

## BIRTH MONTH IS NOT RELATED TO SUICIDE AMONG MAJOR LEAGUE BASEBALL PLAYERS<sup>1</sup>

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*Summary.*—In 2005, Abel and Kruger reported that, compared to the other 10 months of the year, Major League Baseball players are much less likely to commit suicide if they are born in July and much more likely to commit suicide if they are born in August. The data and statistical tests used to support this claim are both incorrect. A correct test applied to the complete, accurate data shows that there is no relationship between birth month and suicide for Major League Baseball players.

Abel and Kruger (2005a) reported that Major League Baseball (MLB) players who are born in July are much less likely to commit suicide, and players who are born in August are much more likely to commit suicide, than are players born in the other 10 months of the year. This would be a remarkable finding if it were true.

Previous research has been mixed about whether there are seasonal cycles in the birth months of people who commit suicide. Kettl, Collins, Sredy, and Bixler (1999) found that Alaska Natives and Yukon residents who committed suicide were slightly more likely to have been born in the spring and summer than in the fall and winter. No such patterns were found for residents of Saskatchewan, Montana, Wyoming, and Pennsylvania. This difference was attributed to the extreme seasonal weather differences (particularly in the amount of sunlight) experienced during the perinatal period for those born above the Arctic Circle. However, a  $\chi^2$  test was not statistically significant at the 5% level for Alaskan Natives ( $p = .33$ ), Yukon residents ( $p = .55$ ), or these two groups combined ( $p = .27$ ).

Using suicide data for residents of a northern county in Sweden, Chotai, Renberg, and Jacobsson (1999) reported that (a) men who committed suicide before the age of 45 were more likely to be born between February and April than were men who committed suicide after the age of 45, and (b) men who committed suicide by hanging were more likely to be born between February and April than were men who committed suicide by poisoning or petrol gases. They did not examine whether suicide propensity varies by season of birth. They argued that the amount of daylight during gestation or the perinatal period affects the serotonin metabolite 5-hydroxyindoleacetic acid (5-HIAA), which has been linked to sui-

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cide. Specifically, low levels of 5-HIAA have been found in persons born between February to April (Chotai & Asberg, 1999) and in persons exhibiting suicidal behavior (Lester, 1995; Asberg, 1997). In contrast, Salib and Cortina-Borja (2006) examined suicides in England and Wales that were reported between 1979 and 2001 and found a seasonal pattern in birth months that peaked in April and May (rather than February to April) and bottomed in October and November.

There is no credible theoretical reason why people born in a specific month should be more or less inclined to commit suicide than are people born in the other 11 months of the year. Pokorny (1960) analyzed data for 44 military veterans who committed suicide. He found that 10 were born in July, twice the number of any other month, but concluded that, "This incidence is probably not significant." Lester, Reeve, and Priebe (1970) analyzed suicides in Erie County, New York, and were unable to confirm July as a suicidal birth month, which they argue, "is fortunate for we would be hard pressed to explain such a distribution."

Beck and Lester (1973) examined data for 254 persons admitted to hospitals after suicide attempts and found no relationship to birth month. Sanborn and Sanborn (1974) analyzed New Hampshire suicides for the years 1955 to 1969 and concluded that there was no significant relationship between suicides and birth month. Lester (1987) looked at 1982 Philadelphia suicides, homicides, and natural deaths and found no relation to birth month for any of these causes of death.

#### METHOD

The baseball data reported by Abel and Kruger (2005a) are displayed in Table 1. There are no obvious seasonal cycles, just a striking dip in July and spike in August. If there is some kind of seasonal cycle that peaks in August, one would expect elevated suicide rates in the adjacent months of July and September, not the below-average rates that Abel and Kruger report. It is also puzzling that Pokorny found a July spike for military veterans while Abel and Kruger found a July dip for MLB players.

Abel and Kruger calculated  $\chi^2=30.7$  ( $p=.001$ ) when they assumed that the 12 birth months are equally likely, and therefore compared the monthly observed numbers in Table 1 with monthly expected values of  $76/12=6.33$ . The assumption that each birth month is equally likely is inappropriate since birth months are not uniform for MLB players' births (Abel & Kruger, 2005b). To take into account the uneven distribution of birth months, the expected value for the number of suicides in any month should be calculated by multiplying the total number of MLB suicides by the fraction of all MLB players born in that month (Smith, 1998).

However, Abel and Kruger (2005a) incorrectly adjusted the *observed* number of suicides in each month instead of the *expected value*. They cal-

TABLE 1  
ABEL AND KRUGER (2005A) DATA ON BASEBALL SUICIDES BY BIRTH MONTH

	Observed Number	Adjusted Values	
		Adjusted Number	Expected Value
January	6	9	10.5
February	7	13	10.5
March	5	8	10.5
April	5	10	10.5
May	5	9	10.5
June	6	11	10.5
July	2	3	10.5
August	19	29	10.5
September	5	8	10.5
October	7	11	10.5
November	3	5	10.5
December	6	10	10.5
Total	76	126	126

culate the “adjusted” numbers shown in Table 1 by dividing the observed number of suicides in each birth month by the total number of players born in that month and then multiply this ratio by 1,000. The observed values used in a standard  $\chi^2$  calculation should be whole numbers (and some software programs enforce this rule). Abel and Kruger rounded off their adjusted numbers to the nearest whole number and used an expected value of  $126/12 = 10.5$ . The  $\chi^2$  value based on a comparison of these 12 adjusted and expected values was 43.1 ( $p = .00001$ ).

The procedure used by Abel and Kruger artificially increased the sample size by 66 percent, from 76 to 126. If their adjustment procedure had multiplied by 10,000 instead of 1,000, they would have increased both the sample size and the  $\chi^2$  value by a factor of 10, to 1,260 and 431, respectively. The only valid way to increase the sample size is to collect more data. Here, the sample size is 76 and this is the number that should be used in a statistical test.

In addition to this statistical error, the raw data that Abel and Kruger (2005a) analyzed were incorrect. They reported that they matched a list of 126 baseball suicides at The Deadball Era web site<sup>2</sup> with the information in Sean Lahman’s Baseball Archive<sup>3</sup> to obtain birth months for 76 Major League Baseball players who committed suicide. There are not 126 suicides at The Deadball Era web site; this is the sum of their artificially

<sup>2</sup>Russo, F. (2010) *Suicides*. Retrieved January 26, 2010, from <http://thedeadballera.com/suicides.html>.

<sup>3</sup>Lahman, S. (2010) *Sean Lahman’s baseball archive*. Retrieved January 26, 2010, from <http://www.baseball1.com/>.

inflated “adjusted” numbers. The Deadball Era web site lists 113 suicides, although one player, Dick Scott, is listed twice.

Of the 112 unique suicide listings, 92 were major league players. Sean Lahman’s Baseball Archive<sup>3</sup> gives the birth months of 87 of these MLB players. Abel and Kruger report the birth months of 76 players in their 2005 paper although 84 MLB players committed suicide before 1996 and have birth months in the Sean Lahman database.

To assess if there is any relationship between suicide and birth month, all available data were used in the present study. Baseball-reference.com<sup>4</sup> and Reichler (1996) were used to double-check the birth months of the 87 players in the Sean Lahman database. Baseball-reference.com (2010) gives the birth months for two other players who committed suicide: Jim McElroy and Ike Van Zandt. The birth months of three players (Ernie Hickman, Terry Larkin, and Fraley Rogers) are unknown.

Twenty suicide listings were not major league players: nine minor league players, four sportswriters, one National League President, one Southern Association President, one major league owner, one minor league manager, one major league umpire, one minor league umpire, and one scout. Abel and Kruger generally refer to their data set as major league players, but at one point they say that, “Only data for major league players and managers and umpires who did not play in the major leagues were considered in the analysis” (Abel & Kruger, 2005a, p. 22). None of the suicide victims were major league managers. The major league umpire who committed suicide had a June birth month, but was excluded from the present analysis because Abel and Kruger (2005a, p. 22) argue that one advantage of studying MLB players is that it is a homogeneous career group. Thus, the final data set consisted of 89 major league baseball players who committed suicide and have known birth months.

## RESULTS

Abel and Kruger reported that, among their 76 observations, there were 19 August birth months and only two July birth months. They focused on the unexpectedly large number of suicides by players who had August birth months; however, the small number of suicides with July birth months was also unexpected, especially because a seasonal pattern, if there is one, would not predict a July dip and August surge. In fact, these numbers are incorrect. There were five players with July birth months: Freddie Fitzsimmons, Dan McGann, Tom Miller, Johnny Niggeling, and Jake Powell. Despite the fact that 89 final entries were found, rather than the 76 reported by Abel and Kruger (2005a), there are only 16 August birth

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<sup>4</sup>Sports Reference LLC. (2010) *Baseball-Reference.com: major league statistics and information*. Retrieved July 5, 2010, from <http://www.baseball-reference.com/>.

months, not the 19 that they reported. They apparently categorized three of the July birth months as August birth months.

Table 2 shows the data for the 89 MLB players listed at The Deadball Era site who committed suicide and have known birth months. Sean Lahman's Baseball Archive was used to calculate the birth month frequencies for all MLB players. These frequencies were then multiplied by 89 to assess the expected value of the number of suicides in each birth month if there is, in fact, no relationship between birth month and suicide. For example, a fraction 0.0862 of all major league players was born in January, so the expected value of the number of suicides with January birth months is  $0.0862(89) = 7.67$ . The  $\chi^2$  value is 10.13 ( $p = .52$ ). In other words, one would expect to observe variations among the birth months as large, or larger, than those observed more than half the time.

TABLE 2  
THE DEADBALL ERA DATA ON MAJOR LEAGUE BASEBALL PLAYER SUICIDES BY BIRTH MONTH

Birth Mo.	No. of Suicides	Birth Mo. Frequency, All MLB Players	Expected Value (frequency $\times$ 89)
January	7	0.0862	7.67
February	7	0.0759	6.76
March	8	0.0825	7.34
April	4	0.0773	6.88
May	5	0.0768	6.84
June	7	0.0733	6.53
July	5	0.0803	7.14
August	16	0.0972	8.65
September	5	0.0868	7.73
October	10	0.0949	8.44
November	7	0.0864	7.69
December	8	0.0825	7.34
Total	89	1.0000	89.00

## DISCUSSION

Abel and Kruger (2005a) reported a strong statistical relationship between birth month and suicides for MLB players, with a large deficit of suicides for July birth months and a large surplus for August birth months. There is no theoretical basis for a July dip and August surge. The data and statistical procedure used were incorrect. To assess if there is any relationship between suicide and birth month, all available data were used in the present study. Baseball-reference.com<sup>4</sup> and Reichler (1996) were used to double-check the birth months of the 87 players in the Sean Lahman database. When the correct data were re-analyzed, no relationship was found between birth month and suicide for MLB players.

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