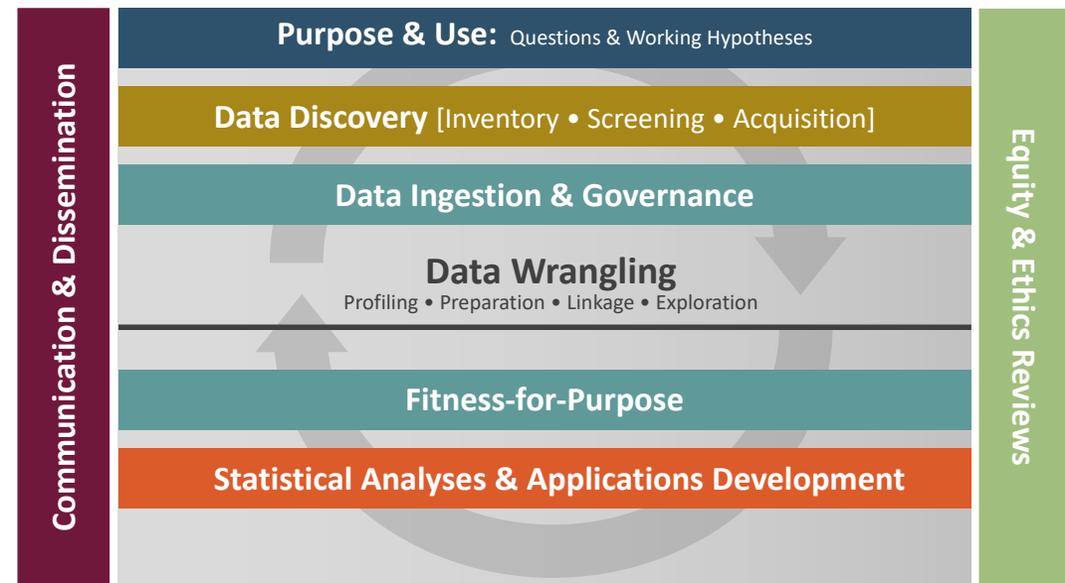
- Both an infrastructure and a continuously evolving ambition to **empower and enable** Bureau scientists and their data users to develop **new measures** of people, places, and the economy.
- Exploits **multiple data sources**, from sample surveys, censuses, and other official administrative and third-party data, which can provide **more robust, timely, and comprehensive measures** when combined.

Research Components of the CDE

Goal: Illuminate the needed capabilities of the CDE and support its development

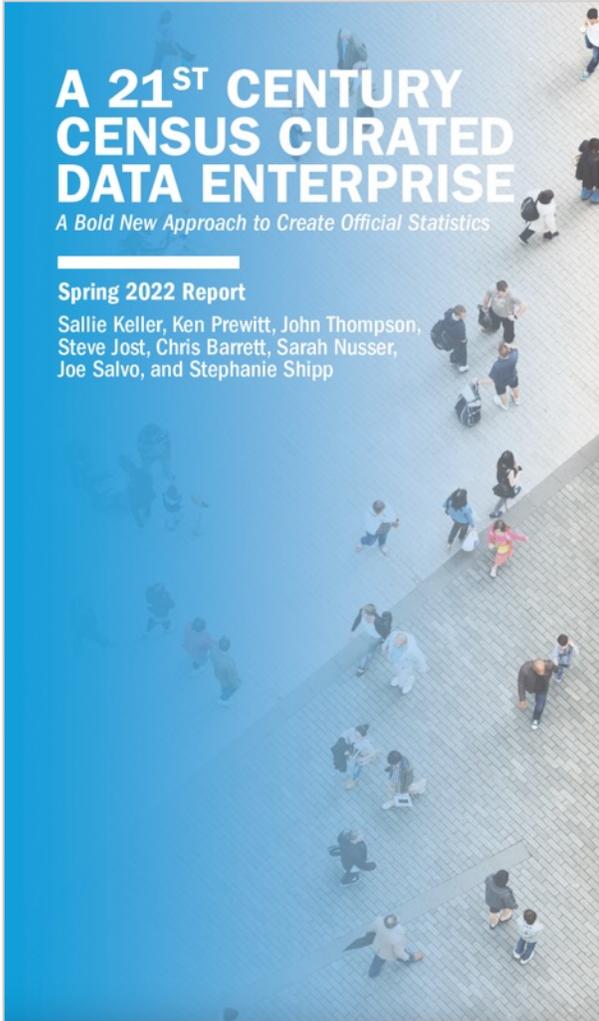
- Start with how to capture purpose and use
- Develop information collection processes for each box in the CDE framework
- Give insights into standards and automation
- Develop theory and methods

Curated Data Enterprise Framework



Curation applied at every step

<https://biocomplexity.virginia.edu/institute/divisions/social-and-decision-analytics/census>



A 21st Century Census Curated Data Enterprise

Supporting Innovation at the U.S. Census Bureau

Numquam sagittis voluptate! Quidem diam quasi? Donec turpis dis aspernatur, itaque libero! Nunc quas imperdiet, maxime! Dignissimos blandit



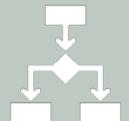
Thinking Like a “Local”



More than 70 percent of the 31,600 Places in the U.S. have fewer than 4,000 persons.



Local Planners as Consumers of data: Knowledge of population and the local economy permit an assessment of decisions and strategies adopted by local officials.



Local Planners as Directors: Decisions and strategies affect the quality-of-life of residents.





Reacting to the Pandemic: Questions and Strategies

Thinking Like a “Local” - Three Key Knowledge Areas for the local town planner:

1. Local economy/business: How are residents able to sustain themselves economically?
2. Are residents reacting to the pandemic “with their feet?” What is the impact on population?
3. What about those who are most vulnerable, e.g., persons in nursing homes?

Use Case - Gig Economy in Post-Pandemic World of Work

Art of the Possible

- Complete picture of work:
 - GIG workers
 - Remote workers
 - Vulnerable workers and equity issues

Data Sources

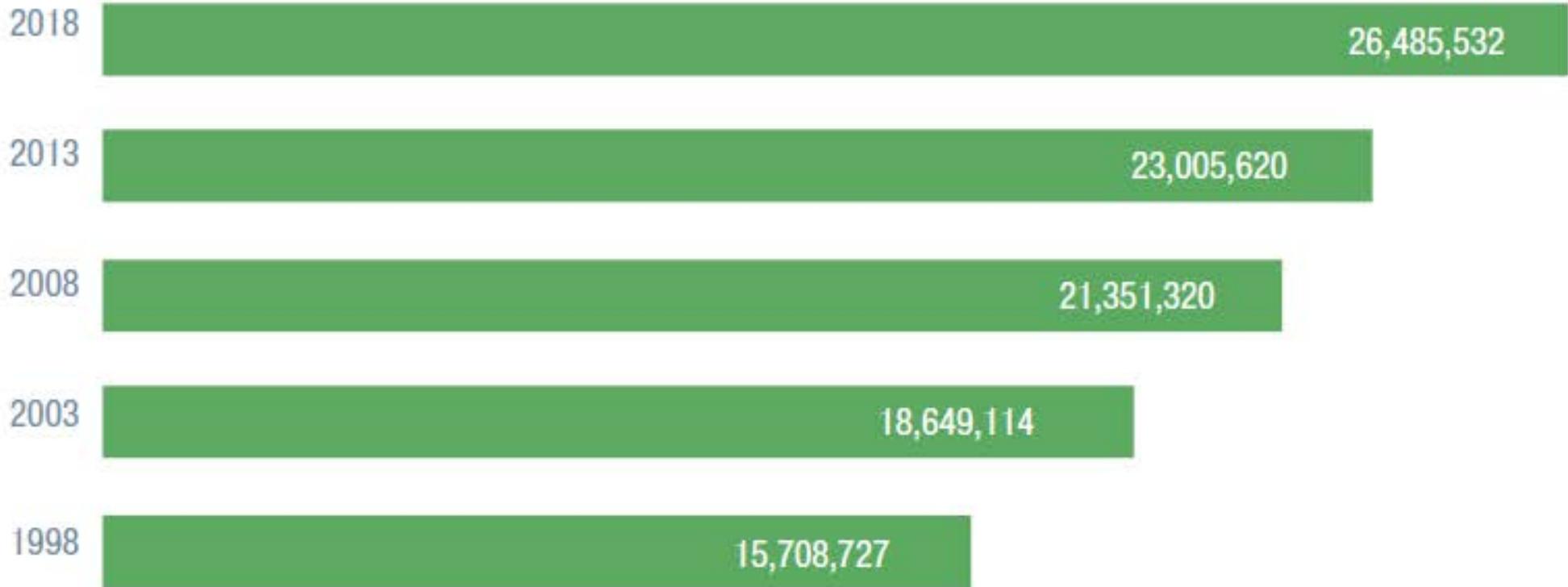
- Labor Force, Occupations and Industries (ACS, CPS, LEHD)
- IRS, USPS, other administrative data
- State records that require authorization

CDE Capability to Exercise

- Obtaining flexible geographic granularity
- Testing the limits of data partnerships.



NUMBER OF NONEMPLOYER FIRMS³

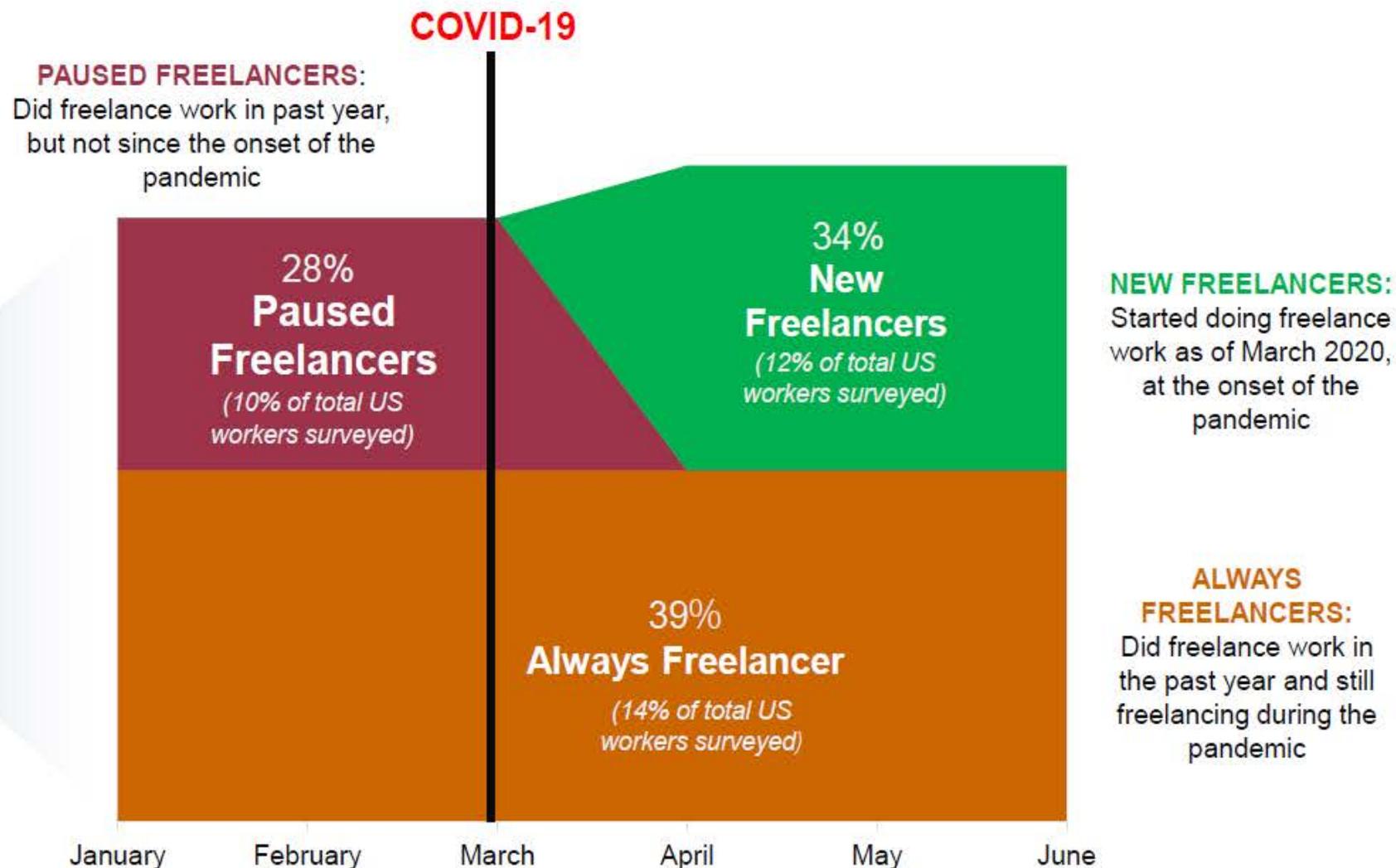


1 Data for small employer firms is sourced from US Census Bureau's Statistics of US Businesses.
Data for nonemployer firms is sourced from US Census Bureau's Nonemployer Statistics.
2 Small employer firms are businesses with 1-499 employees.
3 Sourced from US Census Bureau, Nonemployer Statistics.



AMIDST COVID-19, FREELANCING OFFERS CONSISTENCY AND NEW CAREER OPPORTUNITIES

36% of the American workforce are freelancers



Percent of workers with the ability to work from home by income percentile, 2018
(Bureau of Labor Statistics)

Income percentile	Percent
Bottom 25	9.2%
25-50	20.1%
50-75	37.3%
Top 25	61.5%

Source: Adapted from Gamio, 2020.

Use Case - Domestic Migration

Art of the Possible

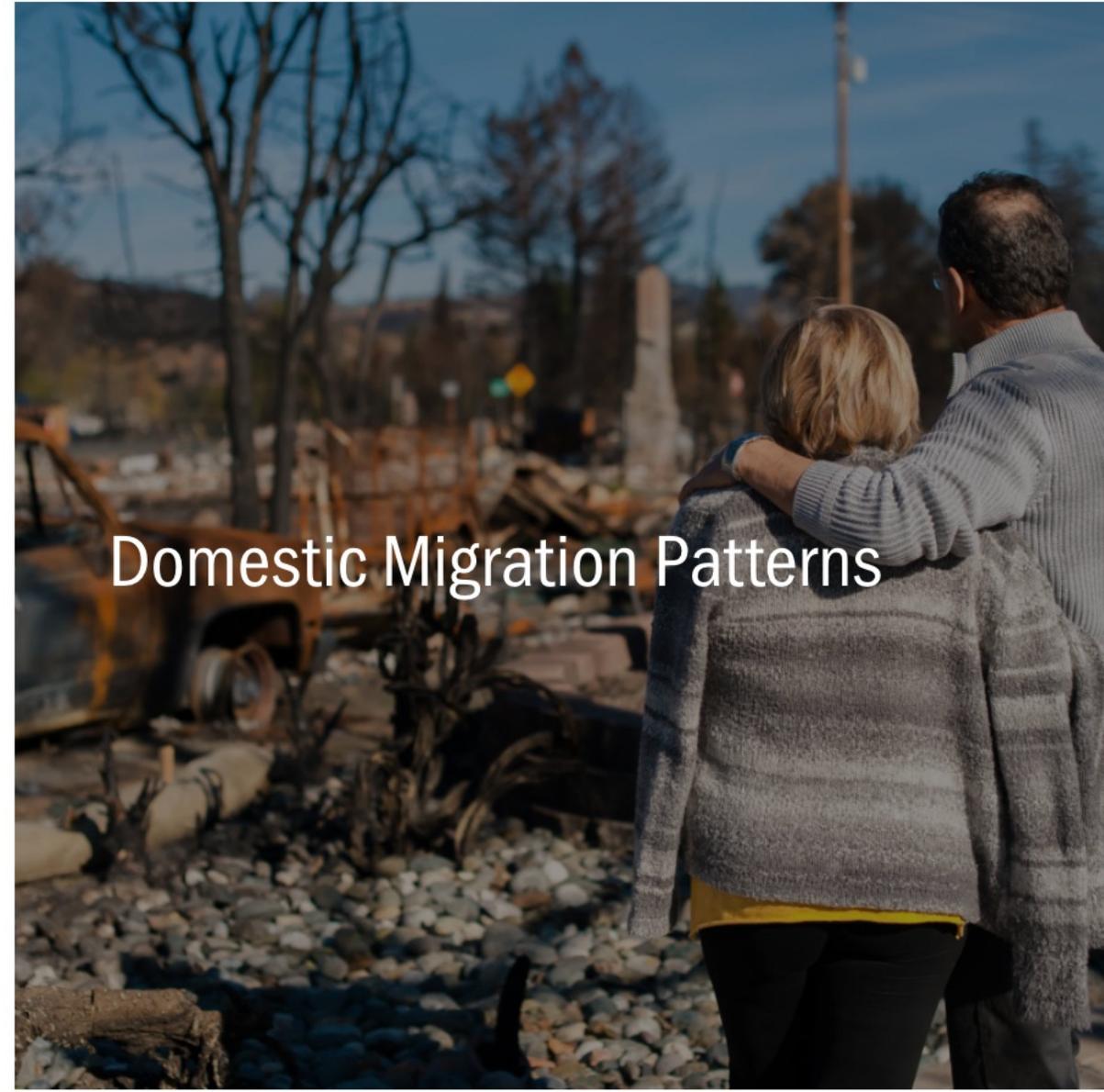
- Close to real-time estimates using external data

Data Sources

- ACS residence one year ago (in-movers); county gross migration; net migration as a residual
- Cellphone detailed records
- Postal changes of address
- Commercial mover data

CDE Capability to Exercise

- Overcoming barriers to the use of novel external data sources, e.g., digital records
- Build effective models to select best measures for different geographic areas (variables and overall)

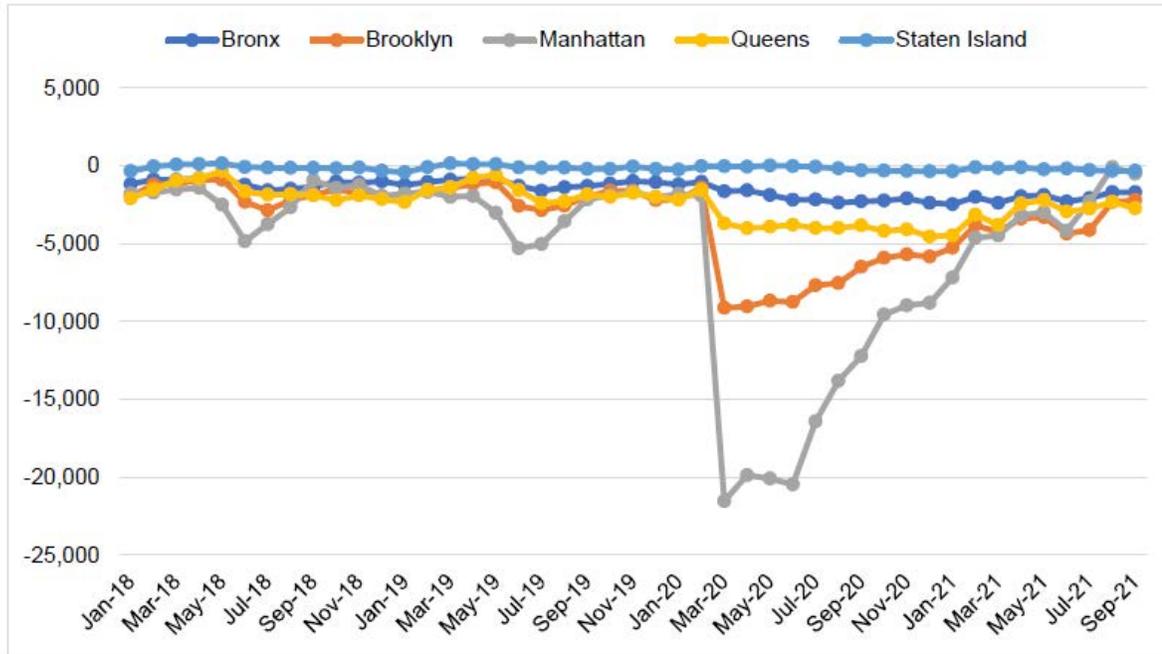


Domestic Migration Patterns

Postal Service Data, Covid-19 and Migration: New York City

Net residential movement was highest in areas with higher incomes

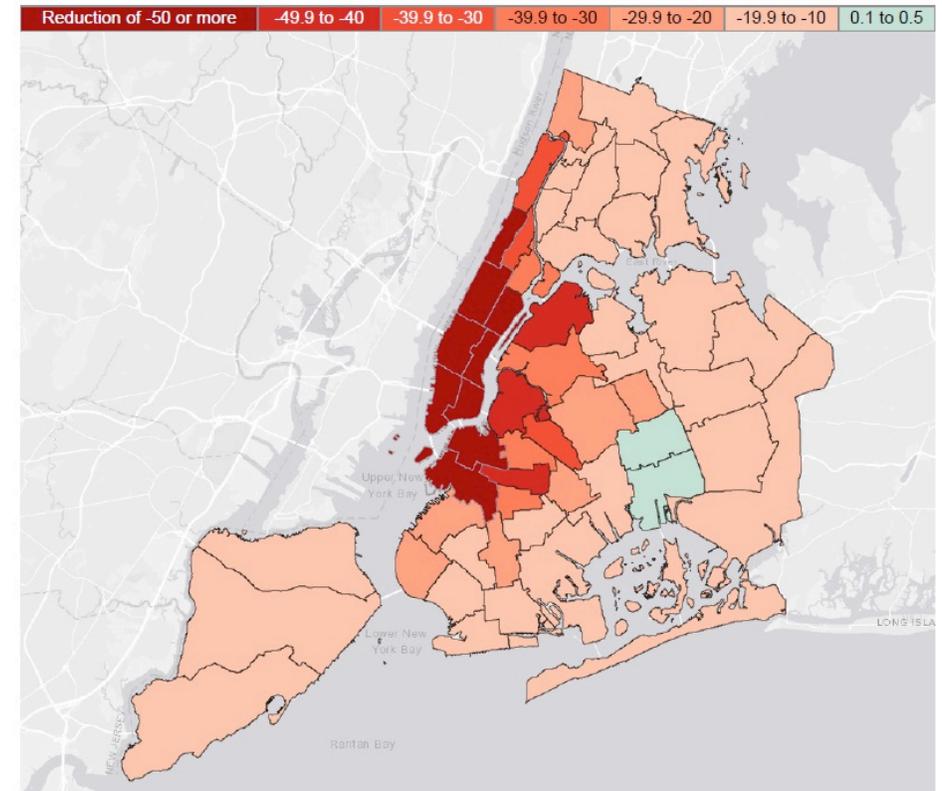
Chart 3. Monthly Net Residential Moves by Borough, 2018-2021



SOURCE: NYC Comptroller's Office analysis of United States Postal Service, "Change of Address Stats," <https://about.usps.com/who/legal/foia/library.htm>

Note: Includes temporary and permanent moves.

Map 1: Change in Net Residential Moves from Pre-Pandemic Trend in 2020 (Change in Net Residential Moves per 1,000 Residents in 2020, as Compared to 2019)



SOURCE: NYC Comptroller's Office analysis of United States Postal Service, "Change of Address Stats," <https://about.usps.com/who/legal/foia/library.htm>

Note: Per-capita figures based on 2020 decennial census data. Includes temporary and permanent moves.

Use Case – Vulnerable Populations in Nursing Homes

Art of the Possible

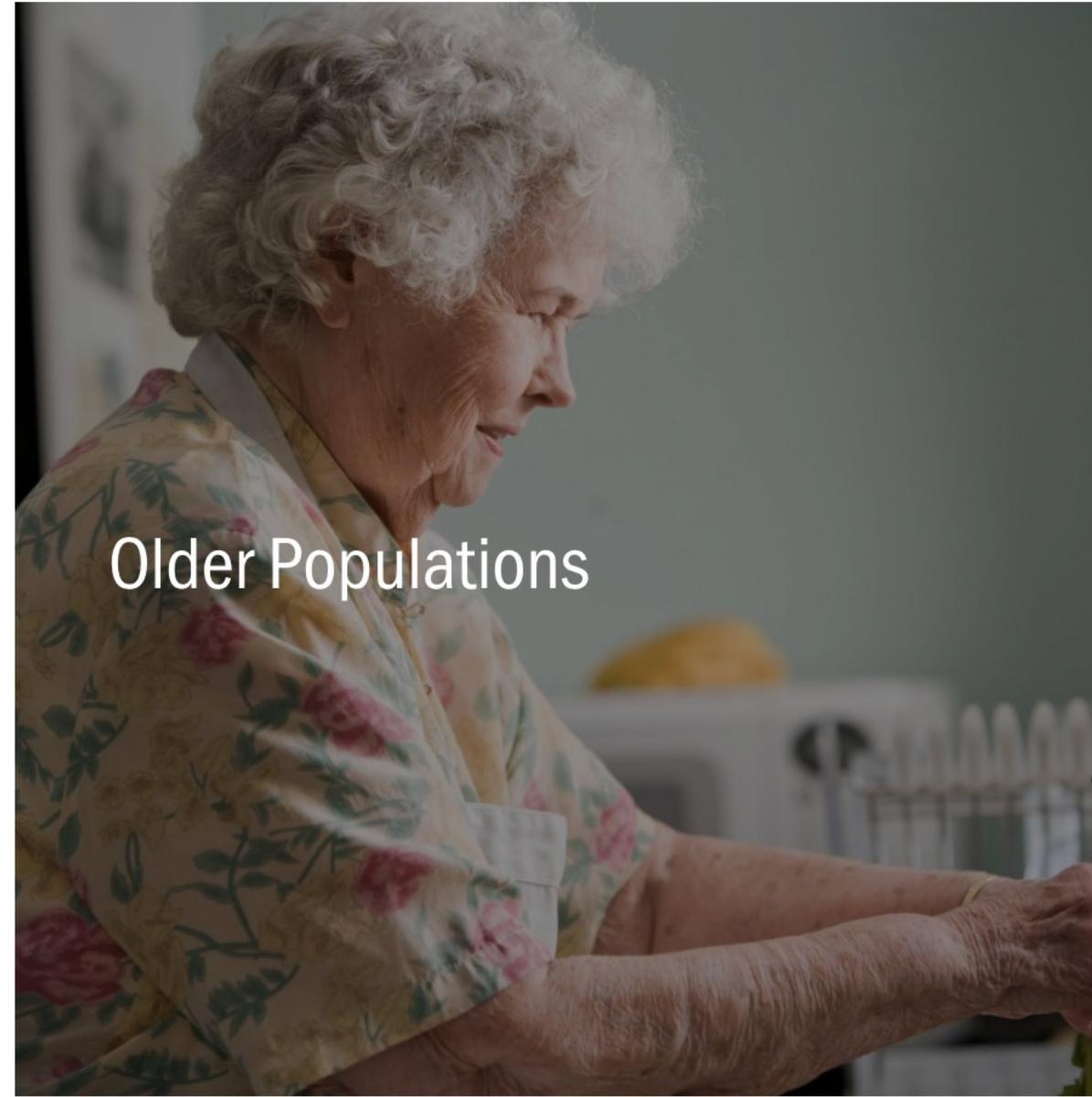
- Comprehensive picture of elder care
 - Residents
 - Staff
 - Owners

Data Sources

- Group Quarters (GQ) population-based on decennial census, ACS
- CMS administrative data
- BLS, CDC, NIH surveys

CDE Capability to Exercise

- Develop cross-agency partnerships
- Integrating data with different units of analysis, timing, geography



Successful Data Discovery and Acquisition will Require Partnerships with Federal, State, and Local Agencies, the Private Sector, and Non-Profit Organizations

Federal

- Centers for Disease Control and Prevention (CDC)
- Centers for Medicare and Medicaid Services (CMS)
- Agency for Healthcare Research and Quality's (AHRQ)

States

- State Department of Public Health divisions that are responsible for oversight and maintaining data about Skilled Nursing Home Facilities
- State Department of Social Services or Public Health divisions that are responsible for oversight and maintaining data about CCRC and assisted living facilities

Foundations

- Kaiser Family Foundation
- American Health Care Association
- National Center for Assisted Living

Exhibit 2. Kaiser Family Foundation - Providers and Service Use Indicators by state and overall¹⁹

Aggregates CMS Nursing Home data by state.

- Total Number of Certified Nursing Facilities
- Total Number of Residents in Certified Nursing Facilities
- Average Number of Certified Nursing Facility Beds
- Average Nurse Hours per Resident Day in All Certified Nursing Facilities
- Distribution of Certified Nursing Facilities by Ownership Type
- Distribution of Certified Nursing Facilities by Certification Type
- Distribution of Certified Nursing Facility Residents by Primary Payer Source
- Distribution of Certified Nursing Facilities by Chain-Owned Affiliation
- Distribution of Certified Nursing Facilities by Hospital-Based Status
- Certified Nursing Facility Occupancy Rate
- Percent of Certified Nursing Facilities with Resident Groups and Family Groups
- Average Number of Deficiencies per Certified Nursing Facility
- Percent of Certified Nursing Facilities Receiving a Deficiency for Actual Harm or Jeopardy
- Percent of Certified Nursing Facilities with Deficiencies
- Percent of Certified Nursing Facilities with Top Ten Deficiencies

Applying the CDE in Response to a Climate Event

Baseline Curated Data Enterprise

Census Linked Frames

Geography

People

Jobs

Businesses



County Level Measures

- # of nurses for every 1000 persons >= 65
- # of home health agencies for every 1000 persons >= 65
- # of hospital beds for every 1000 persons >= 65
- # of empty nursing home beds divided by the # of nursing homes

Census Tract Level Measures

- CDC Social Vulnerability Index
- Climate and Economic Justice Screening Tool climate disadvantaged census tract designation

Skilled Nursing Home Measures

Residents

- Demographic:
- Percentage
 - Minority
 - Percentage > 65
 - Mental Health
 - Physical Health
 - Cognitive Function
 - Percentage on Medicaid
 - Total # of residents

Workers

- Hours:
- RN hours/ resident day
 - LPN hours/ resident day
 - CNA hours/ resident day
- Turnover:
- Total nursing staff turnover
 - # of administrators who have left

Owners

- Facility type
- Whether the facility is a chain
- Whether the facility changed hands in the last 12 months

Facility Safety Assessment
Total # of safety deficiencies over the last 3 years

- Building Knowledge Base (BKB)
- Transportation infrastructure
- How workers get to the nursing home
- Worker demographics
- Where workers live

Severe Climate Event

Data Products

Emergency Preparedness
Total # of emergency preparedness deficiencies over the last 3 years

- Hurricane, flooding, and riverine flooding predictions
- Past hurricane and extreme flooding events

A comprehensive picture of nursing homes

Building on the baseline to address specific questions



What is the “Art of the Possible?”

From the Local Planner’s Perspective

Goal is to

Forge a path that leads to evidence-based decisions to mitigate shorter-term impacts related to the pandemic and devise longer-term strategies to promote economic growth

Based on

A timely and accurate view of the current demographic and social characteristics of the population and the economic conditions of individuals and businesses

Using

Data products that are actionable at a local level

A landscape of rolling hills at sunset. The sky is a warm, golden-orange color, and the sun is visible on the right side, casting a glow over the hills. The hills are silhouetted against the bright sky. A dark grey rectangular box is overlaid on the center of the image, containing the quote in white text.

Strive for progress,
not perfection.

Anonymous

*“Unless someone like you cares a whole awful lot,
nothing is going to get better. It’s not.”
from The Lorax by Dr. Seuss*



An aerial photograph of a large crowd of people walking on a paved plaza. The plaza is marked with a complex geometric pattern of thin black lines forming various polygons. The people are scattered across the area, some walking in groups, some alone. The overall scene is busy and organized. Two horizontal white lines are positioned above and below the central text.

For additional information please contact
Joseph Salvo at ckp7gd@virginia.edu