Using VA Data to Characterize Health and Healthcare Disparities in VA

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Using Data and Information Systems in
Partnered Research Cyberseminar Series
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Acknowledgements

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Learning Objectives

- Describe the data sources and data decisions used to construct vulnerable population characteristics such as race/ethnicity and measures of socio-economic status (SES)

- Describe trade-offs involved with different specifications for race/ethnicity and SES measures to assess variations in VA health and health care

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Session Outline

- Introduction

- Measuring race and ethnicity
  - Algorithm for reducing missing data
  - Contributions of alternate data sources
  - Characterizing "unknown" race/ethnicity

- Measuring socio-economic status
  - Challenges, strategies, and examples

- Resources

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Poll Question #1

I am interested in VA data primarily due to my role as:

a. Researcher (PI, Co-PI, Co-investigator, CDA)

b. Research Staff

c. Clinical Staff

d. Operations Staff

e. Other – please describe via the Q & A function

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OHE-QUERI Partnered Evaluation Initiative Goal

- Use VA data to systematically characterize the health and healthcare disparities in VA for vulnerable groups

  - Diseases and conditions considered the principal causes of disability and mortality, particularly for vulnerable Veteran populations

  - Gaps and trends in quality of healthcare and patient experiences with care

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OHE-QUERI Partnered Evaluation Initiative Approach

- Operations work in partnership with OHE

- Secondary analysis using large VA datasets

- Include <u>all</u> VA health care users
  - out-patient, in-patient, non-VA

- Define vulnerable population characteristics, including race/ethnicity and socio-economic status

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- **Measuring race and ethnicity**
  - ➤ Algorithm for reducing missing data
  - ➤ Contributions of alternate data sources
  - ➤ Characterizing "unknown" race/ethnicity

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  - ➤ Challenges, strategies, and examples

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Office of Management & Budget (OMB) Revised Standards for Classification of Federal Data on Race and Ethnicity

- Categories and definitions provide a common language to promote uniformity and comparability of data on race and ethnicity

- 5 minimum categories for race, 2 categories for ethnicity (Hispanic origin, not of Hispanic origin)

- Classifications should not be interpreted as being scientific or anthropological in nature

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OMB Definitions for Racial and Ethnic Categories

- **American Indian or Alaska Native.** A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.

- **Asian.** A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

- **Black or African American.** A person having origins in any of the black racial groups of Africa. Terms such as "Haitian" or "Negro" can be used in addition to "Black or African American."

- **Native Hawaiian or Other Pacific Islander.** A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

- **White.** A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

- **Hispanic or Latino.** A person of Cuban, Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin, regardless of race. The term, "Spanish origin," can be used in addition to "Hispanic or Latino."

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Poll Question #2

What sources of VA race/ethnicity data have you used? (check all that apply)

a. No prior use

b. MedSAS files

c. Corporate Data Warehouse (CDW)

d. Vital Status File

e. Other VA data sources (Please specify)

Poll Question #3

In your work (using VA data or otherwise), how do you usually handle missing race/ethnicity data?

a. Delete those with missing values

b. Include missing with another category

c. Multiple imputation or other statistical techniques

d. Other-Please specify

Data Sources

- Corporate Data Warehouse (CDW) – national repository of data from VistA Patient File

- Medical SAS (MedSAS) datasets: outpatient visit or event file; inpatient PTF main file

- VA OEF/OIF/OND Roster – from Department of Defense

- VHA Vital Status File – CMS Race from Medicare

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CDW Race Data

- Not nationally standardized
  - See "Race Data Best Practice Guide" and "CDW Race Data and Multiple Races" for mapping CDW Race to standard race
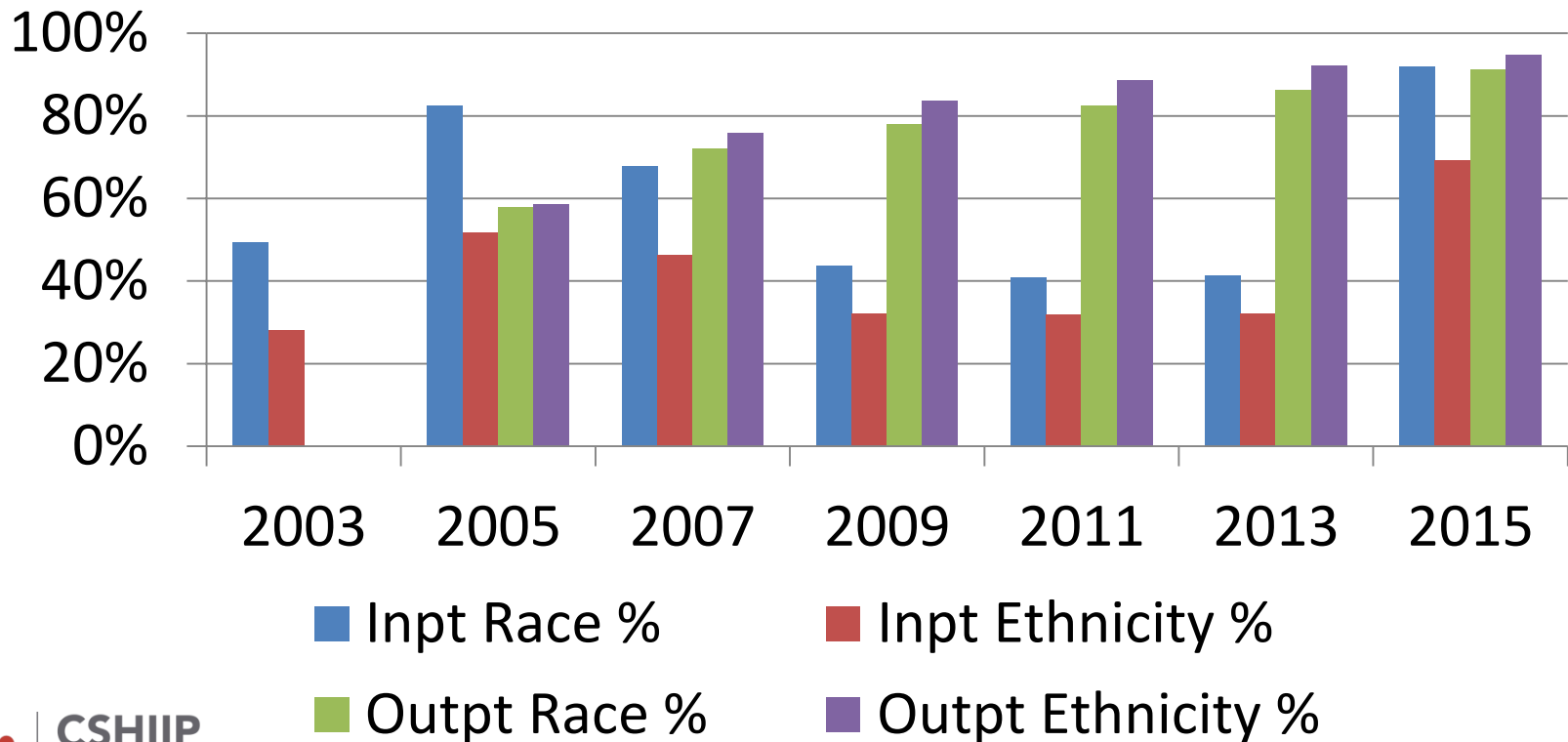- 15% missing as of FY2012

Completeness of CDW Race Data
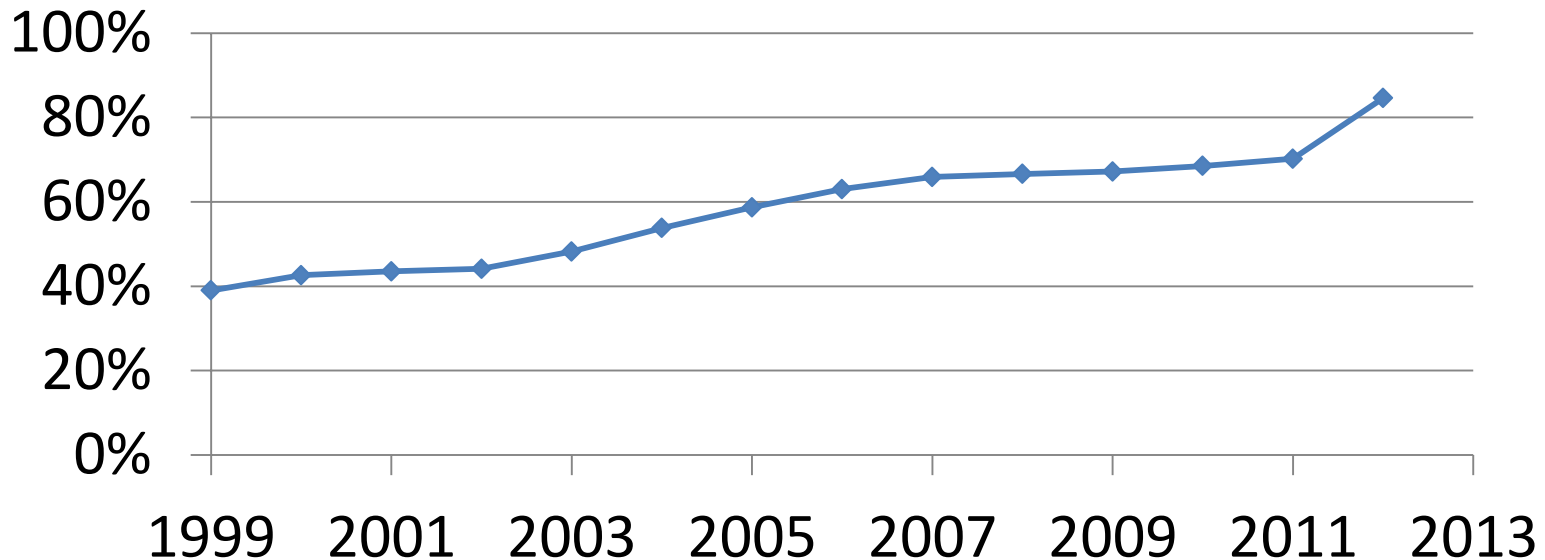
Medical SAS Datasets

Post-2003 standards } Outpatient: RACE1-RACE7 and ETHNIC
Inpatient: RACE1-RACE6 and ETHNIC

Completeness of MedSAS Datasets

Legend:
- Inpt Race %
- Inpt Ethnicity %
- Outpt Race %
- Outpt Ethnicity %

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Other Data

- ## VA OEF/OIF/OND Roster

  - ➤ Department of Defense, Manpower Data Center (DMDC) cumulative roster – VA roster includes subset enrolled in VHA prior to date roster was updated

- ## VHA Vital Status File

  - ➤ Mortality and demographic data, including race and ethnicity data from Medicare (CMS Race) for Veterans enrolled in VHA who received VHA care since 1992 or VBA compensation or pension benefits since 2002

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Strategies for Minimizing Missing Data

- Combine data from different sources over multiple years

- Challenge posed by data being structured differently across data sources and even across years within a single data source

- Must perform within-source, within-year data processing to achieve a standardized data structure across sources and years

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Mapping of Race Values

VHA Medical SAS Datasets		VA OEF/OIF/OND Roster (Source: Department of Defense)	VHA Vital Status File (Source: Medicare)		PEC RACE (WHEI_Race)
RACE1-RACE7 (SF, FY04-FY14) RACE1-RACE6 (Inpatient Main FY03-FY14)	RACE (SF, FY00-FY03, FY04-FY14†), RACE (Inpatient Main, FY00-FY02, FY03-FY14‡)	RACE, ETHNICITY	CMS_RACE		Values
American Indian or Alaska Native	American Indian	Race=(Other OR Unknown ‖) AND Ethnicity=(Aleut, Eskimo, OR U.S./Canadian Indian tribes)	North American Native		**American Indian / Alaska Native**
Asian	Asian	Race=(Other OR Unknown) AND Ethnicity=(Asian Indian, Chinese, Filipino, Guamanian, Japanese, Korean, Vietnamese, OR Other Asian Descent)	Asian	Reassigned race values	**Asian**
Black or African American	Hispanic Black; Black	Black	Black		**Black / African American**
Native Hawaiian or Other Pacific Islander	*	Race=(Other OR Unknown) AND Ethnicity=(Melanesian, Micronesian, Polynesian, OR Other Pacific Islander Descent)	*		**Native Hawaiian / Other Pacific Islander**
White	Hispanic White; White	White	White		**White**
Unknown; Declined to Answer; Missing	Unknown; Missing	Race=Hispanic OR Race=(Other OR Unknown) AND Ethnicity=(Other, None, OR Unknown)	Hispanic; Other; Unknown		**Unknown §**

Starting in †FY04 for MedSAS outpt SF files and ‡FY03 for Inpt Main files, RACE values were no longer being populated, although the previously-populated legacy value was carried forward in subsequent years' files.
‖ exceptions for 0.02% defined in Technical Appendix. § Unknown also includes declined to answer and missing.

Source: adapted from National Veterans Health Equity Report, Technical Appendix.

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Mapping of Ethnicity Values

VHA Medical SAS Datasets		VA OEF/OIF/OND Roster (Source: Department of Defense): ETHNICITY	VHA Vital Status File (Source: Medicare): CMS_RACE		PEC ETHNICITY (WHEI_Ethnicity) Values
ETHNIC (SF, FY04-FY14), ETHNIC (Inpatient Main FY03-FY14)	RACE (SF, FY00-FY03, FY04-FY14†), RACE (Inpatient Main, FY00-FY02, FY03-FY14‡)				
Hispanic or Latino	Hispanic White, Hispanic Black	Puerto Rican; Mexican; Cuban; Latin American with Hispanic Descent; Other Hispanic Descent	Hispanic	Reassigned ethnicity values	**Hispanic**
Not Hispanic or Latino	American Indian§	Asian Indian; Chinese; Filipino; Guamanian; Japanese; Korean; Vietnamese; Other Asian descent; Aleut; Eskimo; U.S./Canadian Indian tribes; Melanesian; Micronesian; Polynesian; Other Pacific Islander descent	North American Native§		**Non-Hispanic**
	Asian§		Asian§		
	Black		Black§		
	White		White§		
Unknown; Declined to Answer; Missing	Unknown; Missing	Other; None; Unknown	Other; Unknown		**Unknown ||**

Starting in †FY04 for MedSAS outpt SF files and ‡FY03 for Inpt Main files, RACE values were no longer being populated, although the previously-populated legacy value was carried forward in subsequent years' files.
§ Hispanic not selected, so mapped to race. || Includes "Unknown," "Declined to Answer," "Missing," "Other," and "None."

Source: adapted from National Veterans Health Equity Report, Technical Appendix.

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Missing Race Values - % resolved by Step of WHEI_Race Variable Creation Algorithm*

Step	Source, Field, Year	% resolved	% missing (cumulative)
1	SF RACE1-RACE7, FY12	79.1	20.9
2	Inpatient Main RACE1-RACE6, FY12	0.1	20.8
3	SF RACE, FY12	3.8	17.0
4	Inpatient Main RACE, FY12	0.0	17.0
5	OEF/OIF/OND Roster RACE, OCT2012	1.0	16.0
6	VHA Vital Status File CMS_RACE FY12Q4	8.0	8.0
7	Repeat Steps 1-4 sequentially by year, FY11-FY04	1.3	6.7
8	Repeat Steps 3-4 sequentially by year, FY03-FY00	0.1	6.6

*Among FY12 base cohort, 5,613,091 Veteran VHA users

Source: Frayne et al. WHEI Sourcebook Vol. 3 – Part 9, Technical Appendix.

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Missing Ethnicity Values - % resolved by Step of WHEI_Ethnicity Variable Creation Algorithm*

Step	Source, Field, Year	% resolved	% missing (cumulative)
1	SF ETHNIC, FY12	84.8	15.2
2	Inpatient Main ETHNIC, FY12	0.1	15.2
3	SF RACE, FY12	2.4	12.8
4	Inpatient Main RACE, FY12	0.0	12.8
5	OEF/OIF/OND Roster ETHNICITY, OCT2012	0.2	12.6
6	VHA Vital Status File CMS_RACE FY12Q4	6.1	6.5
7	Repeat Steps 1-4 sequentially by year, FY11-FY04	1.3	5.2
8	Repeat Steps 3-4 sequentially by year , FY03-FY00	0.1	5.2

*Among FY12 base cohort, 5,613,091 Veteran VHA users

Source: Frayne et al. WHEI Sourcebook Vol. 3 – Part 9, Technical Appendix.

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Mapping of Race with Ethnicity Values to Race/Ethnicity

Race	Ethnicity	Race/Ethnicity
American Indian / Alaska Native	Hispanic	Hispanic
Asian	Hispanic	
Black / African American	Hispanic	
Native Hawaiian / Other Pacific Islander	Hispanic	
White	Hispanic	
Unknown	Hispanic	
Any combination of two or more races recorded in the same record	Non-Hispanic OR Unknown	Multi-race
American Indian / Alaska Native	Non-Hispanic OR Unknown	American Indian / Alaska Native – non-Hispanic (AI/AN)
Asian	Non-Hispanic OR Unknown	Asian - non-Hispanic
Black / African American	Non-Hispanic OR Unknown	Black / African American - non-Hispanic
Native Hawaiian / Other Pacific Islander	Non-Hispanic OR Unknown	Native Hawaiian / Other Pacific Islander - non-Hispanic (NH/OPI)
White	Non-Hispanic OR Unknown	White - non-Hispanic
Unknown	Non-Hispanic OR Unknown	Unknown

Source: National Veterans Health Equity Report, Technical Appendix.

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Race/Ethnicity Distribution (%) by Step in Which Race/Ethnicity Data Resolved (FY14)

Step(s)	1,2	3,4	5	6	7a	7b,8	Total
White	73.7	79.8	68.0	90.1	64.6	67.6	72.3
AI/AN	0.6	0.6	1.2	0.6	1.0	1.4	0.6
Asian	0.9	1.2	3.4	0.5	1.9	2.0	0.9
Black	17.0	15.5	16.3	8.2	23.2	20.8	15.8
Hispanic	6.2	3.0	10.8	0.6	7.4	6.5	5.6
Multi-race	0.9	--	--	--	0.9	0.7	0.8
NH/OPI	0.7	--	0.5	--	1.2	1.0	0.6
% resolved	**85.5**	**2.1**	**1.2**	**6.7**	**0.5**	**0.5**	**96.6**

Notes: 1,2 FY14 new stds; 3,4 FY14 old stds; 5 OEF/OIF/OND; 6 VSF; 7a FY13 new stds; 7b remainder of FY13-FY04; 8 FY03-FY00.   -- absent from that data source
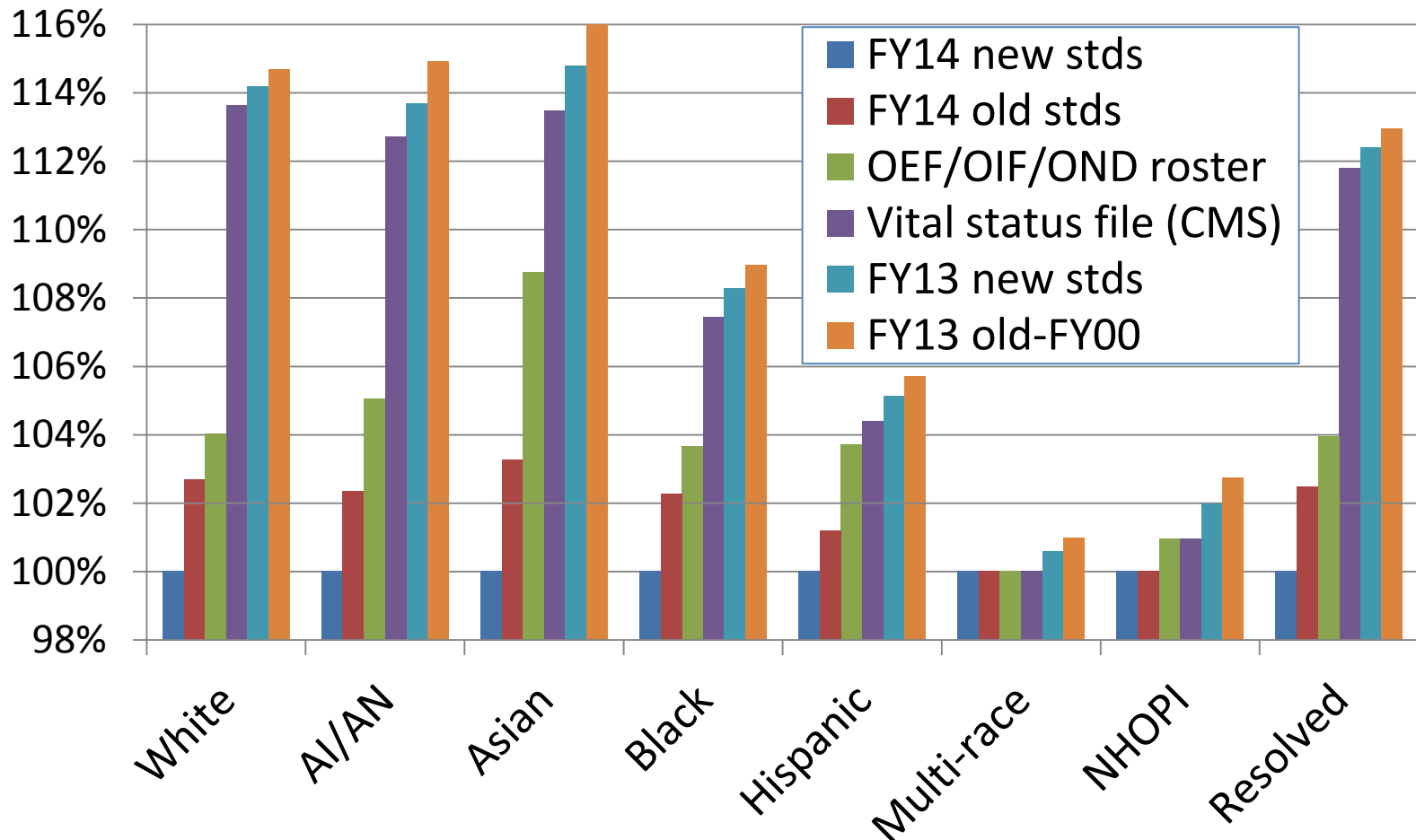
Source: OHE-QUERI Partnered Evaluation Initiative

Cumulative % Increase by Race/Ethnicity Group with Sequential Steps in Algorithm

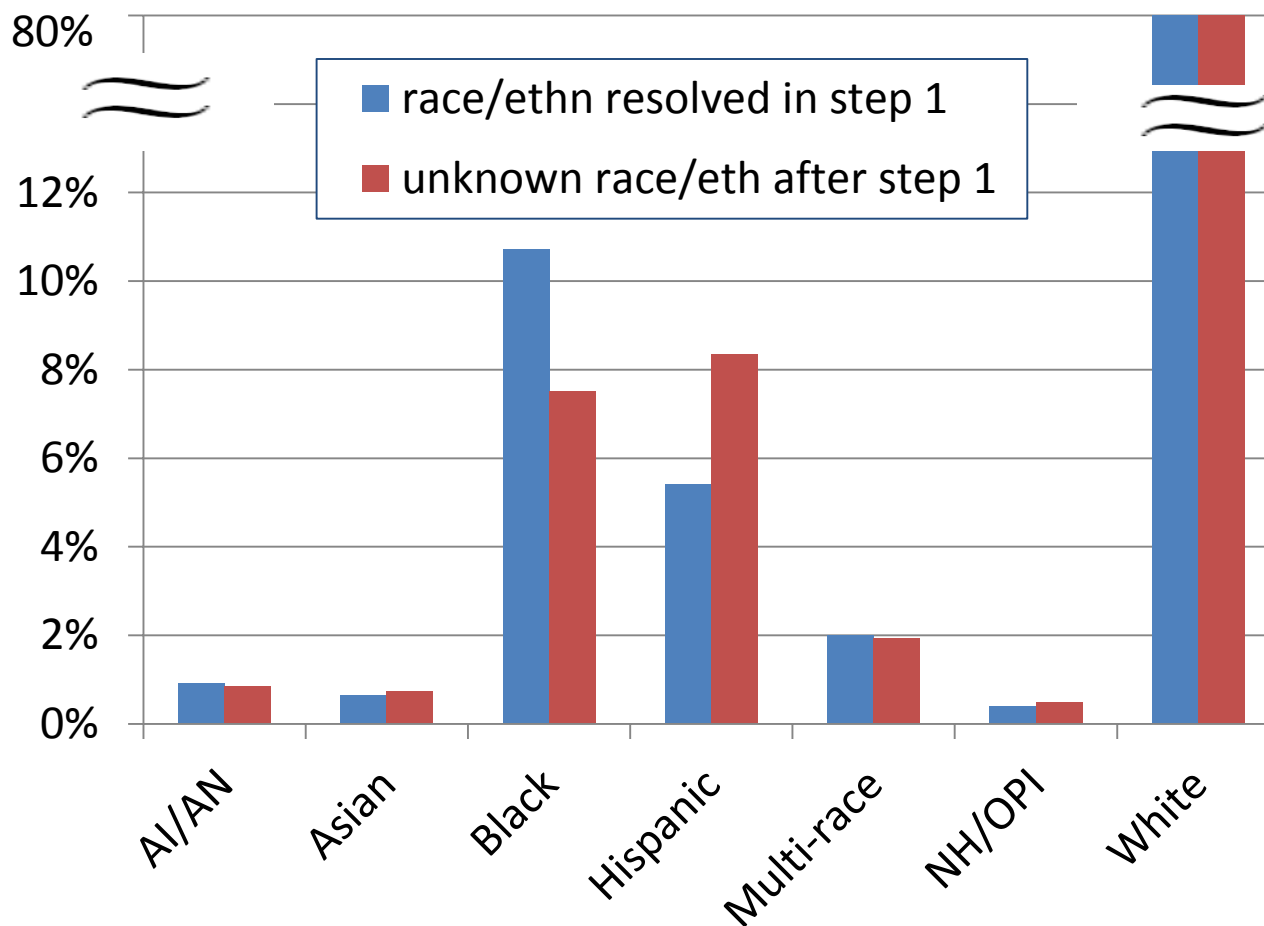Legend:
- FY14 new stds
- FY14 old stds
- OEF/OIF/OND roster
- Vital status file (CMS)
- FY13 new stds
- FY13 old-FY00

X-axis categories: White, AI/AN, Asian, Black, Hispanic, Multi-race, NHOPI, Resolved

Y-axis: 98% to 116%

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Self-identified Race/Ethnicity (from survey data) among Veterans with Unknown MedSAS Race/Ethnicity

Legend:
- race/ethn resolved in step 1 (blue)
- unknown race/eth after step 1 (red)

Categories: AI/AN, Asian, Black, Hispanic, Multi-race, NH/OPI, White

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Demographic Characteristics by Step in Which Race/Ethnicity Data Resolved (FY14)

Percent Female

Legend:
- FY14 new stds
- FY14 old stds
- OEF/OIF/OND
- VSF (CMS)
- FY13 new stds
- FY13 old-FY00
- Unknown Race/Eth

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Demographic Characteristics by Step in Which Race/Ethnicity Data Resolved (FY14)

Age Distribution (%)

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Distribution of Ethnicity by Race of VA Users, FY14

Hispanic / Latino %
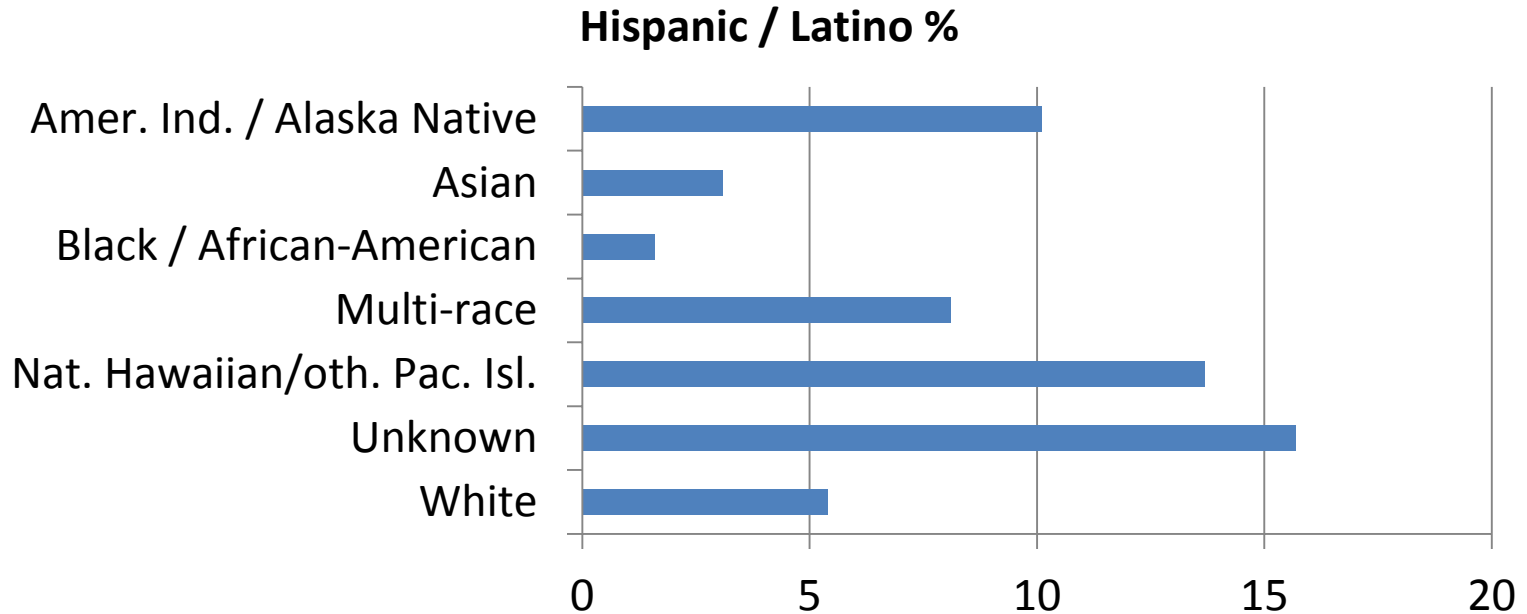
	AI/AN	Asian	Black	Multi-race	NH/OPI	Unk race	White
Hispanic	10.1	3.1	1.6	8.1	13.7	15.7	5.4
Unk ethnicity	0.7	0.9	1.5	0.5	1.9	53.0	1.0
Non-Hispanic	89.2	96.0	96.9	91.4	84.4	31.3	93.6

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Distribution of Race/Ethnicity among Veteran VA Users, FY14
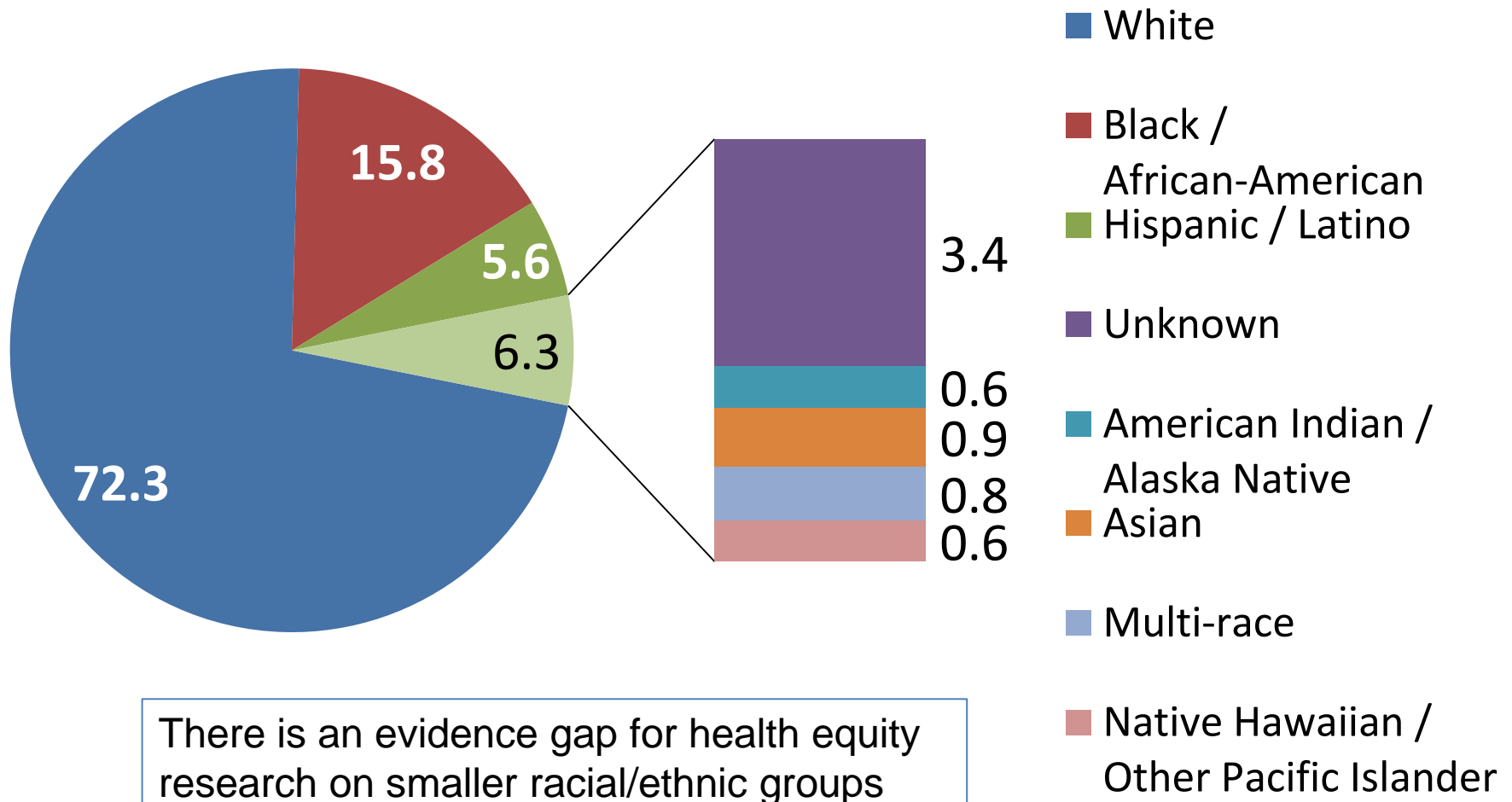
Legend:
- White
- Black / African-American
- Hispanic / Latino
- Unknown
- American Indian / Alaska Native
- Asian
- Multi-race
- Native Hawaiian / Other Pacific Islander

Pie chart values: 72.3, 15.8, 5.6, 6.3

Stacked bar values: 3.4, 0.6, 0.9, 0.8, 0.6

There is an evidence gap for health equity research on smaller racial/ethnic groups
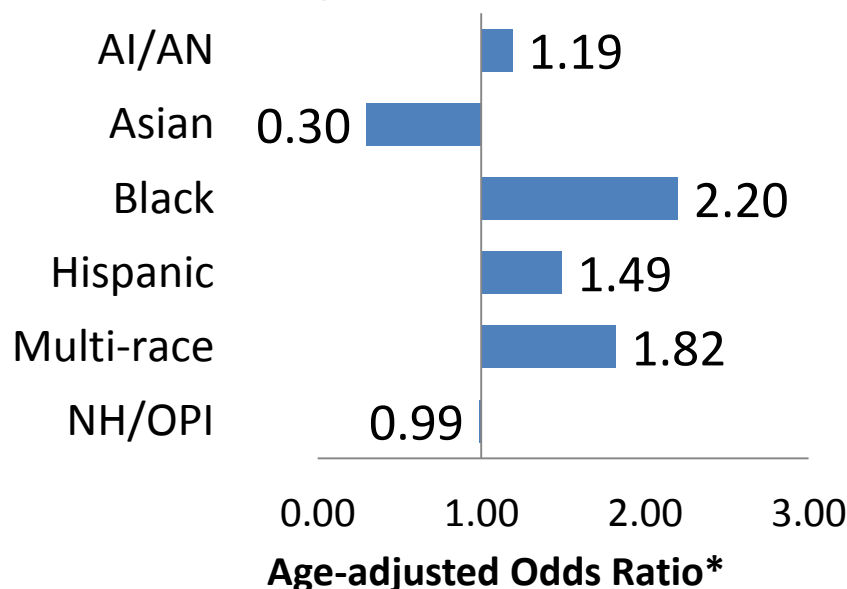
Poll Question #4

In your work with race/ethnicity data, how do you usually handle smaller size groups?

a. Do not include in analysis

b. Combine small groups together (e.g., as "Other")

c. Include small groups with a larger group
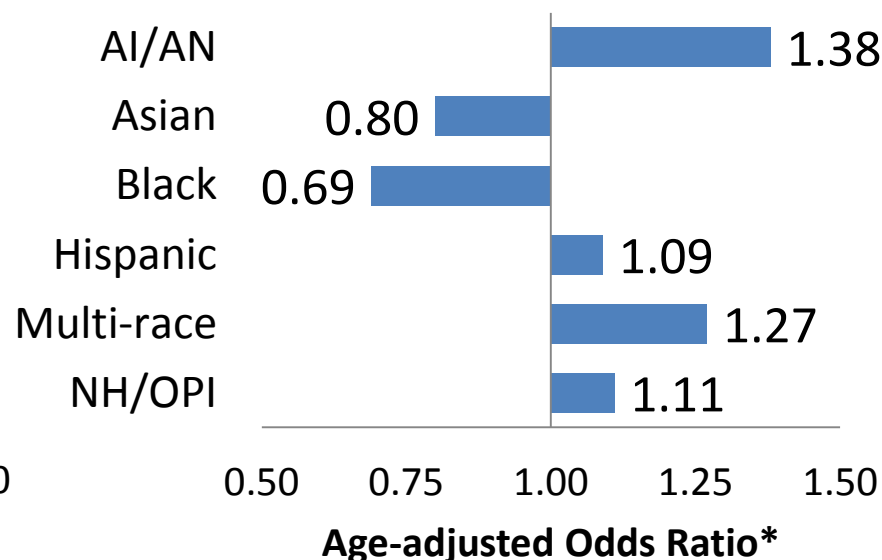
d. Other – please describe via the Q & A function

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Age-adjusted Odds Ratios of Select Conditions by Race/Ethnicity (FY14)

Hepatitis C

Race/Ethnicity	Age-adjusted Odds Ratio*
AI/AN	1.19
Asian	0.30
Black	2.20
Hispanic	1.49
Multi-race	1.82
NH/OPI	0.99

Traumatic Brain Injury

Race/Ethnicity	Age-adjusted Odds Ratio*
AI/AN	1.38
Asian	0.80
Black	0.69
Hispanic	1.09
Multi-race	1.27
NH/OPI	1.11

*$p<0.05$ for all comparisons with White ref group except NH/OPI for Hepatitis C. In these examples, combining smaller groups (AI/AN, Asian, Multi-race, NH/OPI) would mask statistically-significant differences.

Session Outline

- Introduction

- Measuring race and ethnicity

- **Measuring socio-economic status**
  - Challenges, strategies, and examples

- Resources

Poll Question #5

What sources of income or other socio-economic status data have you used? (check all that apply)

a. No prior use

b. MedSAS files

c. Corporate Data Warehouse (CDW)

d. Census Data

e. Other – please describe via the Q & A function

VA Socio-economic Status (SES) Measures

- CDW: Income
  - Not required for those with service-connected status, therefore high level of missing data

- VA enrollment priority group: potential proxy measure
  - Service-connected status and multiple other criteria confer co-payment exemption (e.g., military service within 5 years)
  - Those subject to means test are categorized into priority 5, 7, or 8 based on geographic-based income that is adjusted for household size (plus subcategories based on other criteria)
  - Priority group 5 = lower income, no co-payment
  - Priority groups 7 and 8 = two thresholds of higher income

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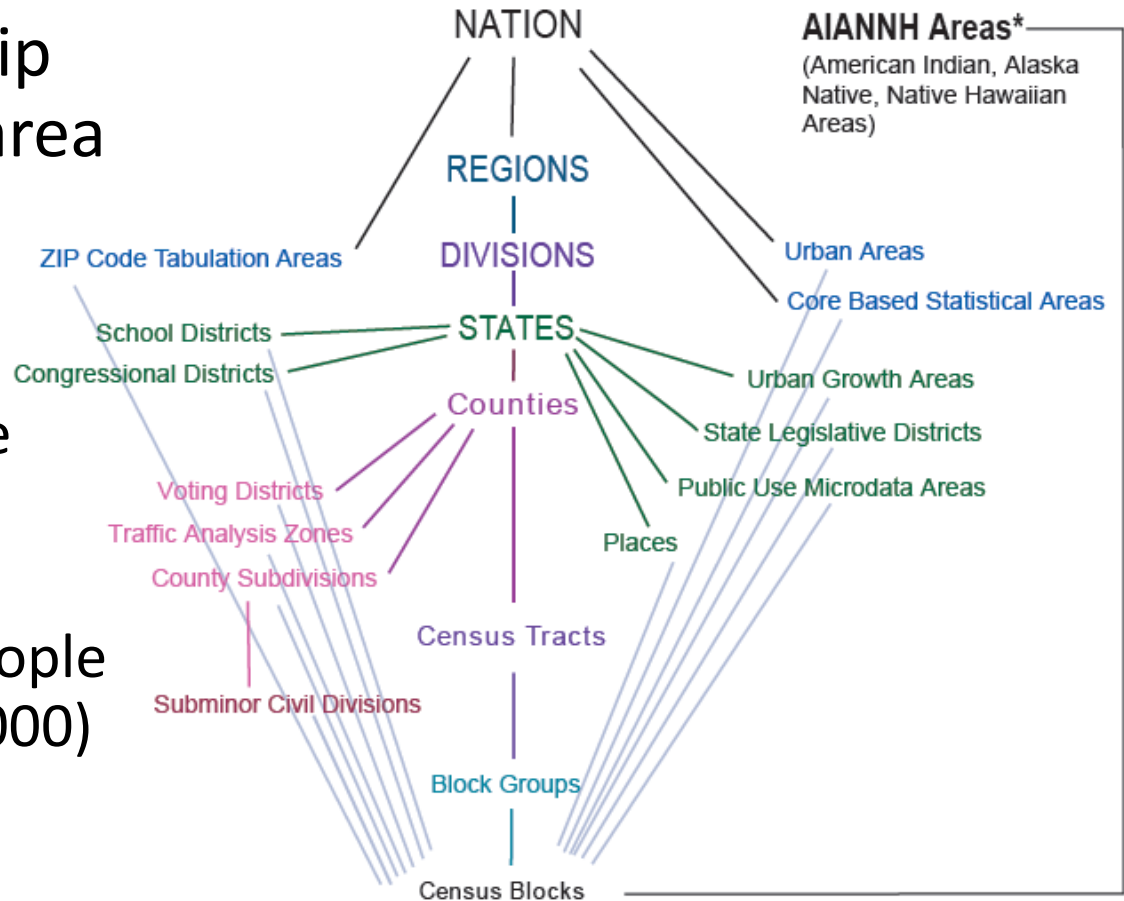Innovation, Implementation & Policy

Area-based Socio-economic status (SES) measures

- CDW: Zip code, zip+4 (9-digit zip code) – link to zip code tabulation area (ZCTA)

- PSSG: latitude-longitude – link to census tract
  - Both – link to multiple US Census SES measures, e.g., median household income, % of area below federal poverty level

- Area deprivation index
  - Geographic area-based measure of the socioeconomic deprivation experienced by a neighborhood, derived from 17 markers of SES from US Census
  - Higher levels of deprivation associated with increased risk of adverse health and health care outcomes (e.g., mortality)
  - Available for block group and 9-digit zip code

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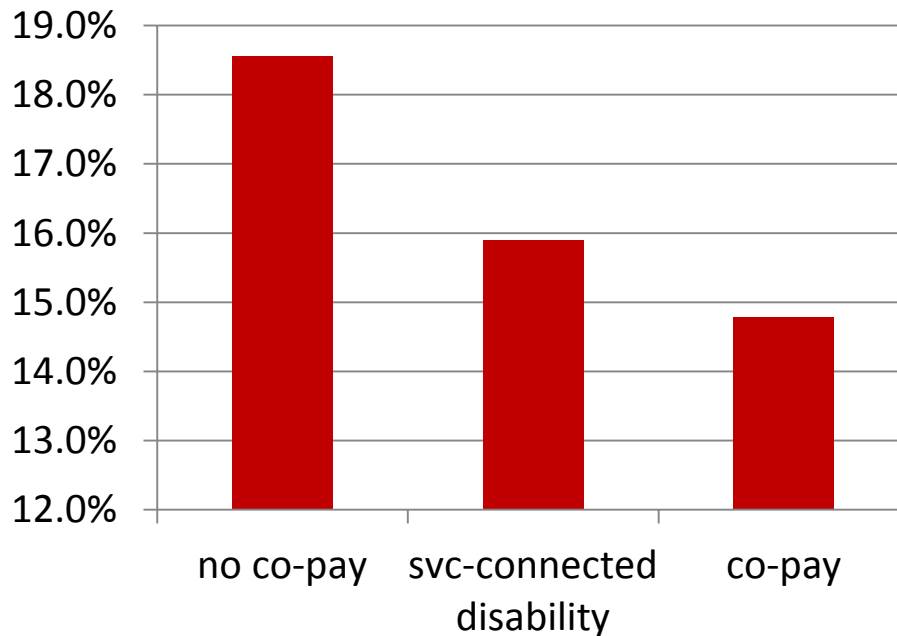Innovation, Implementation & Policy

Standard Hierarchy of Census Geographic Entities

- Link zip code to zip code tabulation area (ZCTA)

- Area sizes:
  - Zip codes average ~30,000 people
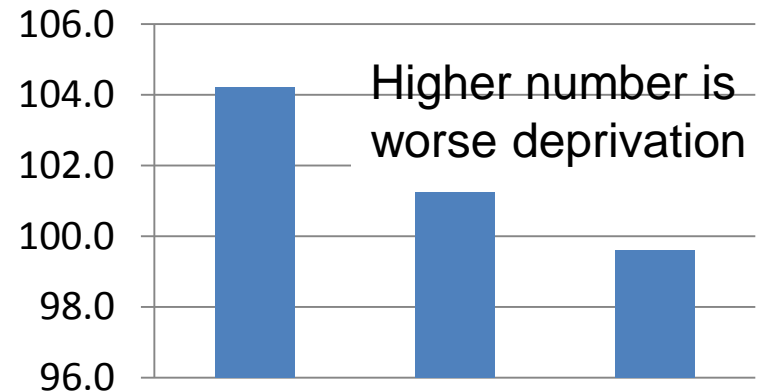 - Census tracts average 4,000 people (range ~3,000-8,000)

NATION

AIANNH Areas*
(American Indian, Alaska Native, Native Hawaiian Areas)

REGIONS

DIVISIONS

ZIP Code Tabulation Areas

Urban Areas

Core Based Statistical Areas

School Districts

STATES

Congressional Districts

Urban Growth Areas

Counties

State Legislative Districts

Public Use Microdata Areas

Voting Districts

Traffic Analysis Zones

County Subdivisions

Places

Census Tracts

Subminor Civil Divisions

Block Groups

Census Blocks

Source: US Census Bureau, http://www.census.gov/geo/www

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Correlation of VA Priority Group with Area-based SES Measures

Area % below Federal Poverty Level

- no co-pay
- svc-connected disability
- co-pay

Area Deprivation Index

Higher number is worse deprivation

Median Income (area)

- no co-pay
- svc-connected...
- co-pay

- no co-pay = priority group 5
- co-pay = priority groups 7 & 8
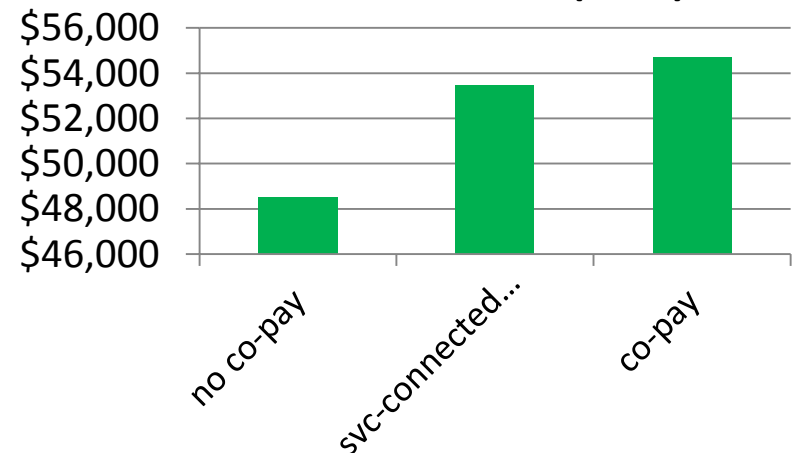
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Resources

- VA Office of Health Equity. 2016. National Veteran Health Equity Report–FY2013. US Department of Veterans Affairs, Washington, DC. Available online at: https://www.va.gov/HEALTHEQUITY/NVHER.asp.

- Women Veterans Sourcebook Volume 3: Frayne SM, Phibbs CS, Saechao F, et.al. Sourcebook: Women Veterans in the Veterans Health Administration. Volume 3. Women's Health Evaluation Initiative, Women's Health Services, VHA, Dept of Veterans Affairs, Washington DC, Feb 2014.
https://www.womenshealth.va.gov/WOMENSHEALTH/docs/Sourcebook_Vol_3_FINAL.pdf

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Resources

- VIReC Race & Ethnicity Overview with many useful links including those mentioned in slides: http://vaww.virec.research.va.gov/RaceAndEthnicity/Overview.htm

- VIReC information and links about VA Priority Groups: http://vaww.virec.research.va.gov/PriorityGroups/Overview.htm

- VHA Data Portal: http://vaww.vhadataportal.med.va.gov/Home.aspx

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Resources (continued)

- Area Deprivation Index (ADI):
  - Singh GK. Area Deprivation and Widening Inequalities in US Mortality, 1969-1998. Am J Public Health. 2003; 93:1137-43.
  - Kind AJH, Jencks S, Brock J, et.al. Neighborhood Socioeconomic Disadvantage and 30 Day Rehospitalizations: An Analysis of Medicare Data. Ann Intern Med. 2014;161(11):765-74.

- Paper demonstrating use of VA race/ethnicity measures and ADI: Washington DL, Steers WN, Huynh AK, Frayne SM, Uchendu US, et.al. Racial And Ethnic Disparities Persist At Veterans Health Administration Patient-Centered Medical Homes. Health Affairs. 2017 Jun; 36:1086-94.

- Corporate Data Warehouse (CDW): https://vaww.cdw.va.gov/Pages/CDWHome.aspx

- Information about transition from VistAWeb to Joint Legacy Viewer (JLV) to access electronic health record data: http://vaww.ehealth.va.gov/EHEALTH/jlv.asp.

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Office of Health Equity-QUERI Partnered Evaluation Initiative

For further information:

- **Donna L. Washington, MD, MPH**

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  http://www.queri.research.va.gov/partnered_evaluation/equity.cfm

  .

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Office of Health Equity-QUERI Partnered Evaluation Initiative

Thursday, June 29, 2:00 PM ET

Chronic Health Conditions Among Vulnerable Veterans: Current Research and Action.

To register, go to:

https://register.gotowebinar.com/register/20503960543 75707907

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Next QUERI Presentation

Tuesday, July 18, 2017 at 12pm Eastern

Using Data and Information Systems to Measure Colonoscopy Quality

Tonya Kaltenbach, MD, MAS

San Francisco VA Medical Center

To register, go to:

https://register.gotowebinar.com/register/6021361459140675588