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Understanding Census 2000: Race Category Changes & Comparisons

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Race categories in the federal census data are no longer comparable. In 1997, the federal Office of Management and Budget (OMB) undertook a comprehensive review of the categories for data on race and ethnicity. As a result of this review, OMB decided to revise the existing Standards for the Classification of Federal Data on Race and Ethnicity.

Table 1 compares the old and the revised standards. The two fundamental changes between the 1977 Directive 15 and the revisions are

1. **The Pacific Islanders are separated from Asians, and**
2. **Respondents are allowed to mark more than one race.**

Table 1. Comparison of 1977 OMB Race Category with 1997 Revisions

Race categories classified in 1977 OMB Directive 15 and used in 1990 Census						
White	Black or African American	American Indian, Eskimo & Aleut (AIEA)	Asian & Pacific Islanders (API)		Other (specify)	Note: Mark one race only
OMB 1997 revised standards and used in the 2000 Census						
White	Black or African American	American Indian, or Alaska Native (AIAN)	Asian	*Native Hawaiian or Other Pacific Islander*	Other (specify)	*Note: Mark one or more if necessary*

How will the multiracial data be tabulated and interpreted?

The Bureau of the Census is the first federal agency that has used the OMB new categories to collect the race data in Census 2000. The PL-171 redistricting data will show tables that contain all the 63 possible racial combinations.[1] Due to the allowance of multiracial choices, an unconventional concept has also been introduced into the tabulations. Each race shall be tabulated in three ways: race alone, race in combination, and race alone or in combination. The first is called the exclusive category and the second is inclusive. The inclusive tabulation counts the number of choices people have made. If a person marked himself as white and black, he is shown in "white in combination with some other race," as well as in "black in combination with some other race." Since those people will be counted more than once, the third way of tabulation (race alone or in combination) adds up to more than a hundred percent.

Can we compare the census 2000 race data with those in 1990?

When Census 2000 data come out, researchers probably will look for changes and shifts in racial distribution. Policy makers will try to examine the correlations between different racial and ethnic groups and a variety of socioeconomic, health, and educational indicators in a trended fashion. While the data are not exactly comparable, one way to interpret the change is to examine the change in terms of range rather than exact number or percentage. With both the exclusive and inclusive categories provided, we can compare "white alone category" with white population in 1990 to get the minimum change. Then add

"white in combination with some other race" category to look at the maximum change with the assumption that this entire "white in combination" group all considered themselves white in 1990. However, we must remember that the sum is more than 100 percent.

The range of change concept will not solve the problem for longitudinal studies. In 1997 after its decision to revise the race standards, OMB charged an interagency committee to study and evaluate methods that could be used to bridge the data of different standards either forward or backward.

The methods studied can be divided into two major categories: Whole Assignment and Fractional Assignment. In each category, the bridging can be done with deterministic or probabilistic assignment.

1. **Deterministic whole assignment** uses fixed deterministic rules for assigning multiple responses back to one and only one of the racial categories from the 1977 standards. There are three ways to do the assignment:
   - ?? small group
   - ?? largest other than white
   - ?? largest

Let us use a person who has marked white/black/Asian for example. At the state level in Washington, white is the largest single race group, Asian comes second and black is the third. Using the small group rule, this person is allocated to black. The largest other than white rule assigns him to Asian, and the largest group rule puts him in white.

2. **Deterministic fractional assignment** uses fixed, deterministic rules for fractional weighting of multiracial responses, that is, assigning a fraction to each one of the individual racial categories that are identified. For example, for a person who identifies himself as black and American Indian, 0.5 will be assigned to black and 0.5 to American Indian.

3. **Probabilistic whole assignment** allocates all individuals of the same combination of races to the one race that has been most strongly identified in the National Health Interview Survey (NHIS)[2] data. Please see footnotes for details about the NHIS.

4. **Probabilistic fractional assignment** puts multiracial individuals into categories based on the choices they made in NHIS.

Bridging methods using NHIS data will currently work if just two races are given. Data were not retained for more than two races.

The 1998 Washington State Population Survey (WSPS)[3] asked the race question twice. The first set is in compliance with categories defined by OMB Directive 15 allowing only one choice per person. The second set of questions is based on the1997 revised race classifications. Hence, there are data available to replicate the NHIS methods for Washington State.

The all-inclusive method assigns an individual's responses to each race reported. In this case the sum of the categories totals more than 100 percent. Therefore, a statistical raking procedure is needed for adjustment. Table 2 uses a person who identifies with three races to show how to apply the different bridging methods.

Table 2. Comparison of Multiracial Assignments:

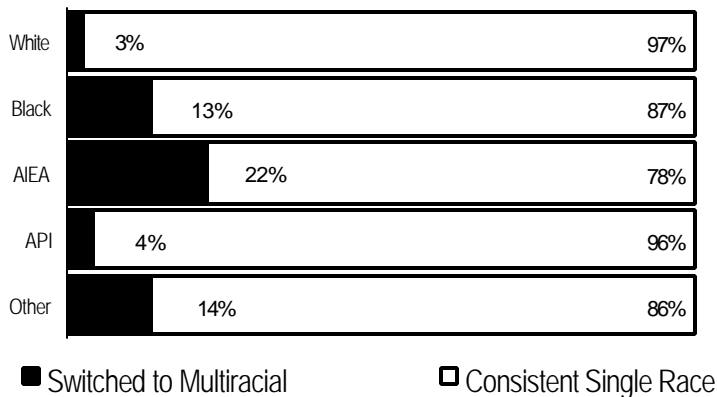| Method	Number assigned to:		
Whole Assignment	White	Black	AIAN
Smallest group			1
Largest other than white		1	
Largest	1		
NHIS whole assignment			1
Fractional Assignment			
Equal fractions	.333	.333	.333
NHIS fractions	.3	.2	.5
All inclusive	1	1	1

The Interagency Committee on Race Data Tabulation conducted methods evaluation. The first step was to use each method and the race data of new standards to estimate numbers expected under the old standard. The second step compared those numbers to the actual one race selection each respondent marked. Finally, a goodness of fit measure, the standard likelihood ratio G^2, was used to evaluate the agreement between the estimated and the actual numbers. According to this evaluation, the best method is fractional assignment using NHIS data, followed by fractional assignment using equal fractions and the whole assignment using either the largest group or whole assignment based on NHIS data.

What would the 1990 race distribution be if multiracial selections were allowed?

The 1998 WSPS provides us with a unique opportunity to see who would likely switch when multiracial choices become available. The survey indicates that multiracial population composes about 3.7 percent of the state's total population. In addition, matching the answers to both sets of race questions, we gain the information on the decision multiracial persons made when the choices are constrained to selecting only one race. The chart shows the proportion of population that switched from each single selection race to multiracial. In the bridging estimate, it is assumed that proportion of multiracial population stays constant over the decade. The percentages of people who switched from single to two or more races are used to approximate multiracial population from each race in 1990. The information and method are applicable only at the state level. The following table shows the result of the bridging estimate.

Percent of People Who Switch from Single Race to Multiracial

Race	Switched to Multiracial	Consistent Single Race
White	3%	97%
Black	13%	87%
AIEA	22%	78%
API	4%	96%
Other	14%	86%

■ Switched to Multiracial   □ Consistent Single Race

Table 3. Bridging forward from 1990 to 2000 using 1998 Washington State Population Survey Data

	Ratio of Persons Switching from Single to Multiracial	1990 Census	Estimation Multiracial	Raking to Match Total	Bridging Estimate
	(1)	(2)	(3)=(1)*(2)	(4)=(3)*.941389	(5)=(2)-(4)
White	0.03	4,308,937	129,268	121,692	4,187,245
Black	0.13	149,801	19,474	18,333	131,468
AIAN	0.22	81,483	17,926	16,876	64,607
API	0.04	210,958	8,438	7,944	203,014
Other	0.14	115,513	16,172	15,224	100,289
Multiracial	0.04		191,278	180,069	180,069
Total		4,866,692			4,866,692

Note: Raking ratio is state total of persons selecting multiracial (180,069)/ sum of the individual estimates of persons switching from single to multiple race selection in Col 3 (191,278)=.941389

Bridging 2000 back to old race categories, using WSPS survey data.

OMB evaluation shows that Probabilistic Fractional method has the best match of choices multiracial persons would have made, if they are limited to one choice only. WSPS data provides a chance to use this method. For aggregated data such as census 2000 where there is no access to original records, the fractions are applied to each racial population group. Table 4 is a matrix matching the weighted proportions of the two answers that multiracial people provided in WSPS. Equal fractions are used instead for people of three or more races because the numbers from WSPS are too small and statistically unreliable. Asian and Pacific Islander groups are combined for the reason of data comparability. These ratios are based on the entire survey and can be used at state level only. They do not represent the multiracial distribution at any lower geography.

Table 4. Ratios Used to Allocate Multiracial Back to Single Selection Race Category

Multiracial	White	Black	AIAN	Asian	Other	Total
White/Black	62.2	6.7	3.4	24.5	3.2	100.0
White/AIAN	77.6	0.4	9.3	1.9	10.7	100.0
White/Asian	47.8	0.0	0.1	12.5	39.6	100.0
White/Other	46.7	0.0	0.2	0.0	53.1	100.0
Black/AIAN	0.0	91.8	2.5	0.0	5.7	100.0
Black/Asian	0.0	0.0	0.0	0.0	100.0	100.0
Black/Other	0.0	3.9	0.0	0.0	96.1	100.0
AIAN/Asian	0.0	0.0	46.8	0.0	53.2	100.0
AIAN/Other	0.0	18.1	78.2	0.0	3.7	100.0
Asian/Other	0.0	0.0	0.0	49.6	50.4	100.0

Table 5 provides the numbers allocated from multiracial to single selection race categories. The numbers in columns 2 to 6 are derived by multiplying column 1 by the ratios in Table 4.

Table 5. Allocation of Multiracial Persons to Single Selection Race Category

	Multiracial from 2000 WSPS	White	Black	AIAN	API	Other	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
White/Black	44,535	27,680	2,999	1,529	10,899	1,429	44,535
White/AIAN	70,787	54,923	300	6,611	1,373	7,580	70,787
White/API	75,170	35,895	-	104	9,394	29,778	75,170
White/Other	52,232	24,397	-	94	-	27,740	52,232
Black/AIAN	2,816	-	2,585	71	-	160	2,816
Black/API	4,864	-	-	-	-	4,864	4,864
Black/Other	939	-	36	-	-	903	939
AIAN/API	2,522	-	-	1,180	-	1,341	2,522
AIAN/Other	11,541	-	2,087	9,028	-	426	11,541
API/Other	5,666	-	-	-	2,808	2,857	5,666
White/Black/AIAN	3,171	1,057	1,057	1,057			3,171
White/Black/API	3,989	1,330	1,330		1,330		3,989
White/Black/Other	158	53	53			53	158
White/AIAN/API	3,337	1,112		1,112	1,112		3,337
White/AIAN/Other	602	201		201		201	602
White/API/Other	124	41			41	41	124
White/Black/AIAN/Other	142	36	36	36		36	142
White/Black/API/Other	733	183	183		183	183	733
White/Black/AIAN/API/Other	4,596	919	919	919	919	919	4,596
Total	287,923	147,826	11,584	21,942	28,060	78,510	287,923

Table 6 illustrates the bridging to the past exercise OFM has done using the preliminary 2000 WSPS data. The first column shows the exclusive race categories gathered from the survey. The second column contains the numbers of multiracial population that have been allocated back to broad single race categories based on the distribution listed in Table 4. Column 3 is the sum of columns 1 and 2. Column 4 controls the estimate in column 3 to the official state 2000 total population. Columns 6 and 7 provide a comparison between 2000 WSPS and the 1990 Census. The annual percent change cannot be applied to Census 2000 numbers.

Table 6. Bridging 2000 Washington State Population Survey Multiracial Persons back to 1990 Single Race Selection Category

	2000 WSPS	Multiracial Allocated	Bridging Estimate	Control to 2000 Census	1990 Census	Estimated Difference	Estimated Annual percent Change
	(1)	(2)	(3)=(1)+(2)	(4)=(3)* 0.999079	(5)	(6)=(4)-(5)	(7)=(6)/(5)*10
White	4,786,983	147,826	4,934,809	4,930,268	4,308,937	621,331	1.44
Black	184,536	11,584	196,119	195,939	149,801	46,138	3.08
AIAN	84,271	21,942	106,213	106,115	81,483	24,632	3.02
API	338,081	28,060	366,141	365,804	210,958	154,846	7.34
Other	217,736	78,510	296,246	295,974	115,513	180,461	15.62
Multiracial	287,923						
Total	5,899,529	287,923	5,899,529	5,894,100	4,866,692	1,027,408	2.1

Note: Raking Ratio is census 2000 total population (5,894,100)/sum of bridging estimates by race Col.3 (5,899,529).

Discussion:

The main purpose of this paper is to help the public and media understand and able to interpret the new race data in census 2000. It should be kept in mind that the bridging estimates listed above are based on survey data, and therefore, subject to error. Further research is being planned to evaluate the methods and results when the census data become available.

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Note: (1) All the 63 categories are reported if the numbers are big enough so that they will not violate the rule of confidentiality.

(2) National Health Interview Survey is a continuing nationwide sample survey designed to measure the health status of residents of the United States. The bridging analysis uses three years of NHIS data from 1993, 1994, and 1995. In each year about 45,000 households were interviewed, resulting in approximately 100,000 people per year. During the survey, the interviewer asked the question: " what is the number of the group or groups that represents your race?" If the respondent selected more than one category, then interviewer asked again: "which of those groups would you say best describes your race?" Office of Management and Budget: Provisional Guidance on the Implementations for Federal data on Race and Ethnicity, December 15, 2000

(3) The Washington State Population Survey was conducted in the spring of 1998 to provide social, demographic, and economic information about Washington. Responses were obtained from telephone interviews of 7,279 households that represented the state as a whole. The survey was designed by the Office of Financial Management (OFM) and conducted by the Washington State University Social and Economic Sciences Research Center. Data are subject to sampling variability and other sources of error. More information about the state survey is available under **"Population Data"** at: **http://www.ofm.wa.gov/** .