

Unemployment and Youth Suicide

Stephen Morrell*

Andrew Page*

Richard Taylor*

Abstract

Suicide rates in younger age groups in Australia, and in a number of other similar Western countries, have increased substantially since the 1960s. In Australia this rise has occurred contemporaneously with rises in youth unemployment rates, especially in males. Aggregate analyses investigating the relationship between these trends are reviewed for Australia, and compared with similar international aggregate studies of youth suicide and unemployment. Individual based studies investigating the role of unemployment in the causal pathways associated with suicide are also considered in this review. Aggregate suicide and unemployment data for males aged 20-24 years is presented to illustrate the changing relationship between unemployment and youth suicide over 1921-1998. The relationship between youth suicide rates and unemployment rates, particularly in males, is discussed in terms of the utility of using such indicators in evaluating suicide prevention initiatives. The applicability of aggregate variables in multi-dimensional explanations of suicide is also discussed.

Background

World Health Organisation (WHO) suicide data (WHO, 2000) indicate that suicide rates appear to vary by broad religious divisions: Roman Catholic and Muslim dominated countries have the lowest recorded suicide rates in the world. This is not necessarily a reporting artefact due to differences in data collection across countries, since recorded suicide rates in similar

* Department of Public Health and Community Medicine, The University of Sydney

country-of-birth groups in Australia are also quite low compared to the national rate (Taylor et al., 1998b). Differences in global suicide rates can be best explained by differences in social conditions, culture, custom and history, without reference to prevailing differences or changes in levels of mental illness.

Such cross-cultural differences in suicide rates illustrate the strength of Durkheim's central thesis that suicide has broad social and economic determinants exerting themselves at an aggregate whole-population level (Durkheim, 1979). If these differences in suicide can occur between countries, then they can also occur over time within countries if social conditions change. Over the last three decades a substantial proportion of WHO countries, including Australia, have witnessed a fundamental change in their suicide rates in that younger age groups, particularly males, are committing suicide at higher rates than older age groups. This is unprecedented and certainly was unknown in Durkheim's time, where older age groups committed suicide at the highest rates. Examples of countries where youth suicide rates have increased in comparison to relatively stable rates in older age groups include Australia, New Zealand, Canada, and the United Kingdom (WHO, 1999). By comparison, suicide rates remain highest in older age groups in countries such as France, Germany, the Czech Republic, Denmark and Japan (WHO, 1999).

Australian suicide trends

All-age suicide rates in Australia over the 20th century have remained relatively stable, especially in females. Despite a spike during the Great Depression, a largely artefactual decrease during World War II in male suicide due to the exclusion of servicemen in mortality data (Taylor et al., 1998a), and an increase during the 1960s sedative epidemic predominantly in females (Oliver and Hetzel, 1972), suicide rates have remained at approximately 21 per 100,000 for males and 5 per 100,000 for females (Baume and McTaggart, 1998; Cantor and Neulinger, 2000; Morrell et al., 1993). However, underlying these general patterns are changes in age and other socio-demographic differentials. This paper focuses on suicide in the younger age groups (15-24 years) and its relationship to unemployment.

In Australia, suicide in the 15-24 year age group is second only to motor vehicle accidents as the most common cause of death in this age group (ABS, 1997). Male 15-24 year suicide rates have been increasing since the 1960s. In the 20-24 year age group male suicide rates trebled from 1960 to 1989 and corresponding female rates doubled (Cantor et al., 1996). This

increase has continued into the 1990s, particularly in rural areas (Dudley et al., 1998; Wilkinson and Gunnell, 2000). In the 15-24 year age group the male to female suicide rate ratio is approximately 6:1. (Cantor and Neulinger, 2000).

High youth suicide rates are also apparent in comparisons with similar Western countries. Australian youth suicide rates rank 13th and 30th in the world for males and females respectively (WHO, 1996). In 1994 the highest rates of suicide for younger males occurred in the Russian Federation, Lithuania, Finland and Latvia (WHO, 1996). For females, the highest rates occur in (rural) China, Lithuania, Kazakstan, Singapore and Estonia (WHO, 1996).

The most common methods of suicide in young males in Australia are hanging, motor vehicle exhaust gas and firearms (Cantor and Neulinger, 2000). Hanging has increased as the most common method since the 1980s, as has motor vehicle exhaust gas, while suicide by firearms has decreased. For females, despite a long term decrease since the late 1960s, self-poisoning remains the most common method overall, but hanging became the dominant means in young female suicide in Australia during the 1990s (Cantor and Neulinger, 2000).

Unemployment

A number of studies have examined youth suicide in the context of unemployment. Unemployment is part of the constellation of inter-related factors which are regarded as components of individual and family socio-economic status: (a) income and wealth; (b) education; and (c) occupation and employment status. Low socio-economic status usually consists of the presence of low ratings on all three domains, and is often labelled as 'disadvantage' or 'deprivation'. While there is a vast literature on socio-economic status and health and mortality, much less is available on the restricted area of unemployment *per se*, particularly with regard to suicide and youth suicide. Unemployment is partly a consequence of low educational attainment, is more prevalent in some occupations than others, and in nearly all cases reduces income. However, unemployment generally is not something that someone chooses but affects whole layers of the workforce according to economic conditions. Moreover because unemployment is often intermittent compared to other components of socio-economic status which are more or less fixed (e.g. education in adults), or change slowly, it is more difficult to attribute health or mortality outcomes to unemployment.

Low unemployment rates of 1 to 5% which occurred in Australia from the 1950s to the early 1970s, during the post-war boom, were exceptional compared with other periods of the 20th century (Morrell et al., 1998). Unemployment estimates from Withers (1985) suggest that the Great Depression impacted on employment for the remainder of the 1930s, where unemployment rates ranged from 10% to 20% after reaching almost 30% in 1933 (Withers et al., 1985). For the remaining parts of the 20th century unemployment has ranged from 6 to 10% (Morrell et al., 1998). From age-specific unemployment data, first collected outside the Census by the Australian Bureau of Statistics in 1966, unemployment in younger (15-24 year) age groups began increasing markedly from the 1970s, and in some areas of Australia approached 30-35% in the 1980s and 1990s (Morrell et al., 1998).

Individual studies of youth suicide and unemployment

There are few studies that have examined unemployment and its role in the proximate causal pathways associated with youth suicide, with most studies determining risk factors relying on clinical samples (case series) or case-control evidence. The focus of such studies is often on psychiatric mental health, and unemployment is often included as a confounding rather than a study variable. Unemployment as an individual risk factor for suicide has been reported in a sample of alcoholics in the United States (Conner et al., 1999), in studies of coronial data in the United Kingdom (Hawton et al., 1999), in a sample of completed suicides in Finland (Heikkinen et al., 1995), and a study of coronial data in New Zealand (Rose et al., 1999). Moser et al. (1986) also noted an excess incidence of suicide in a study of men and women directly affected by unemployment (Moser et al., 1986). A study of coronial data in Western Australia also found a relationship between unemployment and youth suicide, with a comparison between younger and older groups revealing an over-representation of unemployed individuals in youth age groups (Graham and Burvill, 1992).

Aggregate studies of youth suicide and unemployment

The majority of investigations of youth suicide and unemployment have been at the aggregate level. The strength of such studies is that they demonstrate population trends and patterns, and generate hypotheses for testing in studies involving individuals. Aggregate studies at best show associations that may imply causality, but can overlook the importance of

other variables not in the data. Such variables may be intermediary variables in a causal chain (e.g. unemployment leading to loss of self-esteem or perceived purpose in life), or wider variables that overarch the variable being studied (e.g. unemployment as a component of socio-economic status). In the United States, Caces and Harford (1998) found a positive association between overall suicide rates and unemployment and per capita alcohol consumption (Caces and Harford, 1998). Time series analysis revealed a positive association, particularly in younger age groups, between unemployment and rising suicide rates in the United Kingdom (Gunnell et al., 1999), and also in the wider European Community (Pritchard, 1992). La Vecchia et al. (1986) in an Italian study of age, period and cohort effects in suicide found increases in suicide rates in younger age groups paralleling unemployment rates from the 1970s (La Vecchia et al., 1986). A positive relationship between unemployment and suicide has also been demonstrated in Canada, with Leenaars and Lester (1995) showing that the unemployment rate was associated with suicide in younger age groups for the period 1965-1985 (Leenaars and Lester, 1995). These aggregate relationships have not been demonstrated in all countries, suggesting other factors are germane, particularly *relative* socio-economic differentials (Dooley et al., 1989a; Dooley et al., 1989b; Ferrada-Noli, 1996).

In general, low socio-economic status and economic deprivation have been shown to be positively associated with higher suicide rates in younger age groups in Australia (Cantor et al., 1995; Martina, 1985; Taylor et al., 1998b). A negative association has also been noted between suicide and economic resources in youth aged 15-29 years (Cantor et al., 1995). And in Australia suicide rates peaked when unemployment was at an all time high in the Great Depression (Hassan, 1995; Morrell et al., 1993). In a study of Australian suicide from 1907-1990 Morrell et al. (1993) found that 18% and 11% of the overall variance in suicide could be accounted for by unemployment for males and females respectively. When this analysis was limited to younger age groups from the 1960s, the period when youth suicide rates began to increase, 68% of the variance in suicide rates was accounted for by unemployment in youth. This relationship was not found in younger females. Krupinski et al. (1994) noted an area-based cross-sectional correlation between youth suicide and unemployment rates in Victoria.

In short, while a number of studies have demonstrated an ecological relationship between unemployment and suicide, the role of unemployment predicting a suicide in an individual is less clear.

Suicide and unemployment in Australian male youth

A closer look at youth suicide and unemployment in Australia over the period 1966-90 showed a high correlation between 20-24 year male suicide and their unemployment levels when viewed as two ratios: (i) the ratio of the 20-24 year male suicide rate to the overall male crude suicide rate, and (ii) the ratio of the 20-24 year male unemployment rate to the overall unemployment rate (males and females) (Morrell et al., 1993). This correlation was 0.9 and has remained strong ($r=0.89$) in a more recent investigation which included data up to 1996 (Morrell et al., 1998). Suicide in 15-19 year old males was found not to be as strongly correlated with their unemployment levels, even though the latter have been substantially higher than in 20-24 year males. It is thought that the lower correlation between suicide and unemployment in this age group reflects the transitory status of those still living in the parental home (Morrell et al., 1993). In this context unemployment could also be considered in terms of the financial strains and stressors on the family unit rather than the individual, so that the family unit partly shields an unemployed young person's exposure to some of the effects of unemployment, particularly poverty and homelessness.

Investigation of suicide and unemployment data from 1921 to 1998 for 20-24 year old males illustrates the recency of the changing nature of suicide in this age group in Australia. Suicide and unemployment rates for males aged 20-24 years are shown in Figure 1. Unemployment rates prior to 1966 for 20-24 year old males are based on Census estimates and are presented separately to those based on Labour Force estimates. Male suicide rates in this group were relatively stable prior to World War II. The artefactual decrease, noted elsewhere, is apparent during World War II (Taylor et al., 1998a) where suicide rates during this period dropped to as low as 2 per 100,000. In the period following World War II, 20-24 year male suicide rates returned to pre-war levels despite a peak in 1958. By 1961 the 20-24 year male suicide rate began to rise substantially and did not begin to level off until the 1990s. The peak in the early- to mid-1960s coincides with the sedative epidemic reported elsewhere (Oliver and Hetzel, 1972), but its magnitude was not as high as in females for the corresponding period (Morrell et al., 1993; Oliver and Hetzel, 1972).

Unemployment rates prior to 1966, based on Census estimates only, are shown to illustrate general trends for males aged 20-24 years. Unemployment rates for the years 1921, 1933, 1947, 1954, 1961, 1966, 1971, and 1976 are interpolated with a dotted line to aid interpretation. Post-1966, the more accurate age-specific unemployment data for this age group, based on ABS Labour Force surveys, is presented. As can be seen, the overlap

Figure 1. Suicide and unemployment in Australian 20-24 year old males, 1921-1998

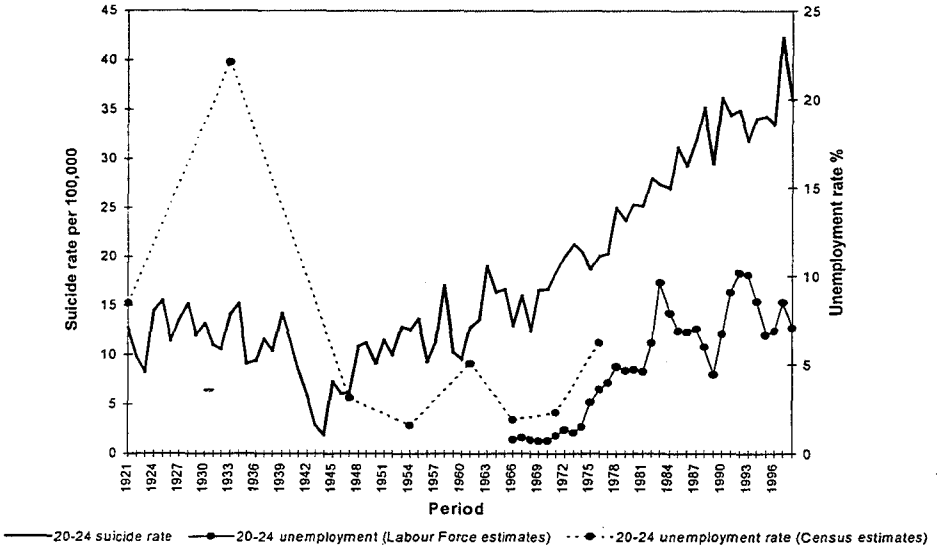
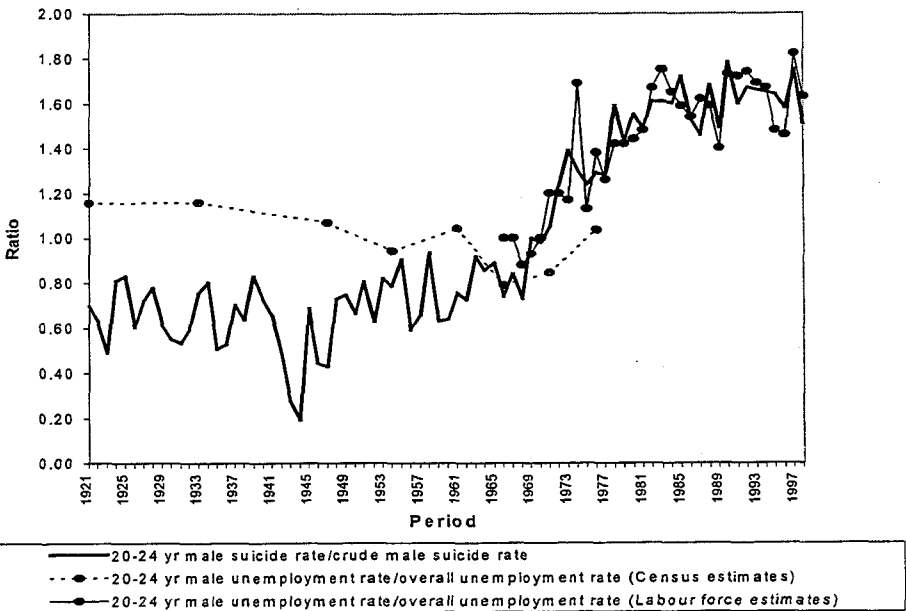


Figure 2. Ratios of suicide rates to overall male suicide rates and unemployment rates to overall unemployment rates, Australian 20-24 year old males, 1921-1998



between the two periods (1966-1976) demonstrates the difference in unemployment estimation methods. The unemployment rates from the Censuses are consistently higher for 1966-1976, but follow the same broad secular trends as the Labour Force estimates. The unemployment peak during the Great Depression years is evident in 1933, after which unemployment rates decreased below 5% during World War II and the post-war boom ending in 1974. The peak in 1961 coincides with the period following the 'credit squeeze' when the 1960 budget led to an adverse drift in the balance of payments and induced an economic recession (Martin, 2000), after which the unemployment rate again decreased. From 1966 the 20-24 year male unemployment rate began to increase and increased sharply after 1974, with peaks in 1983 and 1992.

Figure 2 shows plots of the ratio of the 20-24 year male suicide rate to the overall (crude) male suicide rate, and of the ratio of the 20-24 year male unemployment rate to the overall unemployment rate (males and females). The ratio of the 20-24 year age group to total male suicide rates reflects the trends in Figure 1. The suicide ratio in this age group remained relatively stable until the 1960s, after which it began to increase substantially. The unemployment ratio for this age group also reflects trends in Figure 1. The ratio based on Census estimates indicates higher relative unemployment during the 1920s and 1930s (approximately 1.18), after which it decreases to approximately 1.0 up to 1969-1970 at the peak of the post-war boom. Prior to 1966 there was little apparent relationship between the relative unemployment level of 20-24 year males and their relative suicide rate. Following 1966, and especially following 1970, the two curves show remarkable concordance, reflected in a high correlation constant ($r=0.89$), as previously reported (Morrell et al., 1993; Morrell et al., 1998) which continues for 1996-1998. It should be noted that the relationship also exists to a lesser degree in the 15-19 year old male age group (not shown). As mentioned, this age group is commonly still living at home or receiving support from parents, which may be a factor in this weaker relationship. Also the proportion of 15-19 year olds in the workforce has declined substantially during 1970-1998 such that part-time or casual employment during the years of late high school and tertiary education predominates in this age group (ABS, 2001a; ABS, 2001b).

Conclusion and implications

Studies of suicide, including in youth, have found positive aggregate associations with unemployment, either temporally or spatially. Clearly,

prior to the late 1960s, the temporal relationship between the 20-24 year male suicide ratio and the 20-24 year male unemployment ratio in Australia is weak or non-existent. But the strong aggregate association between male youth suicide and unemployment in the latter part of the 20th century is not sufficient evidence for causality. Suicide after all is the outcome of an individual decision, and is bound up in complex interactions between intrapsychic variables relating to psychological and social distress. Many possible intervening factors at individual and interpersonal levels have been identified for suicide. Individual risk factors include previous suicide attempts (Diekstra, 1992; Moscicki, 1995), psychopathology (Caldwell and Gottesman, 1990; Clark and Fawcett, 1992; Moscicki, 1995), substance abuse and dependence (Bongar, 1991; Moscicki, 1995), chronic health problems (MacKenzie and Popkin, 1990), and other psychological factors (Bartley, 1994; Ferrie et al., 2001; Janlert, 1997). Other interpersonal factors identified include marital status (Cantor et al., 1995; Moscicki, 1995), family discord (Kosky et al., 1990), geographic and social isolation (Dudley et al., 1997; Dudley et al., 1992; Dudley et al., 1998), and access to means (Cantor and Slater, 1995; Gunnell and Frankel, 1994). Since individual consciousness is shaped or constrained by broader socio-economic conditions, and while being unemployed is not necessarily a prerequisite for an individual to commit suicide, the economic, social, and psychological stress of unemployment arguably is reflected or internalised at some level in individual behaviour, such that other factors associated with suicide can impinge more sharply on an individual's decision to end their life.

What the aggregate relationship between male youth suicide and unemployment tells us is that while the absolute level of unemployment can certainly be associated with suicide, relative unemployment in this age-group is even more strongly associated with their relative suicide rate. This is illustrated by the Great Depression of the 1930s where 20-24 year male suicide rates hardly changed in relation to their very high absolute unemployment levels. On the other hand, the 20-24 year male unemployment ratio was less than 1.2 for this period, according to the 1933 Census, and therefore this age group in relative unemployment terms was not substantially worse off than the older age groups. Clearly the 20-24 year male unemployment level, in absolute or relative terms, was not strongly associated with 20-24 year male suicide in the 1930s, or for any period up to the late 1960s and early 1970s.

The nexus between unemployment and youth suicide can be used to readily evaluate at a population level the effectiveness of national youth

suicide prevention programs, since time trends in unemployment and suicide indicators are ostensibly independent. If the nexus between youth suicide and unemployment is shown to be broken then the hypothesis that suicide prevention initiatives have worked cannot be excluded. Unfortunately, the relationship between male youth suicide and unemployment up to 1998 remains, so it would appear that efforts thus far at youth suicide prevention have failed to break this nexus. That is, even if 20-24 year male suicide rates declined following preventative efforts, if the reductions merely followed the unemployment trend, then the suicide reduction may not be attributable to prevention.

An issue for studies of suicide and unemployment is how these quantities are defined and measured, which varies according to the data source and period. Age-specific unemployment rates prior to 1966 are difficult to compare with post-1966 estimates given the changes in official definitions of unemployment. Reported unemployment rates are certainly indicative and useful to consider in a general socio-historical context. When considering ratios of sub-group unemployment to the overall unemployment rate this is less of a problem since ratios are constructed from the same measures. The same argument applies to suicide in that changes in coronial protocols over time, or differences in these at a state level apply to whole populations and therefore to population sub-groups.

Like most individual risk factors for suicide, unemployment at an individual level has not been shown to predict a suicide in an individual. This is because not all the unemployed commit suicide and most individual-level associations have been found post-hoc. For instance, a recent study of US cohort data by Kposowa (2001) found unemployment at baseline to be associated with a 100 percent higher suicide risk in males at three year follow up, compared to those who were employed at baseline (Kposowa, 2001). While this association is suggestive of unemployment 'predicting' suicide, not everyone who was unemployed committed suicide, and therefore being unemployed is not predictive of a suicide in any given individual.

This contradiction between the strong aggregate relationship and weak individual relationship can be resolved. First, high unemployment rates may act indirectly on individuals who are employed. For example, a high unemployment level can make the employed more insecure and vulnerable because their working conditions are threatened by the unemployed who, if sufficiently desperate or made even more so by government policies, will readily take the same job for lower wages and work longer hours. In the context of male youth unemployment, which has been high in relation to older age groups, this may be the product of young people being perceived

by the employers as less employable than older age groups under conditions of high overall unemployment and relatively high wages and working conditions, as occurred during the 1970s and 1980s. Second, unemployment may act to make affected populations more vulnerable to the already known suicide risk factors. It has been shown in individual studies, for example, that unemployment can affect psychological health detrimentally (Feather and O'Brien, 1986; Morrell et al., 1994; Winefield and Tiggemann, 1990) which may place an individual in a more vulnerable situation if a personal crisis occurred (e.g. bereavement) and the individual had little social support or material means to cope with such a crisis.

The relationship between unemployment and male youth suicide underlines the importance for preventive approaches to reach beyond the narrow domain of health. This is not to deny the importance of identifying individual risk factors for suicide, or advocating for improved health service provision, or increasing the awareness of the issue of suicide in individuals and families. However, close relationships at an aggregate level, such as that between male youth suicide and unemployment also indicate that population-level factors may be operating which may impact on individual suicide risk factors.

From a demographic and economic standpoint it could be argued that the 1970s and 1980s witnessed a decline in birthrates while labour productivity continued to increase. The consequence of this was decreasing demand for commodities, which were being produced by fewer workers. If 'structural unemployment' is to have any meaning at all, it means that there is a long-term oversupply of labour for a given productive output, which in turn impacts on those groups most vulnerable to retrenchment or who have the most difficulty gaining employment: young people with the least seniority and least experience. The oil shocks of the 1970s may have changed the economic landscape in terms of the labour market, but productivity has increased without concomitant reductions in working hours, or demand which can keep up with productivity increases. The price of this mismatch between productivity increases and the available labour force is being borne primarily by the young.

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