

Suicide rates jumped after extreme drought in the Murray-Darling Basin, researchers find

October 5 2023, by Sarah Ann Wheeler, Alec Zuo and Ying Xu

Suicide deaths by sex and remoteness areas, Australia, 2010 to 2021

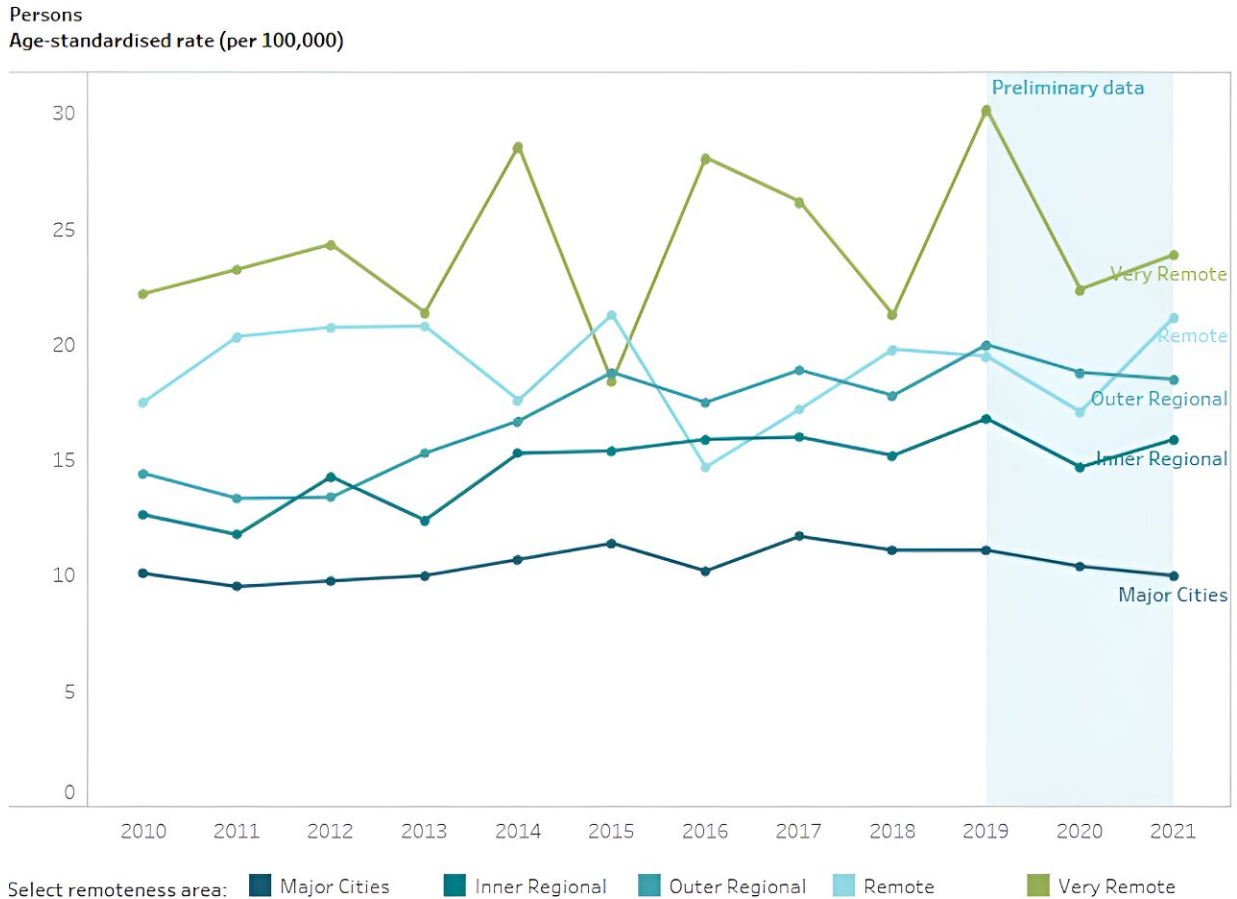


Chart: AIHW. Data: AIHW National Mortality Database and ABS Causes of Death, Australia 2022

The [impact on mental health of weather extremes](#) such as drought is a growing concern due to climate change.

Rural communities feel the impact of drought much more than urban residents. Our [new research](#) looks at the link between drought and [suicide rates](#) in one of Australia's biggest farming areas, the Murray-Darling Basin.

Drawing on monthly data from 2006 to 2016, our findings were alarming. We found, for instance, that one more month of extreme drought in the previous 12 months was strongly associated with a 32% increase in monthly suicide rates.

Climate change is [predicted](#) to bring more heat and [longer, more extreme droughts](#). More effective approaches will be needed to prevent suicides in affected regions.

Drought hits rural areas hardest

Droughts induce [post-traumatic stress disorder, anxiety and depression](#). Hotter temperatures can also [reduce levels of the brain chemical serotonin](#). This has negative effects on the [central nervous system and moods](#).

In Australia, suicide is a [leading cause of death](#)—especially for people aged 18-44. And the suicide rate in [remote areas](#) is [almost double that of major cities](#). This is because drought can:

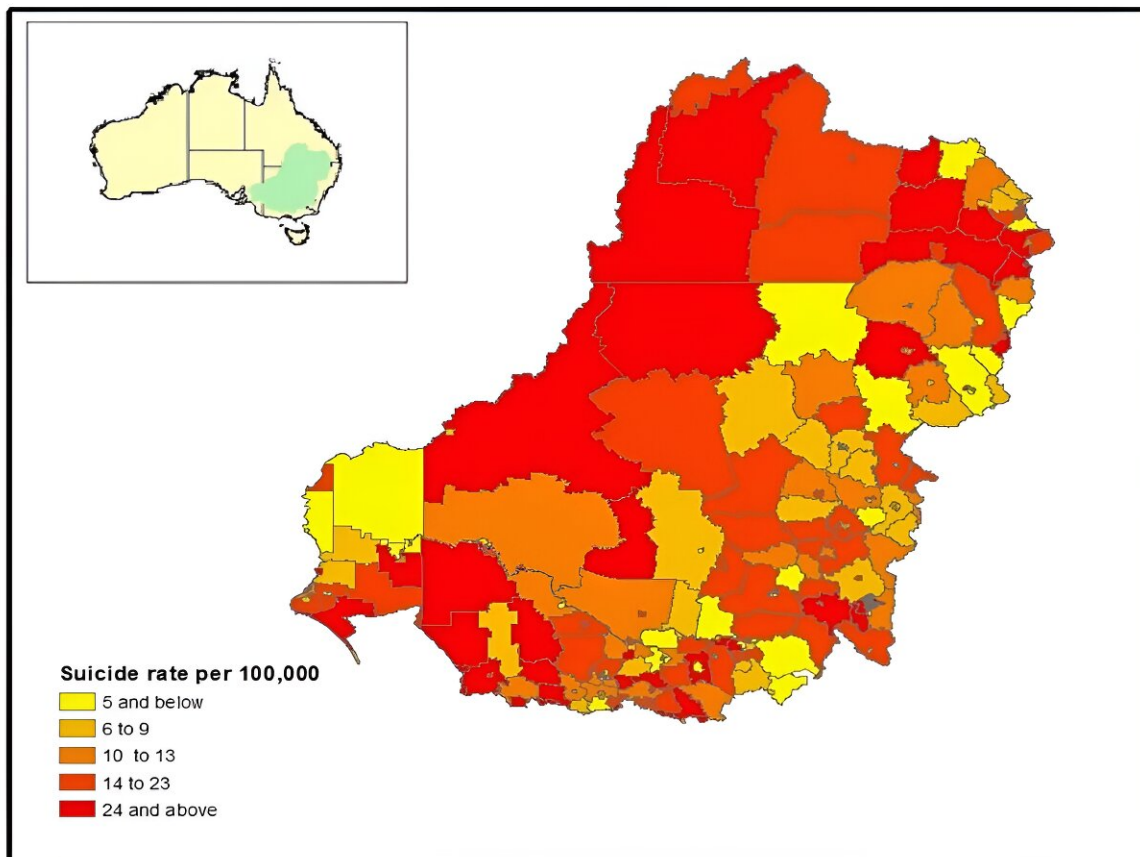
- [reduce agricultural production](#)
- [increase financial hardship](#)
- [degrade the environment](#)

- [reduce employment](#).

[Research overseas](#) found suicide rates rise with higher average temperatures. In Australia, a study found some evidence linking [drought and suicide](#) in New South Wales. However, a [Victorian study](#) found no significant association.

What happened in the basin?

[Our study](#) looked at the Murray-Darling Basin. The region went through one of the worst droughts on record, the Millennium Drought, over the past couple of decades.



Average suicide rate per 100,000 by local area in the Murray Darling Basin.

Credit: [Source: Xu et al \(2023\) using data from National Cause of Death Unit Record File from Australian Coordinating Registry \(2006-2016\) and ABS Population Census, 2006, 2011, 2016](#)

We analyzed local area monthly data from 2006-16. We wanted to see whether worsening drought and heat were linked to higher monthly suicide rates, by examining differing types of droughts (moderate to extreme).

The map below shows the average suicide rate for 2006-2016 in local areas across the basin. Male suicide rates were over three times female rates.

We sought to control for as many local area characteristics as possible. Our modeling included unemployment, income, education, proportion of farmers, proportion of Indigenous people, [health professionals](#), green space and various climate and drought variables. We modeled suicide rates for different age and gender sub-groups.

Key findings include:

- one more month of extreme drought in the previous 12 months was strongly associated with the total suicide rate increasing by 32%
- one more month of moderate drought in the previous 12 months was very weakly associated with a 2% increase in the suicide rate
- a 1°C increase in average monthly maximum temperature in the previous 12 months was associated with up to an 8% increase in the suicide rate

- in males and younger age groups, suicide rates are more strongly associated with extreme drought and higher temperatures
- a higher proportion of farmers in a local area was associated with an increased suicide rate
- a higher proportion of First Nations people in a [local area](#) was also associated with higher suicide rates
- more [green space](#) was significantly associated with moderating impacts of both extreme drought and temperature on suicide rates
- an increase in average annual household income moderated the relationship between higher temperature and suicide.

Our results suggest the association between moderate drought and suicide rates is significant but the effect was small. As the drought becomes extreme, suicide rates increase significantly.

What can we do better to prevent suicides?

Given drought's impact on farm production and finances, [mental health](#) will clearly get worse in [rural areas](#) if the impacts of [climate change](#) are not better managed.

Mental health interventions to prevent suicide in [rural areas](#) are different from what's needed in urban areas. Areas in the basin with higher percentages of farmers and First Nations people were hot spots. These areas may need special intervention.

Many have emphasized the need for a [systems approach to suicide prevention](#). Actions need to be multifaceted and co-ordinated as well as possible. One intervention or approach is not enough.

Interventions in the bush range from telehealth and [medical services](#) to [primary health networks services](#), [men's sheds](#) and drought counseling.

The relationship between [drought and financial hardship](#) seems to be key in farming areas. This points to the need for other forms of income on the farm, including from native vegetation and carbon credits. Work can also be done to promote [drought](#) preparedness, increase appropriate regional economic, social development and environmental policies and—where necessary—help people leave farming.

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