

The Role of Demographic Changes in the Decline of Suicide in Sweden

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Background

Sweden's high suicide rate became common knowledge in the early 1960s, after then-American President Dwight Eisenhower blamed it on the country's socialist economy. The country ranked sixth among nations in 1957, after Japan, Austria, Denmark, Finland, and Switzerland. Sweden's suicide rate (about 15 persons per 100,000 in 1950) continued to climb during the 1960s, peaking in 1970 at 22.3 suicides per 100,000. At that point, Sweden achieved the dubious distinction of having the highest suicide rate among countries whose data were reliable and available.

Since 1970, Sweden's suicide rate has declined by between 5 to 13 percent per five-year period. The country's suicide mortality, according to a recent public health report, has declined by nearly 40 percent in the last two decades. This decline is unprecedented, and the direction of this trend has not changed in more than 30 years. Indeed, Sweden no longer is among the top ten countries with respect to this statistic.

Hypotheses

Demographic changes in the Swedish population may be driving some of the decline in the suicide rate. The suicide rates of *cohorts* may have changed over time. For example, the suicide rates through the life course for those born in 1930 may differ from the suicide rates through the life course of individuals born in 1960. Thus, a particular cohort may be driving the changes in the suicide rate. If there is a change in the age distribution of suicide over time, then it is possible this may be due to cohort effects. In 1970, for example, the most likely demographic group to record a suicide was middle aged males. Perhaps there was something specific about this cohort that was associated with the rise in the suicide rate. If true, a decline in the size of this cohort as they age might be associated with a decline in the general suicide rate. Concomitantly, perhaps most individuals in this cohort, who were predisposed to suicide, had taken their own lives by 1970. This would further reduce the suicide rate in the following years. Extreme differences in cohort suicide rates are likely due to historical events experienced uniquely by that cohort.

The level of *immigration* is another demographic factor predicted to be related to the suicide rate. Immigrants usually have higher suicide rates compared to their counterparts in their home countries. The numbers of immigrants and their countries of origin, as well as the annual rate of immigration may affect the general suicide rate. For example, the high point of immigration to Sweden coincided with the country's suicide zenith in 1970.

Other factors may affect the Swedish suicide rate. Improved health care and quality of life for the elderly may have reduced the likelihood that they will commit suicide. Declining

alcohol and drug abuse -- self-destructive behaviors that have been hypothesized to be related to suicide -- may be associated with the declining suicide rate. Fertility may also impact suicide rates. Rising birth rates may indicate family social integration that would tie individuals more closely to the family group and prevent suicide; increases in the birth rate should be related to decreases in the suicide rate.

Methodology

This study uses a time series regression analysis to determine the extent to which demographic changes have played a role in the decline of suicide in Sweden. The dependent variable, suicide, is measured by the 3-year moving-average, age-sex-specific suicide rate. It also includes deaths due to uncertain intention, as it is estimated that many suicides have been misreported into this category.

Independent variables include changes in the age and sex composition, morbidity, mortality, immigration, and fertility of the Swedish population. Changes in the *age and sex composition* include: the age-sex suicide rates; the sex ratio for the population; the percent of the population by age and sex; cohort suicide rates; population by year of birth; and the ratios of age groups (e.g., young to old). Changes in *morbidity* include: the rate of hip replacement surgeries by age and sex; the rate of open heart surgeries by age and sex; the rate of glaucoma eye surgeries by age and sex; life expectancy (at birth and age 65); and the number of physicians per 100,000 inhabitants. Changes in *mortality* include: the rates of death due to accidents, accidental poisoning, cirrhosis of the liver, motor vehicle accidents, lung cancer, alcoholism, and homicide. Measures of *immigration* include: the number of immigrants per year; foreign citizens by age, sex, marital status, and country of citizenship; and the level of suicide in their home country. Changes in *fertility* are measured by the birth rate per 100,000 women, the number of abortions per 100,000 females, and household composition.

Hypotheses are tested using aggregate-level data from various branches of Statistics Sweden (the national central bureau of statistics) from the period 1969-1996.

Results

All data have been collected. I am in the process of constructing variables and compiling the dataset for analysis. The final paper will include results of the time series regression analysis.