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Tracking the Paths of Ageing and Depopulation in Regional New Zealand

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Acknowledgements



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 - Tai Timu Tangata (TTT) – Marsden Fund
 - Capturing the Diversity Dividend for Aotearoa New Zealand (CADDANZ) – MBIE
- And follows the earlier MBIE-funded Nga Tangata Oho Mairangai (NTOM) and Climate Change Impacts and Implications (CCII)
- Much of the historical data was derived from Statistics NZ data by Natalie Jackson (Massey). The changing nature of population decline is also her thesis
- The population projection model is joint work with Jacques Poot (NIDEA)
- The ideas in this presentation also benefited greatly from discussions with Dave Maré, Bill Cochrane, and Lars Brabyn

- National population projections produced by Statistics New Zealand (SNZ) paint a picture of gradually slowing population growth
 - At the median, annualised population growth of 1.2% from 2014-18, falling to a fairly stable 0.3% from 2053-68
- However, this masks substantial variation in the likely experiences of subnational areas
 - One-third of the nation's TAs declined in size between 1996 and 2013
 - The number of TAs projected (by SNZ) to decline in size increases from 12 (18 per cent) between 2013 and 2023 to 39 (58 per cent) between 2033 and 2043

Some terminology



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- **Population growth** = increasing population
- **Population decline** = decreasing population
- **Net in-migration** = in-migration exceeding out-migration
- **Net out-migration** = out-migration exceeding in-migration
- **Natural increase** = births exceeding deaths
- **Natural decrease** = deaths exceeding births

Types of population change



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- We can categorise population change into six types:
 1. Population growth through net in-migration that exceeds natural decrease
 2. Population growth through combined net in-migration and natural increase
 3. Population growth through natural increase in spite of net out-migration
 4. Population decline through net out-migration that exceeds natural increase
 5. Population decline through combined net out-migration and natural decrease
 6. Population decline through natural decrease in spite of net in-migration
- Sub-national areas may move between these types
 - In fact, we expect areas to move towards types 1 and 5, and 6 (the latter is what Natalie Jackson has termed the 'new form' of population decline)

Population change



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Population Change Typologies

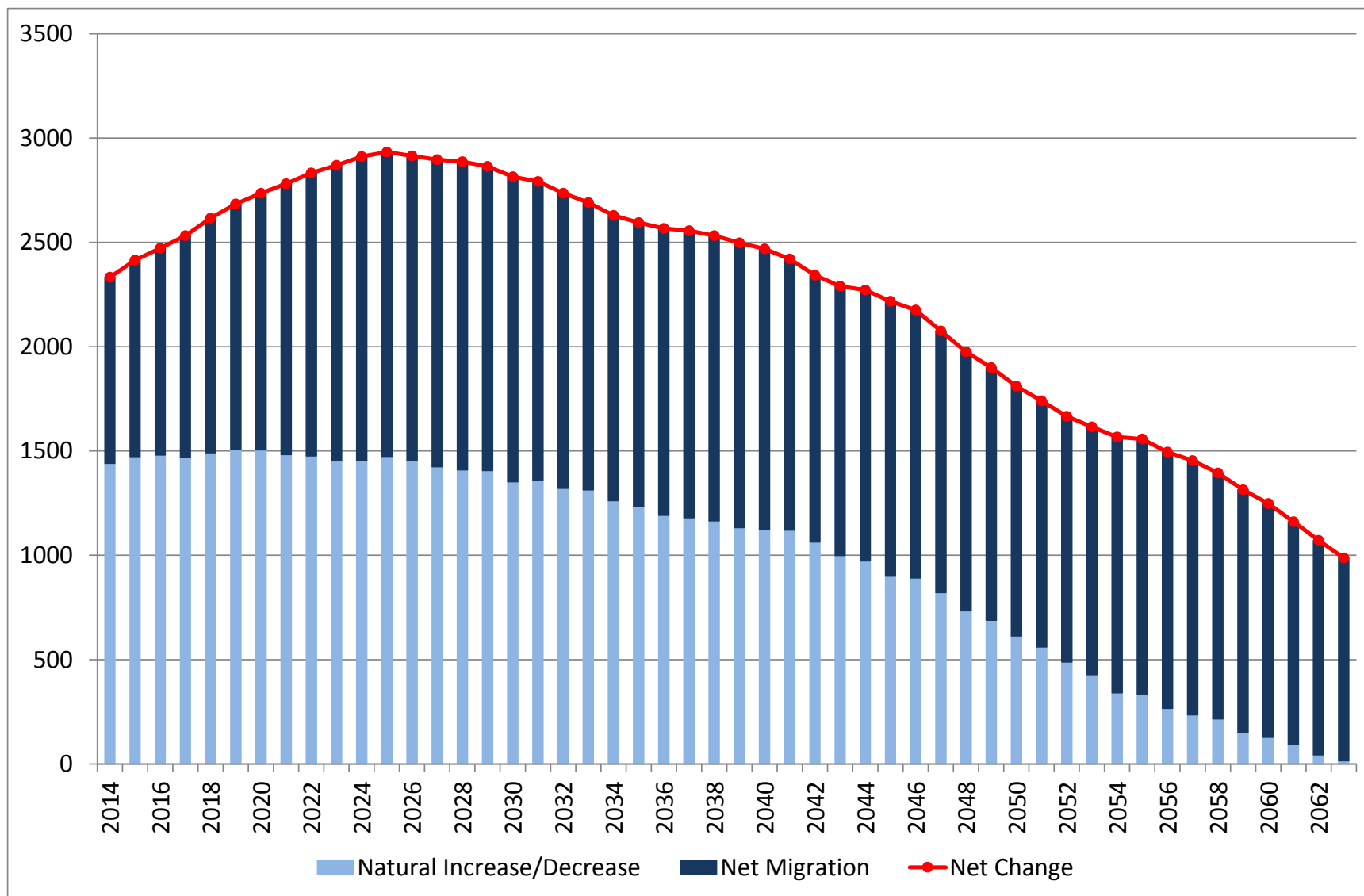


- The historical data I will use comes from inter-Censal population changes
 - Calculations by Natalie Jackson
- The projected data comes from two sources:
 - The WOW population model (single-district cohort-component model)
 - A prototype multi-district cohort-component model (which I discussed briefly in my presentation yesterday)

Hamilton City – Annual projected population change



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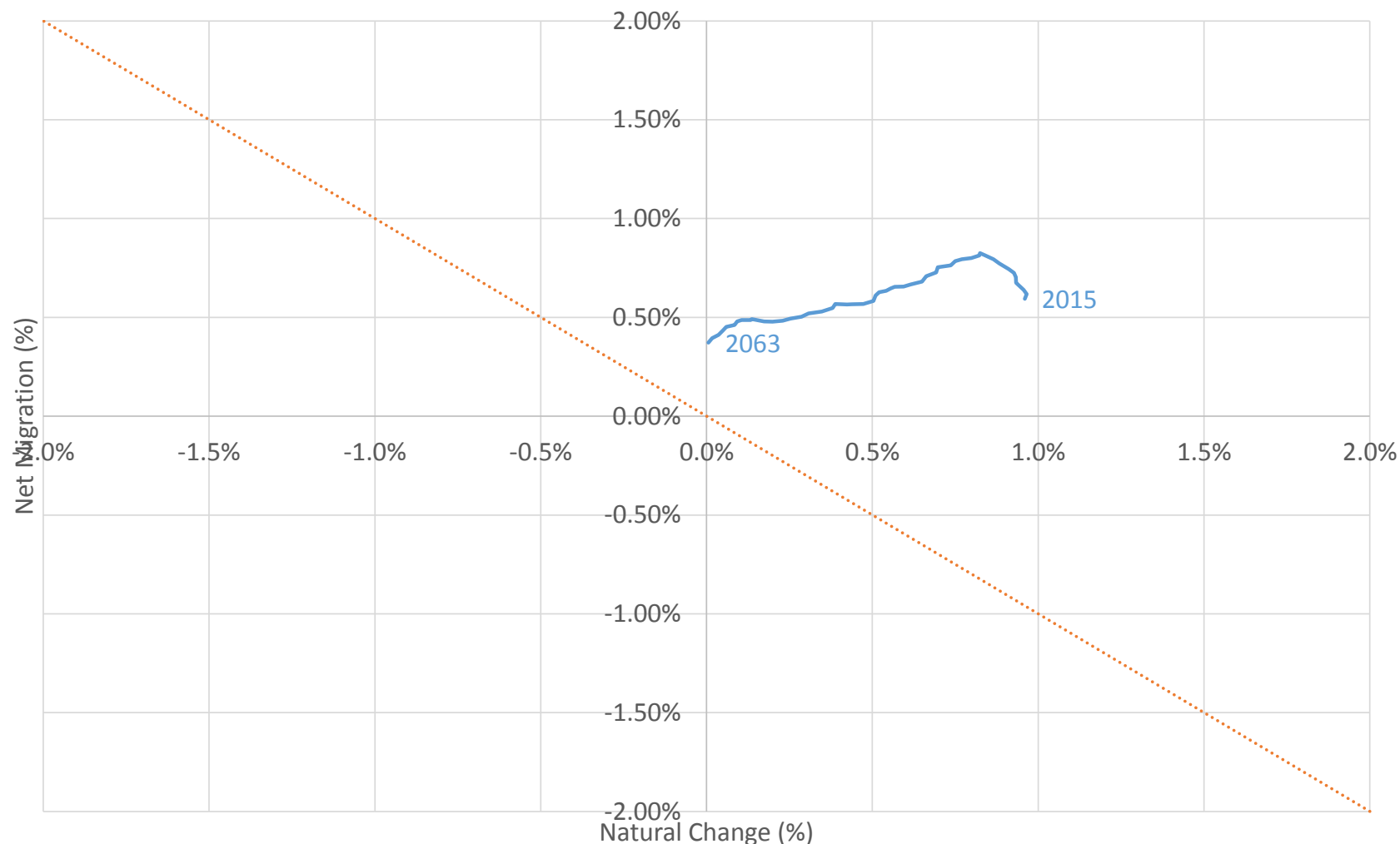


Hamilton City – Annual projected population change



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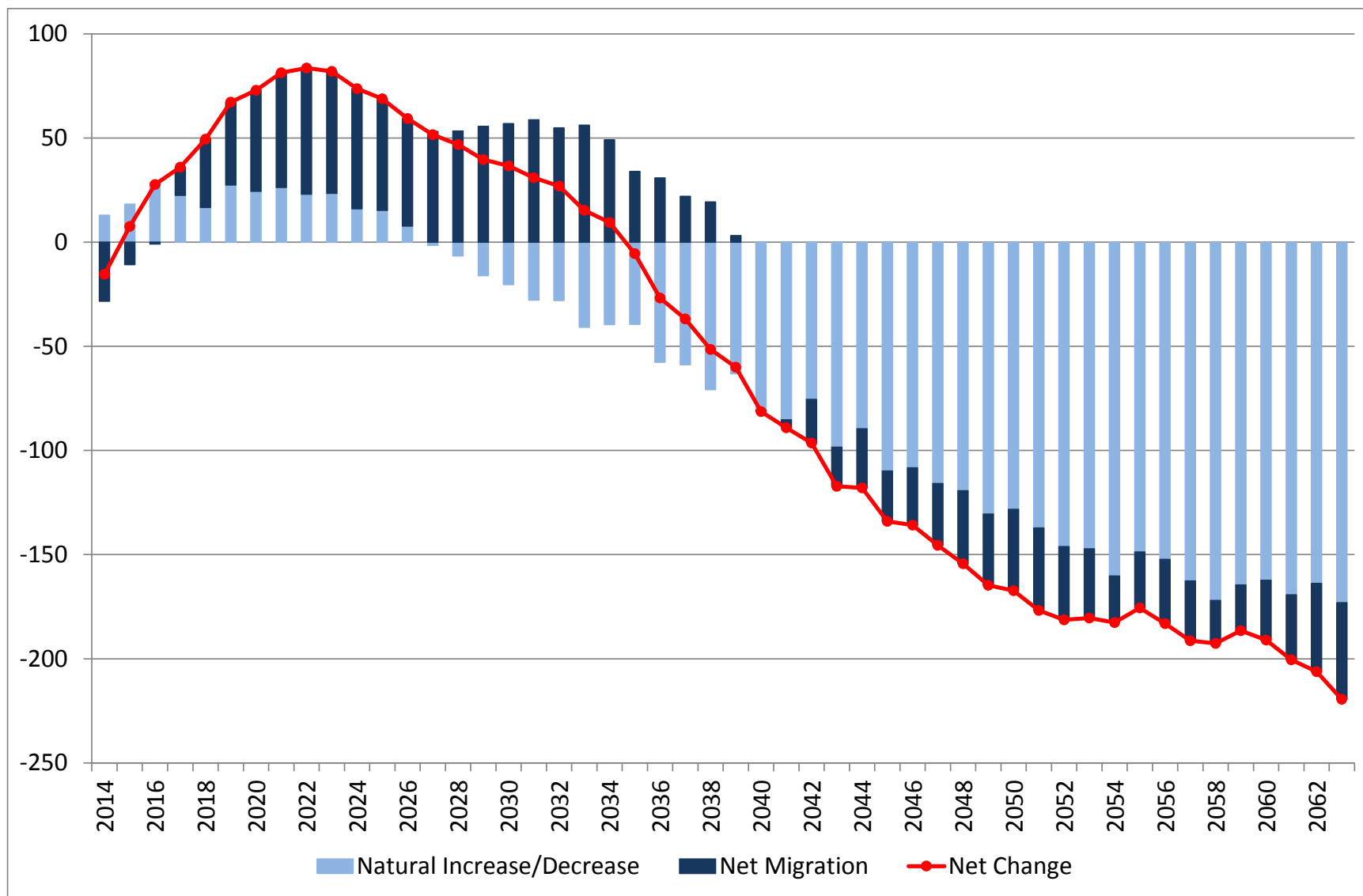
Time Path for Components of Population Change - Hamilton



Hauraki District – Annual projected population change



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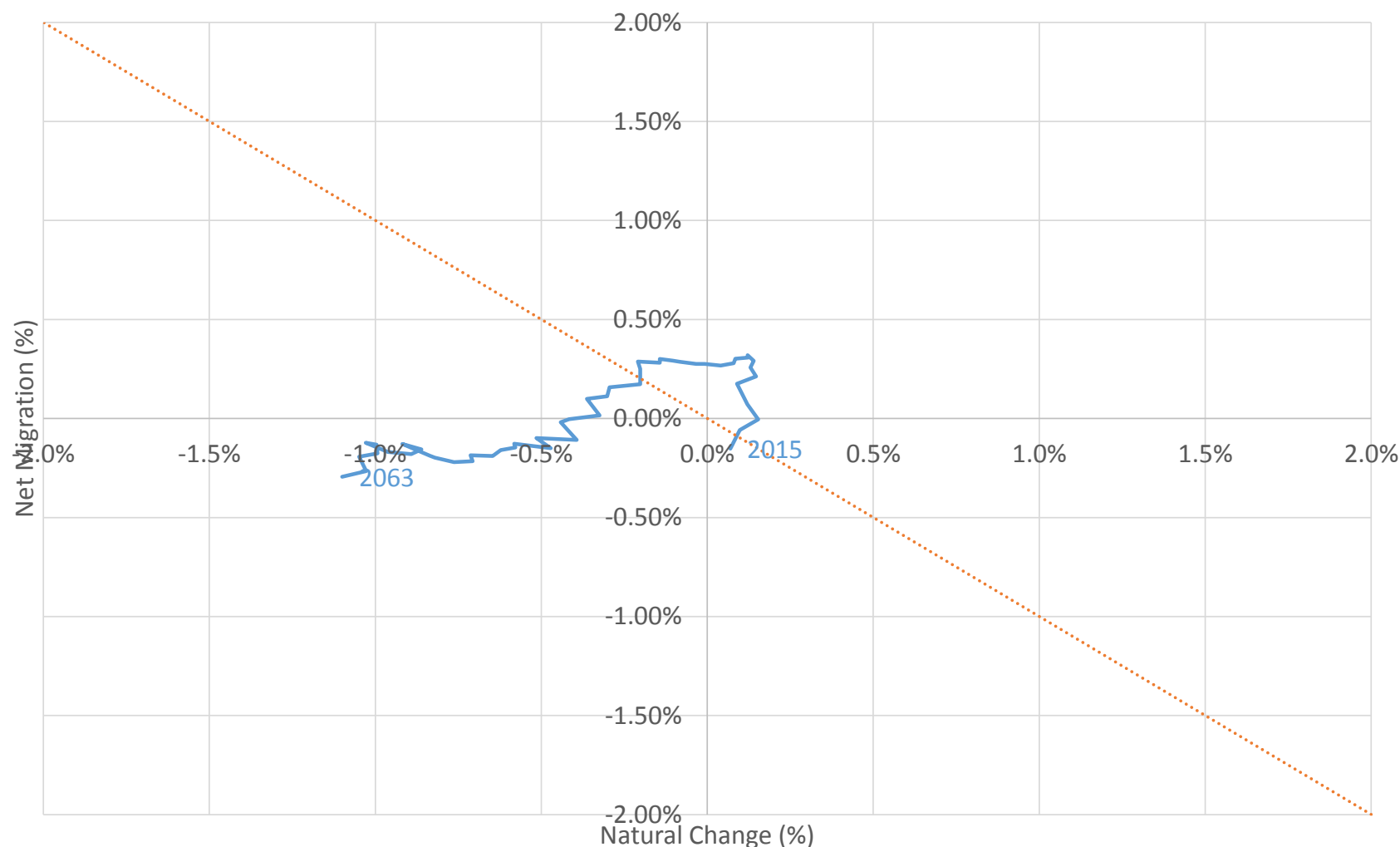


Hauraki District – Annual projected population change



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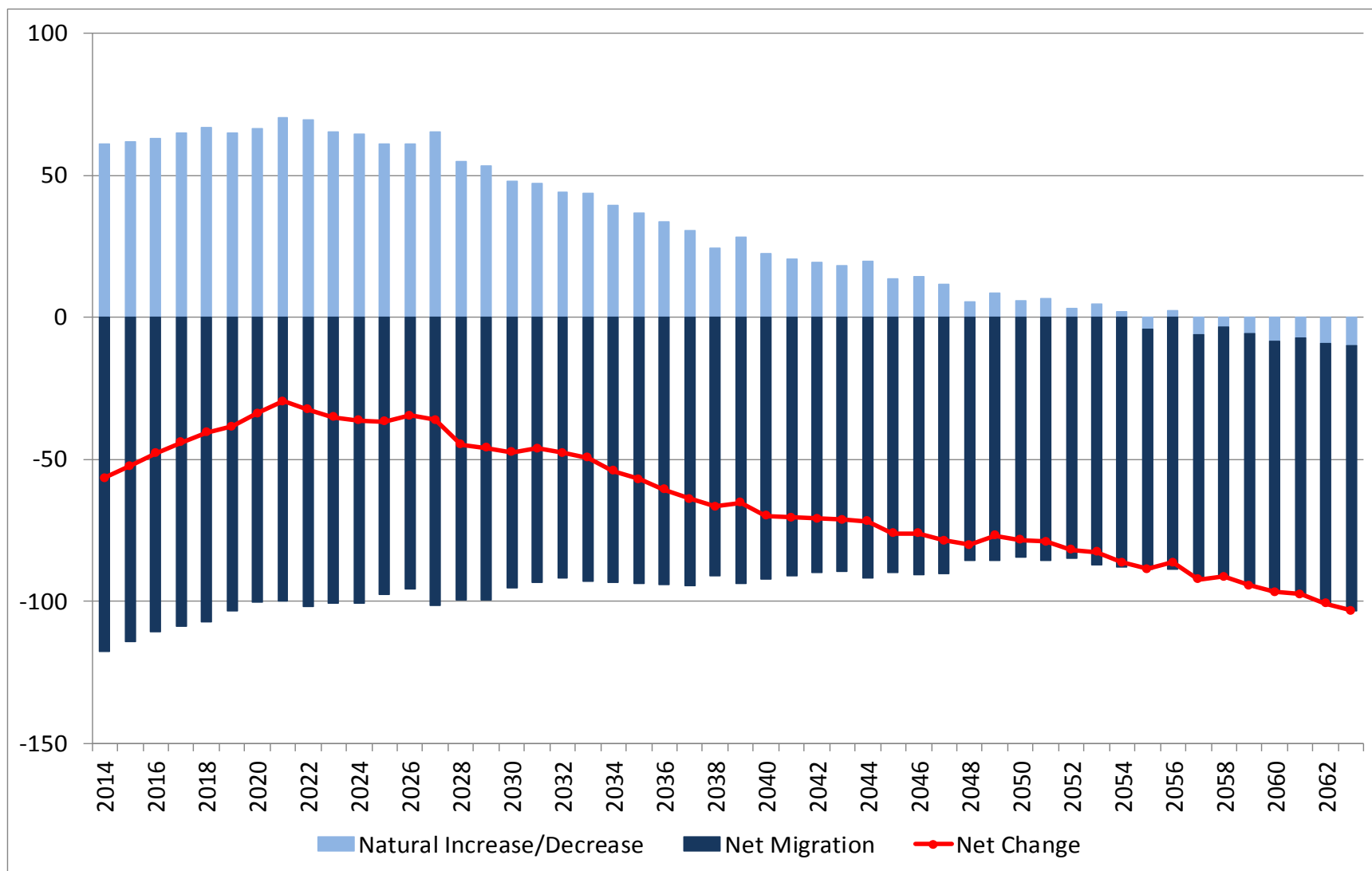
Time Path for Components of Population Change - Hauraki



Waitomo District – Annual projected population change



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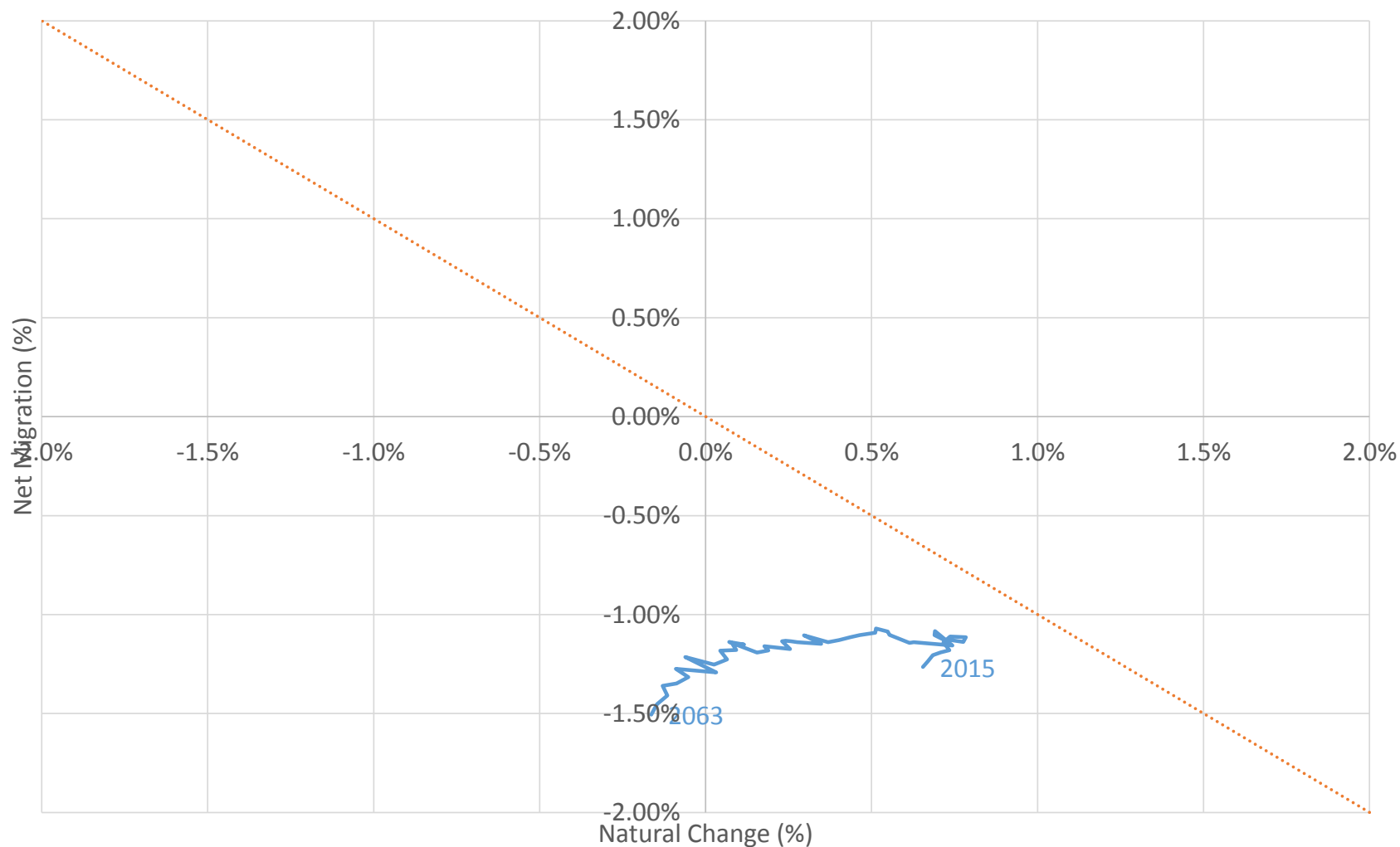


Waitomo District – Annual projected population change



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Time Path for Components of Population Change - Waitomo

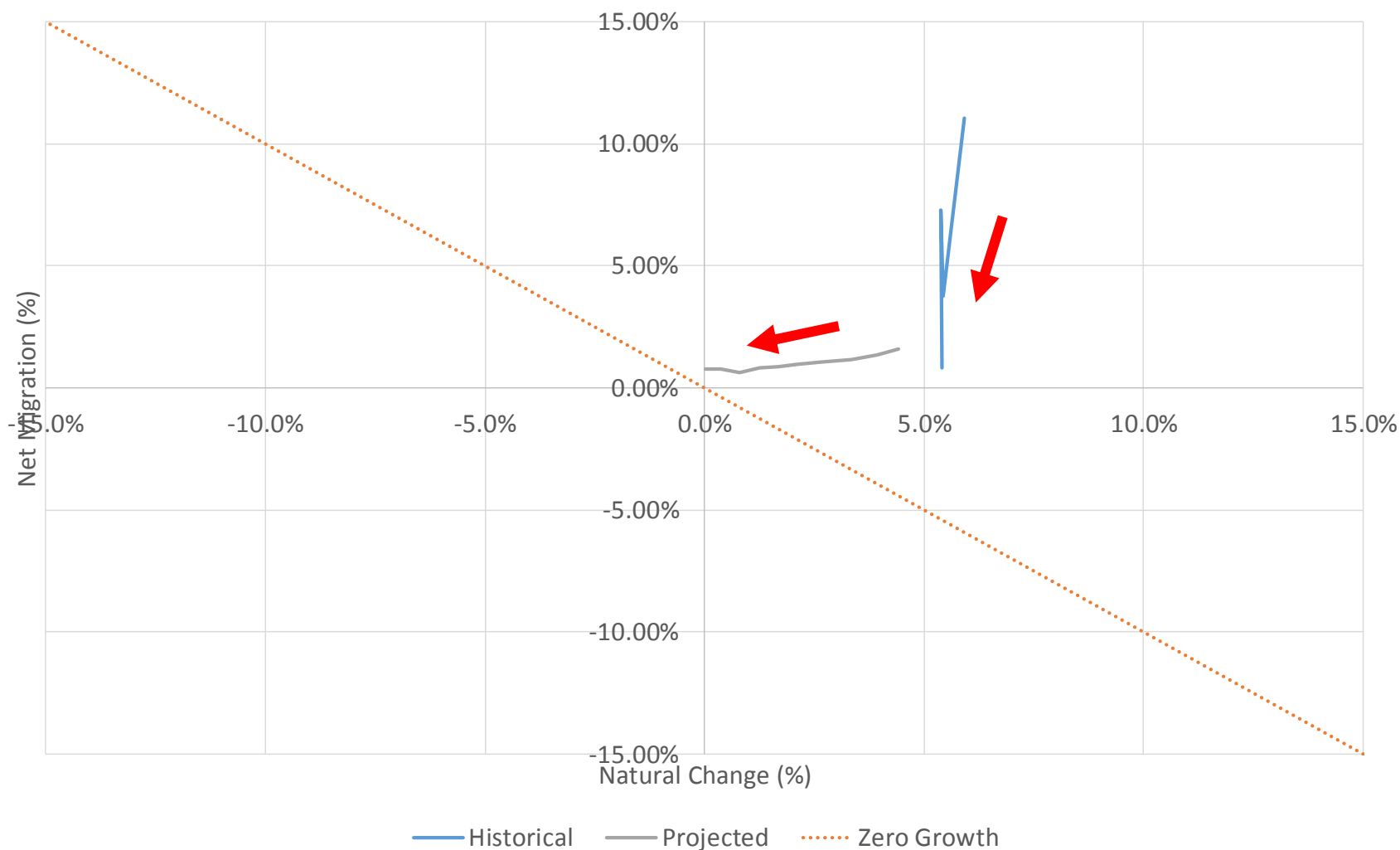


Auckland City – Five-year population changes



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Time Path for Components of Population Change - Auckland

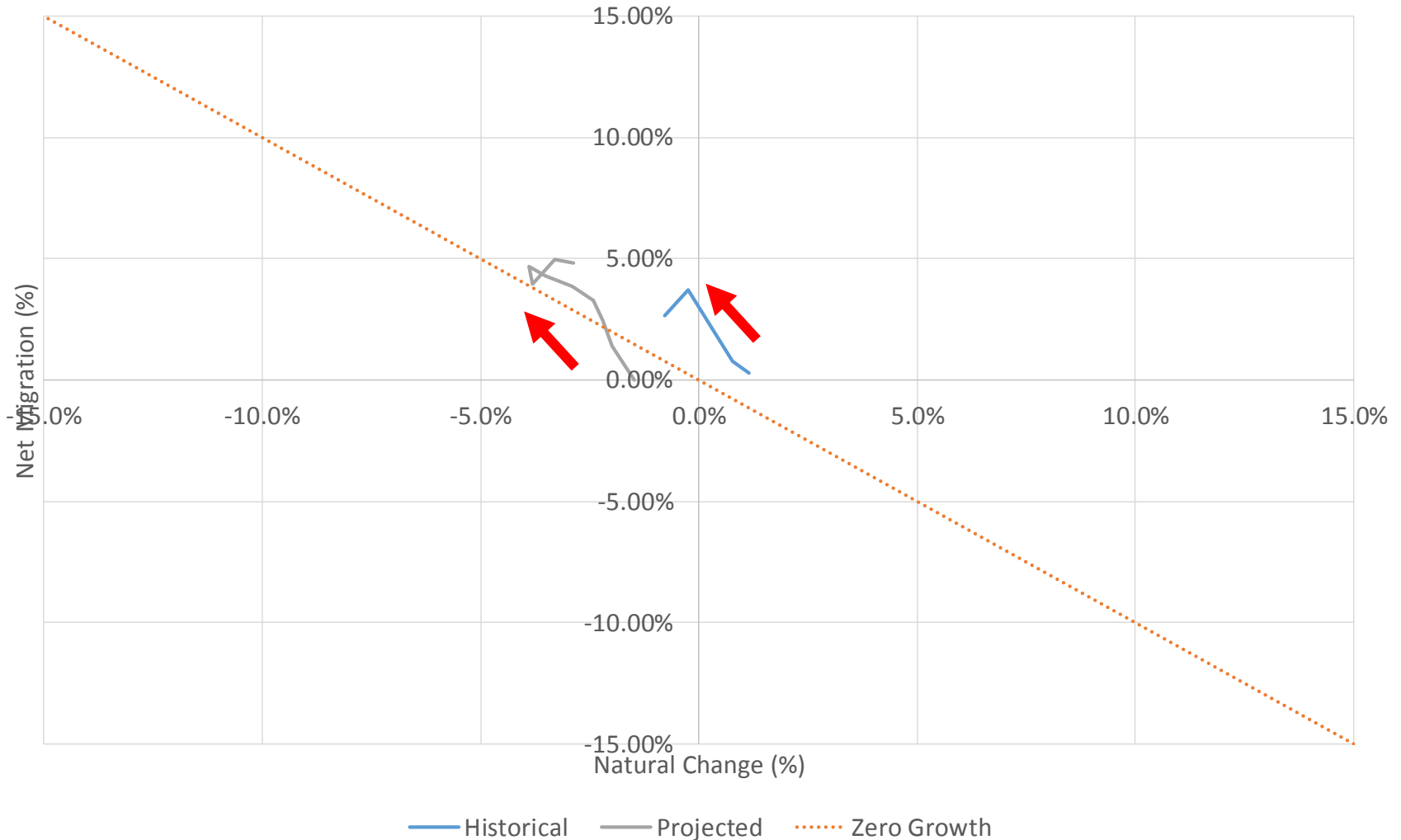


Thames-Coromandel – Five-year population changes



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Time Path for Components of Population Change - Thames-Coromandel

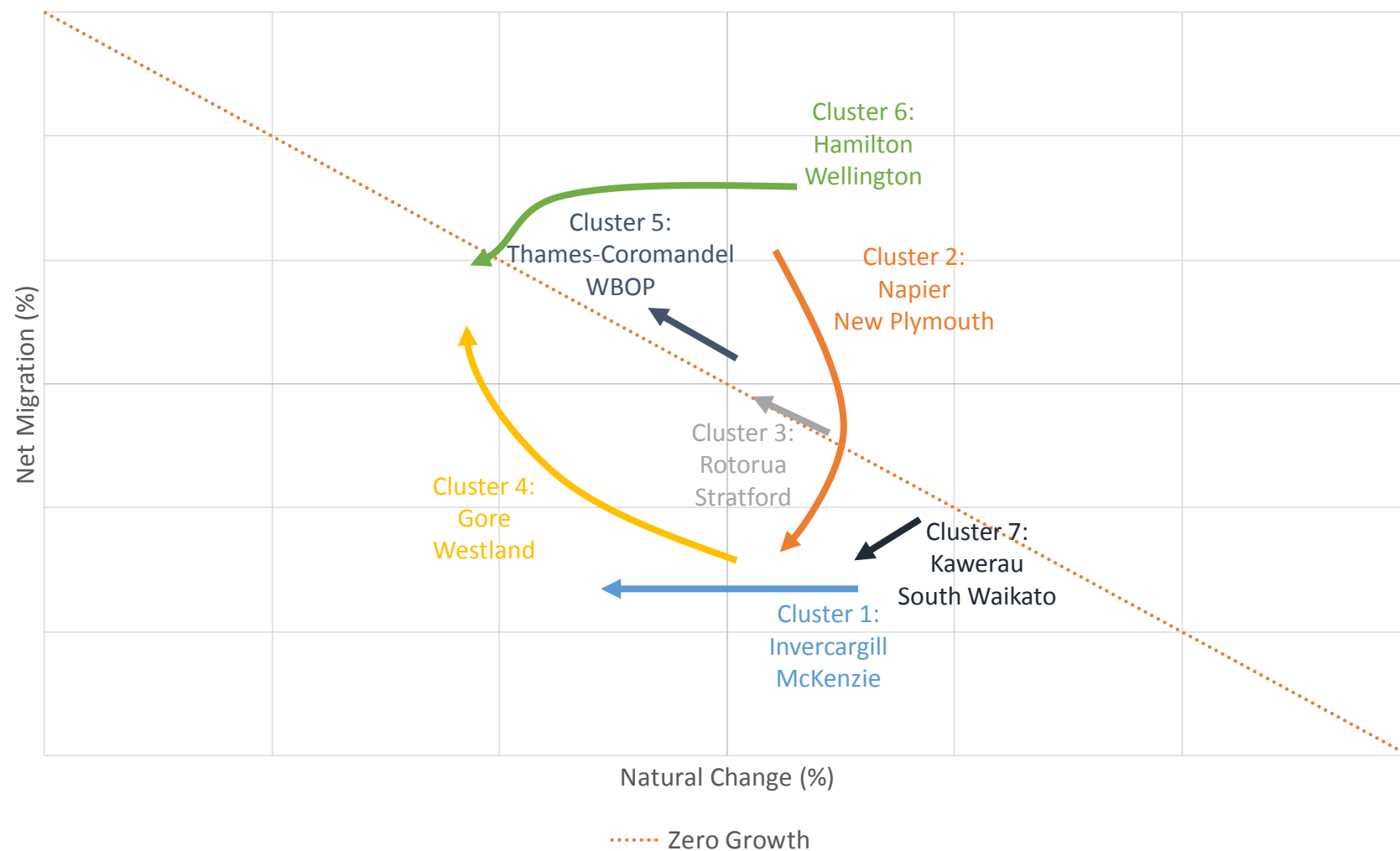


Time paths of population change



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Time Path for Components of Population Change - By Cluster



The role of population ageing



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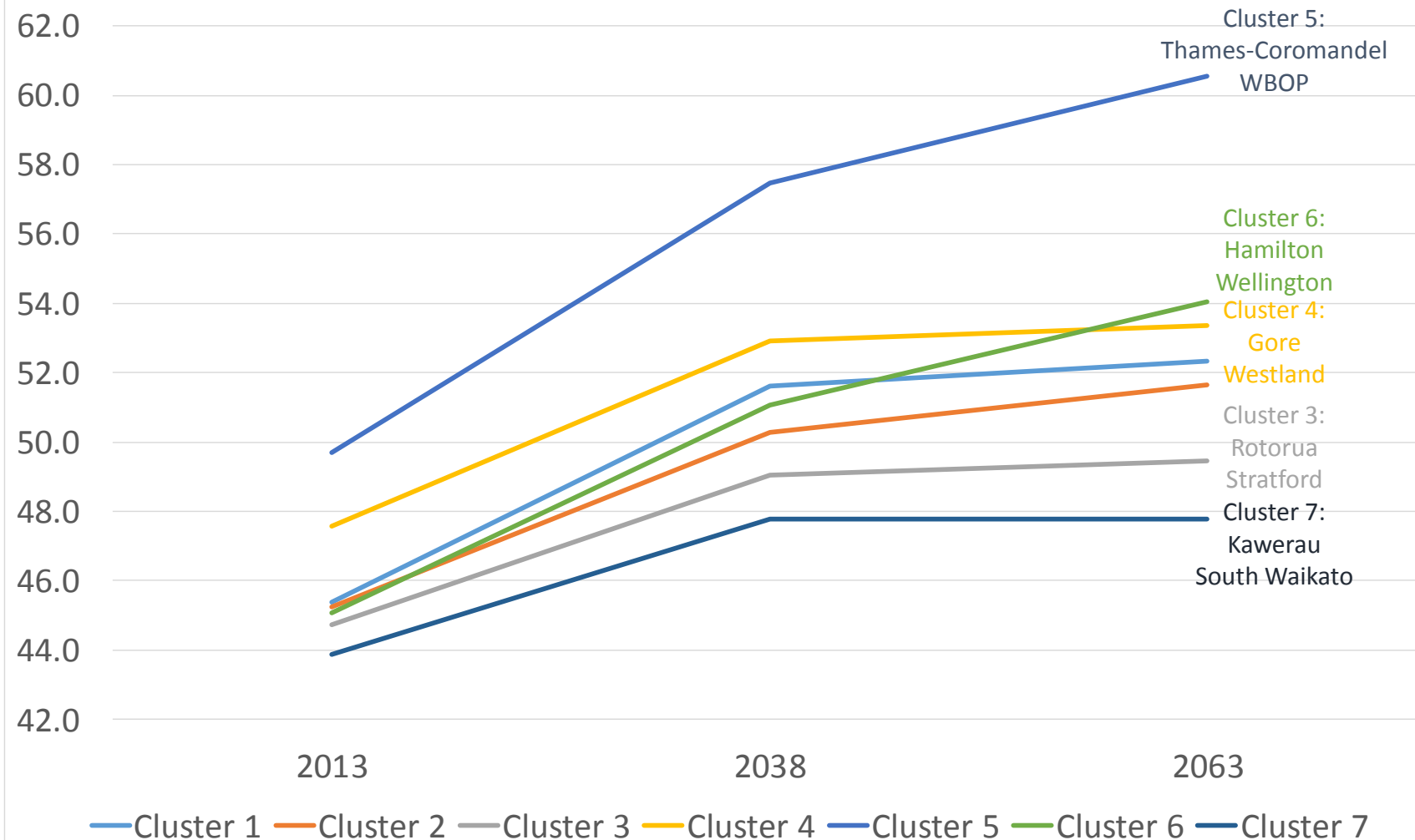
- The age of the population has a clear theoretical role in determining the population trajectory
 - Older populations have fewer children, higher mortality, probably less migration (inward *and* outward)
 - This explains the general shift to the left in the path diagrams for most TAs
- However, to understand the role of population ageing we need an appropriate summary measure of structural ageing
 - I use the root-mean-squared age (RMSA) as a ‘new’ axiomatically-consistent measure of structural ageing

Ageing and population change



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RMSA, by cluster



- This work in progress gives us some food for thought in terms of the ‘new form’ of population decline
 - We **do** project decreasing natural change for TAs experiencing net in-migration, but we see much less of a shift to the expected ‘new form’ of population decline for areas experiencing net out-migration
 - That is, there are movements from Type 2 to Type 1 (and to a lesser extent Type 6), but the movements from Type 3 towards Types 4 and 5 are much slower
 - We need to consider more what is happening in areas with net out-migration

Where to from here?



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- More work is required on the prototype population projections model
 - The source of many of the issues appears to be the projection of international migration (esp. emigration)
 - This should fix the mis-categorisation of some TAs in the cluster analysis, but probably won't change the lesser degree of leftwards movement for TAs experiencing net out-migration
- This developing work sits alongside work at the regional level, and work on subnational ethnic population projections (from the CADDANZ project)

Thanks!



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