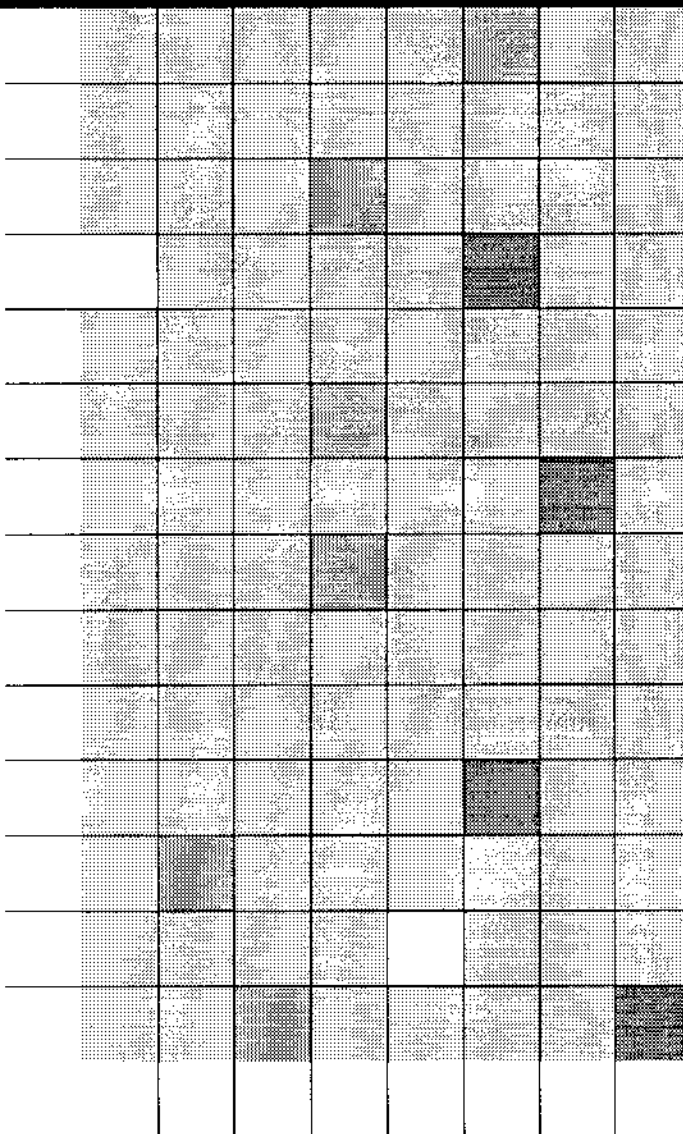




REGIONAL SUICIDE RATES IN QUEENSLAND



Information Circular No. 29



**EPIDEMIOLOGY AND HEALTH INFORMATION BRANCH
SUICIDE RESEARCH AND PREVENTION PROGRAM**

May 1994

BACKGROUND

In response to widespread concern regarding suicide, a number of Health Regions have made enquiries regarding their suicide rates. Accordingly, the Epidemiology and Health Information Branch in conjunction with the Suicide Research and Prevention Program is providing the following preliminary report.

This report supplements Information Circular No. 13 "Suicide - A Health Problem of the Nineties". Also, Drs C Cantor and M Coory have recently canvassed a similar issue in the Australian Journal of Public Health, December 1993 issue with their follow-up article "Is there a rural suicide problem?". (Rural was defined according to the Rural Health Policy Unit's definition). See article attached.

They concluded that there were no significant differences in the rates of urban-provincial-rural suicide in Queensland 1986-90 data when all ages together were considered and for specific age groups 15-19 years and 20-29 years. They acknowledged that Australian suicide rates for young males were high by international standards and also noted that Queensland had higher suicide rates in males 15-19 years of age in both rural and urban settings when compared to New South Wales rates. They suggested that the focus should be in dealing with the youth suicide problem in all areas of the State.

METHODOLOGY AND RESULTS

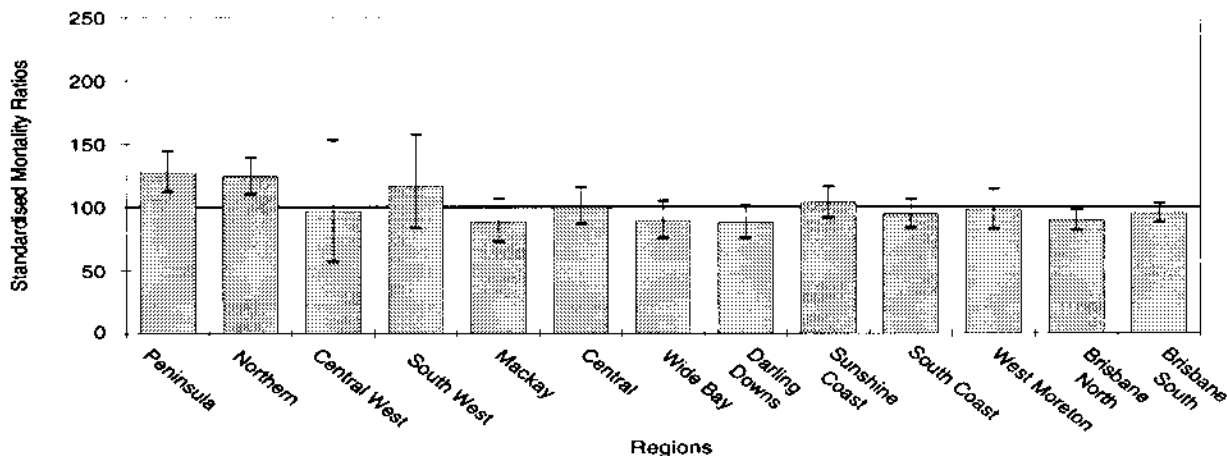
A number of different methods could be used to compare suicide between Health Regions. The simplest of these is the crude suicide rate or the total number of suicides per 100,000 population. However, the crude suicide rate might not be a reliable indicator of suicide across populations as it does not take into account age structure differences. The Standardised Mortality Ratio (SMR), however, is a widely used summary measure that adjusts for age differences between populations, therefore allowing more valid comparisons to be made.

The SMR is the ratio of the number of deaths observed to the number expected if the area of interest experienced the same age specific rates as some standard population. The SMR for the standard population (Queensland in this case) always equals 100 per cent and a SMR greater than 100 means that the actual number of deaths for an area was higher than expected. Ninety-five per cent confidence intervals were also calculated to give an indication as to whether the age adjusted rate for a particular Health Region was statistically significantly different from the overall Queensland rate. If the lower boundary of the 95 per cent confidence interval for a SMR was greater than 100 then it can be concluded that the age adjusted suicide rate is statistically significantly higher than that for Queensland.

As can be seen from the accompanying tables and graphs, the age adjusted ratios for males and persons for the Peninsula and Northern Health Regions (for the time period 1981 to 1991) were statistically significantly higher than the Queensland average. The age adjusted ratios for all other Health Regions for both males and females were at or below the Queensland average. Although the Darling Downs region has below average female and person SMRs, there is no room for complacency because State rates are high.

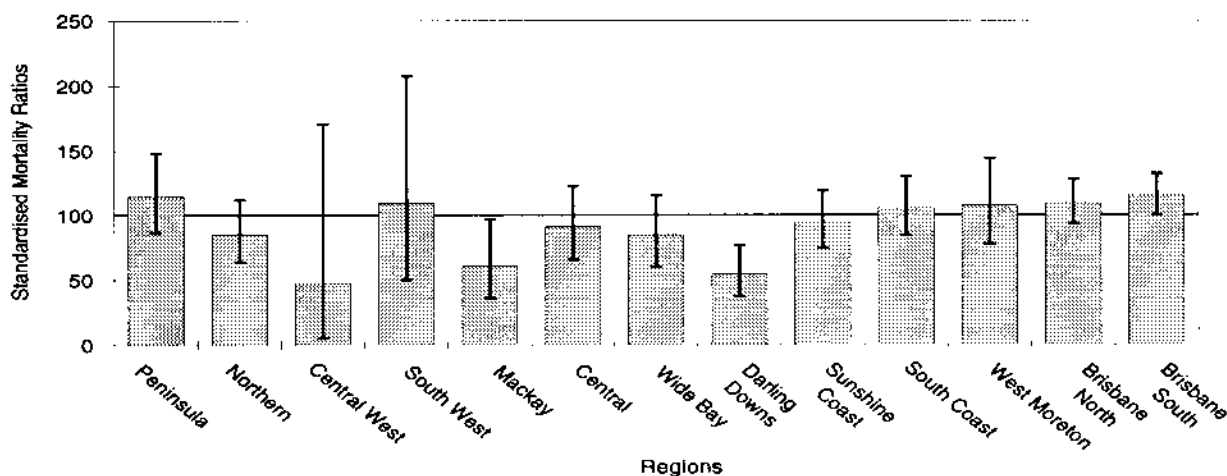
Later in 1994, the Suicide Research and Prevention Program will be able to provide considerably more detail on regional suicide profiles.

**Figure 1. Suicides Males 1981 - 1991
Standardised Mortality Ratios ^(a) by Health Region**



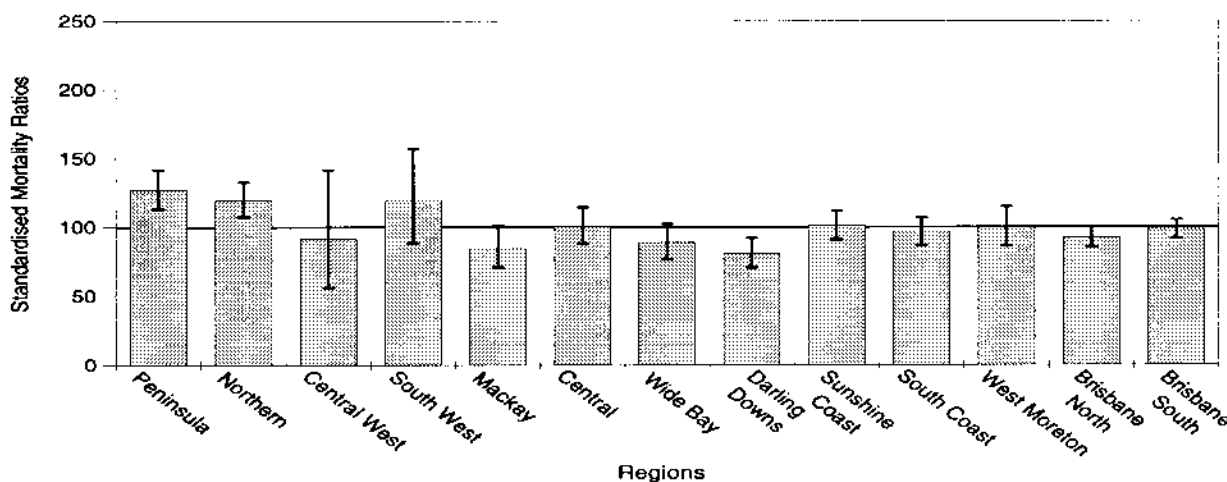
(a) Indirectly age standardised to the 1986 Queensland population.
Source: Mortality collection, Epidemiology and Health Information, Queensland Health

**Figure 2. Suicides Females 1981 - 1991
Standardised Mortality Ratios ^(a) by Health Region**



(a) Indirectly age standardised to the 1986 Queensland population.
Source: Mortality collection, Epidemiology and Health Information, Queensland Health

**Figure 3. Suicides Persons 1981 - 1991
Standardised Mortality Ratios ^(a) by Health Region**



(a) Indirectly age standardised to the 1986 Queensland population.
Source: Mortality collection, Epidemiology and Health Information, Queensland Health

TABLE 1. SUICIDE, MALES, 1981 -1991, STANDARDISED MORTALITY RATIOS^(a) BY HEALTH REGION

Region	SMR	Lower Limit	Upper Limit
Peninsula	127.3	112.0	144.1
Northern	124.2	110.7	138.9
Central West	96.6	57.2	152.6
South West	116.3	83.5	157.8
Mackay	88.3	72.3	106.6
Central	100.2	86.4	115.7
Wide Bay	89.3	75.6	104.8
Darling Downs	87.8	75.9	100.9
Sunshine Coast	103.4	91.8	116.2
South Coast	94.4	83.6	106.3
West Moreton	97.5	82.5	114.5
Brisbane North	89.6	81.6	98.0
Brisbane South	95.1	87.8	103.0

(a) Indirectly age standardised to the 1986 Queensland population

TABLE 2. SUICIDE, FEMALES, 1981 -1991, STANDARDISED MORTALITY RATIOS^(a) BY HEALTH REGION

Region	SMR	Lower Limit	Upper Limit
Peninsula	114.1	86.2	148.2
Northern	85.0	63.3	111.7
Central West	47.2	5.3	170.5
South West	109.2	49.8	207.3
Mackay	61.0	36.2	96.5
Central	90.9	65.5	122.9
Wide Bay	84.6	60.1	115.6
Darling Downs	54.7	37.6	76.8
Sunshine Coast	94.8	74.5	119.1
South Coast	105.4	84.3	130.2
West Moreton	107.1	77.5	144.2
Brisbane North	109.4	93.3	127.5
Brisbane South	115.2	100.1	131.9

(a) Indirectly age standardised to the 1986 Queensland population

TABLE 3. SUICIDE, PERSONS, 1981 -1991, STANDARDISED MORTALITY RATIOS^(a) BY HEALTH REGION

Region	SMR	Lower Limit	Upper Limit
Peninsula	127.0	113.2	142.1
Northern	119.6	107.5	132.6
Central West	91.7	56.0	141.6
South West	119.3	88.6	157.3
Mackay	84.8	70.6	101.0
Central	100.4	87.8	114.2
Wide Bay	88.7	76.5	102.3
Darling Downs	80.9	70.7	92.1
Sunshine Coast	100.9	90.8	111.9
South Coast	96.4	86.7	106.8
West Moreton	99.7	86.1	114.8
Brisbane North	92.5	85.5	100.0
Brisbane South	98.3	91.7	105.2

(a) Indirectly age standardised to the 1986 Queensland population

Is there a rural suicide problem?

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Abstract: *Suggestions that youth suicide rates are disproportionately higher in rural areas were explored using Queensland cause-of-death data supplied by Queensland Health for the years 1986 to 1990. Standardised mortality ratios (SMRs) were compared across three zones: urban, provincial and rural, for three age bands: all ages, 15 to 19 years and 20 to 29 years, for each sex. This Queensland study did not find a statistically significant excess of rural youth suicides. Further study of this phenomenon involving other states is called for. (Aust J Public Health 1993; 17: 382-4)*

In January 1992, Dudley et al. reported on suicide trends in urban and rural New South Wales, demonstrating among other things that:

1. The rate of youth (10 to 19 years) suicide was higher in rural New South Wales than in urban areas; the rates per 100 000 population between 1984 and 1988 were 3.8 in Sydney, 3.0 in Newcastle and Wollongong, 4.7 in rural cities and 6.4 in rural shires and municipalities. The ratio of major metropolis to rural shire suicide rate was almost 1:2.
2. The gradient of rising rates of youth suicide between 1964 and 1988 was greater in rural areas — a five-fold increase in the shires compared with no change in metropolitan areas.¹

Hence, concern regarding disproportionate suicide rates among rural youth arose. Resources could be wasted if 'urban' solutions were provided for 'rural' problems.

In contrast, Hetzel reported that in Victoria between 1950 and 1967 suicide rates rose for both males and females, but almost all of the rise was confined to the Melbourne metropolitan area.² This was the general trend at that time also in the United Kingdom and Europe, although not in the United States.

It is more recently that rises in rural suicide have been reported, not only in Australia. Crombie found that the remote northern highlands of Scotland had greater suicide mortality between 1974 and 1986 than other districts of Scotland.³ The lowest mortality was found in the central belt of Scotland, associated with high population density, heavy industry and social disadvantage. Similarly, in recent years there have been reports of higher suicide rates in rural areas of South Western Greece,⁴ Sweden⁵ and Manitoba, Canada.⁶ This latter study focused specifically on childhood and adolescent suicides. A study of Kentucky farmers (1979 to 1985) found higher rates of suicide in farmers, but closer inspection of the data reveals that this excess rate was confined mostly to older age groups (especially over 65 years) with no excess in the under-25 years group.⁷

This paper further examines rural and urban differences in suicide in Queensland.

Method

Death certificate data for suicides for the years 1986 to 1990 were obtained from a data file held by Queensland Health. Because the population (and hence the number of suicides) in rural areas of Queensland was small, five years of data were combined to ensure that reasonably accurate estimates were obtained. For example, between 1986 and 1990, for males aged 15 to 19 years in rural areas, there were on average six suicides per year. If less than five years of data had been combined, the 95 per cent confidence interval for this age category would have been so wide that no sensible conclusion could be reached.

The comparisons between urban and rural rates utilised a definition developed by Queensland Health's Rural Policy Unit in conjunction with the State Government Statistician's Office. The definition divides Queensland into three major categories. 'Rural' consists of those areas outside Brisbane and the major provincial cities but including Mt Isa. This means that 'rural' refers to any community which had a population of less than 20 000 persons at the 1986 census plus Mt Isa (1986 census population: 23 927). Mt Isa was included in the 'rural' category because of its geographical isolation. The two other categories are:

- 'provincial city': Moreton Statistical Division, the statistical districts in which Cairns, Townsville, Mackay, Rockhampton, Gladstone and Bundaberg are located, Maryborough, Hervey Bay, Gympie and Toowoomba cities
- 'metropolitan': Brisbane Statistical Division

To determine whether there was a rural excess of suicide for all ages combined, indirectly age-standardised mortality ratios (SMRs) were calculated using the 1988 estimated resident Queensland population as the standard.⁸ Ninety-five per cent confidence intervals (CI) were calculated using a method discussed by Ulm for the calculation of exact confidence intervals for a Poisson distributed variable.⁹

Suicide rates per 100 000 population were calculated separately for males and females for the age categories 15 to 19 years and 20 to 29 years. Rates were derived by using the average annual number of suicides for the five-year period 1986 to 1990 and the estimated resident population for the year 1988.⁸

Exact 95 per cent confidence intervals were calculated using Ulm's method.⁹

Results

Table 1 presents the crude suicide rates for the three areas under consideration. The rural rate for males was only marginally higher than the overall Queensland

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Table 1: Crude suicide rates per 100 000 by area in Queensland, 1986-1990

	All suicides, 1986-1990	Average annual suicides	1988 population	Average annual rate ^a
<i>Males</i>				
Metropolitan	695	139.0	611 991	22.7
Provincial	552	110.4	477 156	23.1
Rural	333	66.6	286 910	23.2
Total Queensland	1 580	316.0	1 376 057	23.0
<i>Females</i>				
Metropolitan	211	42.2	628 295	6.7
Provincial	140	28.0	478 262	5.9
Rural	54	10.8	260 121	4.2
Total Queensland	405	81.0	1 366 678	5.9

Note: (a) Rate per 100 000 population

rate, while the rural rate for females was lower than the overall Queensland rate. Table 2 presents the indirectly age-standardised ratios and their 95 per cent confidence intervals. All of the confidence intervals included 100 indicating that, for the three areas under consideration, there were no statistically significant differences from the overall Queensland rate.

Table 3 shows the suicide rates and their corresponding 95 per cent confidence intervals for 15- to 19-year-olds and 20- to 29-year-olds. The rural rate for males aged 15 to 19 years (24.1 per 100 000) was higher than both the provincial (17.4) and metropolitan (18.9) rates. However, since the confidence intervals overlapped, it was concluded that the differences were not statistically significant. For females in this age group the situation was similar, with a higher rural rate, but overlapping confidence intervals indicating that the difference was not statistically significant. It should be noted, however, that the number of suicides for females was small, making it difficult to draw any definitive conclusions.

For the age category 20 to 29 years, the situation was reversed, with the rural area recording lower rates than

Table 2: Age-standardised mortality ratios (SMRs) by area in Queensland, 1986 to 1990^a

Area	SMR	CI ^b
<i>Males</i>		
Metropolitan	98.2	91.1 to 105.8
Provincial	100.2	92.0 to 108.9
Rural	103.6	92.8 to 115.3
<i>Females</i>		
Metropolitan	112.1	97.5 to 128.3
Provincial	97.5	82.0 to 115.1
Rural	73.8	55.4 to 96.3

Notes: (a) Indirectly age-standardised to the 1988 Queensland population.

(b) CI=95% confidence interval

the other areas for both males and females. Once again the 95 per cent confidence intervals overlapped, indicating that the differences were not statistically significant.

Discussion

The rural excess of youth suicide suggested in the New South Wales study was not clearly demonstrated for Queensland.¹ The rural rates were higher for males aged 15 to 19 years, although not statistically significantly so. The rural rate for males aged 20 to 29 years was in fact lower than the metropolitan and provincial rates, although once again this was not statistically significant. In most national and international suicide studies, trends in the 15- to 19-year-old age range closely parallel those in the 20- to 29-year range. The fact that rates of suicide in urban, provincial and rural areas in these two age ranges were firstly, not statistically different, and secondly, displayed inverse patterns, dictates caution in attributing differences among urban, provincial and rural suicide rates. We do not discount the possibility of specific localised problem areas (geographic) in Queensland, be they urban or rural. The current analysis did not address this. We also did not address the issue of whether there has been a

Table 3: Specific suicide rates per 100 000 by area in Queensland, 1986 to 1990

	Total suicides 1986 to 1990	Average annual suicides	1988 population	Average annual rate ^a	CI ^b
<i>Males 15 to 19 years</i>					
Metropolitan	55	11.0	58 313	18.9	14.2 to 24.6
Provincial	36	7.2	41 498	17.4	12.2 to 24.0
Rural	30	6.0	24 906	24.1	16.3 to 34.4
Total Queensland	121	24.2	124 717	19.4	16.1 to 23.2
<i>Females 15 to 19 years</i>					
Metropolitan	5	1.0	58 015	1.7	0.6 to 4.0
Provincial	4	0.8	40 049	2.0	0.5 to 5.1
Rural	7	1.4	21 601	6.5	2.6 to 13.4
Total Queensland	16	3.2	119 665	2.7	1.5 to 4.3
<i>Males 20 to 29 years</i>					
Metropolitan	175	35.0	105 550	33.2	28.4 to 38.5
Provincial	153	30.6	75 928	40.3	34.2 to 47.2
Rural	71	14.2	47 897	29.6	23.2 to 37.4
Total Queensland	399	79.8	229 375	34.8	31.5 to 38.4
<i>Females 20 to 29 years</i>					
Metropolitan	53	10.6	104 181	10.2	7.6 to 13.3
Provincial	25	5.0	74 950	6.7	4.3 to 9.8
Rural	9	1.8	42 898	4.2	1.9 to 8.0
Total Queensland	87	17.4	222 029	7.8	6.3 to 9.7

Notes: (a) Rates per 100 000 population of the same age and sex. (b) CI = 95% confidence interval

disproportionate rise in suicide among rural youth over the last 30 years. The Queensland findings provide no grounds for reassurance regarding youth suicide in that state. Although caution needs to be exercised because of different definitions of 'urban', 'provincial' and 'rural' and the different periods from our own used in the New South Wales study,¹ our findings suggest higher rates of 15- to 19-year-old male suicide in all areas of Queensland compared with New South Wales:

- Queensland 1986-1990: metropolitan 18.9 per 100 000, provincial 17.4, rural 24.1, total Queensland 19.4.
- New South Wales 1984-1988 (approximate): Sydney 11, Newcastle/Wollongong 11, rural cities 12, rural shires and municipalities 21, total New South Wales 13.2.

Unpublished research by one of us (CHC) has demonstrated that in all age groups, Queensland suicide rates tend to be higher than the national average—usually by 10 to 15 percent. No explanation for this has emerged to date.

While we found little evidence in support of a significant rural excess of suicide, there are no grounds for complacency regarding Australian youth suicide rates, urban or rural. In a recent study of 21 countries, Pritchard described Australia and New Zealand as 'unique as they were the only countries in which male and female youth suicide levels were higher than their average rates.'¹⁰ Similarly, Diekstra reported that for the years 1985 to 1986 Australia ranked second of 19 countries for suicide in males aged 15 to 29 years. The more recent report by Pritchard for Australian males aged 15 to 24 years ranked Australia fifth of 21 countries for suicide rates in 1987.¹⁰

Conclusions

The question posed in the title of the paper should not be answered simply by *yes* or *no*. It appears that rural populations in Queensland have suicide mortality

rates similar to metropolitan and provincial areas. Even in the younger male age ranges (15 to 19 and 20 to 29 years), no statistically significant differences emerged. This study suggests therefore that urban, provincial and rural Queensland all have problems with suicide in males aged 15 to 29 years, but of similar dimensions.

Why in the young age groups our findings are not consistent with the New South Wales study is unclear. It is possible that the insidious rise in male youth suicide clearly detected in New South Wales may have been masked by the cross-sectional design of our study. Further studies of this nature, including data from other states, are required before the question can be answered with confidence.

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