

Where Are They Now?

A Follow-up Study of Suicide Attempters from the Golden Gate Bridge

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ABSTRACT: The Golden Gate Bridge is currently the number one suicide location in the world. From the opening day, May 18, 1937 to April 1, 1978, there have been 625 officially reported suicide deaths and perhaps more than 200 others which have gone unseen and unreported. Proposals for the construction of a hardware antisuicide barrier have been challenged with the untested contention that “they’ll just go someplace else” This research tests the contention by describing and evaluating the long-term mortality experience of the 515 persons who had attempted suicide from the Golden Gate Bridge but were restrained, from the opening day through the year 1971 plus a comparison group of 1-84 persons who made no bridge suicide attempts during 1956-57 and were treated at the emergency room of a large metropolitan hospital and were also followed through the close of 1971. Results of the follow up study are directed toward answering the important question: “Will a person who is prevented from suicide in one location inexorably tend to attempt and commit suicide elsewhere?”

The Golden Gate Bridge, situated at the point where San Francisco Bay meets the Pacific Ocean, is a leading tourist attraction. The most photographed structure in the United States, it is an engineering marvel, a thing of beauty and a joy to behold. Yet, lurking beneath these accolades is the sinister realization that it is currently the world’s leading site for self-destruction.

On May 28, 1937, the Golden Gate Bridge was first opened. Less than three months later, on August 8, 1937, the first known suicide from the Golden Gate Bridge occurred. As of April 1, 1978, a period of some 40 years, the official number of suicides from the Golden Gate Bridge was 625. The true number of persons who have leaped to their deaths from this bridge is even higher since darkness, rain, fog, and a swift ocean bound current may have concealed from us more than 200 additional suicides. To remedy this morbid situation there has been considerable pressure to construct a hardware suicide prevention barrier by extending the present 3 1/2 foot railings to a height of eight feet. Although there is strong support from many segments of the Bay Area community, the Golden Gate Bridge Board of Directors has consistently dragged its feet on this issue ever since the barrier concept was first proposed over 30 years ago. Many reasons have been given for the delaying tactics but a major argument against constructing a barrier has been that it just wouldn’t work. Why wouldn’t it work? Because “common sense” tells us that if a person is bent upon suicide he will find a way and inexorably go someplace else to kill himself. So goes the untested argument.

Review of the Literature

With the growing amount of suicidal behavior from the Golden Gate Bridge, there has been increasing attention paid to the problem (Brown, 1965; Rosen, 1975; Seiden, 1967, 1970, 1973, 1974, 1975, 1977; Seiden & Tauber, 1970; Snyder & Snow, 1967). While these are the only reports directly concerned with Golden Gate suicide there has been complementary research dealing with the broader question of specific locations, which develop magnetic reputations for suicidal behavior.

Derobert et al. (1965) analyzed the information on fatal leaps from French monuments including the Eiffel Tower, which was the site for 339 suicides between 1889 and 1965. McWilliams (1936) reported on the Arroyo Seco Bridge of Pasadena, California, where 80 suicides were recorded during the years 1913-1936. Shneidman (1963) discussed 25 suicides, which occurred through leaps from the windows of a single general hospital in the period 1955-1961. Ellis and Allen (1961) describe an array of suicide landmarks including the Empire State Building, which was the site for 16 suicides from 1931-47, and the infamous Mt. Mihara volcano on the Japanese island of Oshima where during the early 1930s many hundreds of persons killed themselves by jumping into the smoking volcanic crater.

However, these examples differ from the Golden Gate Bridge story in one very significant respect. In every other instance the rash of suicides led to the construction of suicide barriers, which dramatically reduced or ended the incidence of suicides. Of all the suicide landmarks, the Golden Gate Bridge alone has failed to solve the problem with a protective hardware suicide deterrent.

There are two major and conflicting viewpoints regarding the question. Will suicides be prevented or reduced by restricting the availability of a particular means? Or will such a move simply result in a transfer to other more available methods? The conflict is best illustrated by the current debate concerning the significantly reduced British suicide rates, that is, about a one-third reduction from 1963 to the present following the introduction of less toxic natural gas to replace the highly lethal coke gas previously in domestic use. Those who discount the importance of this change in previously available methods (Fox, 1975; Bagley, 1973) assert that an individual who is prevented from suicide by a particular means will simply choose an alternative, available method. Relative to the Golden Gate Bridge, a consequence of this belief is that there would be little to gain from a hardware antisuicide barrier since "they'd just go someplace else." On the other hand, there are those who hold a contrary view, namely, that a switch to less lethal agents would reduce suicides or that when a person is unable to kill himself in a particular way it may be enough to tip the vital balance from death to life in a situation already characterized by strong ambivalence (Brown, 1977; Hassal & Trethowan, 1972; Kreitman, 1976; Malleon, 1973a, 1973b; Survivors Anonymous, n.d.). The fact is that the British rates have remained reduced for the past 15 years, and that there has been an almost one-to-one correspondence between the reduction of suicides and the number of persons who had used coke gas in prior years. There has been no change to more available methods such as hanging, drowning, etc.

Method

One way to test the unverified assumption that persons frustrated from suicide on the bridge would simply and inexorably go someplace else to commit the act is to follow the subjects who were restrained at the bridge. What was their mortality experience over the years and how does it compare with a sample of no bridge suicide attempters? To answer these questions we collected data on 515 subjects who made suicide attempts from the day the Golden Gate Bridge (GGB) opened (May 28, 1937) through the end of calendar year 1971. For purposes of general comparison we also followed through the close of 1971, the cohort of 184 persons who were treated for no bridge suicide attempts at the San Francisco General Hospital (SFGH) emergency room during the years 1956-57.

“Suicide attempt” was operationally defined for the hospital group by the diagnosis made by the emergency room physician. For the bridge group we employed the criteria used by the California Highway Patrol who investigate, classify and record all instances of suicidal behavior on the bridge. They defined attempted suicide as “any incident in which a subject commits an overt act toward an attempt to commit suicide.” This definition probably underestimates the true magnitude of events somewhat since it does not include several varieties of “suspicious” behavior, such as persons apprehended walking “suspiciously” around the parking lots, toll booths, etc.

Having defined our populations of bridge and hospital suicide attempters and recorded all available demographic information from the hospital records and Highway Patrol files, we submitted the relevant information (name; age, sex; social security number; date last known to be alive, that is, the date of their recorded attempt) to the State of California Office of Vital Statistics for a death certificate search. While this method has advantages in terms of centralized data retrieval, it also has some disadvantages. The major liability of this method is that it rests upon the assumption that the suicide attempters continued to reside in California during the period of follow up study. Nonresidents and residents who died in California would be counted. So would California residents dying out of state since there are reciprocal agreements between the states on this matter but we would miss nonresidents who died out of state. Since there is no federal death registry we cannot be sure of how many cases were missed; however, the use of California vital statistics represents the best estimate of cases particularly since 90% or more of bridge attempters were residents of California. Nonetheless, there are always such problems in long-term follow up studies so that we have endeavored to compensate for such “slippage” by interpreting the results of our epidemiological analyses in an extremely conservative manner.

Results and Discussion

Table 1 indicates the follow up periods for the two study groups. The Golden Gate Bridge group (GGB) included all cases of suicide attempts from the day the bridge opened on May 28, 1937, until the end of calendar year 1971, a period of 34 years and 7 months,

during which time there were 515 cases with the median case occurring 26 years, 7 months after the bridge was opened to the public.

The San Francisco General Hospital study group (SFGH) consisted of all cases of suicide attempt treated at the emergency room during calendar years 1956 and 1957. These 184 cases were followed until the close of calendar year 1971, a period of 16 years from start to close with a median follow up period of 15 years.

Follow-up Study Periods		
	<u>GGB (N=515)</u>	<u>SFGH (N=184)</u>
Beginning date	5—28—37	1— 1-56
Closing date	12—31—71	12—31—71
Duration of study period	34 yrs., 7 mos.	16 years
Median follow-up period	26 yrs. 7 mos.	15 years.

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Suicide Attempts. GGB. 1937-71		
<u>Years</u>	<u>f</u>	<u>cf</u>
□1937—41	8	8
□1942—46	4	12
□1947—51	20	32
□1952—56	61	93
□1957—61	112	205
□1962—66	178	383
□1967—71	132	515
□1937—71	515	

Table 2 describes the frequency and cumulative frequency of suicide attempts at the Golden Gate Bridge. The number of suicide attempts has accelerated rapidly over the 34-plus years with half of the cases occurring during the last 8 years of the study period. (Incidentally, the actual suicide deaths from the bridge have shown a similar parallel acceleration over the years, $r = .72$.) This frequency distribution dramatically illustrates

the continuing trend, which has resulted in the bridge's unhappy reputation as the world's leading suicide location.

Figure 1 graphs the cumulative frequency of Golden Gate Bridge suicide attempts over time illustrating the rapid increase of Golden Gate Bridge suicide attempts detailed in Table 2.

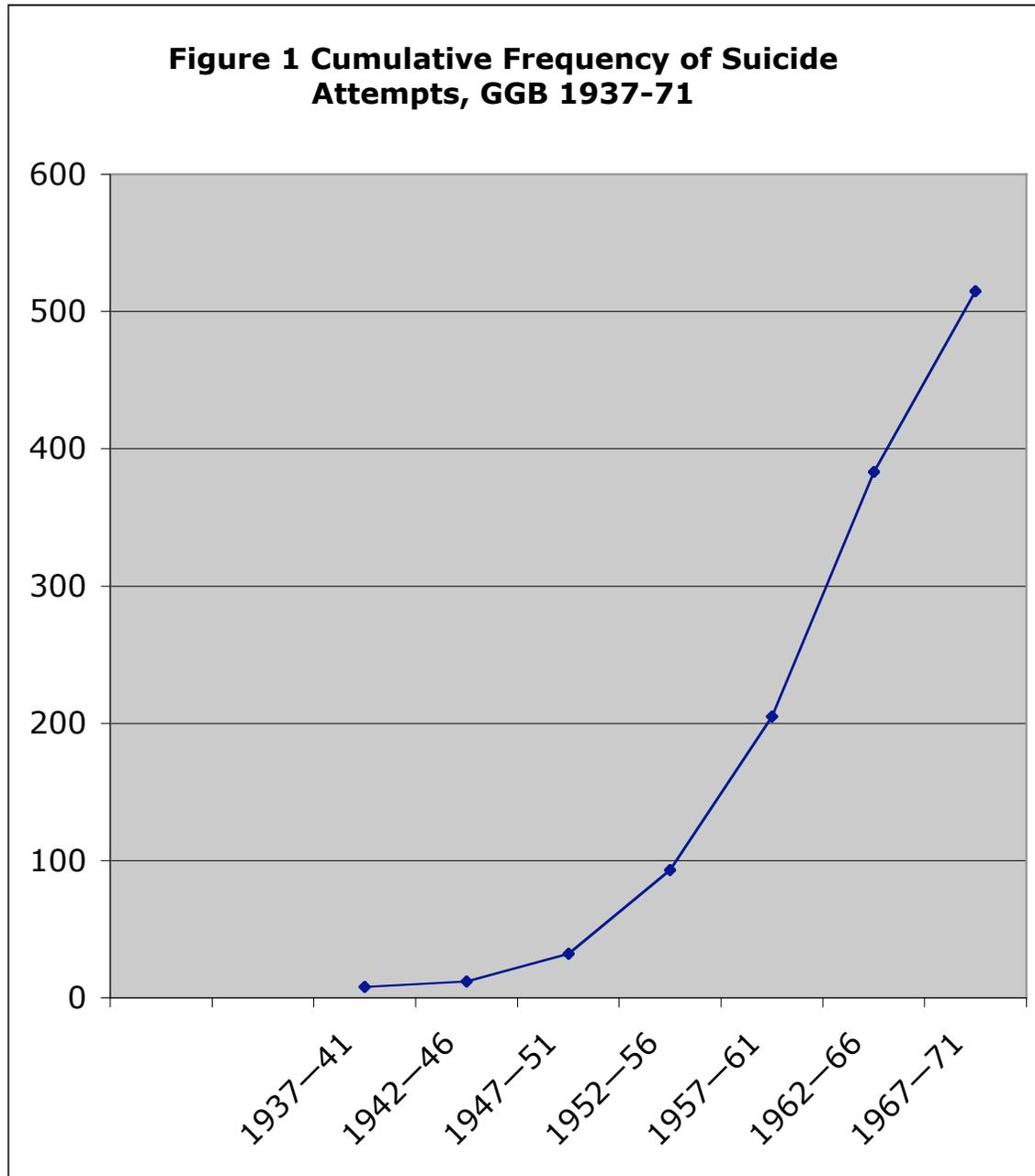


Table 3 indicates the distribution by sex of the two study groups and reveals an interesting reversal from expected norms in the Golden Gate Bridge group. Whereas the San Francisco General Hospital cases follow the usual distribution of relatively greater numbers of suicide attempts by females (sex ratio =61), the Golden Gate Bridge group yields an atypical distribution with a preponderance of males (sex ratio =233); a situation more closely approximating the sex ratio found among completed suicides. The difference in sex distribution between the two groups is significant at beyond the .001 level and confounds any direct comparability between the study groups. Why should the GGB group demonstrate this reversal of form? Previous studies (Seiden, 1977; Lester & Lester, 1971) have speculated that women make more attempts but fewer completions because they use methods which are less violent, less disfiguring and less lethal. All of these factors may play a part in the present situation, however lethality appears to be the major factor. Although jumping from the GGB at a height of over 200 feet usually results in a violent, disfiguring death from massive traumatic injury these facts are not generally appreciated. Instead, the popular mythology holds that one is gently swallowed by the waves to die by drowning. On the other hand, the lethality of the bridge is widely acknowledged since it is well known that only a handful of persons have survived the leap—some 12 people out of more than 600 jumpers have lived to tell the tale. In other words, the jump is fatal more than 98% of the time. As such, it suggests that relatively more men are drawn to the bridge because of its extreme lethality.

<i>Table 3</i>				
Suicide Attempts by Sex, GGB and SFGH				
	GGB		SFGH	
	<u>N=515*</u>		<u>N=184</u>	
Attempts	M	F	M	F
f	360	155	69	125
%	70	30	38	62
Sex Ratio	233		61	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	X ² =58.34	df= 1	p <.001	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>			
	* 1 st attempt only; excludes 26 repeat cases (17M, 9F)			
	** (number of males per 100 females)			

During the period of study there were 64 deaths recorded in the GGB group (12.5%) and 47 deaths in the SFGH group (25.5%). The distribution of these deaths by mode (following the usual NASH scheme) is depicted in Table 4. For the GGB group about half the deaths (50.7%) occurred violently, and for the SFGH group, almost half (42.6%) were violent in nature. In fact, even many of the

so-called “natural” deaths in our study groups were indicative of self- destructive tendencies. For example, about 20% of each group died from fatty livers, a typical consequence of alcohol abuse. The distinction between accident and suicide was even more contentious and often seemed arbitrary at best. For instance, cases of barbiturate overdose, alcohol poisoning and one-car accidents were categorized as “accidental.” Accordingly, it appeared appropriate to collapse the categories of accident, suicide and homicide under the general rubric of “Violent Deaths” as defined by the National Center for Health Statistics Ventura, 1975).

	□	Mode of Death					□
		Total	Natural	Accident	Violent	Unknown	
GGB	64	31	7	25*	0	1	
SFGH	47	27	6	13	1	0	
*7 cases returned to jump from GGB; (5 males, 2 females)							□
1 case (male) jumped from the Bay Bridge							□
□	□	□	□	□	□	□	

Table 5 compares the percentages in each of the study groups with the population distribution for the United States at large in 1960. Inspection of the table discloses that only seven percent of all U.S. deaths were violently caused as opposed to approximately half of all deaths in the two study groups. Both groups departed from U.S. population expectations at beyond the .001 level of significance indicating that the prospect of violent death is considerably enhanced for suicide attempters as compared to the general population.

Having made a suicide attempt, what are the comparable survival experiences for men and women? Are attempts by men more successful than those by women? And, if so, do they tend to die more violently? As Tables 6 and 7 indicate the answer to both questions

Table 5
Deaths by Mode, (in %) GGB, SFGH, US

	Mode of Death			
	Natural	Violent		
		Accident	Suicide	Homicide
GGB	49.2	11.1	39.7	0
SFGH	57.4	12.8	27.7	2.1
US Pop-1960**	92.9	5.5	1.1	0.3

* Excludes 1 case of unknown mode
 **Source: Vial Statistics of the US 1960, Mortality, Part A page 21

	GGB vs. US	SFGH vs. US
	X ² =180.93	X ² = 90.89
	df= 1	df = 1
	p< .001	p< .001

Table 6
Survival Status by Sex, GGB Suicide Attempters

Status	GGB			
	M	F	Total	
Survivor	308	144	452	X ² = 5.5
Natural Death	25	8	31	df = 2
<u>Violent Death Total</u>	<u>27</u>	<u>5</u>	<u>32</u>	<u>p = .06</u>
Total	360	155	515	

is “yes.” Despite the fact that the male and female suicide attempters did not differ appreciably in the ages at which they made their suicide attempts (males 45.1, females 42.6), the male suicide attempters were apt to be more successful than female suicide attempters. While it is well known that women have a greater life expectancy than men, this has been attributed to biological reasons; however, the overrepresentation of male violent deaths bespeaks a psychosocial susceptibility as well.

For purposes of identifying high-risk subjects, it is instructive to look at the ages at which they made their suicide attempts. Table 8 reveals that for both groups the average age of survivors was slightly below the average for their study group and that the average age of non-survivors was considerably higher. This is no surprise since the mortality rate increases with chronological age. What makes for a more interesting comparison is an analysis of the mode of death by age at attempt. That is, having made a suicide attempt

does

Table 7

Survival Status by Sex, SFGH Suicide Attempters

Status	SFGH			
	M	F	Total	
Survivor	44	93	137	$X^2 = 6.78$
Natural Death	15	12	27	$df = 2$
<u>Violent Death Total</u>	<u>10</u>	<u>10</u>	<u>20</u>	<u>$p = .03$</u>
Total	69	115	184	

the age at which it was made bear any relationship to whether one's subsequent death will be natural or violent? Table 9 indicates that age does play an important part and that persons who will die violently made their attempts at significantly younger ages than did their counterparts who died nonviolently

Table 8

Median Age (in years) at Suicide Attempt

	All Attempters	Survivors	Non Survivors
GGB	31	29	45
SFGH	35	31	49

Table 9

Mean Age (in years) by Mode of Death
GGB and SFGH

	Mode of Death		t	df	p
	Natural	Violent			
GGB (N=63)	52.19	39.34	3.21	61	0.002
SFGH (N=47)	53.11	43.05	2.72	45	0.009

Table 10

**Mean Survival Intervals (in years) by Mode of Death
GGB and SFGH**

	Mode of Death		t	df	p
	Natural	Violent			
GGB (N=63)	5.87	2.56	3.14	61	0.001
SFGH (N=47)	6.67	5.90	0.51	45	0.612

Once having attempted suicide is there any relationship between the years of life remaining and the mode of death? Table 10 suggests that there is such a relationship in the Golden Gate Bridge group and that GGB suicide attempters who will die violently will do so in a considerably shorter period of time than those who will die natural deaths.

In terms of clinical management, one must be able to identify periods of high risk in order to conserve resources and expend them when they will do the most good. Prior research indicates that the high-risk period for suicide attempters occurs within 90 days after discharge from the hospital (Shneidman and Farberow, 1957).

Table 11

**Survival Beyond 6 Months by Mode of Death
GGB and SFGH**

		Survival Period		Total
		≤ 6 mos.	≥ 6 mos.	
SFGH	N	0	27	27
	V	0	20	20
GGB	N	0	31	31
	V	10	22	32
Total		10	100	110

Table 11 reveals a similar pattern among the GGB group where almost one-third (10 out of 32) of the violent deaths occurred within six months of their suicide attempts. None of the natural deaths in either group occurred within six months nor did any of the violent SFGH deaths occur within six months. What appears to be happening here seems a consequence of the way GGB suicide attempters are treated once apprehended. Compared to the hospital group which is identified and frequently entered into treatment programs, the bridge attempters are, more often than not, left to their own devices. Frequently they are simply sent home, sometimes with friends or relatives, sometimes by

themselves. In some other cases they are sent to the local catchment area mental health facility but this seems to occur on a nonsystematic basis. What actually happens when a person is apprehended attempting suicide on the Bridge? The California Highway Patrol exercises discretionary responsibility in these cases. Although attempted suicide is not a crime in California, a person can be restrained for as much as 72 hours for observation if he or she is considered to be a danger to himself/herself or others. The Highway Patrol uses this procedure, but only in cases they consider to be "overt acts." There are other times when the patrolmen may be concerned but not absolutely sure of the person's suicide potential although he or she is acting suspiciously enough to warrant intervention. These cases are frequently not sent to treatment facilities and are logged in the records as "reportable incidents" rather than bona fide suicide attempts. Even when people are delivered to the local catchment facility, they may be released upon the discretion of the intake staff. As such there are two levels at which slippage occurs; first, by the highway patrolmen on the bridge, and second, by the intake worker at the treatment facility. Consequently we are dealing often with an untreated population whose subsequent quick and violent (largely suicidal) deaths may be attributed to the failure to heed their "cries for help."

Table 12

**Rates* of Suicide and Other Violent Death
GGB and SFGH**

	<u>N</u>	<u>Median Study Period</u>	<u>Persons/Year</u>	<u>Suicides</u>	<u>Rate</u>	<u>Accidents & Homicide</u>	<u>Rate</u>
GGB	515	26 yrs, 7 mos.	13,690	35	182.6	7	51.1
SFGH	184	15 yrs.	2,760	13	471	7	253.6
* per 100,000 person/years							

Table 12 gives the rates of suicide and other violent modes of death for the two study groups and indicates a suicide rate which is many times higher than the general U.S. population (approximately 11 per 100,000) but comparable to the extremely high rate for persons who have made prior suicide attempts (Dorpat & Ripley, 1967).

Finally, in Table 13 we have the proportion of persons in each study group who subsequently committed suicide or died from other violent causes. What this table discloses is that after 26-plus years the vast majority of GGB suicide attempters (about 94%) are still alive or have died from natural causes. The comparison group of hospital cases has had similar experiences; 89% are still alive or are dead from natural means after 15 years. Conversely, only five to seven percent killed themselves and some six to 11% had died from all violent causes combined. Even if we compensate for under-enumeration by doubling our frequencies it still means that about 90% of the study subjects were alive or had come to a natural non-violent end.

Table 13

Survival Status, GGB and SFGH										
			<u>Alive</u>				<u>Dead</u>			
					<u>Natural</u>		<u>Suicide</u>		<u>Accidents & Homicide</u>	
			f	%	f	%	f	%	f	%
GGB	515		452	(87.8)	31	(6.0)	25	(4.9)	7	(1.3)
SFGH	184		137	(74.4)	27	(14.7)	13	(7.1)	7	(3.8)

Summary and Conclusions

Analysis of the results leads to the following conclusions about the study populations of suicide attempters:

1. Compared to the general population, a greater proportion is likely to die from violent, that is, accidental, suicidal, and homicidal modes of death.
2. Males have a greater risk of mortality than do females for all modes of death.
3. Younger persons were more likely to come to a violent end than their older counterparts.
4. Following a bridge suicide attempt, violent deaths occurred within a brief time span; almost one-third took place within six months.
5. Subsequent rates of suicide and other violent death are much higher than for the general population.
6. Despite the high rates vis-à-vis the general population, still about 90% do *not* die of suicide or by other violent means.

The major hypothesis under test, that Golden Gate Bridge attempters will surely and inexorably “just go someplace else,” is clearly unsupported by the data. Instead, the findings confirm previous observations that suicidal behavior is crisis-oriented and acute in nature. Accordingly, the justification for prevention and intervention such as building a suicide prevention barrier is warranted and the prognosis for suicide attempters is, on balance, relatively hopeful.

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References

- Bagley, C. Suicide prevention: A myth or a mandate? *British Journal of Psychiatry*, 1973, 123, 130.
- Brown, A. *Golden Gate*. Garden City, N.Y.: Doubleday, 1965
- Brown, J.H. Do less lethal agents cause fewer deaths? *Vita*, 1977, 4, 4–6.
- Derobert, L., Hadengue, A., Proteau, J., & Schaut, S. Doit-on supprimer la Tour Eiffel? (Should the Eiffel Tower be abolished?) *Annales de Medecine legale*, 1965, 45, 115–119.
- Dorpat, T. L., & Ripley, H.S. The relationship between attempted suicide and committed suicide. *Comprehensive Psychiatry*, 1967, 8, 74–79.
- Ellis, E.R., & Allen, G.N. *Traitor within: Our suicide problem*. Garden City, N.Y.: Doubleday, 1961.
- Fox, R. The suicide drop—why? *Royal Society of Health Journal*, 1975, 95, 9-14.
- Hassall, C., & Trethowan, W. H. Suicide in Birmingham. *British Medical Journal*, 1972, 1, 717–718.
- Kreitman, N. The coal gas story: United Kingdom suicide rates, 1960–71. *British Journal of Preventive and Social Medicine*, 1976, 30, 86–93.
- Lester, G., & Lester, D. *Suicide: The gamble with death*. Englewood Cliffs, N.J.:Prentice-Hall (Spectrum), 1971.
- Mallesson, A. Suicide prevention: A myth or a mandate? *British Journal of Psychiatry*, 1973a, 122, 238–239.
- Mallesson, A. Suicide prevention: A myth or a mandate? *British Journal of Psychiatry*, 1973b, 123, 612-613.
- McWilliams, C. Suicide bridge. *Pacific Weekly*, 1936, 6, 362–365.
- Rosen, D.H. Suicide survivors—A follow up study of persons who survived jumping from the Golden Gate and San Francisco-Oakland Bay Bridges. *Western Journal of Medicine*, 1975, 122, 289–294.
- Seiden, R.H. San Francisco: Suicide capital? A study of the San Francisco suicide rate. *Bulletin of Suicidology*, December 1967, pp. 1-10.
- Seiden, R.H. The bridge and its suicides. *California's Health*, 1970, 24, 1–2; 16. Seiden, R.H. Can a physical barrier prevent suicides on the Golden Gate Bridge? (Unpublished), 1973.
- Seiden, R.H. Suicide: preventable death. *Public Affairs Report*, (University of California, Berkeley) August 1974, 15, whole No. 4.
- Seiden, R.H. Death bridge. *SPAC Today*, June, 1975 (special supplement).
- Seiden, R.H. Suicide prevention: A public health/public policy approach. *Omega*, 1977, 8, 267–276.
- Seiden, R.H., & Tauber, R.K. Suicides vs. pseudocides. In R. Fox (Ed.), *Proceedings of the 5th international conference for suicide prevention*. Vienna: International Association for Suicide Prevention, 1969.
- Shneidman, E. S. The Golden Gate Bridge project. (Unpublished), 1963.
- Shneidman, E.S., & Farberow, N.L. Clues to suicide. *Public Health Reports*, 1956, 71, 100–114.
- Snyder, R.G., & Snow, C.S. Fatal injuries resulting from extreme water impact. *Aerospace Medicine*, 1967, 38, 779–783.
- Survivors Anonymous. *Wait: The life you save may be your own*. Los Angeles: n.d.
- Ventura, S.J. *Selected vital and health statistics in poverty and non-poverty areas of 19 large cities, United States, 1969-71*. DHEW Publication No. (HRA) 76-1904. Washington, D.C.: U.S. Government Printing Office, 1975.

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