Suicide and Socio-Economic Factors:
Results from the New Zealand Census-Mortality Study 1981-2004

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The New Zealand Census-Mortality Study (NZCMS) is a repeated cohort study assembled using anonymous and probabilistic record linkage of the 1981, 1986, 1991, 1996, and 2001 New Zealand censuses to mortality data for the following three years. This has enabled investigations of causes of death (including suicide) by ethnicity and/or various socio-economic factors including household income, education, labour force status and car access.

Standardised rates, rate ratios and rate differences can be found in the NZCMS Web Tables available at http://www.otago.ac.nz/NZCMSWebTable. Here we present examples of analyses that can be done using this publicly available resource.

Method

First we compared the associations between suicide deaths and all-cause mortality for a range of socio-economic factors, by sex, in different age groups. Next we compared the patterns of association for death by suicide and a range of socio-economic measures including ethnicity.

Socioeconomic measures

Income is one of the most commonly used measures of SES. In the NZCMS it is measured as Equivalised Household Income, adjusted for Consumer Price Index and grouped into three income bands (low, medium and high income).

Education is highest personal educational qualification obtained at census date. It is grouped into No Qualifications, School Qualifications and Post-School Qualifications. Education is not a good measure of SES in younger people (< 25 years), as they may not have completed their education.

Car Access indicates how many cars people in the household have access to, grouped as 0, 1 or 2 or more cars. Car access is one of the most robust measures of access to asset wealth

Ethnicity was grouped into Māori or non-Māori as self identified on the census.

Results

Comparing the association of the three SES measures with suicide and all-cause mortality reveals interesting differences across measures and age groups. In the figures suicide rates per 100 000, (age and ethnicity standardised) are shown on the y axis with 95% confidence intervals shown as error bars. The cohort years are on the x axis.
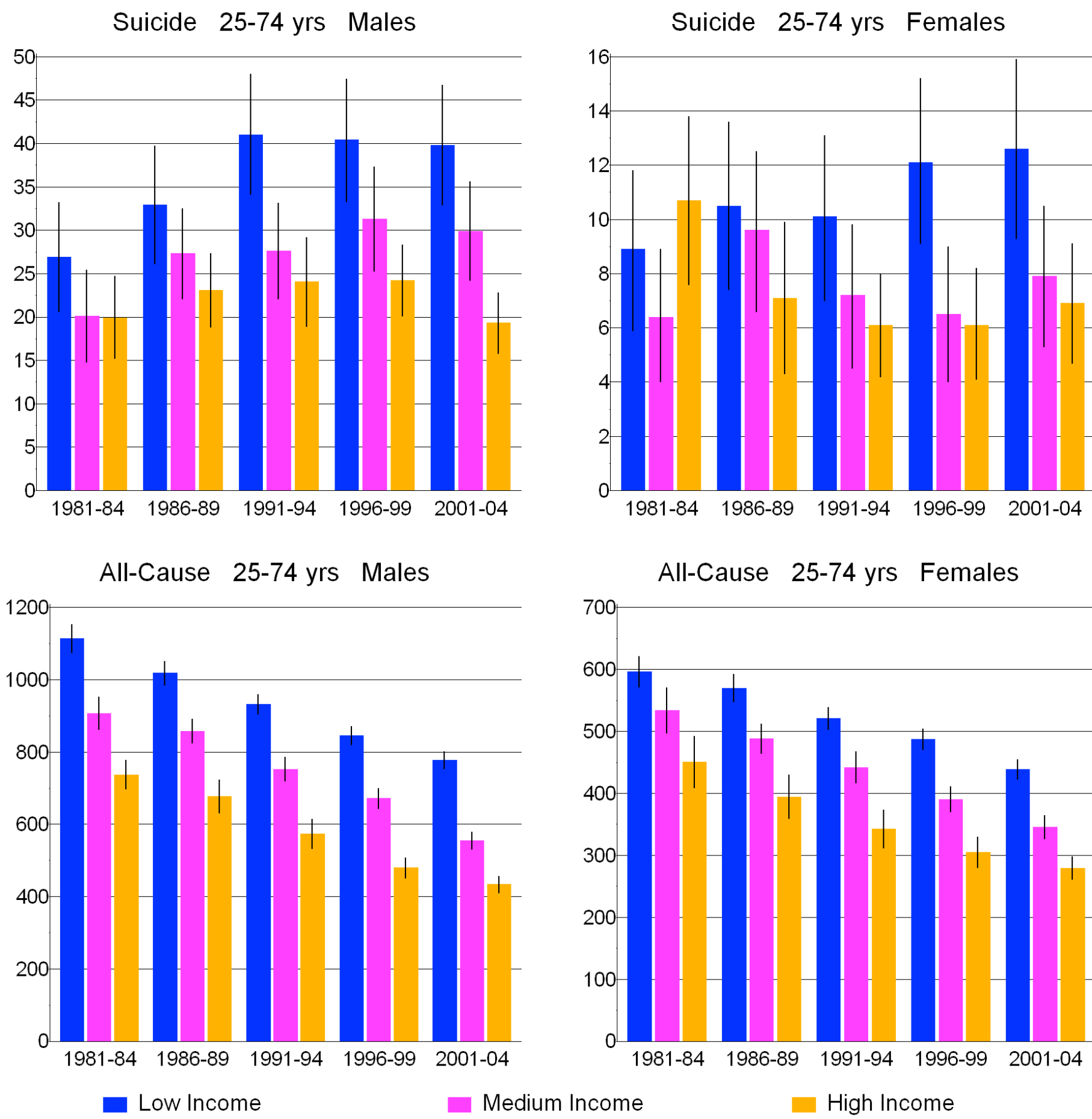
For men and women aged 25-74 the significant associations between household income and all-cause mortality (bottom two figures) maintained a stable pattern across all 5 time points, whereas for suicide (top two figures) there was a changing pattern of association in which a significant gradient of association between low and high income and suicide emerged in the 1991-94 cohort for men and the 1996-99 cohort for women. That is, suicide became increasingly concentrated among lower income groups.
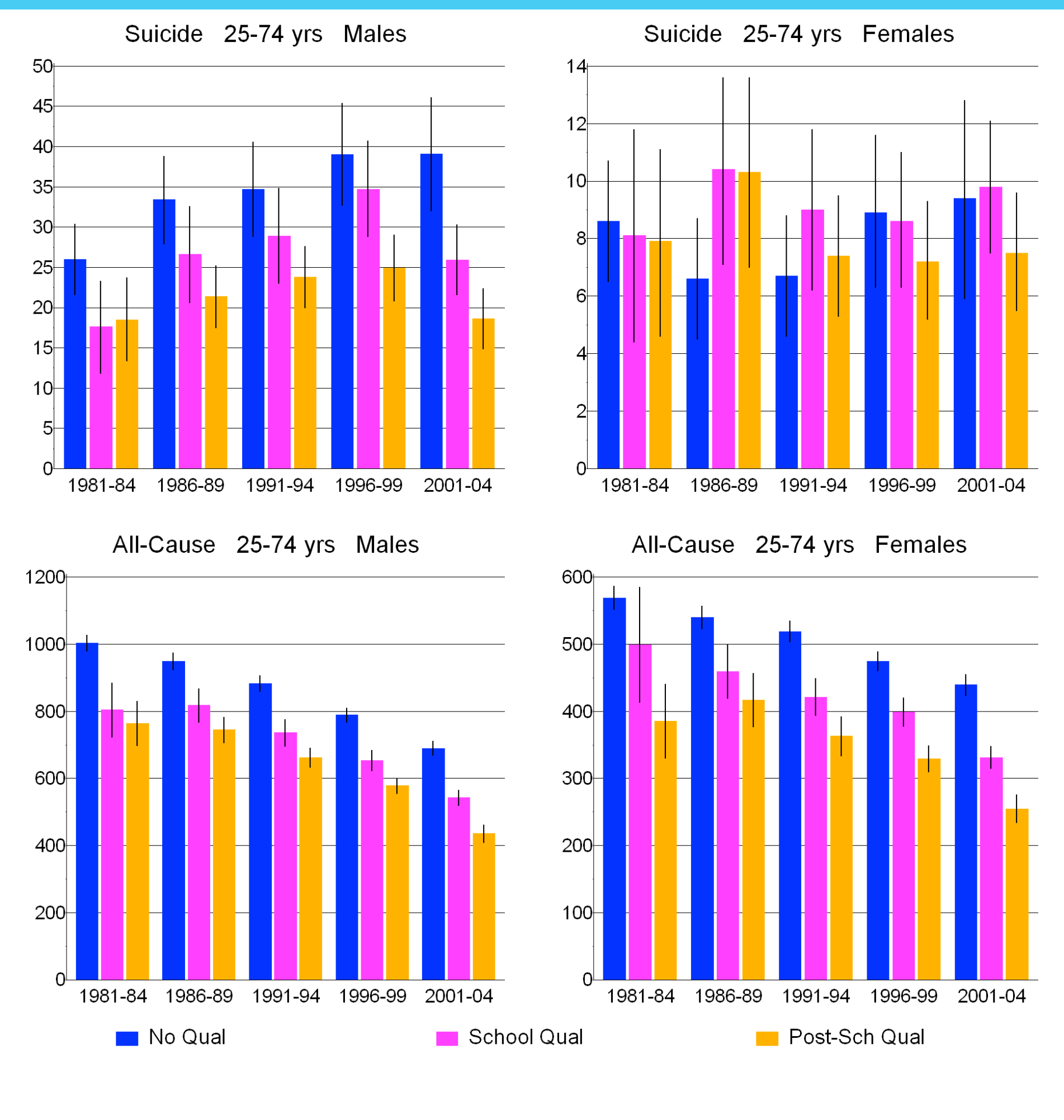
Using education as the measure of SES revealed the emergence of a steep gradient in the association for suicide death among men, whereas the gradient for all-cause mortality was roughly constant across all cohorts. For women, education status was not associated with death by suicide in any cohort, in contrast to all-cause mortality.
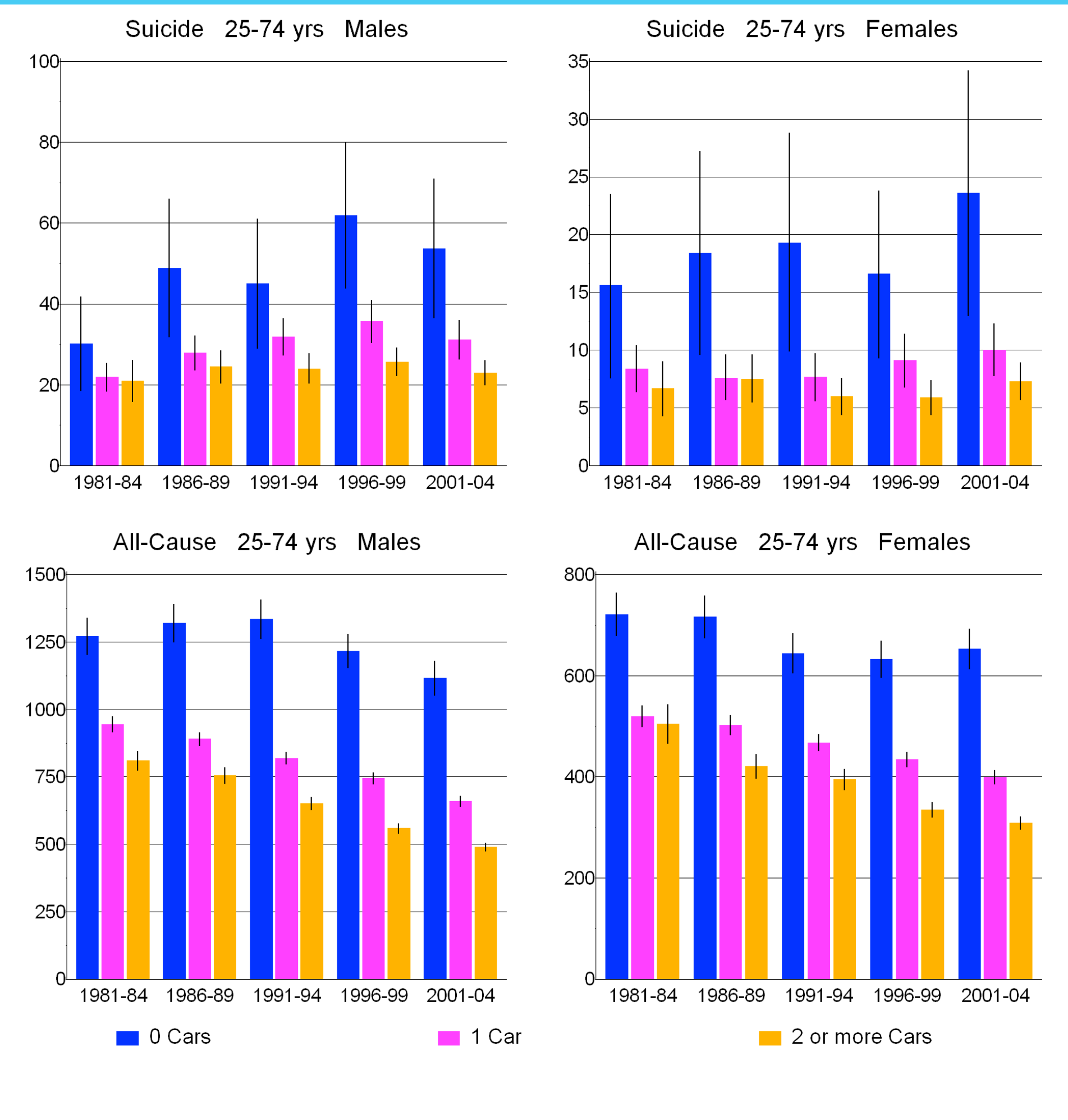
Household access to cars was strongly associated with all-cause mortality for men across all cohorts, with the association emerging for suicide in the 1986-89 cohort and remaining for later cohorts. For women there was a similar pattern, with the risk notably higher for households with no car access.
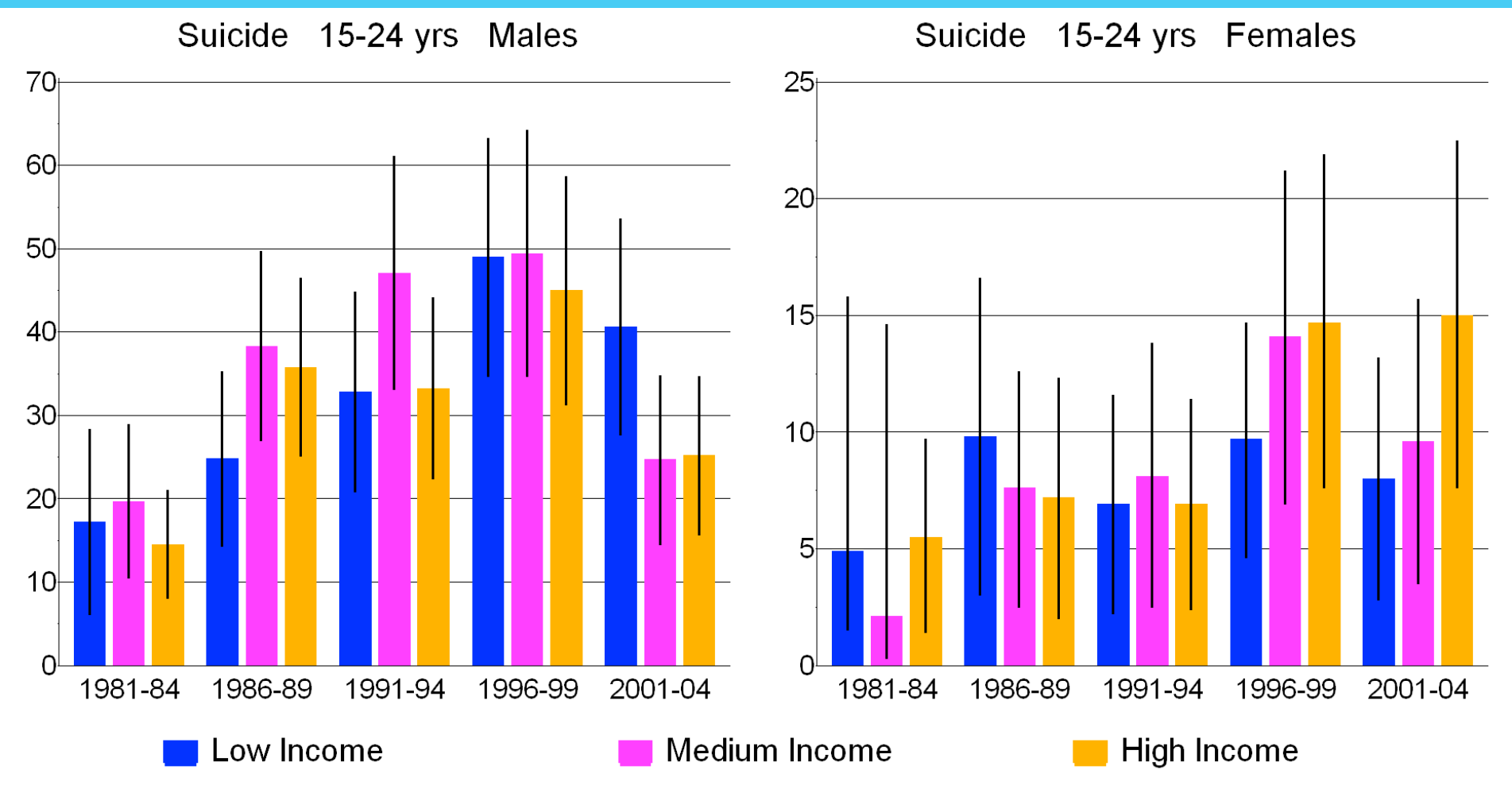
Examining the pattern of association among those aged 15-24 years showed that for both males and females there was no association with income in any cohort for suicide. Although not significant, the trend direction was reversed for young women compared to young men in the last two cohorts: death rates from suicide were highest among young women from high income households and among young men from low income households.
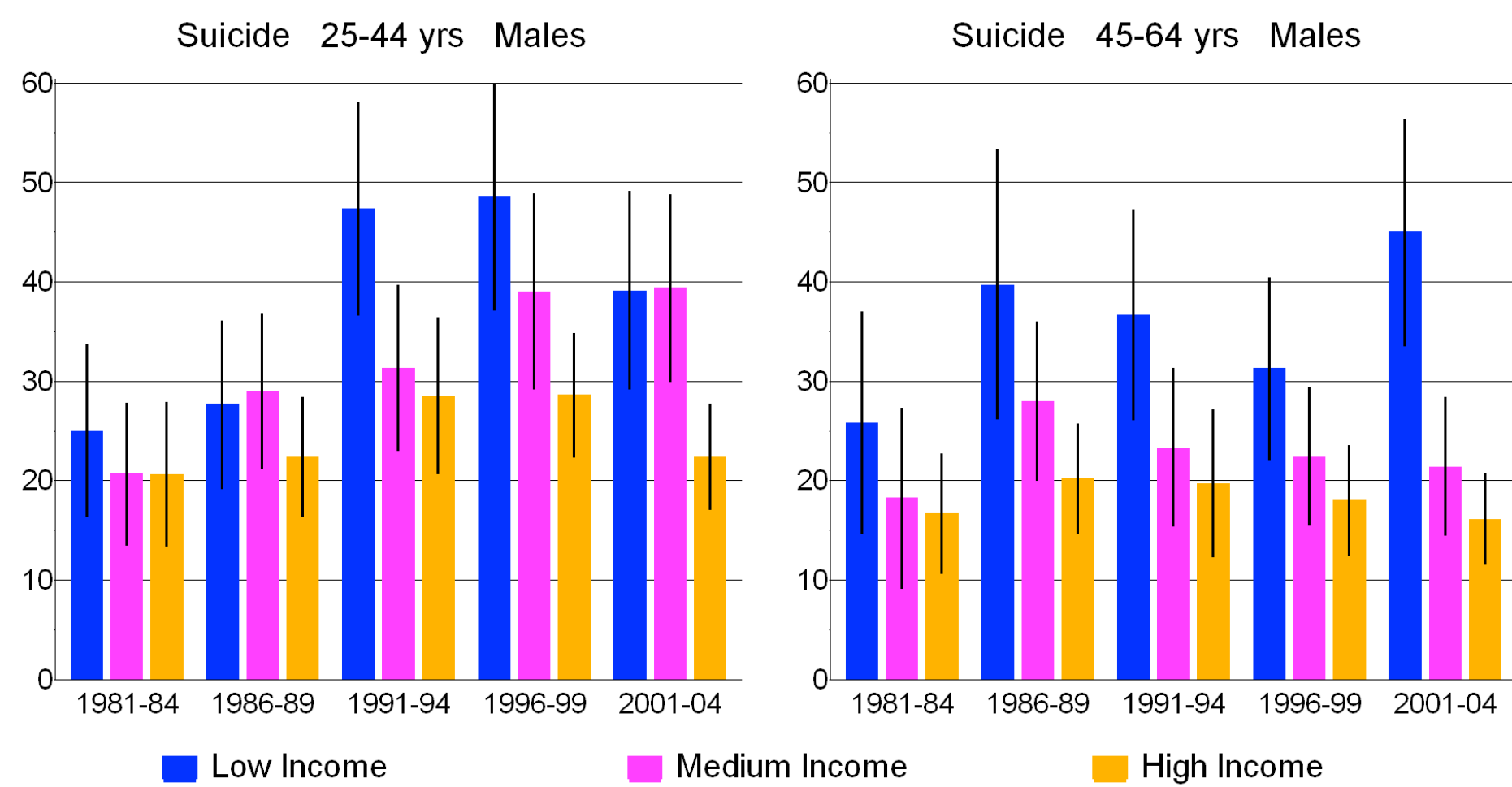
When we examined the patterns of association with income for men in different age groups, we observed that although there was no association for those aged 15-24 yrs, from 1991 onwards men aged 25-44 yrs in low income households were significantly more at risk from death by suicide than men from high income households. For those aged 45-64 yrs, this disparity only emerged in the 2001-04 cohort.
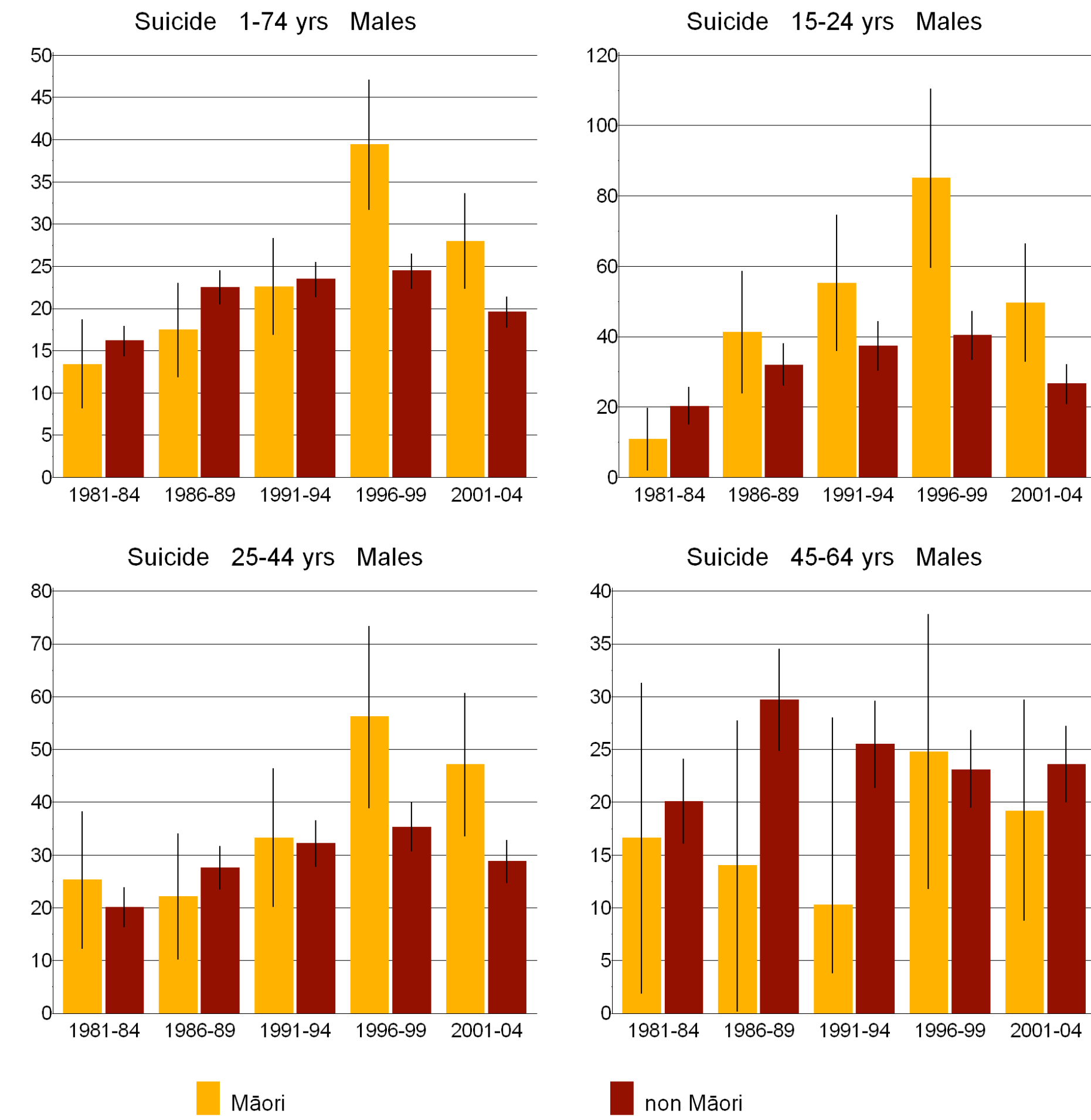
The series of graphs comparing suicide rates for Māori and non-Māori men in progressive age groups reveals that the disparity emerging in the 1996-99 cohort was largely driven by an increase in the rate among young Māori men.

Conclusion

The association between suicide and socio-economic status varies over time and between social groups. It is common for studies of suicide to use SES measures as an exposure or to control for confounding. The apparent nature and extent of the association varies by measure of SES. This means that researchers should ensure that their measure of SES is theoretically coherent with their research question or hypothesis.

The NZCMS Web Tables (http://www.otago.ac.nz/NZCMSWebTable) are in the public domain to allow policy and research communities to look at analyses of seven SES measures plus ethnicity for 25 causes of death, and a range of age groups.

Statistics New Zealand Security Statement