

Heatwaves linked to an increase in Australian suicide rates

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Heatwaves and high temperatures can have a dramatic impact on people's [physical health](#). We only have to [look at the increases](#) in emergency department admissions during recent heatwaves to know that.

But not many people realise that high variations in temperatures can also impact our mental health.

For my [PhD thesis](#) I studied the socio-environmental drivers of suicide rates in Australia from 1986 to 2005. I found that sudden spikes in [average temperatures](#) can be attributed as a risk factor for suicide in some cities.

When examining the association between increased temperatures and increased suicide rates, higher temperature increases between neighbouring months were associated with suicide over time in Sydney, Melbourne, Brisbane and Hobart.

For example, in Sydney and Brisbane, when the difference of the monthly average temperature in one month compared with the previous one month increased by 1 degree Celsius, there was a 3% increase in suicide in both of these cities.

Thus, higher temperatures in Brisbane and Sydney were shown to lead to higher suicide rates.

Crunching the data

Based on Australia's climate, the high risk seasons for suicide are spring and early summer. Over the two decade period of my study there were 28,501 suicide cases reported from eight capital cities.

The largest number of suicides were in Sydney (8,964) and Melbourne (7,701), while the fewest – based on population sizes – were in Canberra (711), Hobart (602) and Darwin (348).

But Darwin, Australia's most northern and only tropical capital city, also had the highest suicide rate (17.08 per 100,000 annual average) among all of the cities on average.

This indicates that consistent high temperature is less significantly

associated with high suicide in most capital cities. Rather it is the spikes in temperature (such as a 5 degree increase of temperature from October to November in Sydney), especially in cities in temperate climate zones, that are of concern.

In Darwin there was less temperature difference between months compared with other cities. Thus we did not find that spikes in temperature had significant associations with suicide, while temperature itself had significant association with suicide in Darwin, which may also be common in other tropical areas.

While I didn't look at why this occurred, previous studies have shown temperature could be attributed to seasonal changes in physiological conditions of the body related to wellness and happiness.

Additional risk factors

When unemployment rates are added to the mix, [suicide rates](#) increased significantly. In Brisbane and Perth, a 1% increase in the unemployment rate was associated with a 5% risk of higher suicide, without heatwaves.

In months with an unemployment rate (higher than median value in the study period), the [temperature](#) difference between adjacent months had more of a significant association with suicide in Brisbane compared with months with an [unemployment rate](#) lower than median level in the study period.

In addition, areas (such as Mornington Shire in Queensland) with a higher Indigenous population had a [higher suicide risk](#) after 1996. This is partly due to the invasion of unhealthy lifestyles from other places and lack of healthcare and psychiatry supports.

So we now have three factors to consider. Temperature variation,

unemployment and Indigenous population appear to be major drivers of suicide across local government areas, especially in recent years. This is based on the available data we collected and applied in this research.

The ultimate tri-effect of these factors still needs to be examined in future studies.

Suicide prevention strategies

The challenge now these factors have been identified is knowing how to react to them to prevent further suicides. As global [climate change](#) and any financial woes continue, it is vital to develop [local interventions](#) to reduce suicidal risk.

We need to understand the variations of suicide patterns over time, location, population groups and the possible reasons for these variations, in order to design more effective suicide control and prevention programs.

In Australia there are [national programs](#) dealing with suicide prevention. All states and territories have suicide control and prevention plans but few of them have considered the impact of environmental factors in suicide prevention programs, especially on climatic impacts.

There needs to be more attention to the potential for increased suicide risks posed by climate change, especially in vulnerable groups and during periods of extreme weather such as high variations in temperatures.

Some supporting groups, such as [Lifeline](#), need to pay attention to the impact of climate change on mental health and suicide. They need to be able to provide relevant support to vulnerable groups, such as victims of natural disasters, to prevent the increase of potential [suicide](#) risk.

It has been known that [mental health](#) problems and suicidal behaviours can be triggered by disasters and [extreme weather events](#). As climate change continues these events are likely to become more frequent and intense.

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