Motor Vehicle Fatalities Increase Just After Publicized Suicide Stories

Abstract. *The average increase in motor vehicle fatalities is 9.12 percent in the week after a suicide story. The more publicity given to the story, the greater the rise in motor vehicle deaths thereafter. This rise apparently occurs because suicide stories stimulate a wave of imitative suicides, some of which are disguised as motor vehicle accidents.*

Many researchers have proposed that automobile accidents might have a suicidal component. However, the evidence has sometimes been contradictory or ambiguous (*1*) and has been based largely on studies of small, nonrandom samples restricted to small geographic areas. I now present what I believe to be the first systematic evidence from a large geographic area that indicates a suicidal component in motor vehicle fatalities.

This evidence can best be understood in the light of an earlier paper (*2*), which showed (i) the number of U.S. suicides increases after a suicide is publicized by the newspapers; (ii) this increase occurs only after the suicide story is published; and (iii) the more publicity given to the suicide story, the greater the increase in U.S. suicides. These findings did not result from random, seasonal, or yearly fluctuations in the data, but rather, seemed to occur because some persons were imitating the publicized suicide.

If motor vehicle accidents do indeed have a suicidal component, motor vehicle fatalities should, like suicide, increase just after a publicized suicide story. This prediction can be tested by examining daily California motor vehicle fatalities before and after suicide stories and during matched control periods free from suicide stories. A complete list of front-page suicide stories was generated from the reference libraries of the Los Angeles *Times* and the San Francisco *Chronicle*. These are the largest newspapers in the Los Angeles and San Francisco standard metropolitan statistical areas—the two largest in the state (*3*).

If front-page California suicide stories stimulate a rise in California motor vehicle fatalities, then this rise can be detected by a technique adapted from earlier work (*2, 4*) and illustrated by the case of Yukio Mishima, a noted Japanese author, who killed himself on Tuesday, 24 November 1970, amid international publicity. In the "experimental period" consisting of the week after Mishima's death (24 to 30 November), there were 117 motor vehicle fatalities in California. One can determine whether this is an abnormally large number of deaths in the experimental period by comparing this number (117) with the number of deaths occurring in control periods in other years. These control periods are matched with the experimental period in several ways: (i) month of the year (in this example, November); (ii) day of the week (in this example, 1-week control periods that fall at the end of November and begin on a Tuesday); (iii) presence or absence of holiday weekends (if the experimental period contains a holiday weekend, the control periods do also). For the period under analysis, 1966 through 1973, four control periods contain no publicized suicides and can be matched with the experimental period in the ways described. The number of motor vehicle fatalities in each of these four control periods was calculated, and a regression line was fitted to these data. From this regression line, one would expect 98.88 motor vehicle fatalities in the experimental period, 24 to 30 November 1970, under the null hypothesis that publicized suicides have no effect on motor vehicle fatalities. There was a rise in motor vehicle deaths in the week after Mishima killed himself, because the observed number of fatalities in this period (117) is greater than the number expected (98.88) ($P < .05$; one-tailed t-test).

This procedure was used to estimate the effect of all front-page suicide stories in California for which suitable control periods were available (Table 1) (*5*). On the average, the number of motor vehicle fatalities increased by 9.12 percent (*6*) in the week after each story ($P = .011$, one-tailed t-test) (*7*).

If the rise in motor vehicle fatalities is caused by publicized suicide stories, then the rise should occur only after each story appears. Figure 1 indicates the daily fluctuation of motor vehicle fatalities for a 2-week period, beginning 2 days before the publicized suicide and ending 11 days afterward. It is evident that motor vehicle fatalities do not rise immediately before the suicide and do rise steeply just afterward.

If motor vehicle fatalities rise because of suicides publicized by the newspapers, two additional predictions should hold true. (i) An index of the newspaper publicity devoted to a story should correlate positively with the rise in motor vehicle fatalities after that story. (ii) The more accurate this index of publicity, the more highly it should correlate with the rise in motor vehicle fatalities.

A much-publicized story is one covered by many newspapers with a large combined circulation; and a little-publicized story is covered by few newspa-

Table 1. California motor vehicle fatalities during the week after publicized suicides and the change in the frequency of such fatalities from control periods. Newspaper circulation is that of the five largest newspapers in California.

Suicide	Date of suicide	Motor vehicle deaths (No.)	Change (%)	Newspaper circulation (thousands)
A. Korbel, winemaker	4/21/1966	96	7.06	750
S. Youngren, union leader	5/17/1966	79	− 1.74	750
Lo Jui Ching, Chinese army leader	1/19/1967	81	.10	1,799
J. Hughes, businessman	2/23/1967			
E. Joe, student *	2/23/1967	102	29.28	1,414
S. Abshear, student	2/25/1967			
A. Amer, Egyptian general	9/14/1967	99	− 2.17	848
M. Berg, Los Angeles policeman	9/23/1967	105	4.27	848
V. Janko, Czechoslovakian general	3/14/1968	88	4.45	1,348
F. Chegwin, mass murderer	8/08/1968	100	11.86	857
H. Luedke, NATO admiral *	11/10/1968	120	34.62	1,578
V. Latham, housewife	11/10/1968			
J. Palach, Czechoslovakian student	1/16/1969	102	30.64	2,627
Y. Mishima, author	11/24/1970	117	18.33	1,642
J. Mattison, prisoner	2/25/1971	90	5.13	479
B. Pollack, orchestra leader	6/07/1971	82	−20.16	966
G. Giffe, hijacker	10/04/1971	104	6.67	1,377
G. Logan, mass murderer	11/26/1971	89	7.79	1,858
J. Van Praag, psychologist	3/07/1972	103	36.12	1,674
M. Oufkir, Moroccan defense minister	8/17/1972	101	20.40	1,022
M. Brody, millionaire	1/26/1973	65	−19.75	458
E. Brudno, ex-P.O.W.	6/03/1973	98	− 4.05	951
W. Inge, playwright	6/10/1973	100	13.60	1,005

*The bracketed suicides occur within 1 week of each other and are treated as one story.

pers with a small combined circulation. Ideally, one should examine all 150 or so California daily newspapers to determine the total circulation devoted to a particular story. In practice, the most one can easily achieve is an examination of the five largest papers which accounted for 41 percent (*3*) of the total 1970 daily newspaper circulation in California.

The publicity devoted to a story by these five newspapers (Table 1, column 5) can be used as an index of the total amount of publicity devoted by all newspapers. For any given story, the value of this index was calculated from

$$\sum_{i=1}^{5} x_i y_i$$

where x_i is the circulation of newspaper i, and y_i is the number of days that newspaper carried the story on page 1. This five-newspaper publicity index correlates positively ($r = .59$, $P < .005$) with the change in motor vehicle fatalities after each story (Table 1, column 4). On the average, fatalities increased by 18.84 percent after stories receiving more than the median amount of publicity and decreased by a statistically insignificant amount, 0.60 percent, after stories receiving less than the median amount of circulation.

In Table 1, a five-newspaper circulation index was used. In general, the more newspapers included in a circulation index, the more highly it should correlate with the rise in motor vehicle fatalities after publicized suicide stories. In all, five indexes have been constructed. These range from index 1 (constructed from circulation data for the single largest California newspaper) to index 5 (constructed from circulation data for the five largest California newspapers). Each index is correlated with the fluctuation of motor vehicle fatalities as follows: index 1, $r = .196$; index 2, $r = .300$; index 3, $r = .478$; index 4, $r = .576$; and index 5, $r = .594$. As predicted, the more newspapers included in the index of publicity, the higher the correlation with motor vehicle fatalities. These five indexes would be ranked in the predicted order by chance .0083 (1/120) of the time.

The data are consistent with the hypothesis that publicized suicide stories help to stimulate a brief increase in motor vehicle fatalities. The results cannot be ascribed to the effect of weekday or monthly fluctuations in motor vehicle fatalities, to holiday weekends, or to yearly linear trends, because these effects were corrected for in the selection and treatment of the control periods with which the experimental periods are compared. Furthermore, because the results are statistically significant, they cannot plausibly be ascribed to chance fluctuations in the data.

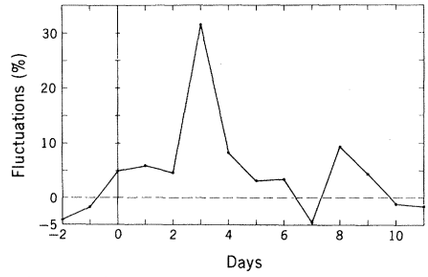

Fig. 1. Daily fluctuation in motor vehicle accident fatalities for a 2-week period before, during (day 0), and after publicized suicides.

The hypothesis that a prior change in social conditions caused both the publicized suicide and the subsequent rise in motor vehicle fatalities is implausible for two reasons. (i) If such conditions create both a wave of motor vehicle fatalities and the front-page suicide, the suicide would be expected to occur during the wave of fatalities rather than before it. (ii) The prior-conditions explanation implies that that there is no link between the characteristics of front-page news stories and the increase in motor vehicle fatalities. If no such link exists, it is difficult to explain the observed association between the publicity given to a suicide and the rise in fatality levels thereafter. Additional, minor alternative explanations have been examined elsewhere (*8*).

The best available explanation for the rise is that it is caused by suicide stories, but the precise nature of the effect can only be inferred. The social and psychological mechanisms that appear to be operating are (i) the publicized suicide story stimulates (*9*) a wave of imitative suicides, and (ii) some of these imitative suicides are disguised and recorded as motor vehicle accidents.

I showed earlier (*2*) that suicide levels rise after publicized suicide stories. I have now shown that automobile accident fatalities also rise after publicized suicide stories.

DAVID P. PHILLIPS
Department of Sociology, University of California at San Diego, La Jolla 92093

References and Notes

1. For example, contrast N. Tabachnick, R. Litman, M. Osmond, W. Jones, J. Cohn, A. Kasper, J. Moffat [*Arch. Gen. Psychiatry* **14**, 60 (1966)] with N. Tabachnick, J. Gussen, R. Litman, M. Peck, N. Tiber, C. Wold [*Accident or Suicide?* (Thomas, Springfield, Ill., 1973)] and C. Preston [*J. Consult. Psychol.* **28**, 79 (1964)]. The psychological test findings of some studies [W. Tillman and G. Hobbs, *Am. J. Psychiatry* **106**, 321 (1949); M. Selzer, *Behav. Sci.* **14**, 1 (1969); J. Finch and J. Smith, *Psychiatric and Legal Aspects of Automobile Fatalities* (Thomas, Springfield, Ill., 1970)] contradict the test findings of others [J. Conger, H. Gaskill, D. Glad, L. Hassell, R. Rainey, W. Sawrey, *J. Am. Med. Assoc.* **169**, 1581 (1959); P. Brown and R. Birdie, *J. Appl. Psychol.* **44**, 18 (1960); C. Preston and S. Harris, *ibid.* **49**, 284 (1965)]. For methodological critiques see Arthur D. Little, Inc. [*The State of the Art of Traffic Safety* (Praeger, New York, 1970)]. This review concluded that "attempts to discover psychological variables which are peculiarly associated with accidents have produced largely negative or ambiguous results" (p. 97).
2. D. Phillips, *Am. Sociol. Rev.* **39**, 340 (1974).
3. A suicide story is defined here as a story about a person's death in which the occurrence of a suicide is indicated in the headline. Death data come from California Highway Patrol, *Annual Report of Fatal and Injury Motor Vehicle Traffic Accidents* (Sacramento, yearly issues). The period analyzed comprises the years 1966 through 1973; 1966 is the first year for which daily data are published, and 1973 is the last year before the Arab oil embargo drastically changed motor vehicle traffic patterns. Daily deaths rather than daily death rates are used because the population figures needed to calculate daily rates are unavailable. Newspaper circulation data come from *Ayer Directory of Publications* (Ayer Press, Philadelphia, yearly volumes). Publicity from television and radio stations is not examined because these stations do not usually keep records of the stories they have covered over the years.
4. D. Phillips and K. Feldman, *Am. Sociol. Rev.* **38**, 678 (1973).
5. When the number of deaths expected in the experimental period could be estimated from a regression line interpolated between control periods, a minimum of two control periods was required. When the expected number of deaths had to be extrapolated from control periods, a more conservative procedure was followed: (i) a minimum of three control periods was required, and (ii) a suicide story was not examined if one needed to extrapolate the regression line for more than 1 year.
6. This figure is potentially misleading since the variance of the predicted number of deaths will usually be smaller for estimates derived by interpolation than for estimates derived by extrapolation. In general, estimates by interpolation can be calculated for stories in the middle years of the study, while estimates by extrapolation are more often needed for the extreme years. For the interpolation estimates in column 4 of Table 1 the mean size of response is 11.97 percent and the standard deviation is 15.47. The mean response for the extrapolation estimates is 7.21 percent; the standard deviation is 17.16.
7. The statistical techniques used in this report are plausible but arbitrary, in the sense that other, equally plausible techniques might have been substituted for the ones actually used. The results (Table 1) remain statistically significant even if these alternative techniques are used. (i) When these results are analyzed by the Walsh test, $P = .010$, one-tailed test. (ii) The expected number of deaths after a story might plausibly be estimated by averaging the deaths in the control periods rather than by fitting these deaths to a regression line. In this case, auto fatalities rise by an average of 7.15 percent, $P = .019$, one-tailed t-test; $P = .016$, one-tailed Walsh test. In view of these findings, it is difficult to conclude that the results in Table 1 are an artifact of the statistical technique used to analyze them.
8. D. Phillips, in preparation.
9. Some of the suicides in this wave may be "created" by the suicide story (in the sense that these suicides would not have occurred in the absence of the suicide story); other suicides in the wave may be precipitated by the suicide story (in the sense that these suicides would have occurred anyway, sooner or later, even in the absence of the suicide story). At present, the ratio of created to precipitated suicides is not known (*2*).
10. Supported by grant R-64 from the University of California Regents. I thank M. Murphy, city editor of the Los Angeles *Times*; R. Murphy, for noting the need to correct for the presence or absence of holiday weekends; G. Hazzard and R. Harding, National Highway Traffic Safety Administration; J. Coolman and L. Cruse, University of California, San Diego; W. Kownacki, R. Murphy, A. Mar, K. Chyten, K. Theobald, N. Fackler, and C. Mallinger for helping to collect and analyze data; R. Bieber, California Highway Patrol; T. J. Donnelly, Audit Bureau of Circulations; and B. Berger, F. Davis, M. Davis, J. Gusfield, C. Mukerji, and J. Wiseman for comments and criticisms.

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