

APPENDIX A

Recommendations for Defining Periods of Military Service and Corresponding Age-18

Cohorts

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In order to determine the long-term outcomes of military service, it is necessary to historically locate an individual's period of service in relation to specific eras of war and peace. To do this accurately, researchers need to have information about the person's exact dates of entry to and exit from the military. In cases where only the year or the person's age of entry to and exit from military service are known, periods of service can be determined, but will likely contain measurement error. To ensure comparability across studies, we recommend that periods of service should be coded using a standard set of dates that define wartime and peacetime eras.

We specifically recommend that researchers who seek to define periods of military service among samples drawn in the United States use the Periods of War dates detailed in the United States Code of Federal Regulations (see Table 1). These dates are set by Congress and used by the Department of Veterans Affairs to determine eligibility for service-related compensation and benefits. However, researchers will discover several challenges in using these dates to analyze existing survey data. The challenges that will need to be resolved depend, in part, on whether the researcher wants to (a) focus only on active-duty personnel and/or veterans or (b) make comparisons between veterans and nonveterans. Another relevant consideration is whether the researcher is attempting to measure cultural influences in a given historical time period, wartime service, or warzone deployment.

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Wartime Eras

For researchers who are interested in making comparisons between active-duty and/or veteran populations within a given historical time period, or between those who served in different time periods, the primary conceptual distinction that must be made is whether period of military service is intended to measure *eligibility for veterans' compensation and pension benefits* or *risk of warzone deployment*. In either case, the researcher needs information on the day, month, and year of all transitions into and out of military service in order to precisely measure period of service. Even then, the period of service measure does not capture actual warzone exposure or service-related trauma, which only can be determined with specific questions regarding the nature of service (see Online Appendix B for examples).

Unfortunately, detailed data on military service experiences are rarely available in surveys. More typically, only the year, and sometimes the month, of service is available. Sometimes data on military experiences exist and, under some circumstances, can be linked in collaboration with the Defense Manpower Data Center or the National Personnel Records Center (Dohrenwend et al., 2006; Magruder et al., 2015). However, there are substantial barriers to making such linkages. Thus, due to data constraints, it is often impossible to determine whether service was continuous and whether a respondent definitively served in a particular war. Researchers should use any additional data (e.g., regarding combat and benefits) to assess the effectiveness of the period of service measures they are able to derive.

Consider a researcher who is using month and year information to identify Vietnam War service. The start date of February 28, 1961 determines compensation and pension benefits eligibility among veterans who served in the Republic of Vietnam. However, in all other cases, August 5, 1964 is used as the start date of the Vietnam War. A researcher who does not have

information about theater of service and uses February 1961 as the start date for the period of service is likely to identify veterans who did not serve in theater during the early years of the conflict and are therefore not eligible for Vietnam War–era benefits. A more conservative approach would be to use August 1964, which corresponds with the official participation of the U.S. in the war. But if the researcher is interested in measuring the risk of combat exposure, using August 1964 would certainly miss some veterans who served in theatre between February 1961 and August 1964 and may have been exposed to combat. In this case, a February 1961 start date would be more inclusive. Similarly, although the stop date for determining benefits for Korean War veterans is January 31, 1955, researchers who are interested in measuring potential combat exposure may prefer to use July 27, 1953, given that the armistice was signed on that date.

Another challenge is determining the period of military and/or war service when data include only the years that service started and stopped. It is easier to develop coding rules for wars with start or stop dates that are early or late in the year than for wars with start or stop dates that fall in the middle of the year. For example, World War II started December 7, 1941 and ended (officially) December 31, 1946. Therefore, if a researcher only has information on the years that service started and stopped, it would be reasonable to code all respondents who served between 1942 and 1946 as serving during World War II. However, the Gulf War started August 2, 1990 and ended April 6, 1991. In this case, coding respondents who served any time during 1990 and 1991 as serving in the Gulf War would likely overestimate service in that war.

Age-18 Cohorts

For researchers who are interested in making cohort comparisons between veterans and nonveterans, there are additional challenges to consider. In this case, the start and stop dates for

wartime periods can be used to construct cohorts that are based on when individuals had their 18th birthday and thus, in most eras, became eligible for military service (regardless of whether or not they served in the military). These cohorts conceptually capture *the general historical context when the person came of military age*. Defining cohorts based on the year the cohort members turned 18 enables researchers to create mutually exclusive categories that situate both nonveterans and veterans historically in relation to specific wars or periods of peace, as well as in terms of their exposure to cultural influences in a formative stage of the life course.

Researchers should again use any additional data regarding the characteristics of veterans to assess whether nonveterans in the same cohort can be considered an effective reference group.

The middle two columns of Table 1 present the first and last birth dates that can be used to determine whether an individual turned 18 during a war era or peacetime. For example, those born between April 6, 1899 and November 10, 1900 would have turned 18 during World War I. Constructing these age-18 cohorts is straightforward for researchers who have access to complete birth dates or birth month and year. However, when only the birth year is available (or can be estimated based on the individual's age and date of data collection), there are some important issues for researchers to consider. In this case, it is reasonable to use the birth year 18 years prior to the start of the war as the beginning of the age-18 cohort; anyone born in that year who survived to age 18 would be exposed to the historical circumstances experienced during the duration of the war. The difficulty comes in determining which birth year to use as the end date. Using the year the war officially ended minus 18 years would capture the general historical circumstances during the 18th birth year of the youngest members of the cohort. However, this approach would overestimate the number of people who were at risk of war service, particularly if the war ended early during the calendar year, because some younger members of the cohort

may have joined the military after the end of the war. Thus, if the age-18 cohort variable is intended to measure risk of war service, then the researcher might want to consider using the year before the war ended, minus 18, as the end date for the cohort.

Generally, we recommend conceptualizing these age-18 cohorts as measuring historical context and not risk of wartime service, given that the various factors that influence actual risk of war service are not typically available in secondary data. Consider, for example, the age-18 birth cohort years for the Korean War. This conflict ended in January 1955. Given this, would one want to code those who were born in 1937 and turned 18 anytime during 1955 as being a part of the Korean War cohort? Doing so might be appropriate if one wanted to measure the influence of the historical context leading up the 18th birthday, given that those who were born in 1927 were exposed to the Korean War during their high school years. But, if one wants to measure potential risk of war service, then a more conservative approach would be to only include those who were born in 1936 and turned 18 in 1954. In situations such as this, we recommend that the researcher consider testing alternate specifications to empirically evaluate if their analysis is sensitive to the decision rules they use to determine the end dates for the age-18 birth cohorts. Even if the results are not sensitive to the coding decisions, it is important to clearly specify exactly how the age-18 cohorts are defined.

An alternative approach, which extends a method presented by Strode-Elfant, Hemez, Tedrow, and Teachman (2017), is shown in the last two columns of Table 1. This approach uses birth ranges that identify individuals who would have been in the peak military service ages of 18 to 24 during a given historical era. Compared to the previously discussed age-18 cohorts, this approach yields wider cohorts. For example, for World War II, the age-18 cohort was born between 12/7/1923 and 1/31/1928, whereas the age 18 to 24-cohort was born between 1917 and

1928. The age 18 to 24-cohort approach yields a measure that captures *the general historical context when the person came of age and the pool of people who were most at risk of military service during a given era*, but it is important to note that the cohort categories are not mutually exclusive. For example, an individual born between 1940 and 1945 would be in both the “Between Korean and Vietnam” and the “Vietnam” categories. The age 18 to 24 cohort approach might be the most useful in cases where the researcher is focusing on one cohort or stratifies the analysis by cohort. This would ensure that respondents who are in birth years that fall into two categories are allocated to just one cohort, in the case of a single-cohort analysis, or are included in both cohort models, in the case of a multiple-cohort analysis. Researchers also could use the age 18 to 24 cohorts in a single model by constructing a series of dichotomous indicators that measure exposure to the risk of military service in a given era, such that respondents who are in birth years that fall into two contiguous historical eras are coded as “yes” on exposure to the risk of military service in both time periods.

Conclusion

As the previous discussion demonstrates, it is difficult to construct a standard measure of military service era that can be used across different studies when individuals’ periods of service are not well-defined by the data at hand and/or comparisons to those who did not serve are important. Studies not only vary in their conceptual aims, but are also constrained by available data, which often do not contain exact birth dates and/or dates of service. *We encourage researchers to pay careful attention to how period of military service is conceptualized and operationalized when they are analyzing data for active-duty military members and/or veterans, to provide a complete rationale for their measures, and to interpret their results in relation to those measures.* This will permit investigators to compare, replicate, and integrate their results,

which is necessary to build a more complete understanding of the impact of military service on the life course.

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Table 1

Periods of Service and Corresponding Age-18 and Age 18–24 Cohorts by U.S. Wars^a

<u>U.S. Wars</u>	<u>Periods of service</u>		<u>Age-18 cohort</u>		<u>Age 18-24 cohort</u>	
	<u>Start Date</u>	<u>End Date</u>	<u>Start Date</u>	<u>End Date</u>	<u>Start Date</u>	<u>End Date</u>
WWI	4/6/1917	11/11/1918 ^b	4/6/1899	11/10/1900	4/6/1893	11/10/1900
Interim: WWI–WWII	11/12/1918	12/6/1941	11/12/1900	12/6/1923	11/12/1894	12/6/1923
WWII	12/7/1941	12/31/1946 ^c	12/7/1923	12/31/1928	12/7/1917	12/31/1928
Interim: WWII–Korean War	1/1/1947	6/26/1950	1/1/1929	6/26/1932	1/1/1923	6/26/1932
Korean War	6/27/1950	1/31/1955 ^d	6/27/1932	1/31/1937	6/27/1926	1/31/1937
Interim: Korean War–Vietnam War					2/1/1931	8/4/1946
Vietnam War	2/1/1955	8/4/1964	2/1/1937	8/4/1946		
Interim: Vietnam War–Gulf War					5/8/1951	8/1/1972
Gulf War	8/5/1964 ^e	5/7/1975	8/5/1946	5/7/1957	8/5/1940	5/7/1957
Interim: Gulf War–						
	5/8/1975	8/1/1990	5/8/1957	8/1/1972		
	8/2/1990 ^f	4/6/1991 ^g	8/2/1972	4/6/1973	8/2/1966	4/6/1973
	4/7/1991	10/6/2001	4/7/1973	10/6/1983		

RECOMMENDATIONS FOR DEFINING PERIODS 10

OEF/OIF/OND^h

4/7/1967

10/6/1983

OEF/OIF/OND

10/7/2001

Present

10/7/1983

Present–18 yrs

10/7/1977

Present–18 yrs

Note. ^aBased on the U.S. Code of Federal Regulations (2014) Title 38: Pensions, Bonuses, and Veterans’ Relief, §3.2, Periods of war. ^bThe U.S. Code of Federal Regulations (2014) indicates: “If the veteran served with the United States military forces in Russia, the ending date is April 1, 1920. Service after November 11, 1918 and before July 2, 1921 is considered World War I service if the veteran served in the active military, naval, or air service after April 5, 1917 and before November 12, 1918.” ^cThe U.S. Code of Federal Regulations (2014) indicates: “If the veteran was in service on December 31, 1946, continuous service before July 26, 1947, is considered World War II service.” ^dThe U.S Code of Federal Regulations (2014) lists an end date of 1/31/1955 for the Korean War, although some scholars prefer to use the armistice date of 7/27/1953. ^eThe U.S Code of Federal Regulations (2014) indicates a start date of 2/28/1961 is applicable to veterans serving in the Republic of Vietnam. In all other cases the 8/5/1964 date is used to determine war service. ^fThe U.S Code of Federal Regulations (2014) designates the Gulf War dates as “August 2, 1990 through date to be prescribed by Presidential proclamation or law.” These same dates are used by the U.S. Department of Veterans Affairs (2014). However, the cease-fire declared by the U.S. on February 28, 1991 took effect April 11, 1991 (Torreon, 2016). We use this date to distinguish the initial Gulf War operations associated with Dessert Storm from the subsequent operations in the interim leading up to OEF/OIF/OND. ^gOEF = Operation Enduring Freedom; OIF = Operation Iraqi Freedom; OND = Operation New Dawn. ^hTorreon (2016) distinguishes between the Gulf War and OEF/OIF/OND.