

Database & Methods Cyberseminar Series

Session #5: Assessing Race and Ethnicity in VA Data

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By the end of this session, attendees will be able to:

- Locate race and ethnicity in VA and Medicare data
- Assess the quality of VA race and ethnicity data
- Create SQL code to use race and ethnicity data

Session Outline

- Introduction
- Locating race and ethnicity in VA data
- Locating race and ethnicity in Medicare/Medicaid
- Quality of VA race/ethnicity data
- Examples
- Recommendations to address data quality issues
- Where to go for more help

Poll Question #1

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

- a. Principal investigator/Co-Pl
- Research staff (Project coordinator, data manager, programmer)
- c. Clinical Staff
- d. Operations Staff
- Other—Please describe via the Q & A function

Poll Question #2

Have you ever used VA Race/Ethnicity Data?

- Yes
- No

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Racial/ethnic disparities in health and health care persistent in US and in VHA

In US

- Root causes and solutions are not well understood
- Disparities in some measures for access and quality have improved for Blacks and Hispanics, most disparities have not changed for other racial/ethnic groups (AHRQ 2017)

In VHA

- Racial/ethnic disparities persist even though financial barriers to receiving care are minimized
- Although quality has improved, significant within-facility disparities observed in clinical outcomes (Trivedi 2011)

More research to detect, understand, and address disparities in health and health care is needed

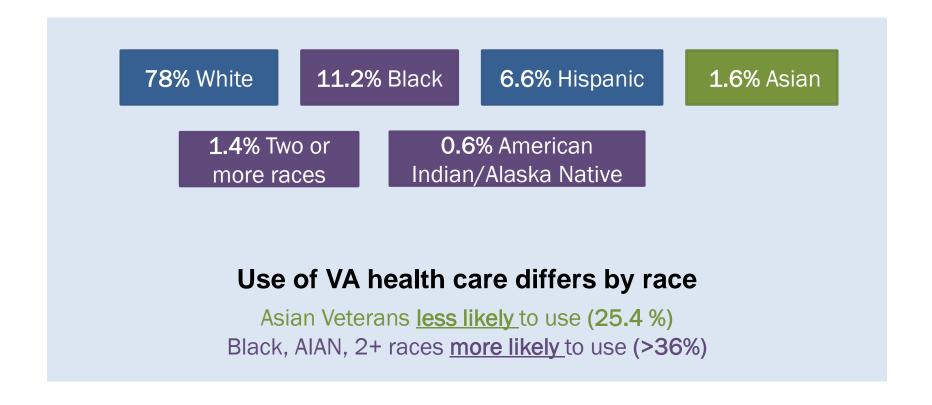
Problems with Race/Ethnicity Data in VA

Accurate race/ethnicity data are essential to disparities research and research on clinical factors associated with race/ethnicity.

Problems with race/ethnicity data in the VA:

- Incomplete
- Inaccuracies
- Inconsistent over time

Racial/Ethnic Distribution of Veterans



VA Race and Ethnicity Categories

VHA Handbook 1601A.01 (2009)

	Spanish
Ethnicity	Hispanic
	Latino
	American Indian or Alaska Native
Race (>1 may be selected)	Asian
	Black or African American
	Native Hawaiian or Other Pacific Islander
	White
	Unknown by Patient
Current reporting method	2 question format: ethnicity, race Self-reported

Acquisition of Race/Ethnicity Data in VHA

How are these data acquired?	Patient (self-report) Proxy VHA Enrollment Coordinator or clerk
When are these data acquired?	VA Form 10-10EZ Application for Health Benefits (on-line, paper, interview) Inpatient or outpatient visit to VHA facility

Data are entered directly into VistA

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Poll Question #3

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

- Never used race/ethnicity data
- CDW
- OMOP
- MedSAS files
- VistA or regional warehouse
- Other VA data sources

Race/Ethnicity Variables in MedSAS

Prior to FY2003 (old data collection methods)

- Race and ethnicity captured jointly in the variable RACE
- Single value allowed for race/ethnicity

After FY2003 (new data collection methods)

- Multiple races captured in RACE1-RACE7
- Single value for ethnicity captured in ETHNIC
- RACE1-RACE7 and ETHNIC have a length of 2 characters
 - First character has race or ethnicity
 - Second character has method of data collection

Location

- Inpatient: Main (PM) file, 1976-present
- Outpatient: Visit (SF) and Event (SE) files, 1997/1998- present

Medical SAS Datasets: Race/Ethnicity Values (Pre-2003)

RACE: Single value for race and ethnicity

Value	Description	
1	Hispanic, white	
2	Hispanic, black	
3	American Indian	
4	Black	
5	Asian	
6	White	
7 or missing	Unknown	

Medical SAS Datasets: Race Values (Post-2003)

RACE1-RACE7: Race and method of data collection First character specifies race

1 st Character	Description
3	American Indian Or Alaska Native
8	Asian
9	Black or African American
Α	Native Hawaiian or Other Pacific Islander
В	White
С	Declined to Answer
D	Unknown
(blank)	Missing

Medical SAS Datasets: Ethnicity Values (Post-2003)

ETHNIC: Ethnicity and method of data collection
The first character captures ethnicity

1 st Character	Description
D	Declined To Answer
н	Hispanic or Latino
N	Not Hispanic or Latino
U	Unknown
(blank)	Missing

Medical SAS Datasets: Race and Ethnicity Source (Post-2003)

RACE1-RACE7, ETHNIC
The second character specifies method of data collection

2 nd Character	Description
(blank)	Missing
0	Observer
Р	Proxy
S	Self-identification
U	Unknown By Patient

Corporate Data Warehouse (CDW)

- National repository of data from VistA Patient File with race and ethnicity data from October 1999 to present
- Contains 1 demographic record for each VA station a Veteran has visited
- Contains standard and nonstandard race values
- Racial data available PatSub.PatientRace
 - Race (newer collection standards)
 - LegacyRace (older collection standards)
 - Use both variables to obtain all available race data

CDW Race Table Changes

The structure of the CDW data is subject to periodic changes.

As of January 2018, none of the available CDW documentation for race and ethnicity match the current data structure.

New Patient 3.0 Domain Factbook should be released in the next few months.

Changes in the business rules for extraction have also led to some differences in the underlying race data stored in CDW.

CDW documentation may refer to race from older collection methods as being located in other CDW tables.

Patient.Patient or SPatient.SPatient tables	RaceSID contains the SID for the patient race Link to CDWWork.Dim.Race to map to race
Patsub.PatientRace	Currently contains the fields LegacyRace and LegacyRaceSID Previously, all race values were stored in the variable Race but those from older collection methods had a value of Null for CollectionMethod

Race Tables in CDW

All race data are contained in PatSub.PatientRace

Data are at the Patient/STA3N level with the most recent data available for the patient

Race	Contains patient race from newer collection methods. Multiple records if more than one race identified.	
CollectionMethod	Contains method of data collection for Race	
LegacyRace	 Contains patient race from the older collection methods Does not allow for multiple races The same value of LegacyRace will be contained on all records for a single PatientSID if that patient has multiple values of Race recorded. Most patients have values of "*Missing*", indicating the presence of no data on LegacyRace. 	
		2/2

Non-standard Race Values in CDW

26 of 31 non-standard races can be mapped to 4 standard races

Examples

Non-standard Race	Standard Race	
Amer Indian or Alaskan Native, American Indian, American Indian/ Alaskan Native	American Indian or Alaska Native	
Black; Black Not of Hisp orig; Black, Non Hispanic; Hispanic Black	Black or African American	
White Not of Hisp orig; White, Not Hispanic; Hispanic White; Caucasian;	White	
Pacific Islander	Native Hawaiian or Other Pacific Islander	

Non-standard values rarely used in Race (<1%)
Current standard values rarely used in LegacyRace (<1%)

Non-mapped Values in CDW

5 values are not mapped to standard values

4.6% of data fall into 1 of these 5 categories (2012)

Non-mapped values

Asian or Pacific Islander Asian Pacific Islander Asian/Pacific Islander Mexican American Unknown

As of January 2018

- 17.4% of non-missing LegacyRace fall into 1 of these categories
- 96.6% of these non-mapped values are Unknown
- 3.0% of non-mapped values indicate Asian or Pacific Islander

Multiple Race Values in CDW

- Approximately 1.7% of patients linked to a standard race have more than 1 standard race (2013)
- Not possible to identify most recent record for a patient
- Recommendation for multiple values
 - Use only self-identified races (if recorded)
 - Use all recorded races for patients without self-identified race

Ethnicity in CDW

Ethnicity data found in 2 CDW tables

PatSub.PatientEthnicity - new method

'HISPANIC OR LATINO' / 'NOT HISPANIC OR LATINO'

PatSub.PatientRace (LegacyRace or rarely Race) - old method

Hispanic race/ethnicity (e.g., HISPANIC, WHITE; HISPANIC, BLACK)

Non Hispanic race/ethnicity (e.g., WHITE NOT OF HISP ORIG; BLACK NOT OF HISP ORIG)

Not all race/ethnicity values indicate ethnicity (e.g., ASIAN, BLACK)

CDW Ethnicity Data (Data Quality Report)

http://vaww.vhadataportal.med.va.gov/Portals/0/DataQualityProgram/Reports/CDW_Ethnicity_D ata.pdf (VA Intranet only)

VINCI OMOP Version 5

- VINCI Observational Medical Outcomes Partnership (OMOP) seeks to use a Common Data Model (CDM) to map and standardize data
- Data on Race and Ethnicity are contained in the OMOPV5.Person table
- Contains one standard value for Race and Ethnicity for each PERSON_ID
 - OMOPV5MAP.PERSON_SPatient_Spatient will link PERSON_ID to other CDW identifiers
 - See documentation regarding those without PatientICN or other potential linkage issues with patient identifiers
 - Excludes non-veterans, test patients, and possible test patients

Race in OMOP

OMOP CDM follows VA Data Quality Program's "Race Data and Multiple Races Report" and VIReC's Researcher's Notebook "Using SQL to "Sort Out" Race in CDW"

Source data	Source.SPatient_SPatient (now LegacyRace in Patsub.PatientRace)
	Source.Patsub_PatientRace
Six categories for race	White
	Black or African American
	Asian
	American Indian or Alaska Native
	Native Hawaiian or other Pacific Islander
	Unknown

[&]quot;CDW Race Data and Multiple Races:"

http://vaww.vhadataportal.med.va.gov/Portals/0/DataQualityProgram/Reports/CDW_Race_Data_and_Multiple_Races.pdf

"VIReC Researcher's Notebook: Using SQL to "Sort Out" Race in CDW": http://vaww.virec.research.va.gov/Notebook/RNB/RNB6-CDW-SQL-to-Sort-Out-Race-CY16.pdf

Race Logic in OMOP

- Identify records as self-report or non-self-report and count distinct values.
- 2. Select the most frequently occurring self-reported race value.
- If no self-reported race or counts of self-reported race (not including unknown or null) are equal, then select the most frequent non-self-reported race.
- 4. If there isn't a most frequent value, then select the race value found on record at the patient's preferred institution.
- If that is null, then select the value edited most recently as determined by ETLBatchID in the SPatient file.
- If no most frequent or recent non-null value is available, then the value is "UNKNOWN"

Ethnicity in OMOP

OMOP CDM follows the "OMB Standards for Data on Race and Ethnicity" and the VA Data Quality Program's "CDW Ethnicity Data Report."

3 categories for ethnicity

Hispanic or Latino
Not Hispanic or Latino
Unknown

OMOP CDM Logic for Ethnicity

OMOP uses only the self-reported information provided under the new collection method, when available

Otherwise Ethnicity is captured from non-self-reported data provided by the new collection method

Ethnicity captured under the old collection methods is used when no data are available from the new recording method

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Sources of Medicare/Medicaid Race in VA

VA Vital Status File

- CMS_RACE (Master File only)
- Master File contains one record for each SSN-date of birth (DOB)gender combination found in VA data
- Some SSNs have more than one record

VA Medicare Data

- Denominator file from Medicare
- RACE (same as CMS_RACE)
- RTI_RACE

VA Medicaid Data

- Medicaid Personal Summary (Enrollment)
- EL_RACE_ETHNCY_CD

Medicare Race/Ethnicity Data

Potentially useful source of data for Veterans enrolled in Medicare, which generally means they are:

- Age 65 and older (>95% of VA elderly)
- Disabled (~20% of VA patients <65 years)
- Diagnosed with end stage renal disease

Derived primarily from Social Security Administration (SSA)

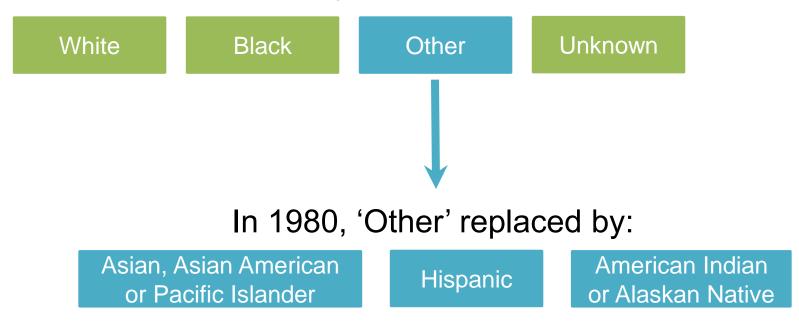
- Obtained at the time of application for SSN and/or replacement card
- Reporting sources: Usually self or family

Distinctions from current VA race/ethnicity data

- 'Hispanic' is a race category
- No multiple race reporting

Medicare Race Data from SSA

Until 1980, only 4 categories collected:



RTI Race in Medicare

Research Triangle Institute (RTI) created and implemented an algorithm to increase accuracy of race variable, especially for Hispanic and Asian individuals.

- RTI_RACE available in Medicare Denominator File
- Algorithm uses first name, last name, preferred language, place of residence
- Improvement in sensitivity of racial codes
 - Increased from 30% to 77% for Hispanic
 - Increased from 55% to 80% for Asian/Pacific Islander

Medicare Race Data Summary

Data quality issues

- Information on most enrollees (those who obtained SSN prior to 1980) limited to original 4 categories
- SSN application form single question format and no multiple race reporting

Initiatives to improve data quality

- Periodic updates on American Indians and Alaskan Natives from Indian Health Service
- 1997 survey of enrollees classified as 'Other', 'Unknown', or with Spanish surname, requesting race/ethnicity self-report
- RTI Race Algorithm

Medicaid Race/Ethnicity

EL_RACE_ETHNCY_CD

Value	Description
1	White
2	Black or African American
3	American Indian or Alaskan Native
4	Asian
5	Hispanic or Latino – No race information available
6	Native Hawaiian or Other Pacific Islander
7	Hispanic or Latino and one or more races
8	More than one race
9	Unknown

Medicaid Race/Ethnicity Variables Summary

Summary variable

EL_RACE_ETHNCY_CD

Individual variables

ETHNICITY_CODE

RACE_CODE_1 - RACE_CODE_5

Can identify multiple races and/or race and ethnicity

Medicaid Race/Ethnicity Data Issues

- Availability lags behind both VA and Medicare
- Fewer enrollees than Medicare (~10%)
- Data collection changes over time
 - October 1998 many changes/additions

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Medical SAS Datasets: Completeness of Race and Ethnicity Data

Prior to FY2003

<60% of patients had usable* race/ethnicity

FY2003

Completeness of data was about 50%

FY2015

Completeness of data was >90%

Completeness varies between inpatient and outpatient files.

Always use both the inpatient and outpatient data to capture race/ethnicity in the MedSAS files.

^{*} A usable race value is any value that is not 'missing' or 'unknown' or 'declined'

CDW Completeness of Race Data

Percent of patients with a standard race in the CDW varies by year of most recent healthcare activity

FY	Standard Race, %
1999*	39.0
2000	42.6
2001	43.5
2002	44.1
2003	48.2
2004	53.8
2005	58.7

FY	Standard Race, %
2006	63.0
2007	65.9
2008	66.6
2009	67.2
2010	68.5
2011	70.2
2012	84.6

^{*}No activity after FY1999

CDW Completeness of Race Data FY2017

New collection methods

92% of Veterans have standard usable race data available from these new methods

Almost 1% with new data are coded as multiracial

0.4% have conflicting values

Old collection methods

1% of Veterans only have older race data

1.3% of those have conflicting values

Unique Veterans with ≥ 1 outpatient visit (NoncountClinicFlag = 'N') in FY2017

CDW Completeness of Ethnicity Data

- 61% of all patients have ethnicity recorded
- 88% with healthcare activity in FY 2012
- 78% with one standard category are self-identified
 - 1% have conflicting ethnicity categories

Recommendations for Using CDW Ethnicity Data

- If available, use ethnicity captured through selfidentification
- Otherwise, use ethnicity captured through new recording method (Patsub.PatientEthnicity)
- Use older collection methods (Patsub.PatientRace, LegacyRace, or Race) when no other data are available

Comparison to Non-VA Data Sources

Aims

- To estimate the extent to which missing "usable" race data in VA MedSAS files can be reduced by using non-VA data sources (Medicare and DoD)
- To evaluate the agreement between VA self-reported race data in MedSAS files and Medicare and DoD race data

Cohort

10% representative sample of VA patients obtaining services during FY2004-2005 (N=570,018)

Reduction in Missing Data

52% were missing usable race from VA data sources

Age ≥ 65	Age < 65
53% missing usable VA race data	51% missing usable VA race data
Of those	Of those
95% had usable Medicare data	18% had usable Medicare data
	37% had usable DoD data
	52% had usable data from Medicare and/or DoD data

Concordance with Non-VA Data Sources

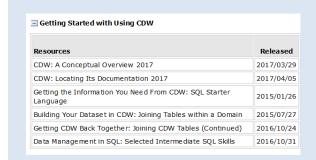
Table compares non-VA data sources to self-reported VA race/ethnicity data

Race/Ethnicity	
White and African Americans	Agreement was good (93-99%) for both non-VA data Sources
Non-African American Minorities	Agreement was poor (27-55%) for both Medicare and DoD
Hispanics	Classified as White (64%) rather than Hispanic (25%) in the Medicare data
Asian, Pacific Islanders, and Other Minorities	Had to be collapsed into one category for comparisons

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SQL Examples in CDW



Getting Started with Using CDW

Includes several seminars on using SQL to join and manipulate CDW data

http://vaww.virec.research.va.gov/CDW/Documentation.htm (VA Intranet only)



Race Data Best Practices Guide

Several SQL examples for multiple tasks utilizing race and ethnicity data

http://vaww.vhadataportal.med.va.gov/Portals/0/DataQualityProgram/Reports/Best_Practices_Guide_Race_Data.pdf_ (VA Intranet only)



Researcher's Notebook: Using SQL to "Sort Out" Race in CDW

http://vaww.virec.research.va.gov/Notebook/RNB/RNB6-CDW-SQL-to-Sort-Out-Race-CY16.pdf (VA intranet only)

Connected to server vhacdwa01.vha.med.va.gov

Please note that the location of race data is now different from what is in these guides.

Example: Patsub.PatientRace

```
2 □SELECT Race, Count(Race) AS Freq
     3 FROM CDWWork.PatSub.PatientRace
     4 GROUP BY Race
       ORDER BY Freq DESC;
100 % ▼ <
Results 📑 Messages
      Race
                                                     Freq
      WHITE
                                                     16810325
      BLACK OR AFRICAN AMERICAN
                                                     3642949
      DECLINED TO ANSWER
3
                                                     795837
4
      UNKNOWN BY PATIENT
                                                     664736
      AMERICAN INDIAN OR ALASKA NATIVE
                                                     254242
6
      NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER
                                                     249581
      ASIAN
                                                     239444
      WHITE NOT OF HISP ORIG
8
                                                     58190
9
      *Missing*
                                                     5
10
      *Unknown at this time*
```

Example: Mapping to Standard Race Values

- Create a table that maps between non-standard and standard values
 - Code is on p.10 of "Race Data Best Practices Guide"
- Map these additional entries to "Unable to Map:"

"*Unknown at this time*"

"*Missing*"

"Asian/Pacific Islander"

Change mapped categories to match project needs

See Researcher's Notebook: Using SQL to "Sort Out" Race in CDW for alternate method for programming standard race values

http://vaww.virec.research.va.gov/Notebook/RNB/RNB6-CDW-SQL-to-Sort-Out-Race-CY16.pdf (VA intranet only)

Example: Race Translation Table

```
□if OBJECT ID('tempdb..#RaceTranslationTable') is not null

 drop table #RaceTranslationTable
                                                     Delete table if it
                                                     already exists

create table #RaceTranslationTable

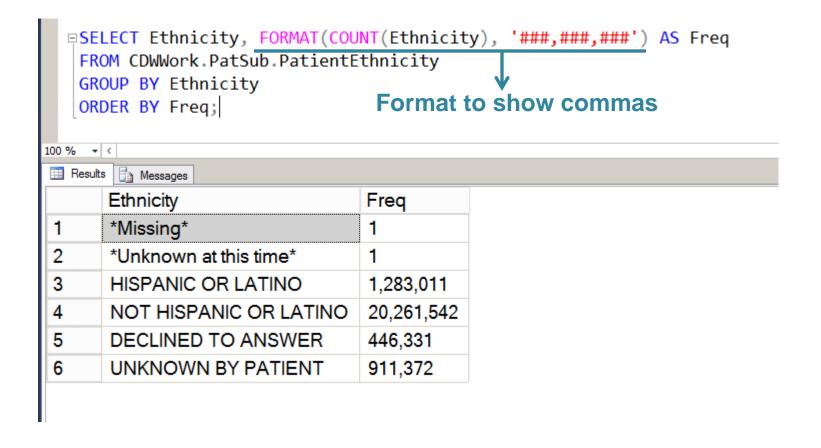
 (InboundRace varchar(50),
                                                     Use # to create
 StandardRace varchar(50));
                                                     temporary tables
insert into #RaceTranslationTable
 values('NULL', 'Unable to Map') —> Text 'NULL' ≠ null value
insert into #RaceTranslationTable
 values('AMER INDIAN OR ALASKAN NATIVE ','AMERICAN INDIAN OR ALASKA NATIVE')
insert into #RaceTranslationTable
 values('AMERICAN INDIAN','AMERICAN INDIAN OR ALASKA NATIVE')
insert into #RaceTranslationTable
 values('AMERICAN INDIAN / ALASKAN NATIVE', 'AMERICAN INDIAN OR ALASKA NATIVE')
insert into #RaceTranslationTable
 values('AMERICAN INDIAN OR ALASKA NATIVE', 'AMERICAN INDIAN OR ALASKA NATIVE')
```

*See page 10 of Race Data Best Practices Guide for the remaining code

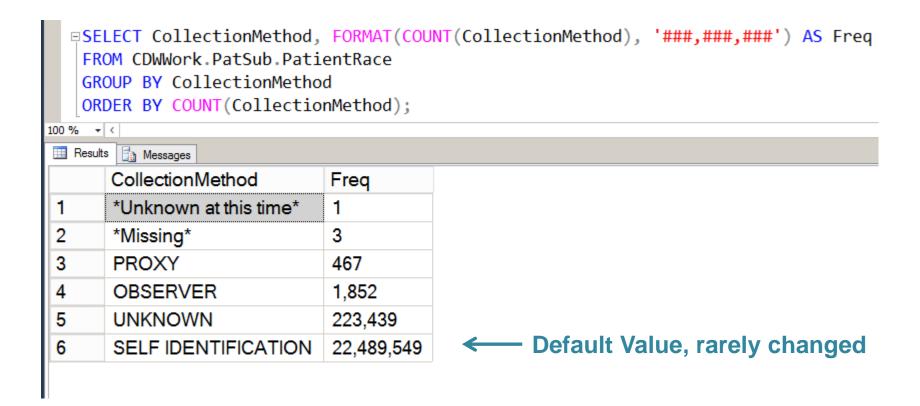
Example: Convert to Standard Values

```
SELECT b.StandardRace, Count(b.StandardRace) as Freq
   FROM CDWWork.PatSub.PatientRace as a left join #RaceTranslationTable as b
   ON
         a.Race=b.InboundRace
   GROUP BY b.StandardRace
   ORDER BY Freq;
100 % - <
Results
       Messages
      StandardRace
                                                    Freq
      Unable to Map
                                                    239444
      ASIAN
      NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER
                                                    249581
      AMERICAN INDIAN OR ALASKA NATIVE
                                                    254242
      UNKNOWN BY PATIENT
                                                    664736
      DECLINED TO ANSWER
                                                    795837
      BLACK OR AFRICAN AMERICAN
                                                    3642949
      WHITE
                                                    16868515
```

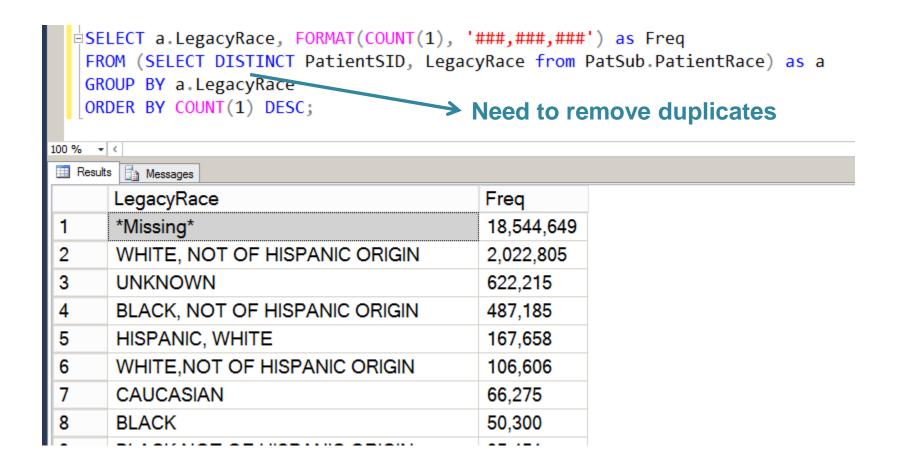
Example: Patsub.PatientEthnicity



Example: Collection Method



Example: LegacyRace



Example: LegacyRace (Standard Values)

```
SELECT b.StandardRace, FORMAT(COUNT(b.StandardRace), '###,###,###') as Freq
   FROM (SELECT DISTINCT PatientSID, LegacyRace from PatSub.PatientRace) as a
   LEFT JOIN #RaceTranslationTable as b
       ON a.LegacyRace=b.InboundRace
   GROUP BY b.StandardRace
   ORDER BY COUNT(b.StandardRace) DESC;
100 %
   ₹ (
Results
       Messages
      StandardRace
                                                     Freq
1
      Unable to Map
                                                     19,188,387
      WHITE
                                                     2,435,066
3
      BLACK OR AFRICAN AMERICAN
                                                     609.367
4
      AMERICAN INDIAN OR ALASKA NATIVE
                                                     14,593
5
      UNKNOWN BY PATIENT
                                                     179
6
      DECLINED TO ANSWER
                                                     88
      NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER
8
      ASIAN
                                                     3
```

Example: Multiple Sources (Long Format)

```
if OBJECT ID('tempdb..#RandomPatients') is not null drop table #RandomPatients
SELECT TOP 100 PatientSID, Sta3n
  INTO #RandomPatients
  FROM CDWWork.Patient.Patient;
SELECT a.PatientSID, a.Sta3N, b.Race, b.CollectionMethod
FROM #RandomPatients as a LEFT JOIN cdwwork.PatSub.PatientRace AS b
ON a.PatientSID = b.PatientSID
                                                Names don't need to match
                                                as long as data type and
UNTON ALL
                                                column order are the same
SELECT c.PatientSID, c.Sta3N, d.LegacyRace as Race, NULL as CollectionMethod
FROM #RandomPatients AS c
LEFT JOIN (SELECT DISTINCT PatientSID, LegacyRace from PatSub.PatientRace) as d
ON c.PatientSID = d.PatientSID
                                                   Can select different value
ORDER BY 1;
                                                   for CollectionMethod but
                                                   must have the same # of
               Sorts by the 1st column
                                                   columns for each table
```

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Recommendations: VA Data

When multiple sources of race and ethnicity exist...

- → Use self-identified* race and ethnicity, if available
- → Otherwise, use new collection methods (not self-identified)
- → Use data from the old collection method (< FY 2003), only if data from the new collection method are not available
 - Use LegacyRace to obtain race and ethnicity collected by the old method (CDW)
 - RACE contains ethnicity and race from the old method (MedSAS)

When using MedSAS...

Obtain race and ethnicity from both inpatient and outpatient files

^{*}Given lack of variability, consideration of collection method is optional

Recommendations: Non-VA Data

- Use of non-VA race data can reduce missing data
- Carefully consider any potential bias (e.g., age or disability) in the outside data source
- Classifying non-Black minorities as "Other" results in better agreement with other data sources
- Potential supplementary data sources

Medicare

Department of Defense

Medicaid

Special Surveys

Recommendations: Medicare

When using VA VSF...

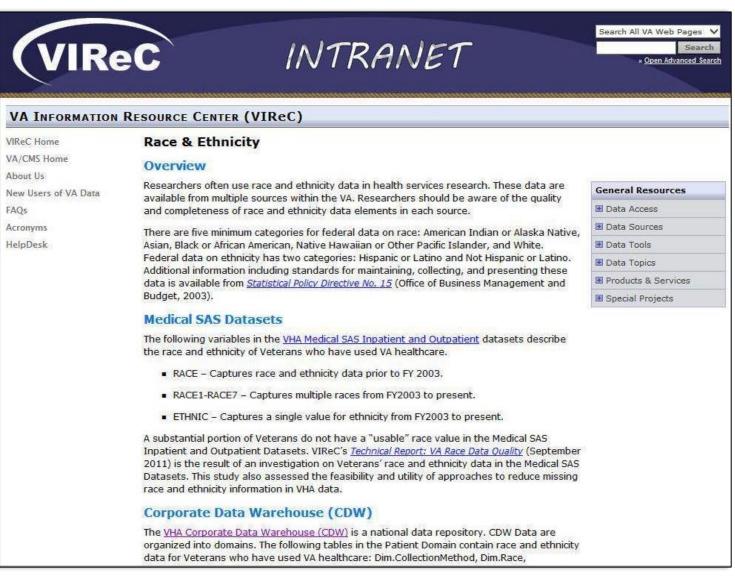
- Match on date of birth and gender, in addition to (scrambled) SSN
- Researchers most likely to identify the right individuals if they use all 3 elements when conducting their VSF-study cohort record match

Note that...

- Medicare data cannot be used to identify Hispanics with any degree of accuracy or completeness, but
- → RTI_RACE in the Medicare Denominator file can increase the identification of Hispanics and Asians

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Race and Ethnicity overview:

http://vaww.virec.research.va.gov/RaceAndEthnicity/Overview.htm (Intranet only)

Quick Guide: Resources for Using VA Data

http://vaww.virec.research.va.gov/Toolkit/QG-Resources-for-Using-VA-Data.pdf (VA Intranet)

VIReC: http://vaww.virec.research.va.gov/Index.htm (VA Intranet)

VIReC Cyberseminars: http://www.virec.research.va.gov/Resources/Cyberseminars.asp

VHA Data Portal: http://vaww.vhadataportal.med.va.gov/Home.aspx (VA Intranet)

VINCI: http://vaww.vinci.med.va.gov/vincicentral/ (VA Intranet)

CDW: https://vaww.cdw.va.gov/Pages/CDWHome.aspx (VA Intranet)

VIReC Options for Specific Questions

HSRData Listserv

- Community knowledge sharing
- ~1,300 VA data users
- Researchers, operations, data stewards, managers
- Subscribe by visiting
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Database & Methods Cyberseminar Series

Session #6: Using Pharmacy Files for Effectiveness Research on Metformin

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