

Estimated impact of interventions to reduce salt consumption in NZ

Prof Nick Wilson, Dr Nhung Nghiem, Dr Cristina Cleghorn,
Dr Linda Cobiac, Prof Tony Blakely

Funder: The Health Research Council of NZ

National
SCIENCE
Challenges



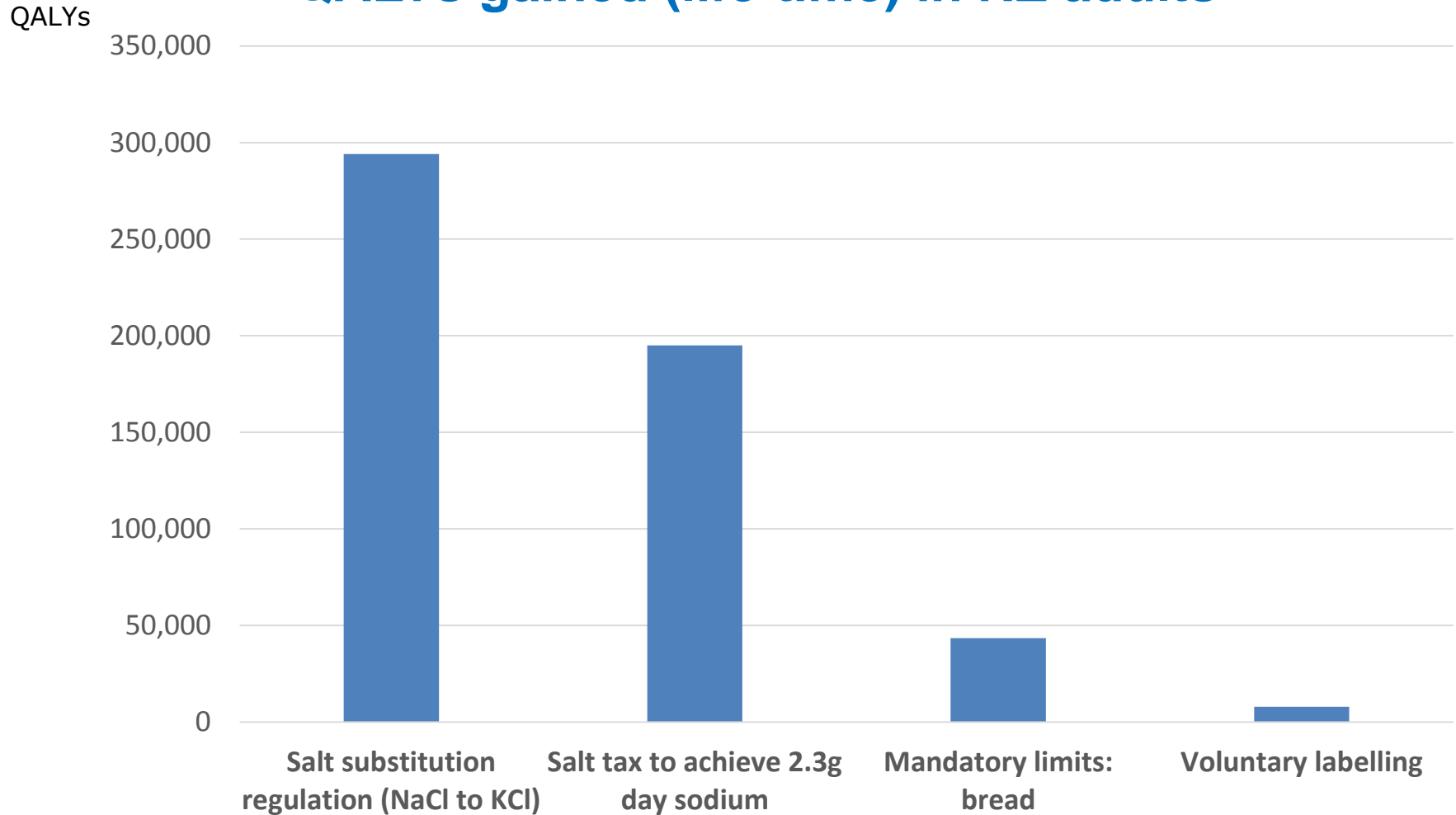
Background

- “Diet high in sodium” 15th most important risk factor for health loss globally (GBD 2016 Study)
- Countries use a wide range of interventions:
 - Labelling (many)
 - Maximum levels in foods (eg, bread)
 - Media campaigns (eg, UK)
 - Taxing salty foods (eg, Hungary)
 - Encouraging industry to reformulate food
 - Substitution with KCl (eg, Finland)
 - Dietary counselling (many)

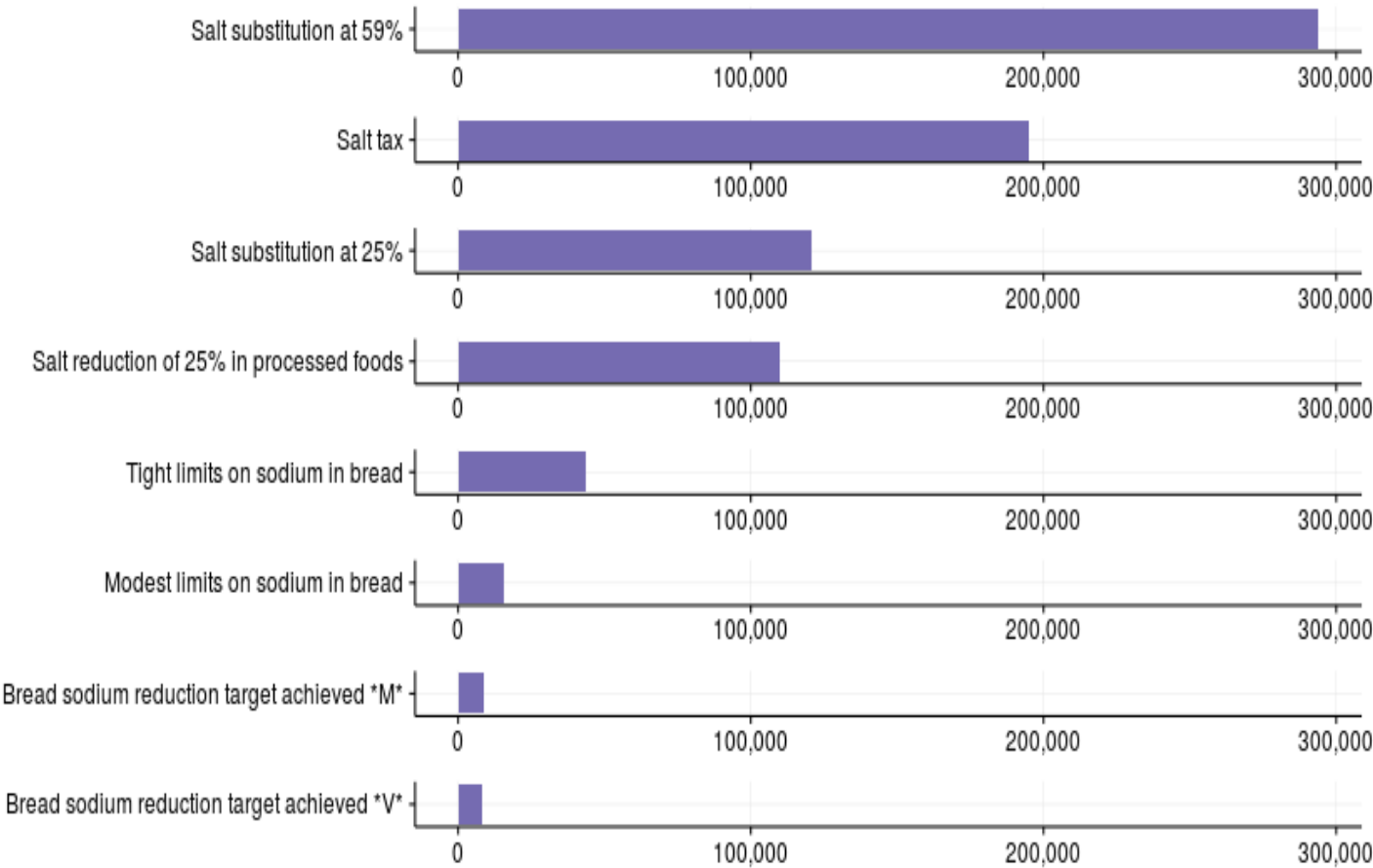
Methods (sodium reduction)

- Markov macro-simulation model (TreeAge)
- Estimates QALYs gained (↓CHD & ↓stroke)
- Methods details on BODE³ website:
 - Nghiem et al 2015, *PLoS One*
 - Nghiem et al 2016, *BMC Public Health*
 - Wilson et al 2016, *Nutr J*
 - Online Reports: eg, model validation

Results vary widely by interventions – QALYs gained (life-time) in NZ adults

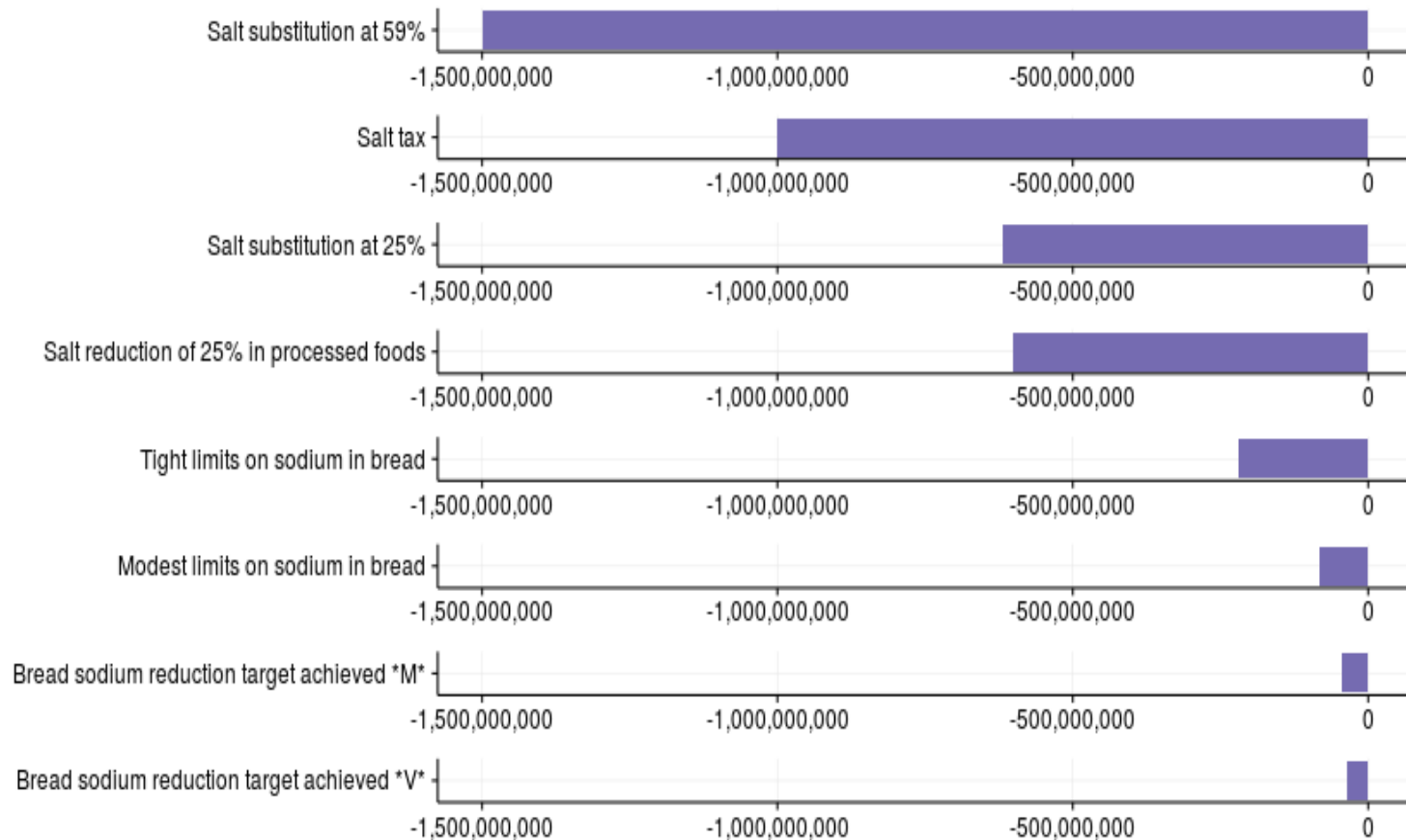


Screenshot, online interactive league table: QALY gains (life-time) for NZ population in 2011 (selection of 32 interventions)



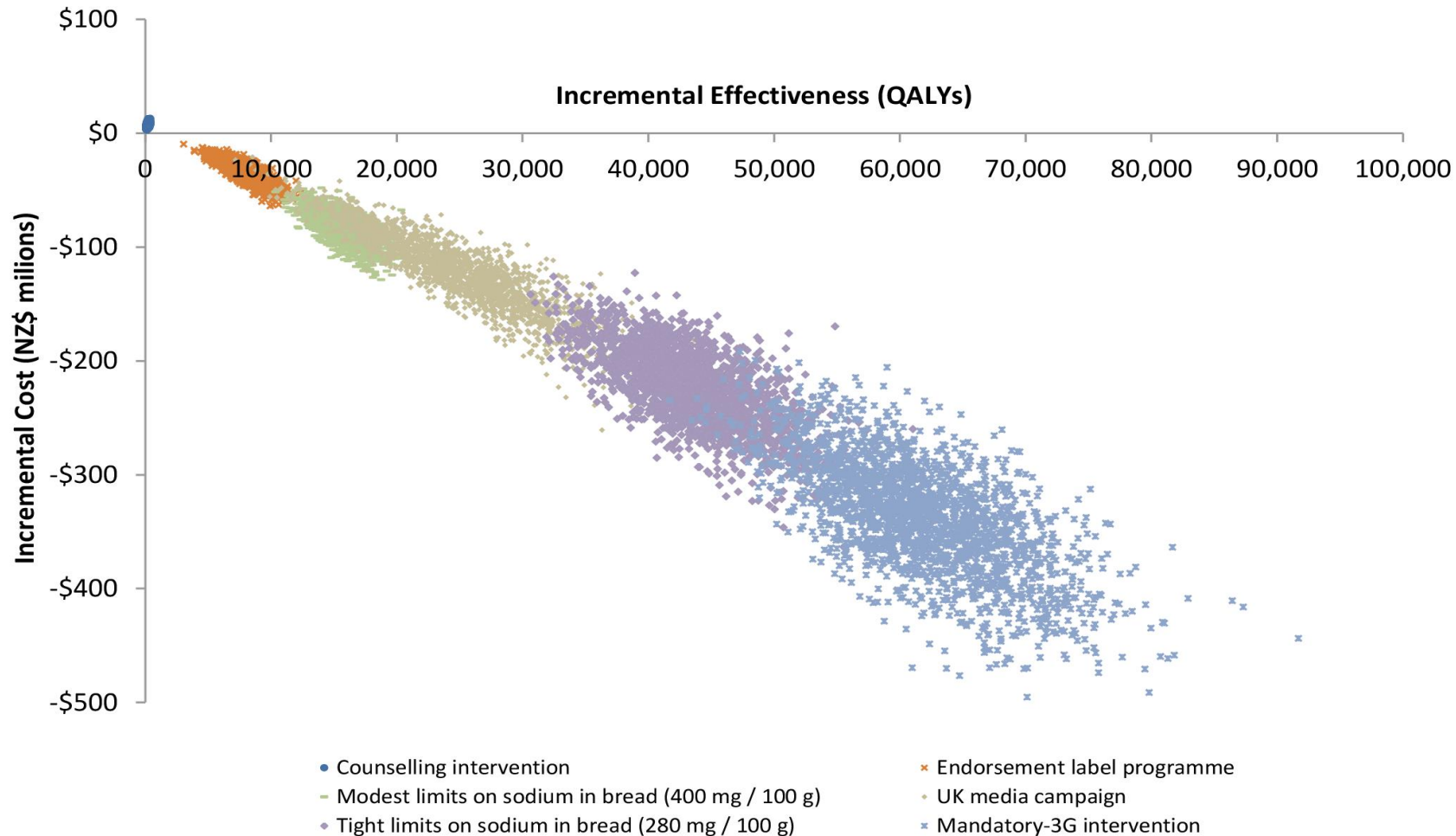
QALYs gained for the NZ population alive in 2011

Screenshot, online interactive league table: health system costs (life-time) NZ\$ for NZ population

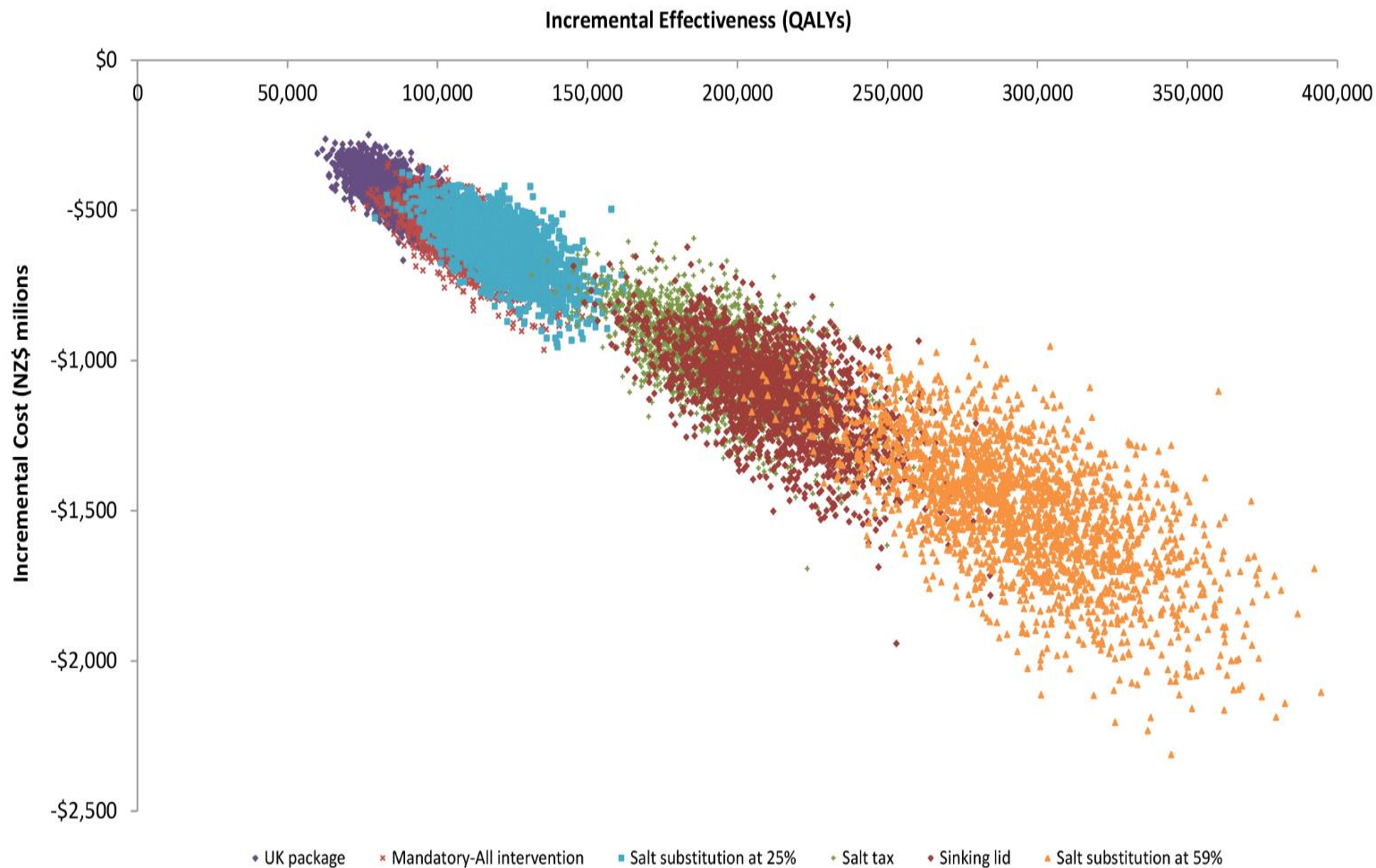


Net costs NZ\$ (negative = cost saving)

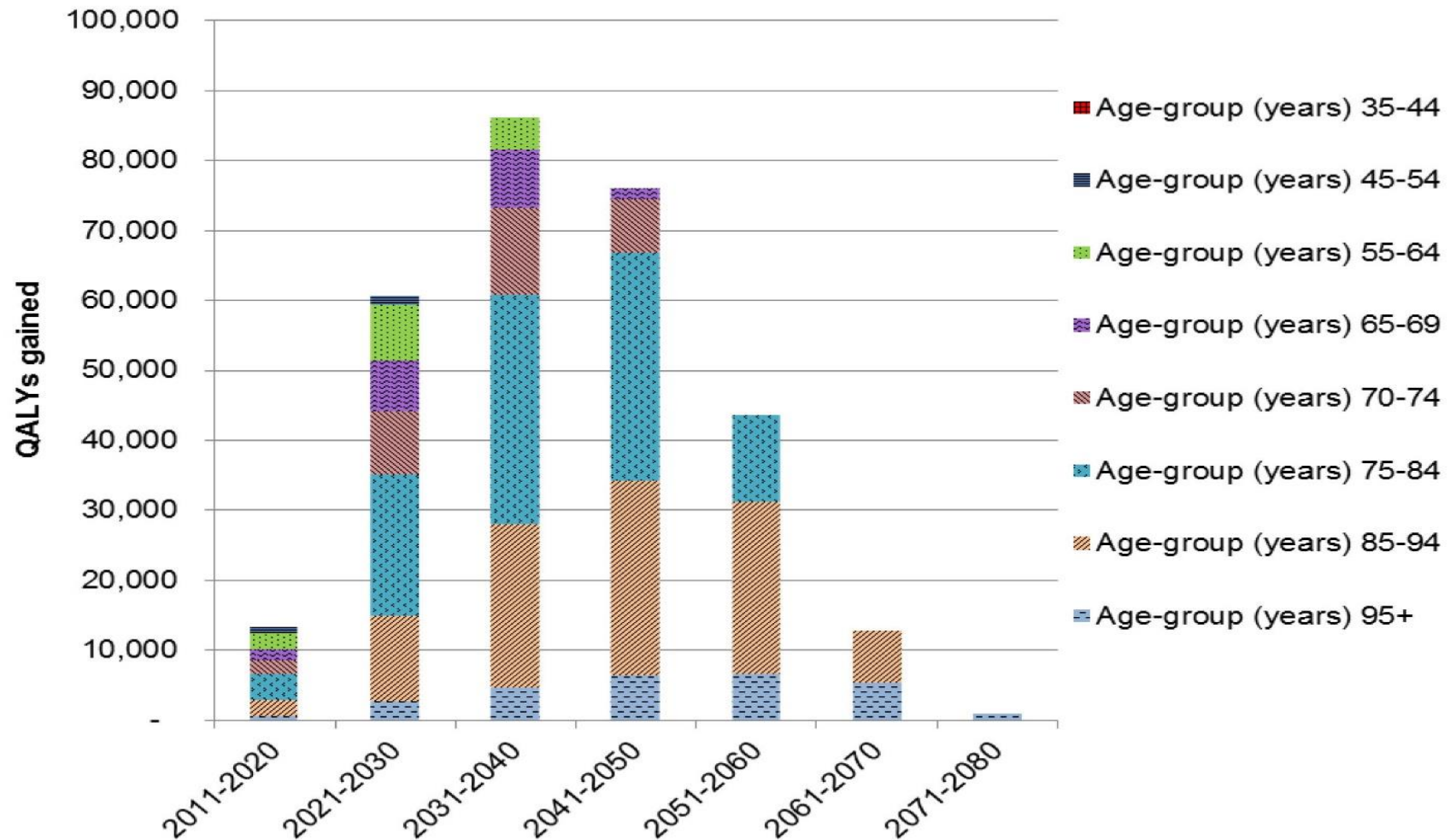
Not yet in the online league table (but published): Cost-effectiveness planes



Cost-effectiveness plane: highest impact interventions



Who gains the QALYs & when



Selected additional issues

- 33% higher per capita QALY gain for Māori
- Revenue from a salt tax – a potential plus?
- Particular value with salt substitution (industry already doing it)
- Priority foods for possible targeting eg,
 - bread
 - sauces
 - processed meats



RESEARCH ARTICLE

Open Access



CrossMark

Designing low-cost “heart healthy bread”: optimization using linear programming and 15-country comparison

Nick Wilson*, Nhung Nghiem, Sian Ryan, Christine Cleghorn, Nisha Nair and Tony Blakely

Abstract

Background: Bread is an important component of many diets, but is also typically too much of other nutrients. This study compares the optimal design of low-cost “heart healthy bread” to 15 countries.

Methods: Optimization using linear programming was used to design a range of minimal sodium levels. Then with the addition of dietary fiber, and then polyunsaturated fat, and comparison nutrient and price data to the design.

Results: The optimized loaf costing NZ\$1.10, met three out of the eight heart health nutrient targets. The bread in ingredients (H-HRS 2) was nutritionally comparable to the 15-country comparison.



Limitations of this work

- Recent human & animal studies: Salt excretion **very metabolically demanding** (so lower salt diet might help with maintaining lower weight)
- Debate about **J-shaped distribution** persists – though probably an artefact of inaccurate measurement of sodium intake (see: He et al 2018, *IJE*)

Summary

- Policy-makers can consider NZ results for 32 methodologically comparable interventions in the BODE³ online interactive league table
- Sodium substitution – largest gains
- Some regulations seem very politically feasible eg, maximum levels on very salty sauces