doi: 10.1111/1753-6405.13286

Deadly declines and diversity – understanding the variations in regional Aboriginal and Torres Strait Islander smoking prevalence

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Tobacco use among Aboriginal and Torres Strait Islander peoples has declined over the past two decades, from 50% of adults smoking daily in 2004–05 to 40% in 2018–19.[1,2] This included a 12% decline among those in urban/regional areas (49% to 37%) while there was no detectable change in remote areas (52%).[2] Tobacco use is influenced by a range of factors, including the ongoing impacts of colonisation which entrenched tobacco use through tobacco rations in lieu of wages until the 1960s,[3] with half of all Aboriginal and Torres Strait Islander deaths attributed to smoking among those aged 45 years and over.[4]

Aboriginal and Torres Strait Islander tobacco control requires a comprehensive, multifaceted, locally tailored approach while addressing the social determinants, including economic and educational exclusion.[5,6] National policies and programs include the regional Tackling Indigenous Smoking (TIS) program and whole of population tobacco control measures.[7-9] Priority investment in Indigenous tobacco control commenced in 2008 with substantial policy shifts and funding declines over the subsequent period of implementation.[8] There was a 9% decline (52% to 43%) from 2004–2018, compared to a 3% (55% to 52%) decline from 1994–2004.[10]

TIS funds local organisations to develop population health tobacco control initiatives. This flexible delivery promotes self-determination with community-controlled programs meeting local needs and contexts. The challenge comes when evaluating the impact on Aboriginal and Torres Strait Islander smoking nationally, with this diversity concealed in the aggregated figures. Further, while TIS is a national program, there is not national program coverage and over one quarter of Aboriginal and Torres Strait Islander peoples live in areas outside the TIS serviced regions.[11,12]

In 2017, Wright et al.[13] explored the potential for tobacco policy to be informed by more granular estimates, at the Indigenous Region level.[14] However, no significant differences in smoking prevalence in any Region between 2012–13 and 2014–15 were detected.[13] We updated this work to include 2018–19 data, and explored if any changes had occurred in smoking prevalence in the 37 Indigenous Regions from 2012–13 to 2018–19.

Methods

We used the weighted estimates of daily smoking prevalence among Aboriginal and Torres Strait Islander peoples aged 15 years and over by Indigenous Region generated from the 2012–13 (n=8,914) and 2018–19 (n=6,952) Australian Bureau of Statistics (ABS) National Aboriginal and Torres Strait Islander Health Surveys (NATSIHS).[15-18]

Prevalence estimates were obtained from reported ABS data. We calculated 95% Confidence Intervals (CI) from Margins of Error. Data is presented by remoteness (major cities; inner and outer regional; and remote and very remote) based on the alignment of the Indigenous Regions against the Australian Statistical Geography Standard Remoteness Structure.[19] Change in prevalence was calculated for each Region as the difference between the 2018/19 and 2012/13 estimates; 95% CI and z-test statistic for change in prevalence were calculated following ABS guidance.[20] An alpha level of 0.05 (absolute value of the test statistic ≥1.96) was the threshold for statistical significance. Analysis was conducted in Microsoft Excel.

Results

Overall, the proportion of people aged 15 years and over who smoked every day decreased significantly by 4.2%, from 41.6% (95%CI 39.8,43.4) in 2012–13 to 37.4% (35.2,39.6) in 2018–19 (Figure 1, Supplementary File 1). There was wide variation in daily smoking prevalence across the Indigenous Regions. Generally, lower prevalence was seen in major cities and higher in remote areas: in 2018–19, daily smoking prevalence ranged from 29.1% (25.3,32.9) in Brisbane to 54.7% (49.4,60.0) in Nhulunbuy (Figure 1).

There were statistically significant changes between 2012–13 and 2018–19 in six Indigenous Regions; two in major cities and four in remote areas. In major cities, a 12.4% (20.2,4.6) decline was observed in the Sydney-Wollongong Region from 42.6% in 2012–13 to 30.2% in 2018–19, and a 10.2% (16.4,4.0) decline in Brisbane (39.3% to 29.1%).

In remote areas, daily smoking prevalence in Katherine declined 16.6% (27.4,5.8) from 68.0% in 2012-13 to 51.4% in 2018-19; 8.8% (17.2,0.4) in West Kimberley from 59.1% in 2012-13 to 50.3% in 2018–19. In contrast, daily smoking prevalence in Apatula increased 15.7% (4.5,26.9) from 35.2% in 2012–13 to 50.9% in 2018-19, and 16.6% (4.4,28.8) in Tennant Creek from 36.1% to 52.7%.

Discussion

There was a significant decline of 4.2% nationally in Aboriginal and Torres Strait

The authors have stated they have no conflicts of interest.

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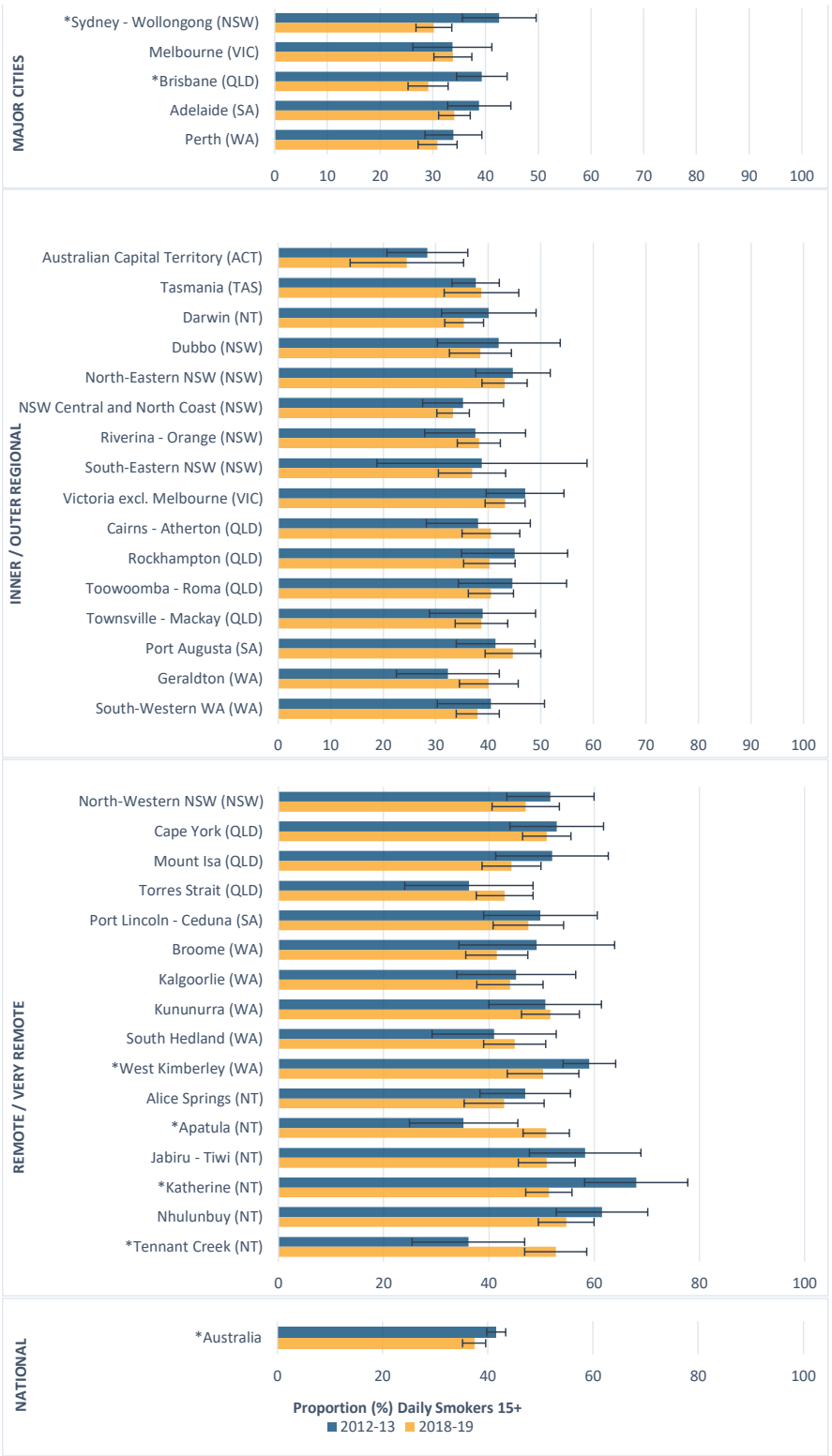
Islander daily smoking prevalence between 2012-13 and 2018-19. There is substantial variation in smoking prevalence by major cities, regional and remote areas across the country and for the first time we have detected differences in the Indigenous Regions, including declines in two remote Regions. There were also significant increases in two Regions.

The diversity in smoking prevalence and changes over time reflects the diversity of Aboriginal and Torres Strait Islander peoples, including experiences of colonisation, variation in structural barriers to being smoke-free and the different relative stages of the tobacco epidemic.[21] The timing of introduction to tobacco and experiences of the ongoing impacts of colonisation are not homogenous across Aboriginal and Torres Strait Islander communities, meaning that different Indigenous Regions will have reached their peak in smoking prevalence earlier than others, with different capacities to respond.[21] These findings, particularly the remote results, must be understood within this context and the broader social determinants of health that drive smoking prevalence.

Figure 1: Daily smoking prevalence, Aboriginal and Torres Strait Islander peoples 15+, 2012-13 and 2018-19, by Indigenous Region and nationally presented by remoteness.



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The Indigenous Regions in remote Australia with smoking prevalence of over 50% were the same communities (with the exception of Kununurra) in the lowest quintiles for employment or education outcomes in the Closing the Gap targets.[22] The success of Aboriginal and Torres Strait Islander tobacco control is mediated by the extent to which smoking determinants are addressed at a systems level.[23] This requires resourcing commensurate to need, with funding per capita for equitable impacts in remote communities likely up to seven times greater than required in urban settings.[24]

The significant increase in smoking prevalence for Tennant Creek and Apatula must be interpreted with caution. They were not observed in previous analysis[13] and are likely due to the absolute increased magnitude of change over the longer period. This may be a continuation of increasing prevalence since the early 1990s, particularly among females, indicating a later peak in the remote tobacco epidemic.[21] In 1994, the proportion of current (includes less than daily) female smokers aged 15+ years in Tennant Creek and Apatula was 17% and 20%, respectively[25]; compared to around 50% (daily) in these Regions in 2018-19.[17]

It is also possible that the 2012-13 (and earlier) estimates were not reliable and underestimated smoking prevalence in these Regions, as it was half that of the surrounding Regions. The increases seen in 2018-19 in two Regions may in part reflect a correction to a more accurate estimate, one that is in line with the surrounding communities (~50%). This is a limitation in interpretation of prevalence over time, and reinforces the need for improved data quality in national health surveys, consistent with previous calls to increase the sample size to generate reliable

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estimates for assessment and evaluation of regional level programs.[13] Further, although we found statistically significant results in six Indigenous Regions, there was no detectable difference in 31/37 of the Indigenous Regions. There may well be a decline in these Regions that could not be detected, due to large Margins of Error.

Improved data

The 2018/19 and 2012/13 surveys largely employed the same methodology which allows for comparability over time. While the sample size for the NATSIHS decreased between the two survey periods, there was substantial improvement in the accuracy of population estimates (narrower confidence intervals), possibly due to the increasing number of peoples identifying as Aboriginal and Torres Strait Islander in the Census and consequently increasing the estimated population size as a whole between surveys.[16] Improved national and regional population denominators may have assisted to increase accuracy in the sample and sub-samples. Although this may limit comparisons, it will ultimately assist to better inform, monitor and evaluate programs and policies as detailed in the World Health Organization's Framework Convention on Tobacco Control.[26]

The significant increases in smoking prevalence in two remote Indigenous Regions will likely have muddied the picture when data are aggregated at the remote/non-remote level, resulting in a perception that there has been no change in smoking prevalence in remote areas. Due to data access limitations and changes in precision of estimates, further detailed exploration of smoking prevalence by Indigenous Region is not possible. This limits evaluation of regionally based programs and requires urgent attention, particularly given the priority in Closing the Gap to support local community decision-making with disaggregated data.[27] The use of multiple data sources will also assist to provide a more comprehensive understanding of smoking prevalence and the impact of programs, such as TIS. So too would an alignment of TIS service boundaries with Indigenous Regions to understand regional declines in relation to TIS teams' activity. However, the presence of consistent and strong TIS teams and other tobacco control activity may explain the declines in smoking prevalence observed in the West Kimberley and Brisbane regions.[28-30]

So what?

Reductions in Aboriginal and Torres Strait Islander smoking continue, but the variation in current prevalence and degree of success over time across Indigenous Regions reinforces that there is no one-size-fits-all approach. It is crucial to continue to tailor and target tobacco control to meet local needs, monitor progress and support the principle of 'proportionate universalism', whereby national level tobacco control is accompanied by additional measures for priority populations and settings.[31] Although the TIS program does not have national coverage,[12] the observed declines may suggest impacts of the current program beyond its serviced areas, leveraging wider-reaching media-based tobacco control initiatives and other programs and policies.

Locally designed and implemented tobacco goals aligned to the TIS program and associated regions have the potential to be the individual building blocks to informing the overarching national goals. This could include the imminent Aboriginal and Torres Strait Islander Health Plan, National Tobacco Strategy and National Preventative Health Strategy. However, policies must recognise and address the determinants of smoking to achieve ongoing, meaningful changes and substantial improvements in health outcomes.

Conclusions

Significant declines are occurring in Aboriginal and Torres Strait Islander smoking prevalence overall (aggregated) and in a number of Indigenous Regions. Improved data quality has assisted in identifying change in six Indigenous Regions and for the first time declines have been detected in two remote Indigenous Regions. While these significant declines are encouraging, there is still much to do in improving smoking related health outcomes, with the lowest recorded prevalence of 29%.

Given the regional diversity in Aboriginal and Torres Strait Islander communities, including in the tobacco context, maintaining a regional program model is critically important. However, resourcing and adequate data will be integral to ongoing monitoring, evaluating, and guiding changes to programs and systems at all levels. Ongoing investment in Aboriginal and Torres Strait Islander tobacco control and increased investment in national surveys is required to provide communities and policy makers with the necessary information to ensure effective programs and policies.

Acknowledgements

We would like to thank and acknowledge Aboriginal and Torres Strait Islander peoples who participated in these national surveys, making it possible to share the success of Aboriginal and Torres Strait Islander peoples and communities to reducing tobacco use and promote smoke free lifestyles.

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Supporting Information

Additional supporting information may be found in the online version of this article:

Supplementary File 1: Data for Figure 1.

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