COMPARISON OF ACS AND ASEC DATA ON VETERAN STATUS AND PERIOD OF MILITARY SERVICE: 2007

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This report is released to inform interested parties of research and to encourage discussion. The views expressed on the statistical and methodological issues are those of the author and not necessarily those of the U.S. Census Bureau.

INTRODUCTION

This report is one in a series that compares data from the American Community Survey (ACS) with data from the Annual Social and Economic Supplement (ASEC) to the Current Population Survey (CPS). The report focuses on comparisons of national and state distributions of veteran status and period of military service between the 2007 ACS and the 2007 ASEC. It suggests possible explanations for those differences that are both statistically and substantively different.

METHODOLOGY

The tables included in this report compare the most commonly tabulated data on veteran status and period of military service from the ACS and the ASEC. Comparisons consist primarily of percentage-point differences between the two distributions. Tables display the ACS and the ASEC estimates, the margins of error from which 90-percent confidence intervals of the estimates can be derived, and the difference between the two estimates. In the case of frequency distributions, the difference is calculated as the percent difference between the two estimates. In the case of relative frequency distributions, the difference is calculated as the percentage-point difference between the two. An asterisk (*) denotes statistically significant differences.

At the national level, the ACS and the ASEC variances were small. This report focuses on statistically significant differences of 0.5 percentage points or more. This yardstick can vary based on the relative size of the category. For example, for population groups constituting a relatively large percentage of the population (such as the nonveteran population), a 0.5 percentage-point difference in the estimates might be relatively small, while for population groups constituting a smaller percentage of the population (such as the veteran population), a 0.5 percentage-point difference could be relatively large. This decision is subjective, however, and

users can apply their own standards to interpret the data presented in this report. Users may choose statistically significant differences that are smaller or larger than 0.5 for their own analytical purposes.

The remainder of this section examines differences in methodology between these different data sets.

Sample Frame

The ACS is administered to the entire U.S. population, including those living in institutions and other group quarters. The 2007 ACS surveyed a national sample of housing units, both occupied and vacant. An initial sample of 2,886,453 households resulted in 1,937,659 completed interviews. The group quarters population consists of the institutionalized population (such as people in correctional institutions or nursing homes) and the noninstitutionalized population (most of whom are in college dormitories). An initial sample of 187,012 people living in group quarters resulted in 142,468 completed interviews. Data were collected in all counties (3,141 counties) in the United States. The sample is designed to provide estimates of housing and socio-economic characteristics for the nation, all states, most areas with a population of 250,000 or more, and selected areas of 65,000 or more.¹

The 2007 ASEC surveyed a national sample of households. The sample is designed primarily to produce estimates of the labor force characteristics of the civilian noninstitutionalized population 16 years of age and older for the nation and all states.

¹ For more information on the source and accuracy of estimates from the ACS, go to http://www.census.gov/acs/www/UseData/Accuracy/Accuracy1.htm

Sample Size and Mode of Data Collection

The 2007 ACS interviewed a total of 1,937,659 households. Data were collected continuously throughout the year using a combination of mail-out/mail-back questionnaires, Computer-Assisted Telephone Interviewing (CATI), and Computer-Assisted Personal Interviewing (CAPI). Each month a unique national sample of addresses received an ACS questionnaire. Addresses that did not respond were telephoned during the second month of collection if a phone number for the address was available, and personal visits were conducted during the third and the last month of data collection for a subsample of the remaining nonresponding units. The 2007 ACS achieved an overall survey response rate of 97.7 percent for housing units and 97.8 percent for group quarters, calculated as the initially weighted estimate of interviews divided by the initially weighted estimate of cases eligible to be interviewed.

The 2007 ASEC contained interviews from about 75,000 housing units, 81 of which were noninstitutional group quarters in which the population is sampled using housing unit equivalents. The ASEC interviews were collected over a three-month period in February, March, and April 2007 as a supplement to the basic monthly CPS conducted during those months, with most of the data collected in March. All ASEC data are collected via Computer-Assisted Telephone and Personal Interviews (CATI/CAPI), with interviews conducted during one week each month. For cases eligible for the 2007 ASEC, the basic CPS household-level response rate was 90.6 percent. The household-level response rate for the ASEC was 91.5 percent. These two response rates led to a combined supplement response rate of 82.9 percent.

Both the ACS and the ASEC employ experienced permanent interviewers for CATI and CAPI data collection. Differences between survey estimates may be due, in part, to the mail-out/mail-back respondents in the ACS.

Residence Rules

The ACS and the ASEC employ different residence rules to determine which individuals in a household are eligible for interview; the ACS uses the concept of current residence, while the ASEC uses a version of usual residence. This difference may contribute to variation in the universes on which social characteristics are tabulated.

The ACS interviews everyone in the housing unit on the day of interview who was living or staying there for more than two months, regardless of whether or not they maintained a usual residence elsewhere or if they did not have a usual residence elsewhere. If a person who usually lived in the housing unit was away for more than two months at the time of the survey contact, he or she was not considered to be a current resident of that unit. This rule recognizes that people can have more than one place where they live or stay over the course of a year, and these people affect the estimates of the characteristics of the population for some areas.

The ASEC interviews everyone staying in the housing unit at the time of the interview who considered the housing unit as their usual residence or who had no usual residence elsewhere. In addition, the ASEC included temporarily absent individuals who considered the housing unit as their usual residence.

The different residence rules result in one notable difference in the universes of the two surveys. The 2007 ACS instructs respondents and interviewers to exclude household members who are temporarily living elsewhere for more than two months, including college students living away. In contrast, the ASEC interviewers are instructed to include as household members any college students who are temporarily absent from the household, including those who are currently residing in college dormitories. This difference is not expected to have a substantial impact on the population of veterans.

Question Wording and Reference Periods

Differences between the ACS and the ASEC in presentation and wording of questions may contribute to differences in estimates. The current ACS question for veteran status is intended to satisfy two distinct purposes: (1) to provide a baseline estimate of veterans and (2) to distinguish between veterans who served on active duty in the past 12 months from those who served over 12 months ago. For this reason, the ACS mail version of the question has multiple responses and the CATI/CAPI version has two additional followup questions, making the collection of veteran status in the ACS more complicated than in the ASEC instrument.

American Community Survey

The mail version of the ACS questions for veteran status and period of military service is

presented in Figure 1.

Figure 1. Reproduction of the Questions on Veteran Status and Period of Military Service from the American Community Survey: 2007



The CATI/CAPI version of the ACS asks the veteran status item using three questions, as

follows:

(Has <Name>/ Have you) ever served on active duty in the U.S. Armed Forces, military Reserves, or National Guard? Do not include training for the Reserves or National Guard but do include activation, for example, for the Persian Gulf War.

- \Box 1. Yes
- □ 2. No

The following question is asked of all persons 15 years and older who have indicated that they

had served on active duty in the U.S. Armed Forces, the military Reserves, or the National

Guard.

When (were you/ was <Name>) on active duty?

- \Box 1. Now on active duty
- $\hfill\square$ 2. On active duty during the last 12 months, but not now
- \Box 3. On active duty in the past, but not during the last 12 months

The following question is asked of all persons 15 years and older who indicated they had never

served on active duty in the U.S. Armed Forces, the military Reserves, or the National Guard.

(Has <Name>/ Have you) ever been in the U.S. military Reserves or the National Guard?

□ 1. Yes

□ 2. No

The CAPI version of the ACS asks the period of military service item as follows:

Using Card F, please tell me each period in which (<name>/you) served on active duty, even if it was just for part of the period. Enter all that apply, even if the person served for only part of the period. Separate with commas.

- 11. September 2001 or later
- 12. August 1990 to August 2001 (including Persian Gulf War)
- 13. September 1980 to July 1990
- 14. May 1975 to August 1980
- 15. Vietnam Era (August 1964 to April 1975)
- 16. March 1961 to July 1964
- 17. February 1955 to February 1961
- 18. Korean War (July 1950 to January 1955)
- 19. January 1947 to June 1950
- 20. World War II (December 1941 to December 1946)

21. November 1941 or earlier

The CATI version of the ACS asks the period of military service item as follows:

Did you serve on active duty during: Enter all that apply, even if the person served for only part of the period. Separate with commas.

<same categories shown above>

Annual Social and Economic Supplement

The ASEC asked the veteran status question as follows:

Did you ever serve on active duty in the U.S. Armed Forces?

- 1. Yes
- 2. No

If the respondent answered "yes," the period of military service follow-up question was asked as

follows:

When did you serve?

- 1. September 2001 or later
- 2. August 1990 to August 2001
- 3. May 1975 to July 1990
- 4. Vietnam Era (August 1964 to April 1975)
- 5. February 1955 to July 1964
- 6. Korean War (July 1950 to January 1955)
- 7. January 1947 to June 1950
- 8. World War II (December 1941 to December 1946)
- 9. November 1941 or earlier

Item Nonresponse

Item nonresponse occurs when an individual does not provide complete and usable

information for a data item. Item allocation rates are often used as a measure of the level of item

nonresponse. These rates are computed as the ratio of the number of eligible people or

households for which a value was allocated during the editing process for a specific item to the

number of people or households eligible to have responded to that item.

For the 2007 ACS, allocation rates for the veteran status and period of military service items were 2.6 percent and 5.0 percent respectively compared with 2.7 percent and 3.3 percent for the 2007 ASEC. The universe for the veteran status item is the total population 17 years and older. The universe for the period of military service item is the population 17 years and over who are currently serving or have previously served on active duty in the U.S. Armed Forces.

Data Editing and Imputation Procedures

The ACS and the ASEC edit and imputation rules are designed to ensure that the final edited data are as consistent and complete as possible. These rules are used to identify and account for missing, incomplete, and contradictory responses. In each case where a problem is detected, pre-established edit rules govern its resolution.

The ACS and the ASEC employ two principal imputation methods: relational imputation and hot deck allocation. Relational imputation assigns values for blank or inconsistent responses on the basis of other characteristics on the person's record or within the household. Hot deck allocation supplies responses for missing or inconsistent data from similar responding housing units or people in sample.

Both the ACS and ASEC editing procedures employ logical checking routines to produce consistency among household members and among responses. Allocation routines using hot decks generally stratify the donors and recipients of the hot deck by their personal characteristics, primarily their age, sex, race, and Hispanic origin.

One notable difference between the editing procedures of the two surveys is the assumptions made about the acceptable age ranges of people allowed in each period of service. The ACS

assumes a younger minimum enlistment age than ASEC when editing the consistency between age and period of military service. This difference could potentially shift the distribution of veterans, more specifically, moving veterans between the two most recent periods of service. Another difference between surveys is that ASEC only allows a respondent to choose up to four periods of service. While there are very few instances where a person could serve in more than four periods, the ACS allows respondents to mark all that apply and then verifies the consistency of the age ranges for each period.

Controls and Weighting

Differences in the selection of controls and the calculation of weights between the two surveys may lead to differences in estimates. The ACS and the ASEC are both weighted to account for the probability of selection and housing unit nonresponse.

After the initial weighting, data from the ACS and the ASEC are both controlled to be consistent with independent population estimates. Data from the 2007 ACS are controlled, at the county level, to independent estimates of the household population and housing units in July 2007. The 2007 ASEC data are controlled to independent national estimates of the civilian noninstitutionalized population in March 2007. In addition, the ACS presents the average responses over a 12-month period, while the ASEC shows the living arrangements of people for the February - April time period, although the population is controlled to March estimates. Because the ACS controls to both the household population and the number of housing units, the ACS files contain both person weights and housing unit weights. The ASEC does not control to the total number of housing units and, thus, the ASEC files do not contain an independent housing unit.

RESULTS

Veteran Status

Table 1 presents national-level data on veteran status. While the veteran status variable is edited for the population 17 years and older, published data products are restricted to the population 18 years and older. Therefore, tables in this report are calculated for that universe. The 2007 American Community Survey (ACS) estimated that, of the civilian population 18 years and older, 23 million people were veterans of the Armed Forces (10.1 percent) and the Annual Social and Economic Supplement (ASEC) estimated 22 million veterans (9.9 percent). This difference, while below the 0.5 percentage-point cutoff, was statistically different.

Table 1 also presents selected characteristics of veterans. The only differences that were above the 0.5 percentage-point cutoff were for the percentages of veterans by age group. The veteran population in the ACS was younger than that in the ASEC. The ACS estimated a higher percentage of the veteran population that was 18 to 34 years old (8.3 percent and 7.1 percent respectively) and a lower percentage that was 55 to 74 years old (43.9 percent and 45.6 percent respectively) compared with the ASEC. The distribution of veterans by age group in the ACS has been consistent since 2005. Overall, the age distributions for the total population of veterans and nonveterans 18 years and older in each survey were not significantly different.

Further investigation of the data (not shown in tables) revealed that, for the subgroup of veterans, weighting procedures seem to differentially affect the distributions by age. Younger veterans had higher average weights than older veterans in the ACS. This may be due, in part, to the mode of interview as younger veterans had lower mail response rates than older veterans.

The difference in the ACS estimates of veterans by age also does not appear to be related to the inclusion of group quarters as the distribution does not change when that population is excluded. The only substantive difference is that the 2007 ACS captured a higher percentage of young female veterans compared with the ASEC.

While the impact is not easily determined from the data, the differences in the question wording between surveys, with the additional response categories and followup questions in ACS, may contribute to the differences in who gets classified as a veteran.

Table 2 presents veteran status by state. Five states had a statistically significant difference of at least 0.5 percentage points between the ACS and ASEC percentages of the population 18 years and older who were veterans—California, Hawaii, Massachusetts, Mississippi, and North Dakota. Of the five states, only Mississippi had a lower percentage of veterans in the ACS compared with the ASEC.

Period of Military Service

Table 3 presents data on period of military service. Of the 9 periods of military service, 3 periods had a statistically significant difference of at least 0.5 percentage points between the 2007 ACS and the 2007 ASEC. The largest difference between the two surveys was for the period "September 2001 or later" (7.8 percent in the ACS and 5.5 percent in the ASEC). Part of this difference may be explained by differences in the percentage of the 18 to 34 year old veteran populations described earlier in this report. Other differences in period of service estimates between the surveys could be caused by differences in editing procedures. The ACS assumes a younger minimum enlistment age than ASEC when editing the consistency between age and period of military service. In the ACS, this means that veterans 18 to 34 years old could have

served in the three periods of service starting in May 1975, while in the ASEC, veterans of the same ages could only have served in the two periods of service starting in August 1990.

SUMMARY

Data from the American Community Survey (ACS) on veteran status and period of military service are generally consistent with those from the Annual Social and Economic Supplement (ASEC) to the Current Population Survey (CPS). The principal differences found in this report are a younger age distribution of veterans and higher proportions of veterans in the most recent periods of service found in the ACS. Some of these differences may be attributed to the editing procedures used in both surveys.

	ACS 2007		ASEC		
	Margin of		Margin of		
Characteristics	Estimate	Error ¹	Estimate	Error ¹	Difference ²
NUMBER (in thousands)					
Civilian population 18 years and	000 745		004.055		
older	226,715	31	221,955	627	2.1 *
Votorans	203,023	52	200,069	079 381	1.9
velerans	22,092	55	21,000	301	4.0
Sex					
Male	21,334	52	20,418	369	4.5 *
Female	1,558	21	1,468	102	6.1
Age					
18 to 34 years	1.894	29	1,553	105	22.0 *
35 to 54 years	6,137	33	5,848	203	4.9 *
55 to 64 years	5,875	30	5,815	202	1.0
65 to 74 years	4,163	19	4,150	171	0.3
75 years and older	4,823	19	4,521	179	6.7 *
Pace and Hispanic Origin ³					
White alone, not Hispanic	18 728	18	17 011	347	46*
Black alone not Hispanic	2 341	-0	2 282	150	2.6
Asian alone not Hispanic	271	9	201	45	34.8 *
Other, not Hispanic	447	11	464	68	-3.6
Hispanic	1,105	17	1,028	102	7.5
DEDCENT					
Civilian population 18 years and					
older	100.0	(X)	100.0	(X)	(\mathbf{x})
Nonveterans	89.9	0.1	90.1	0.2	-0.2
Veterans	10.1	0.1	9.9	0.2	0.2 *
Sox					
Male	93.2	0.1	93.3	0.5	-0 1
Female	6.8	0.1	6.7	0.5	0.1
		-	-		
Age	0.2	0.1	7 1	0.5	10*
35 to 54 years	0.3 26.8	0.1	26.7	0.5	0.1
55 to 64 years	20.0	0.1	20.7	0.8	-0.0 *
65 to 74 years	18.2	0.1	19.0	0.0	-0.3
75 years and older	21.1	0.1	20.7	0.7	0.4
Race and Hispanic Origin [®]					
White alone, not Hispanic	81.8	0.1	81.8	0.7	0.0
Black alone, not Hispanic	10.2	0.1	10.4	0.7	-0.2
Asian alone, not Hispanic	1.2	0.1	0.9	0.2	0.3 ^
Hispanic	∠.0 ∡ o	0.1	2.1 1 7	0.3	-0.2
	4.0	0.1	4.7	0.0	0.1

Table 1. Veteran Status by Selected Characteristics for the United States, 2007

* Statistically Significant Difference at the 90-percent confidence level

¹ This number added to and subtracted from the estimate yields the 90-percent confidence interval around the estimate.

² For numbers, the difference is the percent difference and is calculated as {(ACS-ASEC)/ASEC}*100. For percents, the difference is the percentage-point difference and is calculated as ACS-ASEC. All calculations and tests of significance are performed on unrounded estimates and standard errors.

³ The ACS allowed respondents to identify themselves with multiple race categories, but respondents to the CPS chose one race only. In this report, "White alone" refers to people who reported White and no other race. Likewise, "Black alone" refers to people who reported Black or African American and no other race. People of Hispanic origin may be of any race.

(X) Not applicable.

Source: American Community Survey 2007 and Current Population Survey 2007; Table sourced from ACS Detailed Table B21001 and Subject Table S2101 and CPS special tabulation.

For more information on the ACS and CPS, see http://www.census.gov/acs/www/ and http://www.bls.gov/cps/

Table 2. Veteran Status by State for the United States, 2007

	ACS 2007		ASEC		
		Margin of		Margin of	
Characteristics	Estimate	Error'	Estimate	Error'	Difference
PERCENT	10.1	0.1	9.9	0.2	0.2 *
Alahama	44 7	0.0	10.0	4.5	0.0
Alabama	11.7	0.2	10.8	1.5	0.8
Alaska	15.4	0.8	14.2	1.8	1.2
Arkansas	11.9	0.2	12.0	1.5	-0.7
Colifornio	77	0.3	12.4	1.0	-0.0
Colorado	1.7	0.1	11.6	0.5	-0.2
Connecticut	9.2	0.2	9.5	1.0	-0.2
Delaware	11 9	0.2	11.3	1.4	-0.5
District of Columbia	72	0.4	7.0	1.0	0.0
Florida	12.1	0.0	11.9	0.8	0.2
Georgia	10.2	0.2	10.7	1.0	-0.5
Hawaii	12.9	0.5	10.4	1.4	2.6 *
Idaho	12.1	0.3	12.5	1.6	-0.3
Ilinois	8.3	0.1	8.7	0.8	-0.3
Indiana	10.3	0.2	9.9	1.2	0.4
Iowa	11.0	0.2	10.9	1.6	0.1
Kansas	11.2	0.3	10.3	1.5	0.9
Kentucky	10.4	0.3	9.8	1.5	0.6
Louisiana	9.8	0.3	10.0	1.5	-0.2
Maine	13.8	0.4	13.5	1.8	0.3
Maryland	10.9	0.2	10.7	1.4	0.2
Massachusetts	8.7	0.2	7.4	1.0	1.3 *
Michigan	9.8	0.1	10.0	1.0	-0.2
Minnesota	10.3	0.2	10.7	1.4	-0.4
Mississippi	10.0	0.3	11.7	1.6	-1.6 *
Missouri	11.5	0.2	11.5	1.4	0.1
Montana	14.0	0.6	12.9	1.6	1.1
Nebraska	11.3	0.3	11.3	1.6	0.0
Nevada	12.3	0.4	11.1	1.6	1.2
New Hampshire	12.1	0.4	12.3	1.6	-0.2
New Jersey	7.5	0.1	7.0	0.9	0.5
New Mexico	12.2	0.4	12.4	1.8	-0.3
New York	7.0	0.1	6.7	0.6	0.4
North Carolina	10.8	0.2	10.5	1.1	0.4
North Dakota	11.2	0.4	9.6	1.5	1.7
Ohlohomo	11.0	0.1	11.1	1.0	-0.2
Oragon	12.1	0.3	11.5	1.0	0.5
Diegon Bonnovluonia	12.1	0.2	11.5	1.0	0.6
Phode Island	10.8	0.1	10.3	0.9	0.5
South Carolina	9.0 12.0	0.4	3.2 11.2	1.5	0.0
South Dakota	12.0	0.5	13.4	1.5	-0.8
Tennessee	10 9	0.0	11 3	1.0	-0.0
Texas	9.4	0.1	9.2	0.7	0.2
Utah	8.5	0.3	7.9	1.3	0.6
Vermont	11.3	0.5	10.5	1.6	0.9
Virginia	13.1	0.2	12.4	1.2	0.7
Washington	12.7	0.2	13.3	1.4	-0.6
West Virginia	12.0	0.4	12.0	1.4	0.0
Wisconsin	10.5	0.1	9.5	1.3	1.0
Wyoming	13.1	0.6	13.8	1.8	-0.7

* Statistically Significant Difference at the 90-percent confidence level

¹This number added to and subtracted from the estimate yields the 90-percent confidence interval around the estimate.

Source: American Community Survey 2007 and Current Population Survey 2007; Table sourced from ACS Selected Population Profile S0201 and CPS special tabulation.

For more information on the ACS and CPS, see http://www.census.gov/acs/www/ and http://www.bls.gov/cps/ $\ensuremath{\mathsf{N}}$

Table 3. Period of Military Serv	ce for the United States, 2007
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	ACS 2007		ASEC 2007		
		Manain of		Manain of	
					2
Characteristics	Estimate	Error	Estimate	Error	Difference
NUMBER (in thousands)					
Veterans	22,892	55	21,886	381	4.6 *
Period of Service:					
September 2001 or later	1,778	28	1,204	93	47.7 *
August 1990 to August 2001	3,408	32	3,055	147	11.5 *
May 1975 to July 1990	5,498	34	5,231	192	5.1 *
Vietnam Era (August 1964 to April 1975)	7,710	30	7,480	229	3.1
February 1955 to July 1964	3,971	23	3,805	164	4.4 *
Korean War (July 1950 to January 1955)	2,988	23	2,762	140	8.2 *
January 1947 to June 1950	621	9	724	72	-14.2 *
World War II (December 1941 to December 1946)	2,924	15	2,679	138	9.1 *
November 1941 or earlier	132	5	79	24	66.7 *
PERCENT					
Veterans	100.0	(X)	100.0	(X)	(X)
Period of Service:					
September 2001 or later	7.8	0.1	5.5	0.4	2.3 *
August 1990 to August 2001	14.9	0.1	14.0	0.6	0.9 *
May 1975 to July 1990	24.0	0.1	23.9	0.8	0.1
Vietnam Era (August 1964 to April 1975)	33.7	0.1	34.2	0.9	-0.5
February 1955 to July 1964	17.3	0.1	17.4	0.7	0.0
Korean War (July 1950 to January 1955)	13.1	0.1	12.6	0.6	0.4
January 1947 to June 1950	2.7	0.0	3.3	0.3	-0.6 *
World War II (December 1941 to December 1946)	12.8	0.1	12.2	0.6	0.5
November 1941 or earlier	0.6	0.0	0.4	0.1	0.2 *

* Statistically Significant Difference at the 90-percent confidence level

¹This number added to and subtracted from the estimate yields the 90-percent confidence interval around the estimate.

² For numbers, the difference is the percent difference and is calculated as {(ACS-ASEC)/ASEC}*100. For percents, the difference is the percentage-point difference and is calculated as ACS-ASEC. All calculations and tests of significance are performed on unrounded estimates and standard errors.

(X) Not applicable.

Note: The categories of periods of service are not necessarily mutually exclusive. Veterans may have served in more than one period.

Source: American Community Survey 2007 and Current Population Survey 2007; Table sourced from ACS and CPS special tabulation.

For more information on the ACS and CPS, see http://www.census.gov/acs/www/ and http://www.bls.gov/cps/