HPV CONTROL IN AOTEAROA: AN INVESTIGATION INTO AOTEAROA NEW ZEALAND'S APPROACHES TO VACCINATION AGAINST THE HUMAN PAPILLOMAVIRUS

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Background

The Human Papillomavirus (HPV) is a virus that is a public health threat in Aotearoa New Zealand (NZ), as it is associated with a range of life-threatening cancers, primarily cervical cancer. To reduce HPV transmission a vaccine was introduced into NZ's National Immunisation Schedule in 2008 for girls aged 12 to 13. This vaccine was primarily delivered to year 8 girls through a school-based vaccination programme (SBVP), except in Canterbury, where HPV vaccines were delivered through primary health care providers (PCPs). In 2016 Canterbury switched to a mixed model approach, utilising both schools and PCPs to administer HPV vaccines. In 2017 males were introduced into all HPV vaccination programmes. This study aimed to address current research gaps concerning the efficacy of these differing HPV vaccination programmes, to identify which model best increased vaccination coverage and protected adolescents in our communities against HPV infection. This research strives to align with the mission of Te Niwha, as it is specifically investigating how to best protect New Zealander's against the threats posed by this infectious organism.

Aims

1. Compare HPV vaccination coverage in Canterbury to that achieved in the rest of NZ, to evaluate the differing vaccination models.

2. Investigate whether there are ethnic inequities in HPV vaccination coverage in NZ, and if these inequities differ by vaccination programme.

3. Determine how the COVID-19 pandemic has impacted HPV vaccination coverage.

Methods

A repeated cross-sectional analysis was conducted using vaccination data from the Aotearoa Immunisation Register and population data from the Health Service User dataset, from 2013 to 2023. One-dose HPV vaccination coverage calculated amongst adolescents born 13 years earlier was stratified by ethnicity, gender and location. Line graphs compared coverage between European, Pacific and Māori females and males in Canterbury and in Non-Canterbury. Beta regressions analysed how coverage changed before and after 2016, the year Canterbury introduced a mixed model approach, and how coverage changed before and after the COVID-19 pandemic. All analysis was conducted in RStudio version 4.3.0, and was funded through a Te Niwha Master's scholarship.

Results

1. From 2014 to 2018, female coverage was lower in Canterbury than in Non-Canterbury. From 2019 to 2023 coverage was similar between the two locations. Beta regressions confirmed that Canterbury female's coverage significantly increased from 2016 to 2019. Male coverage from 2017 to 2023 was relatively similar between Canterbury and Non-Canterbury.

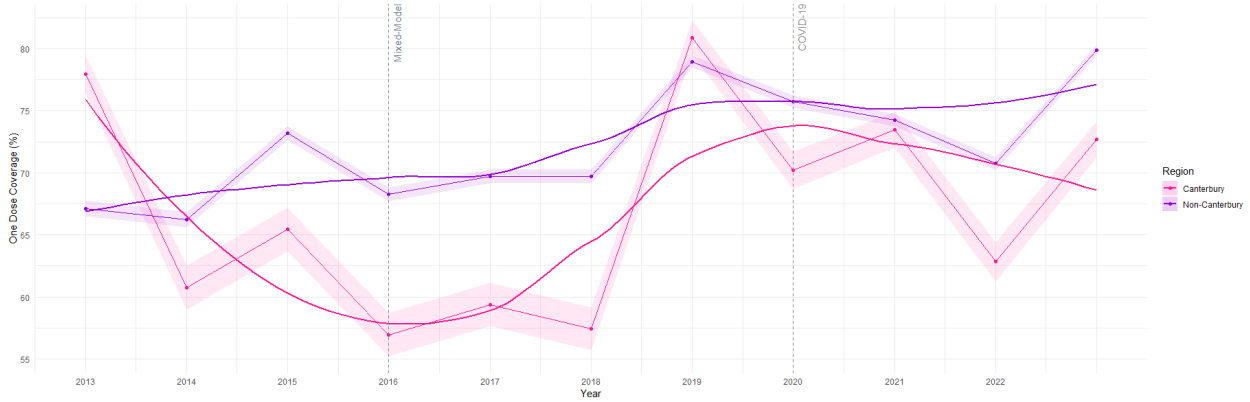

Figure 1 *One dose HPV vaccination coverage in Canterbury & in Non-Canterbury amongst females born 13 years earlier, from 2013 to 2023.*

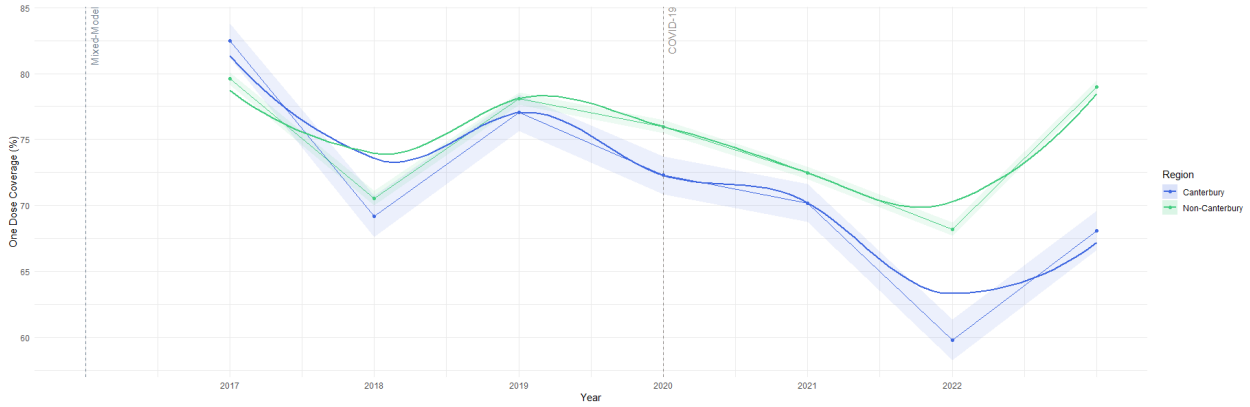

Figure 2 *One dose HPV vaccination coverage in Canterbury & in Non-Canterbury amongst males born 13 years earlier, from 2017 to 2023.*

2. Until 2020, in Canterbury female coverage was relatively consistent across the European, Māori and Pacific populations, whereas male Māori and Pacific coverage was lower than European coverage. In Non-Canterbury, female vaccination coverage was consistently higher amongst the Māori and Pacific populations, in comparison to European populations, until 2020. The male Non-Canterbury Māori coverage rates appeared equal to European coverage, and Pacific coverage higher than European. Overall, trends varied by ethnicity between Canterbury and Non-Canterbury. Only female results are shown here for the sake of brevity.

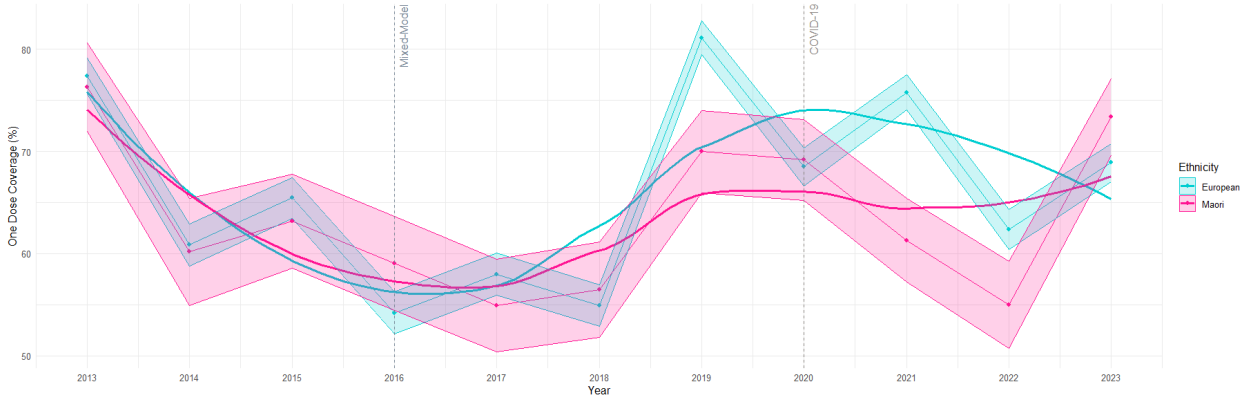

Figure 3 *One dose HPV vaccination coverage in Canterbury amongst the female Māori and European populations born 13 years earlier, from 2013 to 2023.*

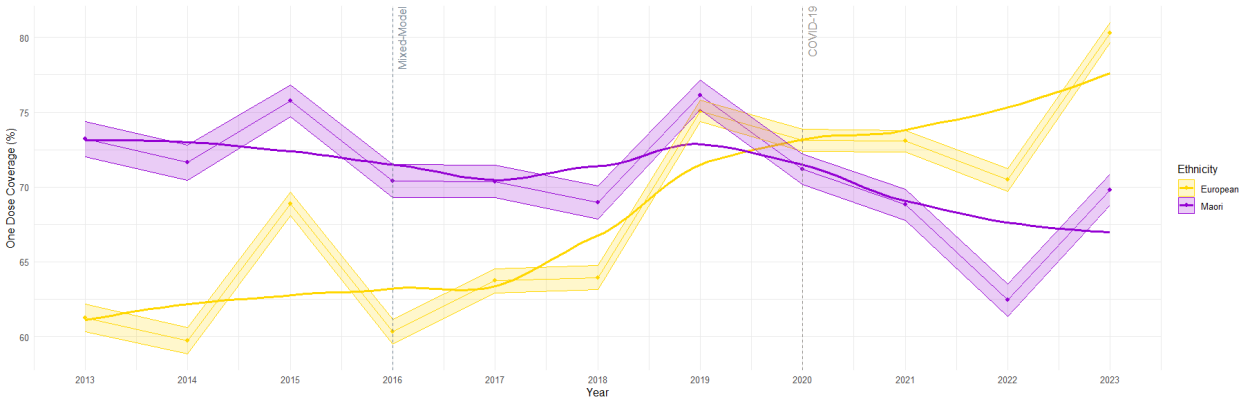

Figure 4 *One dose HPV vaccination coverage over time in Non-Canterbury amongst the female Māori and European populations born 13 years earlier, from 2013 to 2023.*

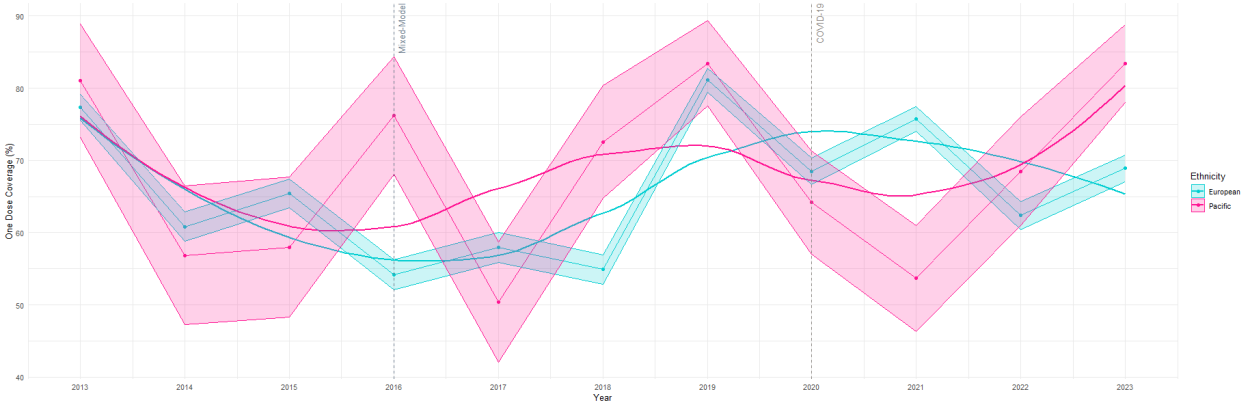

Figure 5 *One dose HPV vaccination coverage over time in Canterbury, amongst the female Pacific and European populations born 13 years earlier, from 2013 to 2023.*

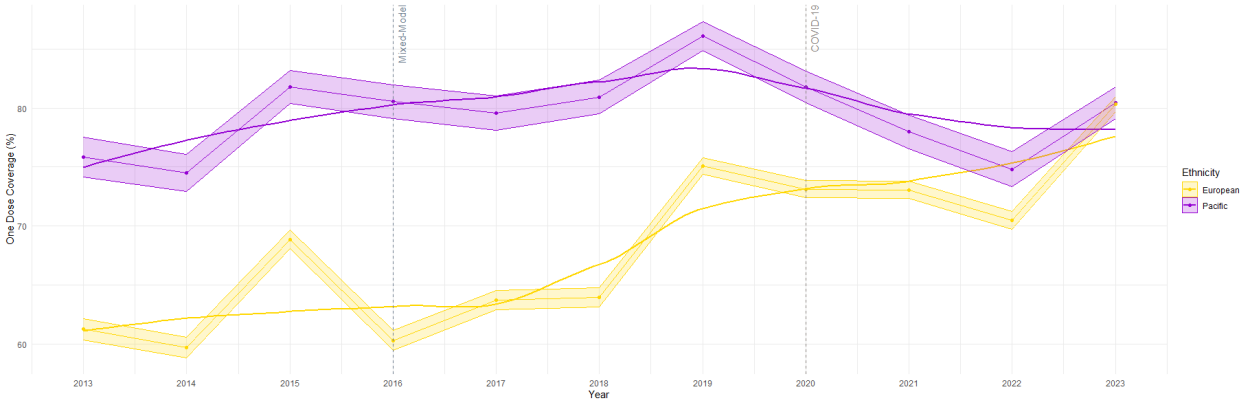

Figure 6 *One dose HPV vaccination coverage over time in Non-Canterbury, amongst the female Pacific and European populations born 13 years earlier, from 2013 to 2023.*

3. The COVID-19 pandemic caused HPV vaccination coverage to decrease from 2020 to 2022, although most populations appeared to recover by 2023. Amongst the total male and female populations, coverage decreased more in Canterbury than in Non-Canterbury. Coverage also predominantly decreased more amongst Māori and Pacific populations than European.

Conclusion

This study postulated that incorporating some form of school-based delivery for HPV vaccines throughout NZ is the most effective strategy to increase coverage, although Māori and Pacific populations appeared most negatively impacted by the COVID-19 pandemic under a SBVP. The next step for this research would be to conduct a more broad analysis looking at each DHB in NZ individually, each prioritised ethnicity and more doses of the vaccine, which would help provide more depth to the findings. Additionally, integrating a more qualitative approach into this research could help provide more contextual evidence for the findings. Further inclusion of relevant stakeholders such as vaccine administrators would help show more about the community perceptions of HPV vaccines, and more consultation with Māori and Pacific health professionals would also provide evidence about why these unique trends by ethnicity were observed.

There are further improvements that could be made to NZ's HPV vaccine delivery, not only to reduce differences in coverage by ethnicity and by vaccination model, but also to allow coverage in NZ to increase to levels seen in other countries. This research provided evidence for decision makers regarding how to optimise New Zealand's HPV vaccine delivery programmes so that they best offer protection to our adolescents. The ongoing potential benefits of this research for NZ is that it can inform evidence based decision making within this field of infectious disease prevention, especially amongst New Zealand's Māori and Pacific populations.