

# Research Findings Brief

HEALTHIER  
LIVES

He Oranga Hauora

National  
**SCIENCE**  
Challenges



## What protects against prediabetes progressing to diabetes?

### Key points

- This is the first study published to identify progression rates of prediabetes in Aotearoa New Zealand.
- The study also identified key protective factors against progression such as healthy weight, being female, older and speaking Te Reo Māori.
- This is the first study to identify Indigenous language as a protective factor against diabetes.



### RESEARCHERS

**Dr Andrea Teng**  
University of Otago Wellington

**Dr Nina Scott**  
Waikato District Health Board

**Professor John Oetzel**  
University of Waikato

**Dr Bridgette Masters-Awatere**  
University of Waikato

**Dr Rawiri Jansen**  
National Hauora Coalition

**Professor Tony Blakely**  
University of Melbourne

**Professor Jeremy Krebs**  
University of Otago Wellington

### COMMUNITY PARTNERS

**National Hauora Coalition**

**Te Kōhao Health**

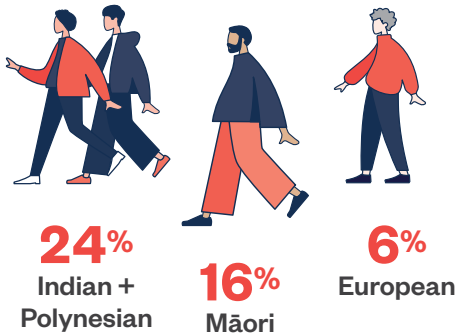
### PROJECT TIMELINE

February 2017 – August 2018

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## Why is this issue important?

- Some communities are affected disproportionately by high levels of non-communicable diseases: in New Zealand the incidence of type 2 diabetes amongst Indian and Pacific peoples is 24% and amongst Māori it is 16%, compared to 6% in European peoples<sup>1</sup>.



- This research will help inform the health system about prediabetes progression rates, and could lead to improved targeting of interventions for people with prediabetes.
- The findings of this study are consistent with previous overseas research, which has indicated a connection to Indigenous culture and language may improve and protect health.

## What did we do?

- The study aimed to identify potential traits that could protect or progress a patient with prediabetes towards diabetes.
- The National Hauora Coalition, along with Statistics NZ, worked closely with researchers to bring anonymised primary health care data into the IDI.
- A sample of 14,000 people enrolled in the National Hauora Coalition, a primary health organisation (PHO) in the upper North Island, were observed from the time they were diagnosed with prediabetes to see if they progressed to diabetes.
- The researchers linked data on patients' measured levels of glycated haemoglobin (known as HbA1c) and body mass index (BMI) to government health, census and social datasets in the IDI.
- By linking the data, the research team was able to look at progression rates from prediabetes to diabetes using data about age, sex, ethnicity and socioeconomic position.

## What did we find?

- The cumulative incidence of diabetes in the group studied was 5% after three years.
- The rate of progression from pre-diabetes to diabetes was greater amongst younger adults, men, people with higher HbA1c, and people with higher BMI.
- Māori and Pacific peoples had a greater rate of progression from prediabetes to diabetes than the rest of the population. This is largely because they had more advanced prediabetes at the time it was diagnosed, as measured by higher HbA1c levels.
- There was an association between speaking Te Reo Māori and 19 to 88 percent lower progression to diabetes, independent of age, sex, income, education, deprivation, ethnicity and HbA1c.
- Other key protective factors against progression were identified, such as healthy weight, being female, and being older.

<sup>1</sup>T.L. Ellison, R. Elliott, S.A. Moyes, *HbA1c screening for undiagnosed diabetes in New Zealand*, *Diabetes Metab Res Rev*, 21 (2005), pp. 65-70



## What did we produce?

- Tables identifying progression of prediabetes to diabetes in the study cohort after three years, by age, sex, ethnicity and socioeconomic position.

## Publication

**What protects against prediabetes progressing to diabetes? Observational study of integrated health and social data** *Diabetes Research and Clinical Practice* 2019; 148:119-129. doi: 10.1016/j.diabres.2018.12.003

## Why does it matter?

'Big data' has the potential to unlock important information about some of New Zealand's greatest health challenges. This study is an example of that; it was one of the first times diabetes data from primary health care has been linked with other data held in the IDI.

This study demonstrates the value of this important data to New Zealand research for policy and clinical practice. In particular, it suggests that groups at high risk of diabetes identified by age, sex, ethnicity, HbA1c and BMI could be considered for prioritisation of prediabetes interventions.

## Next steps

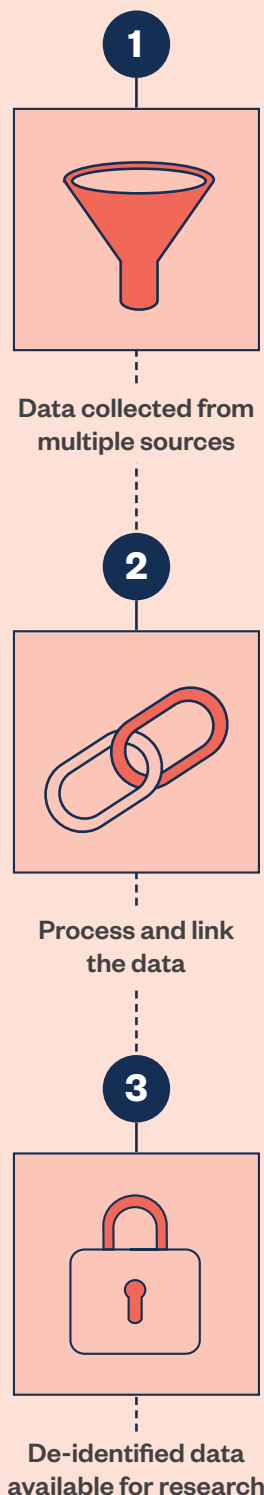
When targeting interventions for slowing the progression of prediabetes to diabetes, health planners and clinicians should consider the factors identified as being associated with increased risk of progressing to diabetes (being a younger adult, being male, having a higher HbA1c level or greater BMI).

Further research is needed to assess the full value of speaking Te Reo Māori for health.

Further research is needed to understand the level of linkage error and potential bias in the IDI and how it might differ by ethnicity.



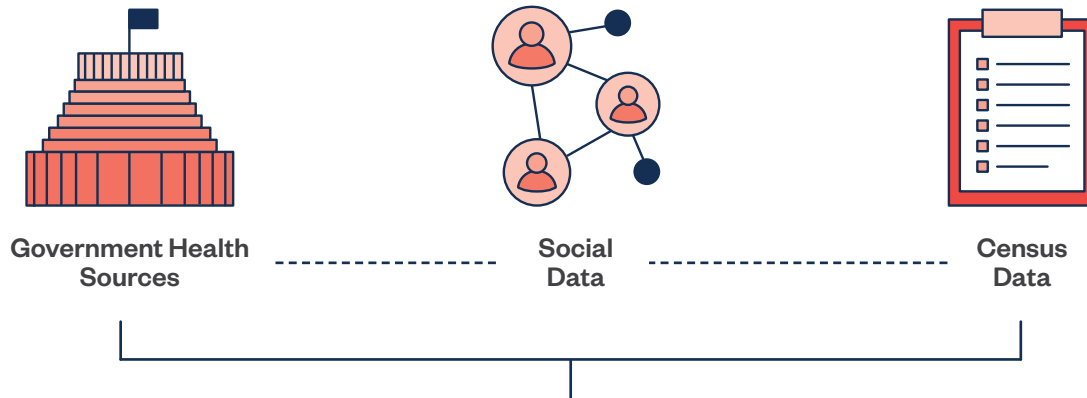
## How the Integrated Data Infrastructure (IDI) works



**Stats** NZ  
Tatauranga Aotearoa

## Using big data

'Big data' was used in this study to investigate the progression of prediabetes to type 2 diabetes. Health data from 14,000 people was linked, anonymously, with government health, social and census data.

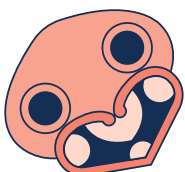


**14,000**  
participants

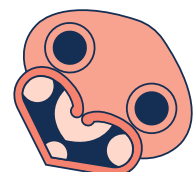
The study found some people had greater rates of progression from prediabetes to diabetes:



The study found some things protected people with prediabetes from progressing to diabetes:



This is the first time Indigenous language has been identified as something that can protect against prediabetes progression.



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## Acknowledgements

We wish to acknowledge the patients of the National Hauora Coalition whose de-identified data was used in this research. We are grateful for input from Te Kōhao Health into the conceptualisation of the study (especially their interest in the impact of mental health and Indigenous language), and the wider He Pikinga Waiora project team who have contributed to its development.

We acknowledge technical support from the IDI team at Statistics New Zealand and analytical support from Jonathan Murray (National Hauora Coalition). Thank you to Dr Jade Tamatea (Waikato District Health Board) and Dr Cristina Cleghorn (University of Otago, Wellington) for your comments on the final draft.

## Disclaimer

The results of this study are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI), managed by Statistics New Zealand. The opinions, findings, recommendations, and conclusions expressed are those of the author(s), not Statistics NZ, or the University of Otago. Access to the anonymised data used in this study was provided by Statistics NZ under the security and confidentiality provisions of the Statistics Act 1975. Only people authorized by the Statistics Act 1975 are allowed to see data about a particular person, household, business, or organization, and the results in this paper have been confidentialised to protect these groups from identification and to keep their data safe.

Careful consideration has been given to the privacy, security, and confidentiality issues associated with using administrative and survey data in the IDI. Further detail can be found in the Privacy impact assessment for the Integrated Data Infrastructure available from [www.stats.govt.nz](http://www.stats.govt.nz)



## About Healthier Lives

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**Our vision** is of Aotearoa New Zealand with equitable health outcomes and a substantially reduced burden of non-communicable diseases.

**Tō mātou kitenga** kia noho a Aotearoa New Zealand hei whenua he ōrite ngā putanga hua hauora mō te tangata, kia iti iho hoki ngā pūkauranga o ngā māuiui kāore e taea te tuku ki te tangata kē.

The **Healthier Lives – He Oranga Hauora National Science Challenge** is a national collaborative research programme, investigating innovative approaches to the prevention and treatment of four major non-communicable diseases (NCDs) – cancer, cardiovascular disease, diabetes and obesity.

### CONTACT US

**phone** (03) 470 9859

**email** [healthier.lives@otago.ac.nz](mailto:healthier.lives@otago.ac.nz)

**website** [healthierlives.co.nz](http://healthierlives.co.nz)

**twitter** @healthierNZ

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