

## Suicide and the Italian Psychiatric Reform: An Appraisal of Two Data Collection Systems

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**Summary.** The reliability of Italian suicide data derived from returns made by the Police and Carabinieri was examined by comparing regional suicide data from that source with those based on medically certified cause of death for the years 1973–1980. Rates of medically certified suicide were found to be higher than those derived from the Police/Carabinieri returns, a difference which increased steadily over the years of study. The between-region within-year correlations (between the suicide rates derived from the two sources) were very high, but tended to decrease with time. The between-year within-region correlations were +0.700 or above for 12 of the 19 Italian regions and between +0.500 and +0.700 for a further 3. The correlation between the rates of suicide derived from the two sources was poor for the remaining 4 regions. A previous analysis of the influence on suicide of the Italian psychiatric reform used Police/Carabinieri data (Williams et al. 1986): this was repeated excluding data from these 4 regions, and the previous results were confirmed. Indeed, the negative correlation between suicide and the provision of general hospital psychiatric beds was stronger than that previously reported.

**Key words:** Suicide data – Italian psychiatric reform

### Introduction

In May 1978, the Italian Parliament passed law 180, the main aims of which were gradually to dismantle the mental hospitals and to institute a comprehensive and integrated system of community psychiatric care. Thus, Italy provides an important opportunity for assessing the effect of extensive change in the pattern of provision of psychiatric care. There exist in the English language literature many accounts of relatively brief visits to services in Italy, but systematic evaluative studies of the Italian psychiatric reform are becoming more frequent (Tansella et al. 1986).

A recent example is the investigation by Williams et al. (1986), who studied the influence of the Italian psychiatric reform on the trend in suicide. In brief, they found that the suicide rate in Italy as a whole had increased consistently over

the past 10–15 years, but that the increase was largely confined to the north/central parts of the country. Furthermore, using an ecological approach, they found a significant negative correlation between the trend in the suicide rate and the post-reform provision of general hospital psychiatric beds per region. No relationship was found between suicide and the regional provision of mental hospital beds, which has decreased considerably in recent years. These findings persisted when the pre-reform suicide trend was controlled for.

In their analyses, Williams et al. used data derived from returns made by the Police and Carabinieri, and collated by the Central Institute of Statistics (ISTAT) and published in the *Annuario Statistico Italiano*. The source of these data – i.e. the Police and Carabinieri – raises questions of their reliability, and of the validity of the results of any study based on them. We decided to study this by comparing them with Italian suicide data derived from death certificates.

### Suicide Data in Italy

As indicated above, Italian suicide data derive from two sources. First, the Police and Carabinieri complete an item sheet on the same day as the suicide is reported, and this is sent direct to ISTAT in Rome. These reports may be amended subsequently, since the cause of death may be reclassified. The returns are collated and tabulated by ISTAT, and published (with relative promptness) each month in the *Bollettino Mensile di Statistica* and annually in the *Annuario Statistico Italiano*.

Second, the Registry of each municipality sends information to ISTAT based on medically certified cause of death. These returns are collated and published annually in the *Annuario di Statistiche Sanitarie*. However, there is considerable delay, due to time-consuming procedures for checking information – usually some 5 years – before these data are published, and the latest year for which they are currently available is 1980. In general, suicide rates based on death certificates are higher than those based on Police/Carabinieri returns. One reason is that a para-suicide, recorded as such by the Police/Carabinieri, may result in death and be classified as suicide only in death certificate statistics. Also, deaths classi-

fied initially as accidents may be reclassified as suicide when further information becomes available.

## Analysis

Information on suicide for the years 1973–1980 was extracted from the relevant editions of the *Annuario Statistico Italiano* and the *Annuario di Statistiche Sanitarie*, and population data were obtained from the *Annuario Statistico Italiano*.

The two sets of suicide rates were compared in three ways. First, the suicide rates (per 100 000 population) according to the two different methods of ascertainment were calculated and compared for Italy as a whole. Next, for each region for each year, the difference between the two suicide rates (i.e. the rate according to the Police/Carabinieri returns minus the rate according to death certificates) was calculated. The significance of these differences was then assessed by regarding the number of suicides in the region in a given year divided by the regional population for that year as a simple proportion, so that a  $z$  statistic could be calculated for each difference. Since 152 such  $z$  statistics were calculated (one for each of 19 regions for each of 8 years,  $19 \times 8 = 152$ ), the confidence level for each individual comparison was adjusted by Tippett's (1931) method so that the overall significance level tested was 0.01 and beyond (rather than 0.05 because of the extremely large denominators [the regional populations], which ranged from just under 1 million to nearly 9 million).

The third method of comparison was by means of correlation coefficients. For each year, the correlation of the two sets of suicide rates was calculated across the 19 regions, while for each region, the correlation of the two sets of rates was calculated over the 8 years.

## Results

Figure 1 shows the suicide rates for Italy as a whole, according to the two methods of ascertainment. As expected, the rates according to death certificates were higher than the rates according to the Police/Carabinieri returns. Figure 1 also suggests that the difference between the two rates increased steadily between 1973 and 1980: even so, the correlation between the two sets of rates over the 8 years was reasonably high (+0.750).

Table 1 shows the difference between the two suicide rates for each region for each year (expressed per 100 000 population). Of the 152 differences displayed there, 113 (74%) can be seen to be less than 2/100 000 and 136 (89%) less than 3/100 000. Of the differences, 25 (16%) were statistically significant when the overall level of significance was 1% or beyond, and it is apparent from Table 1 that these 25 were not randomly distributed between regions: almost all of the significant differences occurred in Piemonte/val d'Aosta, Lombardia, Lazio and latterly, in Campania.

Table 1 also shows the correlations between the two sets of suicide rates, calculated between-region within-year (shown in the bottom row) and between-year within-region (shown in the right-hand column of Table 1). The between-region within-year correlations demonstrated a decreasing trend over time, while the between-year within-region correlations showed that the regions can be considered in three groups. First, there were those (the majority) where the correlation between the

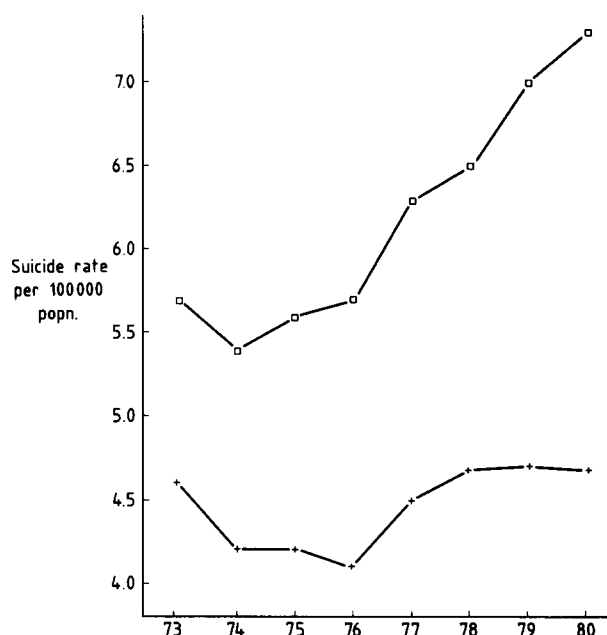


Fig. 1. Suicide in Italy: rates according to the different methods of ascertainment [(○—○) death certificate data; (+—+) Police/Carabinieri data]

two sets of rates was acceptable, +0.700 or above. Second, there were 3 regions (Liguria, Lazio, Basilicata) where the correlation might appropriately be described as moderate (between +0.500 and +0.700). Third, there were 4 regions (Piemonte/val d'Aosta, Lombardia, Campania, Sardegna) in which the correlation between the rates of suicide calculated according to the two different methods of ascertainment was poor (and indeed, for Lombardia, negative). It should be noted that 3 of the regions in this group were also those in which the differences between the rates for the individual years tended to be statistically significant.

This finding that in 4 of the 19 regions of Italy, there were marked inconsistencies over time between the two sets of suicide rates, indicates that the results of Williams et al. (1986) might usefully be reassessed. Studying regional data on psychiatric service provision and suicide (based on Police/Carabinieri returns) for the period 1973–1983, they found a significant negative correlation between changes in the suicide rate and the post-reform provision of general hospital psychiatric beds (there were no relationships between the trend in suicide and three other measures of service provision [mental hospital beds, community psychiatric services and hostels/day hospitals]). The same analysis cannot be conducted using death certificate data for at least another 3 years: however, we calculated the psychiatric service provision/suicide correlations excluding data from the 4 regions in the third of the groups described above (i.e. Piemonte/val d'Aosta, Lombardia, Campania, Sardegna). The findings were essentially the same as before: that is, no relationships were found between suicide and the regional provision of mental hospital beds, community psychiatric services or hostels, but there was a significant negative correlation between the provision of general hospital psychiatric beds and the (pre/post-reform) change in the trend of suicide, a correlation which persisted when the pre-reform suicide trend was controlled for. In fact, when the 4 regions were excluded in this way, the correlations were stronger than those reported by Williams et al. (1986) for all 19 regions

**Table 1.** Suicide in Italy: Police/Carabinieri and death certificate data compared

	Difference in rates (per 100000 population) <sup>a</sup>								Within region correlation
	1973	1974	1975	1976	1977	1978	1979	1980	
Piemonte vdA	-1.42	-1.84	-2.18	-3.37***	-2.96***	-2.70*	-4.09***	-3.87***	+0.256
Lombardia	-1.99***	-2.03***	-2.40***	-2.17***	-2.55***	-2.38***	-5.78***	-4.01***	-0.765
Trentino AA	+0.24	+1.17	+0.93	-0.58	+1.04	+0.35	-0.80	-0.46	+0.727
Veneto	-0.99	-0.88	-1.42	-1.39	-1.75	-2.14*	-1.90	-1.87	+0.879
Friuli-VG	-1.72	-1.55	-0.89	-2.42	-0.24	-2.26	-2.02	-2.26	+0.881
Liguria	-0.97	-0.37	+0.97	-0.70	-0.84	-2.50	-3.65	-3.34	+0.504
Emilia-Rom	-0.25	-1.06	-1.10	-1.40	-1.86	-1.70	-2.23	-1.75	+0.769
Toscana	+0.11	-0.03	+0.23	-0.42	-0.96	-0.59	-1.57	-1.62	+0.906
Umbria	+0.77	-0.26	+1.40	-0.13	+0.50	-1.01	+0.88	-0.50	+0.785
Marche	-0.22	+0.07	-0.36	-1.16	-0.72	+0.43	-1.14	-0.36	+0.825
Lazio	-2.01***	-2.80***	-2.63***	-3.02***	-4.07***	-3.34***	-4.14***	-4.29***	+0.618
Abruzzi	+0.17	+0.34	-0.34	-0.42	0.00	0.00	+0.50	-0.50	+0.929
Molise	-0.93	+0.62	-0.61	-2.15	-1.53	+0.61	+0.92	-2.13	+0.764
Campania	-0.76	-0.72	-0.63	-0.53	-0.68	-1.33	-1.72**	-2.15***	+0.193
Puglia	-0.67	-0.74	-0.84	-0.97	-1.09	-0.89	-1.57	-1.88	+0.739
Basilicata	-1.65	-0.50	0.00	-1.97	0.00	-1.31	+0.33	-1.47	+0.630
Calabria	-0.35	-1.05	-1.84	-1.24	-1.14	-1.72	-0.13	-2.00	+0.880
Sicilia	-1.04	-0.83	-1.26	-1.19	-0.73	-1.47	-0.91	-1.60	+0.834
Sardegna	-1.68	-1.06	-1.57	-3.05	-2.64	-3.20	-3.31	-3.61*	+0.109
ITALY	-1.04	-1.15	-1.34	-1.64	-1.79	-1.82	-2.32	-2.61	+0.750
Within year correlation	+0.921	+0.898	+0.857	+0.897	+0.841	+0.886	+0.800	+0.871	

<sup>a</sup> (Number of suicides according to Police/Carabinieri returns *minus* number of suicides according to death certificates) multiplied by (100000/regional population)

\* Difference significant when overall  $P < 0.01$

\*\* Difference significant when overall  $P < 0.001$

\*\*\* Difference significant when overall  $P < 0.0001$

NB: the regions are ordered north-south

(-0.734 as compared with -0.534 for the zero-order, and -0.711 as compared with -0.523 for the first-order correlations respectively).

## Discussion

Comparing suicide rates derived from Police/Carabinieri returns with those derived from death certificates carries no implication that the death certificate data are error-free, or even less subject to error than data from other sources. Indeed, there is much evidence (comprehensively reviewed by Bloor et al. [1986]) that socially-determined biases can, and do, occur at many stages in the processing of death certificates, from the assignation of cause of death through to coding and tabulation.

Specifically in relation to suicide, a number of studies have assessed the implications (for comparative studies) of differences between countries in methods of ascertainment of suicide (WHO 1982). These studies were considered by a WHO Working Group. It was noted that irrespective of time, place and method of ascertainment, "suicide is always underreported", but the Group "expressed confidence in the use of

official suicide statistics from European countries for trend analysis" (WHO 1982).

The present study clearly demonstrates discrepancies of level between the suicide rates according to the two methods of ascertainment, discrepancies which appear to be increasing with time. However, for the majority of the 19 regions in Italy, there was a reasonable correspondence between the two sets of rates over the time period studied, supporting the validity of analyses of trend based on the Police/Carabinieri data. Although for 4 of the regions there was virtually no correspondence between the rates over time (for reasons which are as yet unclear and require further study), it was clear that these inconsistencies did not invalidate the results of a previous evaluative study of the effects of the psychiatric reform on suicide in Italy. Indeed, the exclusion of data from the 4 regions strengthened the previously reported negative correlation between suicide and the provision of psychiatric beds in general hospitals (using regional data).

This finding is in accordance with clinical experience and previous evidence, since a high proportion of suicides have an unequivocal depressive illness (Barracough et al. 1986), and general hospital psychiatric beds are the only non-private facility to which depressed patients in Italy may be admitted.

On the other hand, however, correlation need not necessarily imply causation (Susser 1973). In the present context, one possible mechanism (other than a causal relationship) to explain the correlation is that there exists a third factor or set of factors, correlated with the distribution of general hospital psychiatric beds, and which has a causal influence on the reported suicide rate. The most likely possibility is that socially determined influences on the assignation of cause of death (Bloor et al. 1986), which would necessarily influence the suicide rate, are themselves related to the regional pattern of implementation of the psychiatric reform (the major feature of which is a marked north-south difference [Tansella et al. 1986]).

While further research is required to elucidate these mechanisms, the findings of a reasonable correspondence (in most regions) between the suicide rates as ascertained by the Police/Carabinieri and by death certificate have important implications for suicide research in Italy.

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