Workshop | DALE HAGSTROM

Revising Civil War Death Counts Using Actuarial Methods

ONE HUNDRED FIFTY YEARS AGO, the United States was embroiled in the early years of the most deadly and destructive war it has ever endured. The nation paid heavily for the sin of slavery, not only in massive property damage and economic dislocation but also in human lives (an immense number of deaths as well as much injury and sickness). To understand the extent of loss and trauma as America moved into postbellum recovery, it's necessary to quantify Civil War deaths reasonably accurately (if not precisely) because they concentrated among the young men needed to work on farms or in factories, on railroads, or in commerce.

For more than a century, the oft-cited total for Civil War deaths was 620,000—from among a national population only 10 percent the size of our current population. Unlike the guerrilla and tactically genocidal conflicts the world has endured in the past 50 years, Civil War deaths clustered around young men in uniform. As a result, it was reasonable that the earliest estimates relied primarily on an enumeration of fatalities by military unit. This accounting approach seemed to favor solid numbers, producing only a lower bound when it avoided using estimates for undocumented deaths—whether among civilians, a collapsing Confederate army, or the severely injured who died after leaving active duty.

J. David Hacker, an associate professor of history at Binghamton University in the State University of New York system, recently published a study, "A Census-Based Count of the Civil War Dead," that takes a more global approach in identifying the excess deaths caused by the Civil War. In his admirable study, Hacker employs techniques that would be familiar to any actuary, including concerns for data sources and quality, creative solutions, and sensitivity-testing of assumptions. While actuaries may need to add a financial component to reflect the time value of money or the effects of selective competition in their work, Hacker's methods and concerns working with historical census data are otherwise quite familiar.

Estimates and Assumptions

While his approach is wide-ranging, Hacker has built enough granularity into his model to produce valid conclusions. He compares actual male survival rates (defined by the 1860 and 1870 censuses for key cohorts) with the expected male survival rates based on the
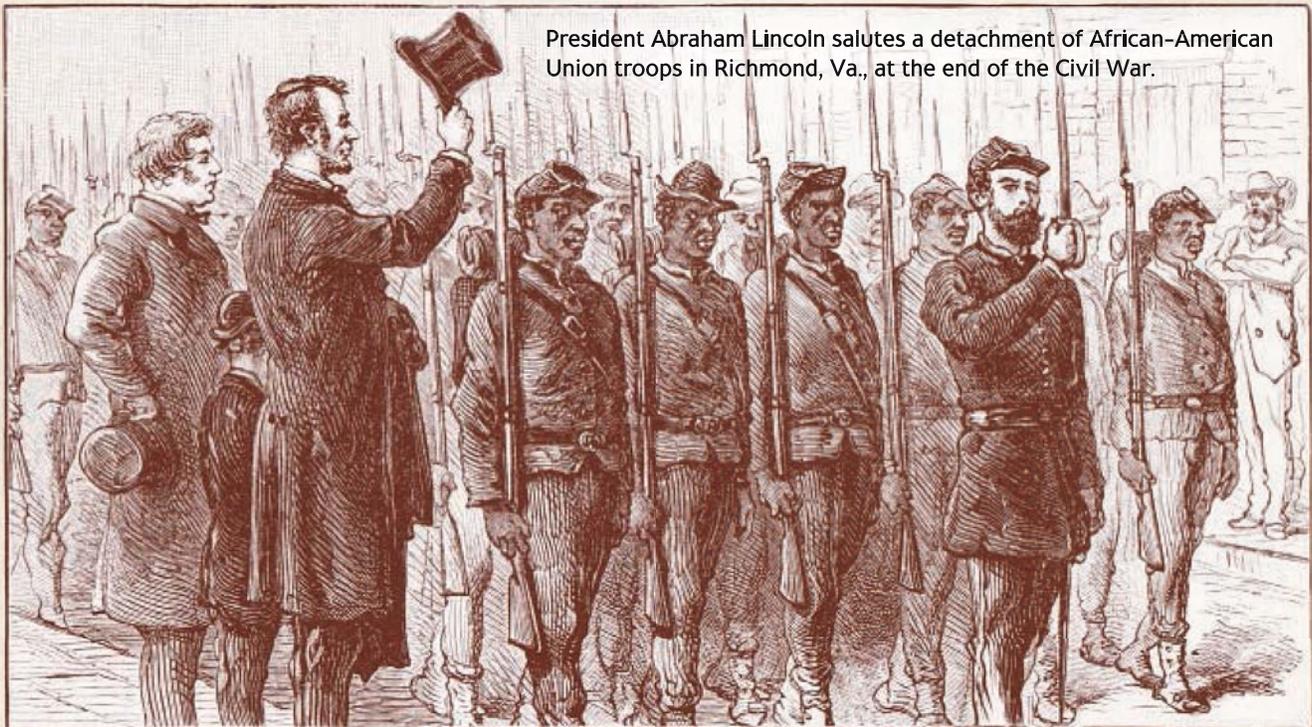
President Abraham Lincoln salutes a detachment of African–American Union troops in Richmond, Va., at the end of the Civil War.
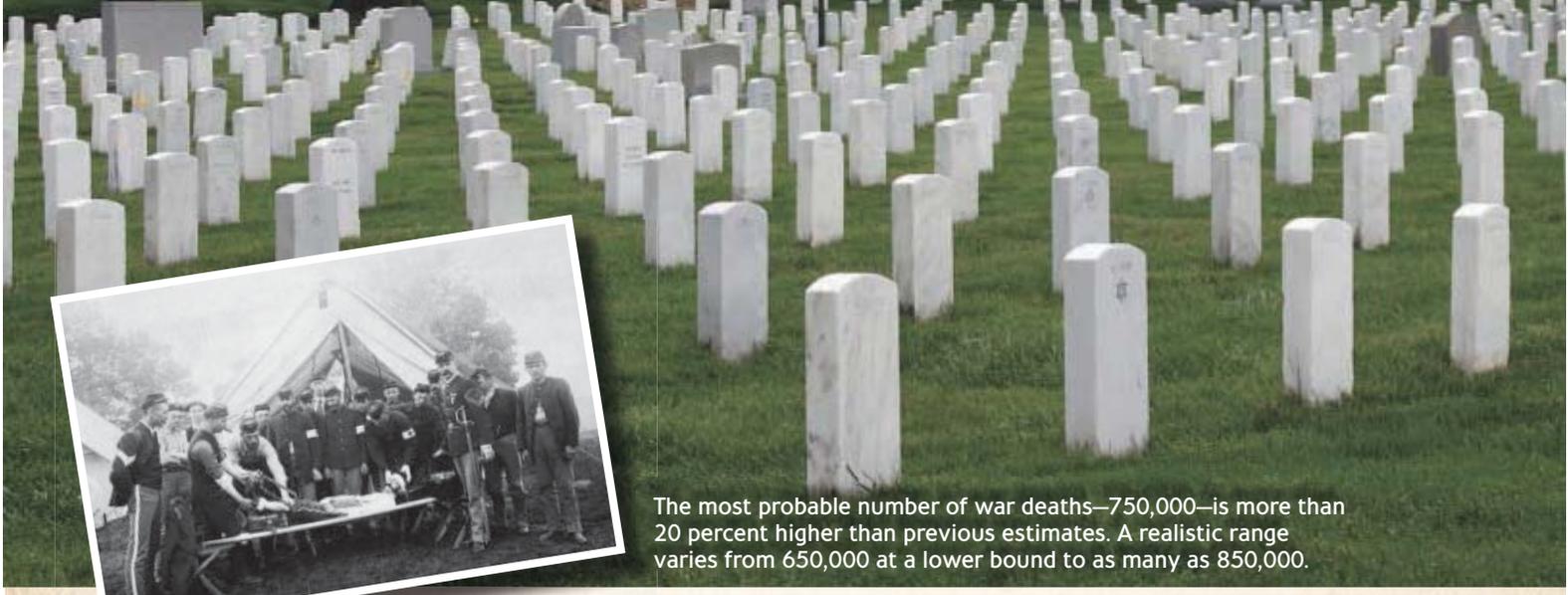
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experience of the decades immediately adjacent to the 1860-1870 decade. Instead of using enumerated deaths to attempt a single best estimate, Hacker uses the census enumerations of the living to develop probable ranges of excess war deaths. He finds that the most probable number of war deaths—750,000—is more than 20 percent higher than previous estimates and that a realistic range varies from 650,000 at a lower bound (5 percent above the traditional estimate) to as many as 850,000. Even this upper bound may miss some share of civilian deaths among former slaves, women, and men outside combatant ages. (In his recent book *Sick From Freedom: African-American Illness and Suffering During the Civil War and Reconstruction*, Jim Downs, an assistant professor at Connecticut College, writes that newly freed slaves encountered yellow fever, smallpox, cholera, dysentery, malnutrition, and exposure during the war. At least 60,000 died of smallpox in that decade.)

Hacker was able to focus first on the native-born white population, using sex differentials to limit errors caused by changes in the level of census undercounting. The key estimates and assumptions Hacker made include the following (all of which he examines in his study):

- The proportion of the U.S. native-born white population that remained in the United States during 1850 to 1880 was stable by age cohort and sex cohort.

- Any changes among the four censuses in net undercount for the native-born white population affected males and females equally.
- War-related mortality among white females aged 10 to 44 was negligible relative to that among corresponding males.
- The expected "normal" age pattern in the sex differential of survival rates for the 1860s is best approximated by averaging the sex differentials

of survival rates observed in the 1850s and 1870s.
- Foreign-born white males experienced the same rate of excess mortality as native-born white males.
- The net census undercount of white men aged 10 to 44 in the 1860 census was approximately 6 percent, within a range of 3.7 percent to 6.9 percent.
- The 36,000 deaths among the Union army's black soldiers, estimated

Comparing Historical Mortality With Today's Population

It's natural to provide context for a historical event resulting in high mortality by multiplying the number of deaths in the earlier disaster by the overall growth in the nation's population. The total U.S. population today is 10 times the U.S. population at the start of the Civil War, so 750,000 deaths in the Civil War is roughly comparable with 7.5 million deaths today. The total U.S. population is three times the U.S. population at the time of the Spanish flu pandemic in 1918–20, so, similarly, the 541,000 excess flu deaths in the United States of 1918 are roughly comparable with 1.6 million excess flu deaths today.

In both cases, however, the comparison can be misleading unless we understand and are willing to ignore any differences that might relate to the much older age distribution in the United States today in comparison WITH 90 to 150 years ago.

As J. David Hacker notes in "A Census-Based Count of the Civil War Dead," 13.1 percent of white males born in Southern slave states aged 10 to 44 in 1860 died because of the war. (Other cohorts had other excess death rates, so the aggregate death rate depended on the mix of cohorts.) That same cohort (specific to age, sex, race, and state) isn't 10 times as large today as it was in 1860. As a result, if we assumed the same age-, sex-, race-, and state-specific death rates applied today—rather than one aggregate excess death rate for the entire population—we would translate 750,000 war-related deaths into a figure that is different from the 7.5 million obtained using a single aggregate adjustment factor.

long ago by the War Department, are the only black deaths included in Hacker's total. He notes that the likely number of deaths among black civilians may have exceeded this number for soldiers, but he omits all of them because it is unclear what proportion should be attributed to the Civil War as distinct from the dislocation and postwar violence that affected blacks of both sexes.

■ Excess male mortality in the 1860s (compared with female mortality and further compared with surrounding decades) is assumed to have been caused entirely by the Civil War. (Hacker notes that the fewer maternal deaths caused by a lower birth rate during war years will have biased downward his estimate of excess male deaths during the 1860s.)

Just as an actuary offers a range of possible outcomes, Hacker provides sensitivity tests of his results, estimating how the results differ if plausible alternative estimates for his assumptions are made.

A Contrasting Perspective

In my professional work I have had occasion to study the 1918 influenza pandemic that was so deadly for young adults. It appeared in waves, primarily during 1918 with smaller waves in 1919 and 1920.

The Civil War raged for four years. Hacker estimates that nearly 23 percent of white males born in Southern slave states who were in the age cohort 20 to 24 in 1860 died as an "excess death" between the 1860 and 1870 censuses. Using a broad definition of "military age," Hacker estimates that more than 13 percent of white males born in Southern slave states who were ages 10 to 44 in 1860 died as an excess death between the 1860 and 1870 censuses.

By comparison, 1.4 percent of males and 1.1 percent of females in the age 25 to 34 cohort died as an excess flu and pneumonia death during 1918–1920 (in which we assume the 1917 levels of flu and pneumonia deaths would have been the normal level for those three years if not for the new strain of influenza). Smaller proportions died from the flu in other age cohorts. □

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Resources

Downs, J.D., *Sick From Freedom: African-American Illness and Suffering During the Civil War and Reconstruction,* Oxford University Press, 2012.

Hacker, J.D., "A Census-Based Count of the Civil War Dead," *Civil War History,* Vol. LVII, No. 4, Kent State University Press, 2011.