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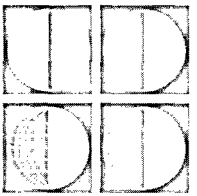
Brief Reports

Can the Famous Really Postpone Death?



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ABSTRACT: David P. Phillips has reported evidence that famous people are often able to postpone their deaths until after a birthday. A reexamination of Phillips' data shows some aspects of his analysis to be questionable, including the lumping together of deaths that occur during the birthmonth, which does not distinguish deaths that occurred before the birthday from those that occurred afterward. A reanalysis of his data shows that there were actually a relatively large number of deaths in the month preceding and the months following the birthday. One explanation is that the anxiety associated with this milestone and the excesses associated with its celebration are sometimes fatal. Another explanation is that Phillips' results were a fluke created by a selective use of data.

In the early 1970's, the American Statistical Association sponsored *Statistics: A Guide to the Unknown,* a collection of essays illustrating the widespread application of statistical tools. One essay (Phillips, 1972) began with this provocative question:

> In the movies and in certain kinds of romantic literature, we sometimes come across a deathbed scene in which a dying person holds onto life until some special event has occurred. For example, a mother might stave off death until her long-absent son returns from the wars. Do such feats of will occur in real life as well as in fiction?

The author, David P. Phillips, looked at selected data and concluded that famous people were often able to postpone their deaths until after a birthday, in that there were fewer than expected deaths (a "deathdip") in the months preceding the birthmonth and more than expected deaths in the birthmonth and succeeding months. Because the collection of essays in which his paper appeared is so well-known, Phillips' essay attracted considerable attention, and one of the authors uses it as an example in his statistics textbook (Smith, 1991).

Four of this author's students have written term papers attempting to replicate Phillips' findings with completely different data sets. None found a statistically significant deathdip: 400 randomly selected persons in the *Biography Almanac* (Rollins, 1990), $p = 0.58$; 372 deceased persons in the 1972 issue of *Who Was Who in the USSR* (Hlahla, 1990), $p = 0.056$; 630 obituaries from the *Los Angeles Times* (Collins, 1989), $p = 0.59$; and 264 obituaries from four newspapers (Hamburg, 1990), $p = 0.30$. In the study with the lowest p value, there were more deaths shortly before the birthmonth than after, which contradicts Phillips' conclusion.

Puzzled by the fact that four independent attempts to confirm Phillips' theory failed, we decided to reexamine Phillips'

original data. One perplexing aspect of his analysis, given his opening description of the dramatic deathbed scene, is that he lumped together all deaths that occur during the birthmonth, not distinguishing those that occurred before the birthday from those that occurred afterward. Instead, he separated the deaths into these twelve monthly categories: birthmonth, one month before birthmonth, one month after birthmonth, and so on.

Phillips interprets those deaths that occurred during the birthmonth as evidence that these people were able to postpone death until the celebration of their birthdays. In fact, when we reexamined his most statistically persuasive data, the deceased in *Four Hundred Notable Americans* (Morris, 1965), we found that of the 26 people who died during their birthmonths, 13 died before their birthdays, 1 died on his birthday, and 12 died after their birthdays! These 26 people who died close to their birthdays were not at all successful in postponing death.

Given the alleged importance of the birthday event, a more natural set of twelve categories is one month preceding the birthday, one month following the birthday, and so on. And this is what we used. We counted the 30 days preceding the birthday as one month preceding the birthday, 31 to 60 days preceding the birthday as two months preceding the birthday, and so on. The birthday itself and the subsequent 29 days were counted as one month following the birthday. The next 30 days were two months after the birthday. To account for the fact that a year has either 365 or 366 days, rather than 360, the six intervals farthest from the birthday have 31 days rather than 30.

Phillips gives data for 348 deceased people in *Four Hundred Notable Americans.* By using more recent reference works, we were able to find complete birth and death information for 386 persons. Table 1 shows the results ($p = 0.418$, far from the 0.025 value reported by Phillips).

We next turned to three additional samples analyzed by Phillips: persons listed in both *Who Was Who in America* (1943, 1950, 1960) and in a U.S. appendix to *Royalty, Peerage and Aristocracy of the World* (1970). Phillips' three *Who Was Who* samples are based on every name in the 1951–1960 edition, every name in the 1943–1950 edition, and every other name in the 1897–1942 edition. In each case, the surnames had to be listed in the *Royalty* appendix, and persons who appear in more than one volume or in *Four Hundred Notable Americans* were not included a second time. In addition, his 1943–1950 sample excludes those who died during World War II and his 1897–1942 sample excludes those who died during either World War.

We followed Phillips' rules, though many seem to be decisions that could have been made after looking at the data rather than before. For example, Phillips justifies his focus on famous people by arguing that their birthdays may be celebrated publicly with considerable attention. In the United States, fame is not noticeably diminished by the absence of one's name from the *Royalty* appendix's list of aristocratic families. Indeed, it could be argued that those who made it into *Who Was Who* without the benefit of an aristocratic surname are more likely to be well-known persons whose birthdays are celebrated publicly than are those who have nothing more going for them than their surname.

Similarly, while it is reasonable to exclude combat deaths, *Who Was Who* does

TABLE 1

DEATHDAY MINUS BIRTHDAY IN FOUR SAMPLES

	400 Notable Americans (χ^2=11.308, p=0.418)		*Who was Who* (χ^2=14.915, p=0.186)		*All Four Samples* (χ^2=19.616, p=0.051)	
DEATH—BIRTH	Expected	Observed	Expected	Observed	Expected	Observed
−183 to −153	31.97	31	92.51	88	124.48	119
−152 to −122	32.76	28	94.80	83	127.56	111
−121 to −91	32.76	28	94.80	93	127.56	121
−90 to −61	31.70	26	91.75	85	123.45	111
−60 to −31	31.70	23	91.75	74	123.45	97
−30 to −1	31.70	30	91.75	103	123.45	133
0 to 29	31.70	32	91.75	112	123.45	144
30 to 59	31.70	41	91.75	90	123.45	131
60 to 89	31.70	41	91.75	97	123.45	138
90 to 120	32.76	38	94.80	110	127.56	148
121 to 151	32.76	34	94.80	95	127.56	129
152 to 182	32.76	34	94.80	87	127.56	121
Total	386	386	1,117	1,117	1,503	1,503

not tell us whether the person died in combat, and it seems unlikely that a soldier who died in combat had accomplished enough in an abbreviated life to be listed in *Who Was Who*. Most of those excluded by Phillips are almost surely not combat deaths.

It is noteworthy that Phillips did not exclude those who did not have aristocratic surnames or who died during these two world wars from his *Four Hundred Notable Americans* data, nor did he exclude from any of his samples those who died during time periods spanned by other wars—including the Revolutionary War, Civil War, Spanish-American War, and Korean War. While it is unlikely that any of these decisions, by themselves, introduce systematic biases into the results, it is likely that the testing of many subsets of any collection of data will yield spurious coincidental relationships. In collecting the data, we were also struck by the very large number of published compilations of notable people; a determined data miner could surely find a subset of some compilation that confirms almost any theory.

Phillips reports that each of his *Who Was Who* samples showed a deathdip in the month preceding the birthmonth. We did not find this deathdip. In two of the three samples, the number of deaths in the month preceding the birthday was larger than expected—the opposite of Phillips' theory—though none of the results are statistically persuasive. The only sample to show a deathdip has a p value of 0.99. Table 1 shows the combined results for the three *Who Was Who* samples and for all four samples. The 0.051 p value for the four combined samples is very close to statistical significance at the 5 per cent level. Similarly, Monte Carlo simulations show that, were the null hypothesis true, there is a 0.04 probability that one category would have 148 or more observations while another has 97 or fewer.

We did find, as did Phillips, a relatively large number of deaths in the months following the birthday. However,

contrary to Phillips, we also found a relatively large number of deaths in the month preceding the birthday. One explanation for this rise in deaths in the month preceding and the months following the birthdate is that, rather than postponing death until after the birthday, the anxiety associated with this milestone and the excesses associated with its celebration are sometimes fatal. Another explanation is that Phillips' results are just a fluke created by a selective use of data.

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