

Use of Administrative Records at Census: Research Results from Linked Program Participation and American Community Survey Data

Mark A. Leach, Ph.D.

Center for Administrative Records Research and Applications (CARRA)
U.S. Census Bureau

NWA Education and Training Conference
Cincinnati, OH
May 23-25, 2016

Agenda

- Background of CARRA's WIC Project
 - Who? Why? How?
- Data, Methods, and Results
 - Data sources and linkage
 - Modeling WIC eligibility
 - Highlights of results
 - Table package
 - Visualizations

About CARRA

- Acquires and processes federal, state, local, and third party administrative records (ARs)
 - Assesses potential for use in decennial census and survey data collection operations
 - Conducts demographic, social, and economic research using new or enhanced data products
- Research and develops record linkage techniques

Foundations of CARRA's WIC Project

- 2020 Census Research, Testing and Operations
- Census – USDA Joint Statistical Project
 - Economic Research Service and Food and Nutrition Service
- 2014 - 2016 NWA Research Needs Assessments
 - 2016: “Examine linkages with other data sources to explore characteristics of eligible non-participants.”

Benefits to Census

- Better decennial census
 - Improve accuracy: better count of population
 - Improve efficiency: lower costs of data collection
- Better survey products
 - Sampling frames
 - Supplement missing and imputed data
 - Potentially replace questions
- Better research
 - Innovative data products for external and internal researchers

Benefits to State Programs

- Better statistics and survey data on state population and economy
- Better census of hard-to-count populations (poverty, children)
 - More federal funding
- Better understanding of program and opportunities for outreach
 - Eligibility and participation rates across demographic groups and counties
 - Characteristics of participating and eligible non-participating populations

Administrative Records Data Transfer Process

- State participation is voluntary
 - Reimbursement for data extraction costs offered
- Data transfer agreement between state and Census Bureau
 - Data protection and privacy ensured
 - Data protected under Title 13 of the U.S. Code

States with Signed Agreements by Data Type

STATE	SNAP	TANF	WIC
Arizona			*
Colorado	*	*	*
Florida	*	*	
Hawaii	*		
Illinois	*		
Kentucky	*	*	
Maryland	*	*	
Nevada	*	*	*
New Jersey	*	*	
New York	*	*	
Oregon	*		
Tennessee	*	*	
Virginia	*		
Wisconsin		*	

Data Delivered

STATE	SNAP	TANF	WIC
Colorado	*		*
Hawaii	*		
Illinois	*		
Maryland	*	*	
Nevada			*
New York	*	*	
Oregon	*		
Virginia	*		
Wisconsin		*	

Data Requested

- Participant Personally Identifying Information (PII)
 - Name
 - Date of birth
 - Social Security Number
 - Address history
- Database table match keys
- Eligibility and termination
- Monthly history of benefits received
- Other: race/ethnicity, sex, employment status, income and sources, etc.

Data Linkage and Estimation Methods

Overview of Data Sources and Method

- American Community Survey (ACS)
 - Annual individual-level data
- Link ACS to WIC administrative records (AR)
- Estimates and profiles
 - Eligibility and participation rates
 - Profiles of participants and eligible non-participants

The American Community Survey

- Annual sample of 2.3 million US households
 - Sample in every state and county
 - Variety of demographic, social and economic information for each individual residing in a household

Data Linkage

- Census Bureau's Person Validation System (PVS)
 - Uses PII and probabilistic matching techniques to assign individuals a unique Protected Identification Key (PIK)
 - PII is stripped from records after PIK assignment and before researcher access
 - The PIK is used to match anonymously across data sources

Concepts

- ***Estimated Eligibility***

- Adjunctive eligibility

- ACS indicator for Medicaid enrollment and income from SNAP or TANF

- Income guidelines

- ACS household or family size and income

- ***Estimated Participation***

- ACS respondent links to ARs

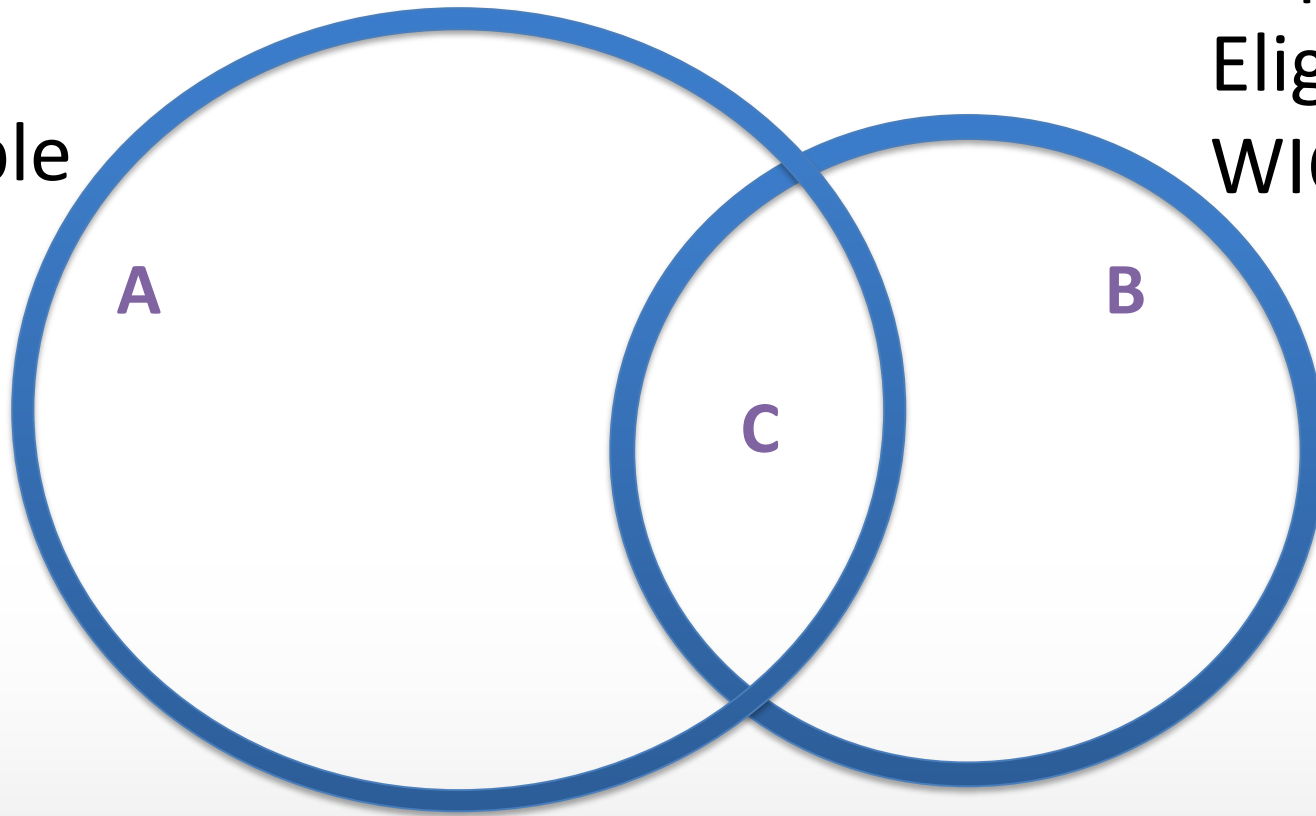
State Population

State
Population

ACS
Sample

ACS
Sample

Population
Eligible for
WIC

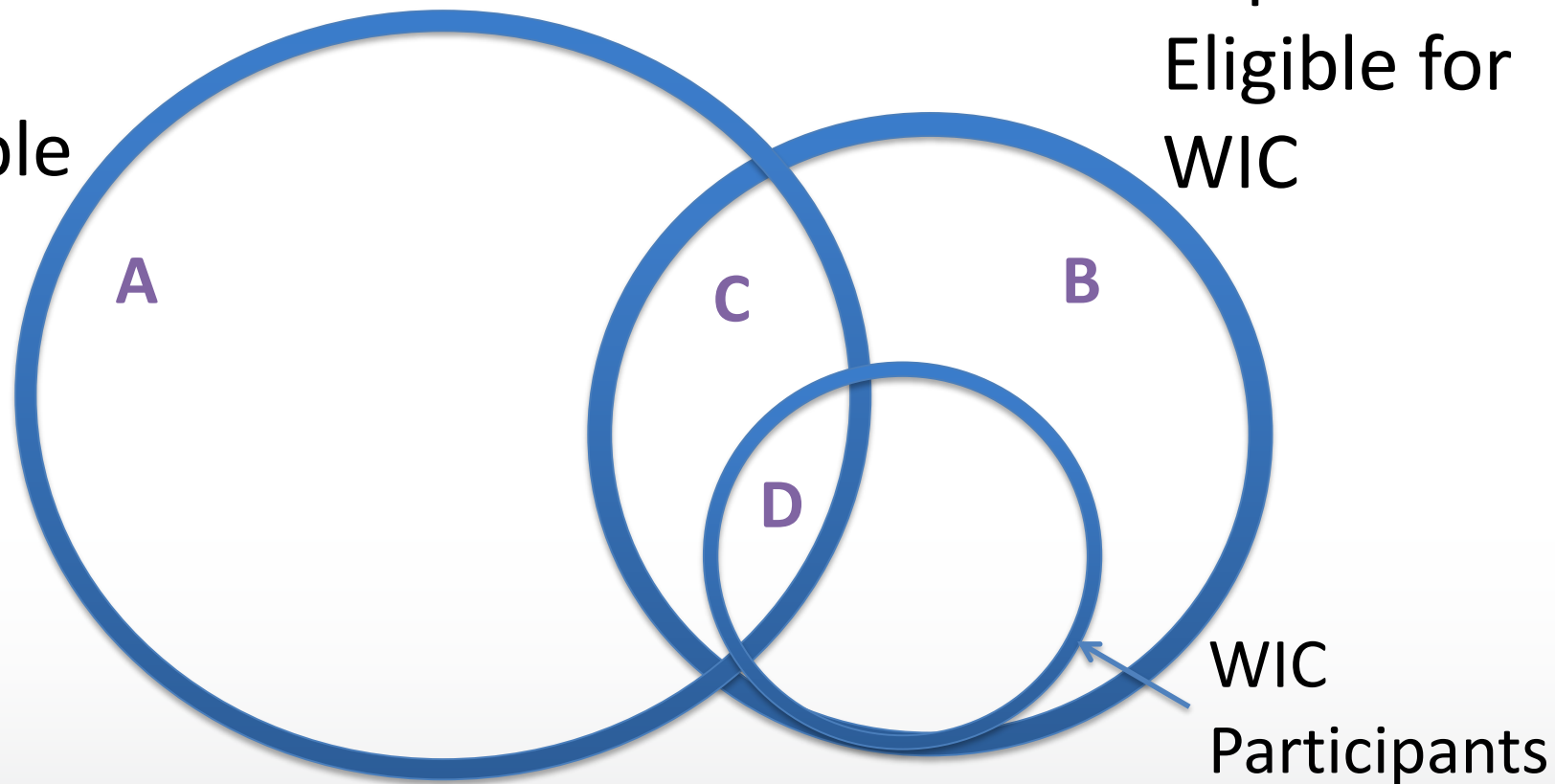


C: Estimate of Eligible Population

$$\textit{Eligibility Rate} = 100 * \frac{C}{A}$$

ACS
Sample

Population
Eligible for
WIC



D: Estimate of WIC Participants

C-D: Estimate of Eligible Non-Participants

$$\textit{Participation Rate} = 100 * \frac{D}{C}$$

Challenges of Linked ACS-WIC Data

- Eligibility of women participants
 - No information on pregnancy or breastfeeding
 - What we can do:
 - Estimate rates at which 15+ female population participates in WIC
 - Profile women participants

Challenges of Linked ACS-WIC Data

- Eligibility of women participants
- ACS sample size of 0-4 and pregnant/breastfeeding populations
 - Cannot estimate annual rates for small population counties
 - What we can do:
 - Aggregate multiple years and estimate average annual rates

Table Package Product

- ***Modeled eligibility and participation rates***
 - State
 - By demographic, social and economic groups
 - By county
 - If aggregate sample size for years of ARs allow
- ***Distribution Profiles***
 - Modeled eligible population
 - Participants
 - Modeled eligible non-participants

Example Table 1. WIC Eligibility and Participation Rates, Infants and Children, State X, 2014

	Eligibility		Participation	
	Estimate	SE	Estimate	SE
Total	53.5	(1.0)	55.1	(1.4)
Age				
0	54.9	(1.8)	67.6	(2.5)
1	52.9	(2.2)	62.2	(2.8)
2	53.7	(1.8)	57.2	(2.8)
3	53.8	(2.0)	47.7	(2.7)
4	52.5	(1.8)	41.3	(3.3)
Race / Hispanic Origin				
Non-Hispanic White alone	38.2	(1.4)	45.5	(2.3)
Non-Hispanic Black alone	81.7	(4.0)	72.8	(5.4)
Non-Hispanic AIAN* alone	83.3	(10.0)	46.6	(11.0)
Non-Hispanic Asian alone	43.0	(7.3)	40.0	(8.0)
Other Non-Hispanic	46.4	(4.2)	60.1	(6.2)
Hispanic	78.8	(1.7)	61.4	(2.1)

Example Table 2. **Distributions** of WIC Participants and Eligible Non-Participants, Infants and Children, State X, 2014

	Eligible		Participants		Non-Participants	
	Estimate	SE	Estimate	SE	Estimate	SE
Total	100.0	-	100.0	-	100.0	-
Race / Hispanic Origin						
Non-Hispanic White alone	39.9	(1.1)	33.0	(1.5)	48.5	(2.1)
Non-Hispanic Black alone	6.5	(0.6)	8.6	(1.1)	4.0	(0.7)
Non-Hispanic AIAN* alone	1.0	(0.2)	0.8	(0.3)	1.2	(0.4)
Non-Hispanic Asian alone	2.2	(0.4)	1.6	(0.4)	2.9	(0.7)
Other Non-Hispanic	4.6	(0.6)	5.0	(0.8)	4.1	(0.8)
Hispanic	45.8	(1.0)	51.0	(1.7)	39.3	(2.0)

Example Table 3. WIC Eligibility and Participation, Parents of Infants and Children, State X, 2014

	Eligibility		Participation	
	Estimate	SE	Estimate	SE
Total	53.5	(1.0)	55.1	(1.4)
Marital Status				
Married	42.4	(1.1)	51.5	(1.9)
Widowed, Divorced, Separated	83.0	(2.8)	53.2	(3.8)
Never Married	85.5	(1.6)	63.4	(2.8)
Education				
Less Than HS Diploma	94.8	(1.3)	63.7	(3.7)
High School Diploma	79.1	(1.9)	59.4	(2.8)
Some College	63.9	(1.7)	54.4	(2.5)
Bachelor Degree or Higher	21.3	(1.4)	38.7	(3.3)
Nativity / Citizenship				
Native Born	48.9	(1.2)	53.8	(1.7)
Foreign Born, Citizen	62.3	(4.3)	58.8	(6.0)
Foreign Born, Not Citizen	85.5	(1.8)	59.4	(3.8)
English Language Skills				
Speaks Only English or Well	51.8	(1.1)	53.8	(1.4)
Does Not Speak English or Not Well	96.2	(1.6)	72.3	(5.3)

Example Table 3. WIC Eligibility and Participation, Households of Infants and Children, State X, 2014

	Eligibility		Participation	
	Estimate	SE	Estimate	SE
Total	53.5	(1.0)	55.1	(1.4)
Household Income below Federal Poverty Line				
<=100% Poverty Line	98.6	(0.6)	60.6	(3.1)
100<-145% Poverty Line	98.9	(0.5)	58.4	(2.9)
145<-185% Poverty Line	92.9	(2.2)	43.8	(3.9)
>185% Poverty Line	26.2	(1.1)	53.3	(2.7)
Size				
2-3 persons	46.7	(1.8)	55.4	(2.8)
4 persons	44.0	(1.8)	53.3	(2.8)
5 persons	60.9	(2.8)	51.9	(3.3)
6+ persons	73.7	(2.4)	60.2	(3.2)
Locale Type				
Urban	53.8	(1.0)	56.4	(1.5)
Rural	51.4	(2.9)	44.5	(5.1)
Military / Veteran Status of Occupants				
Not Active Military or Veteran	53.8	(1.1)	54.0	(1.6)
Active Military or Veteran	51.7	(2.9)	62.2	(3.4)

Example Table 4. WIC Eligibility and Participation by County, State X, 2014

	Eligibility		Participation	
	Estimate	SE	Estimate	SE
State Total	53.5	(1.0)	55.1	(1.4)
County				
Adams	63.0	(2.0)	64.9	(2.7)
Alamosa	69.1	(9.0)	49.8	(13.0)
Arapahoe	54.7	(1.8)	56.3	(3.1)
Archuleta	90.6	(6.1)	.	.
Baca
Bent	81.2	(7.0)	.	.

Data Visualization Product

- A user-friendly complement to information provided in Table Package
- Allows us to deliver additional information not easily communicated in tables
 - Maps and trends

Summary

- Partnership between state programs and Census is mutually beneficial
 - An improved census benefits both state programs and the Census Bureau
 - Table package provides state program with information not otherwise available

Contact Information

For information about becoming WIC data partner:

- Katherine Reeves, Katherine.L.Reeves@census.gov
- Epa Uwimana, Epaphrodite.Uwimana@census.gov

For information about WIC profiles:

- Mark Leach, Mark.A.Leach@census.gov