

Rheumatic Fever Epidemiology

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Rātonga Hauora ā Iwi o Tamaki Makaurau



Working with the people of Auckland, Counties Manukau and Waitemata

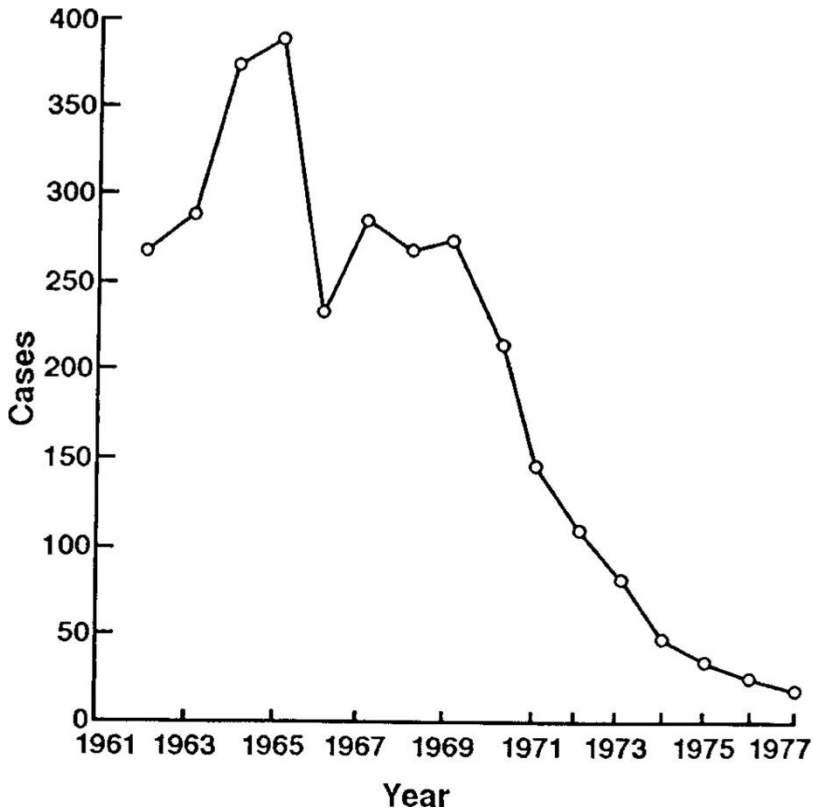
Working with the people of Auckland, Counties Manukau and Waitemata

Outline

- Global Context
- New Zealand experience
- Risk factor distribution

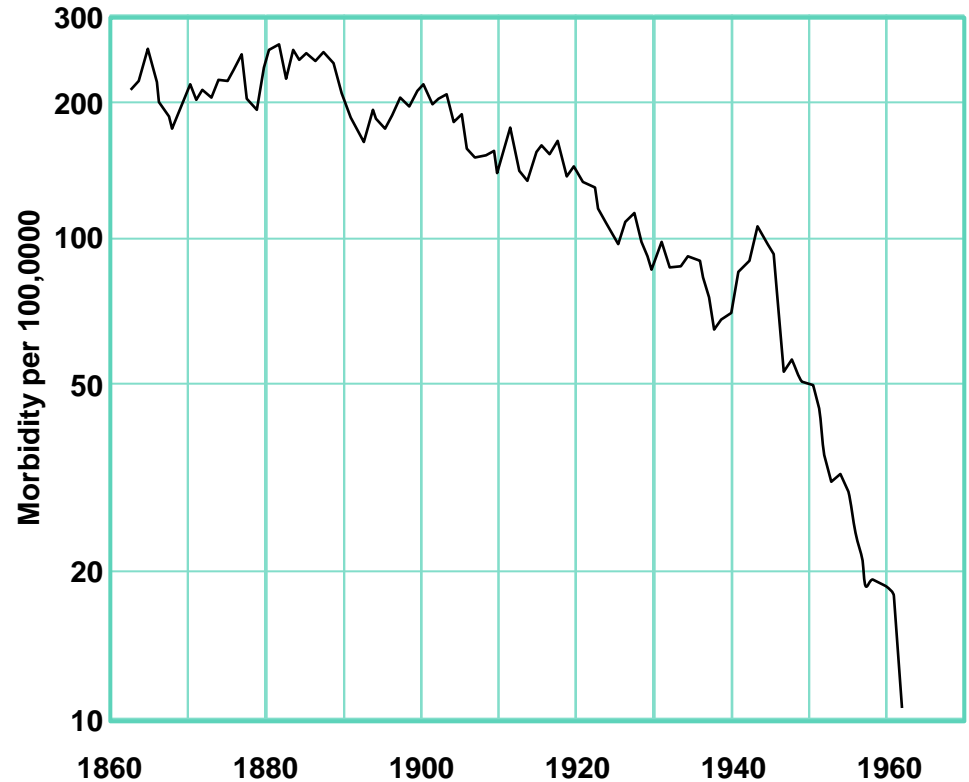
Disappearing Disease?

Chicago 1969-1977



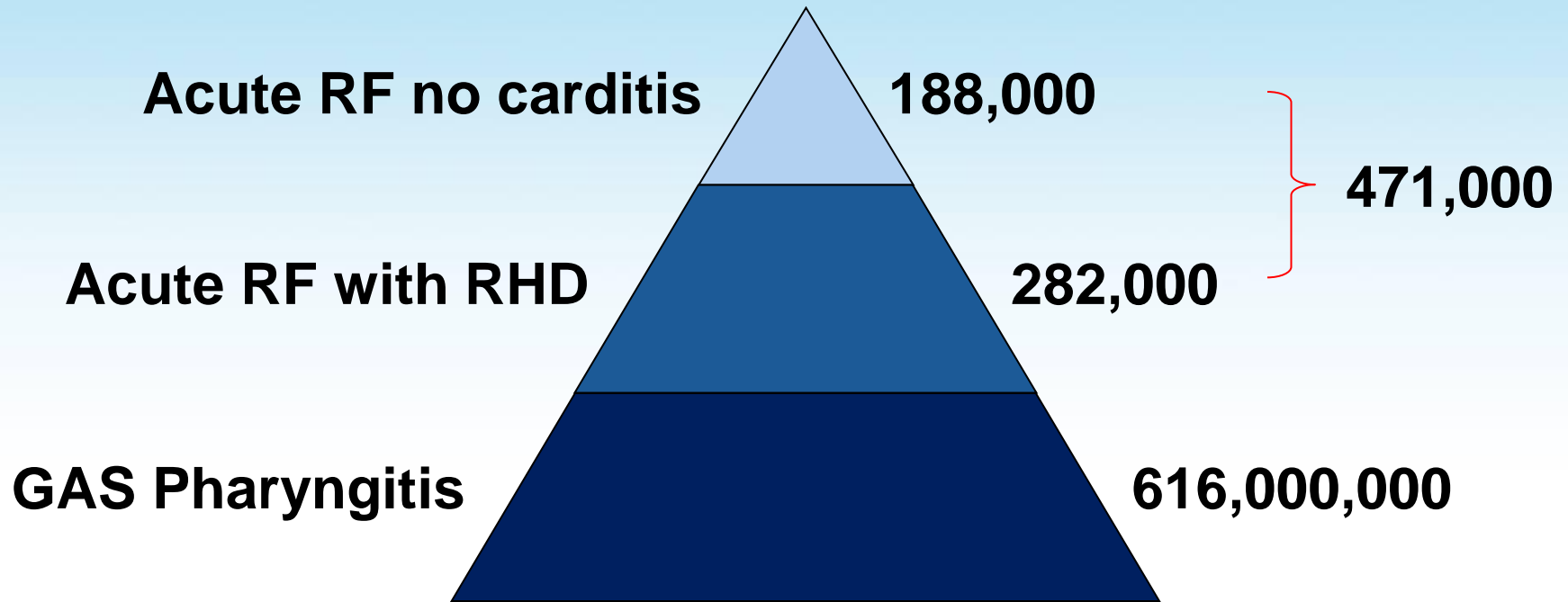
Shulman S T et al. Clin Infect Dis. 2006;42:441-447

Copenhagen 1862-1962



Denny F. Clin Infect Dis. 1994;19:1110-1122

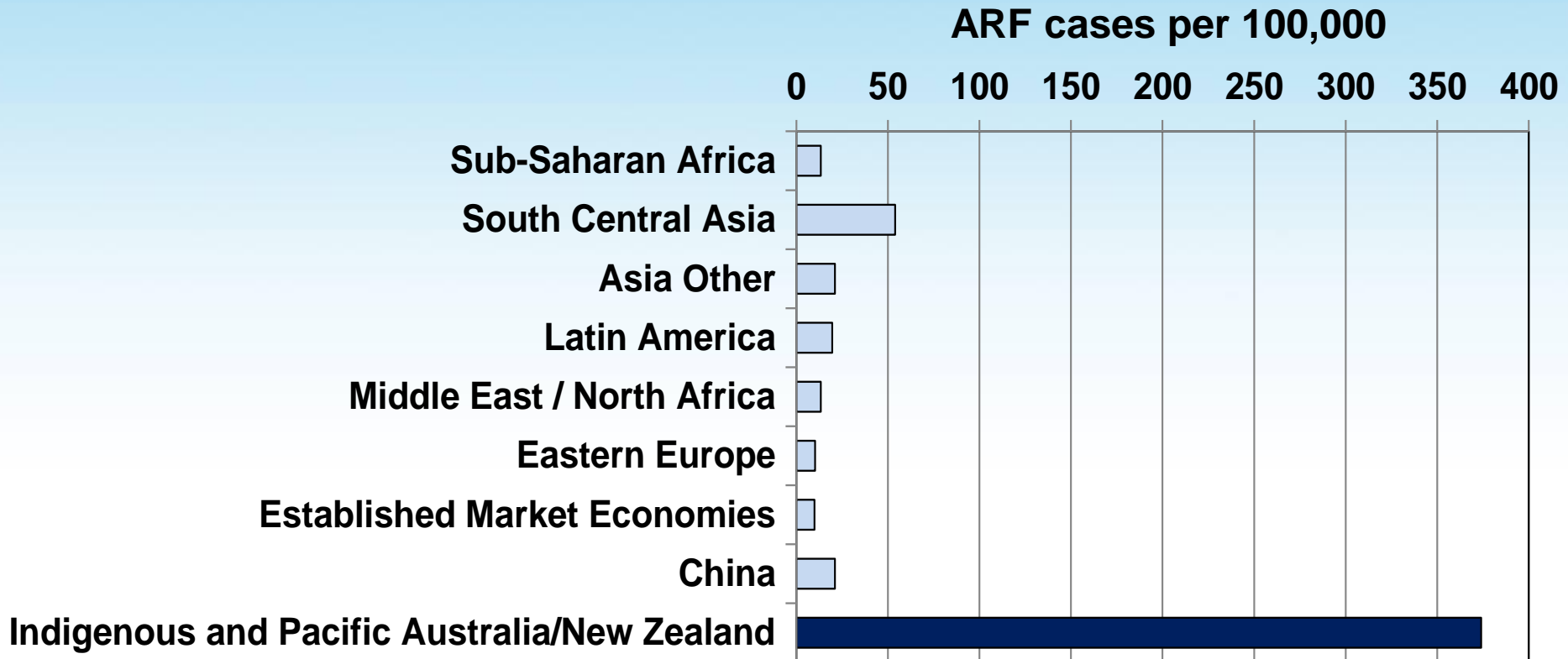
2005 Estimated Global Burden (new cases per year in 5-14 year olds)



Carapetis et al. *Lancet Infect Dis* 2005;5: 685-94

ARF Global Distribution

Median Incidence of ARF



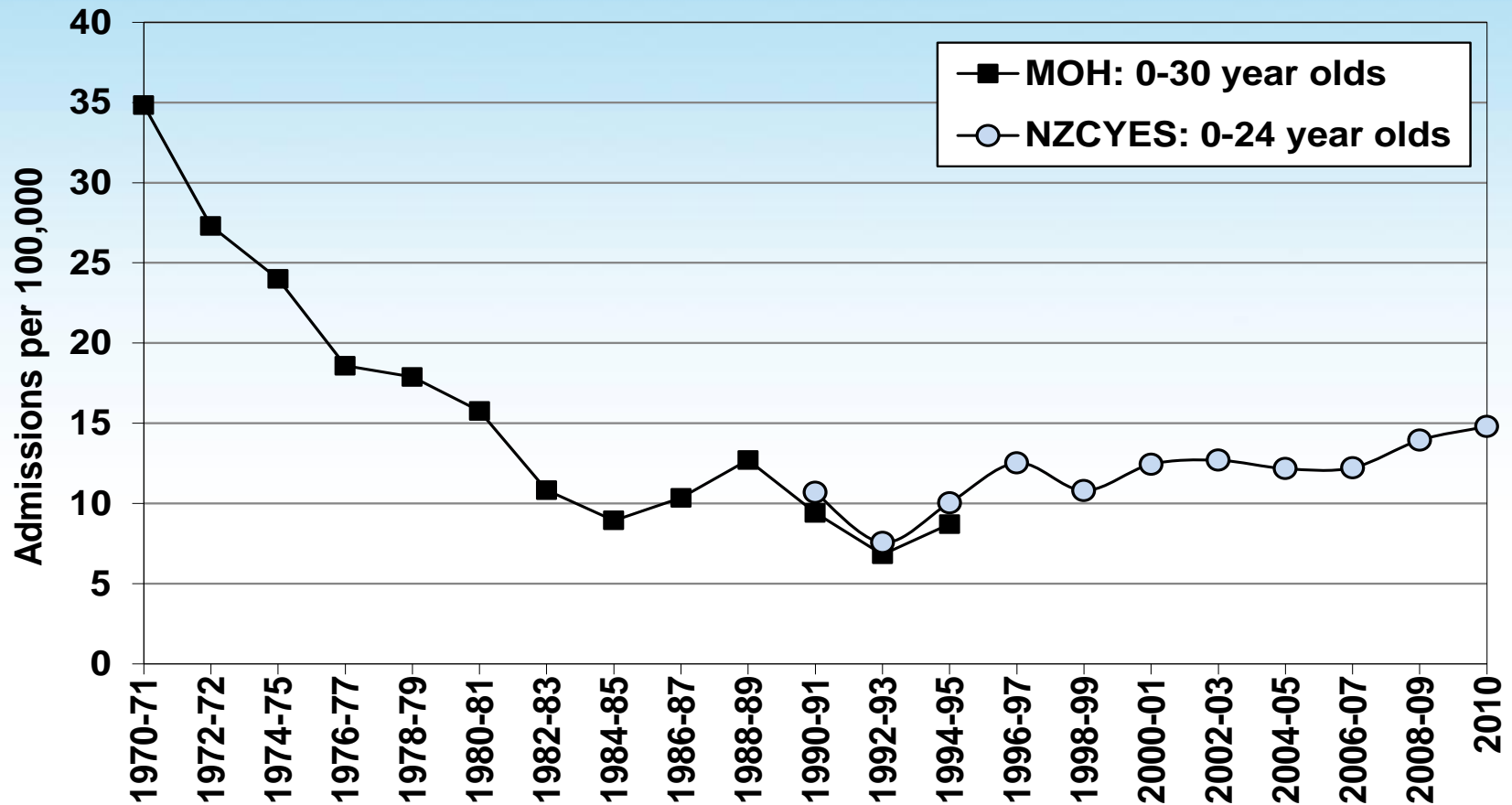
Carapetis et al. *Lancet Infect Dis* 2005;5: 685–94

New Zealand Data

Data Source	Strengths	Weaknesses
Hospital Admissions	National data	Over-estimates by 20-33%
ESR Surveillance	National data	Under-estimates by 20-50%
Rheumatic Fever Registers	Accurate diagnosis	Regional vs national

New Zealand Trends

Acute Rheumatic Fever Hospitalisations 1970-2010



Ministry of Health. Progress on Health Outcome Targets 1999. Wellington: Ministry of Health; 1999.

New Zealand Child and Youth Epidemiology Service www.otago.ac.nz/nzcyes

National Burden

- Acute Rheumatic Fever
 - first admission rate 4.2 / 100,000
 - ~180 first admissions per year (closer to 120)
 - ~1,500 children and young people on prophylaxis
(in Auckland Region ~1,000)
- Rheumatic Heart Disease
 - ~550 hospital admissions per year
 - ~140 deaths

Better Public Services Target

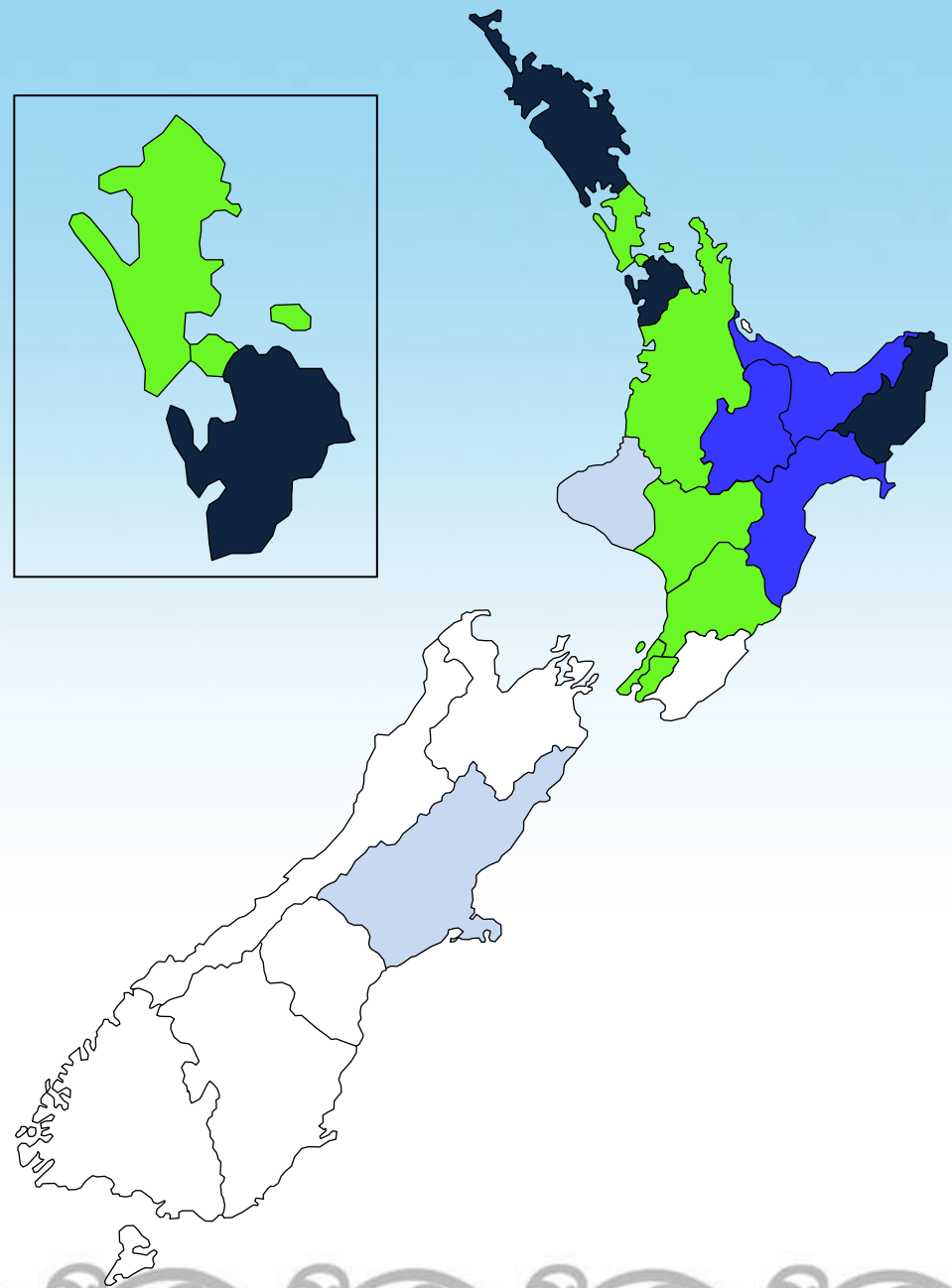
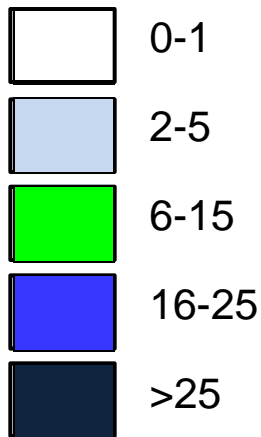
- Reduce the incidence of first episodes of acute rheumatic fever by two thirds
- From 4.2 per 100,000 (2010/11)
to 1.4 per 100,000 by June 2017

reduction in the total population
hospital admission rate

<http://www.health.govt.nz/about-ministry/our-priorities/better-public-services>

North-South Gradient

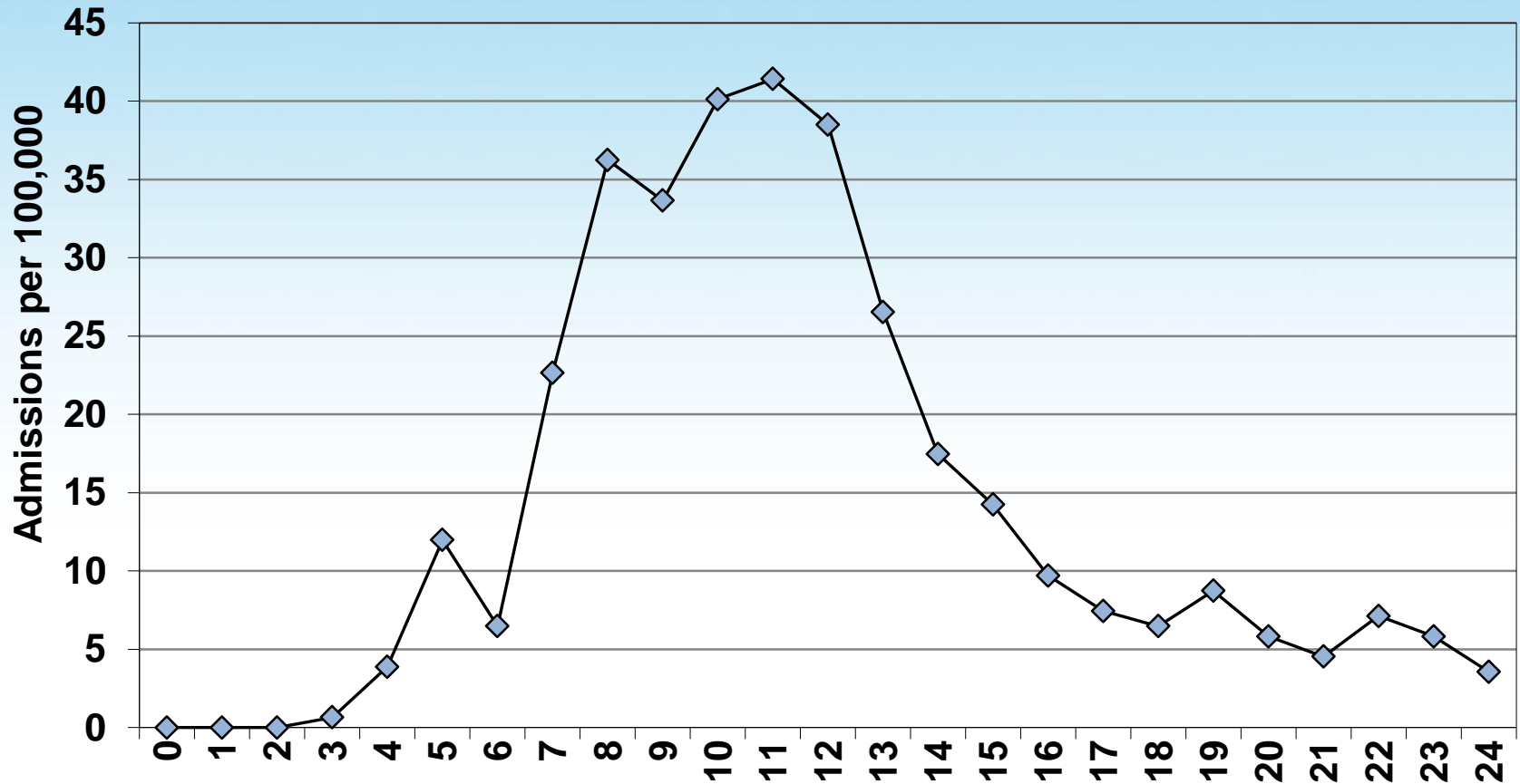
ARF Admissions 2006/10
0-24 Year Olds
Rate per 100,000



New Zealand Child and Youth Epidemiology
Service www.otago.ac.nz/nzcyes

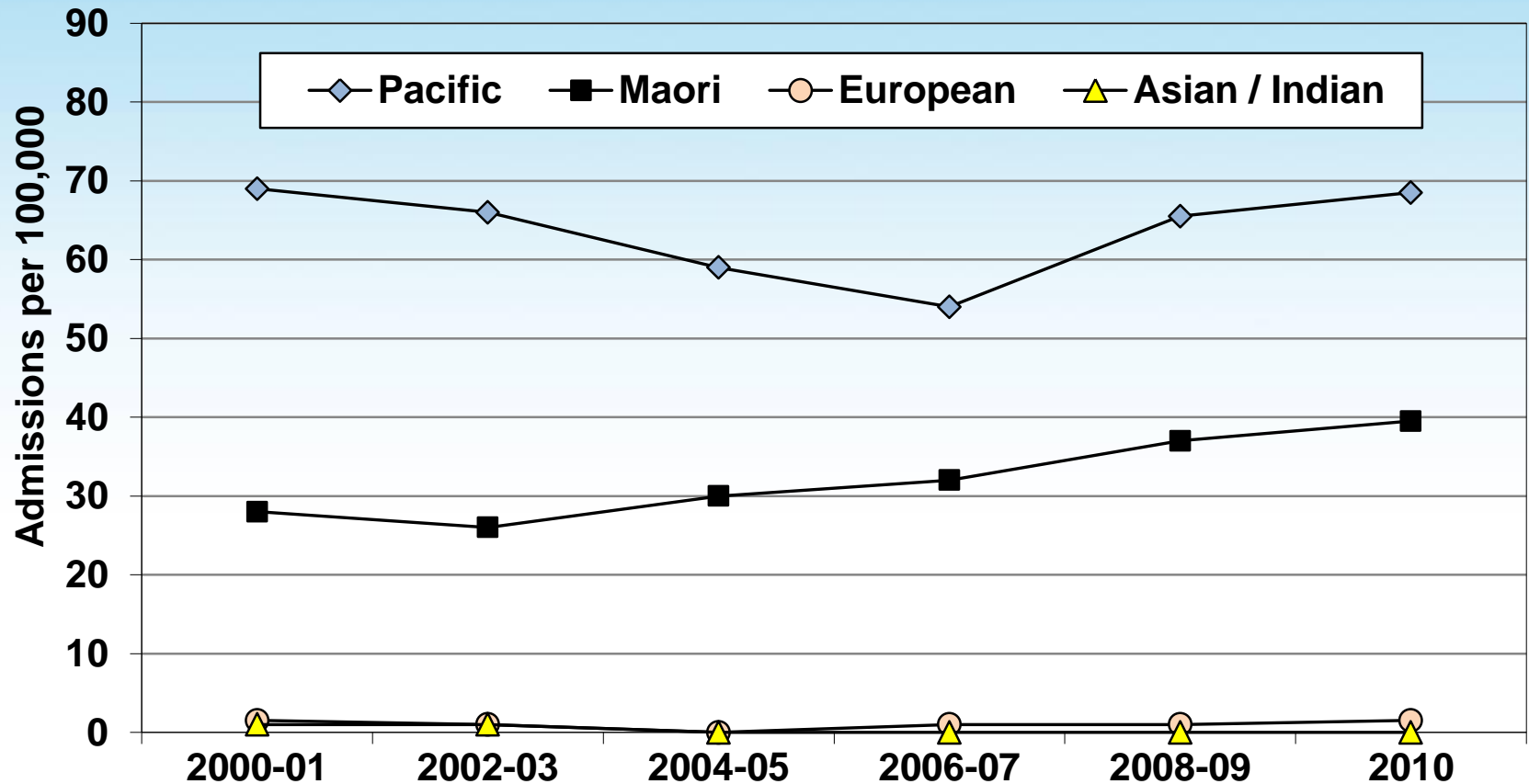
ARF Admissions by Age

0-24 Year Olds, NZ 2006-2010



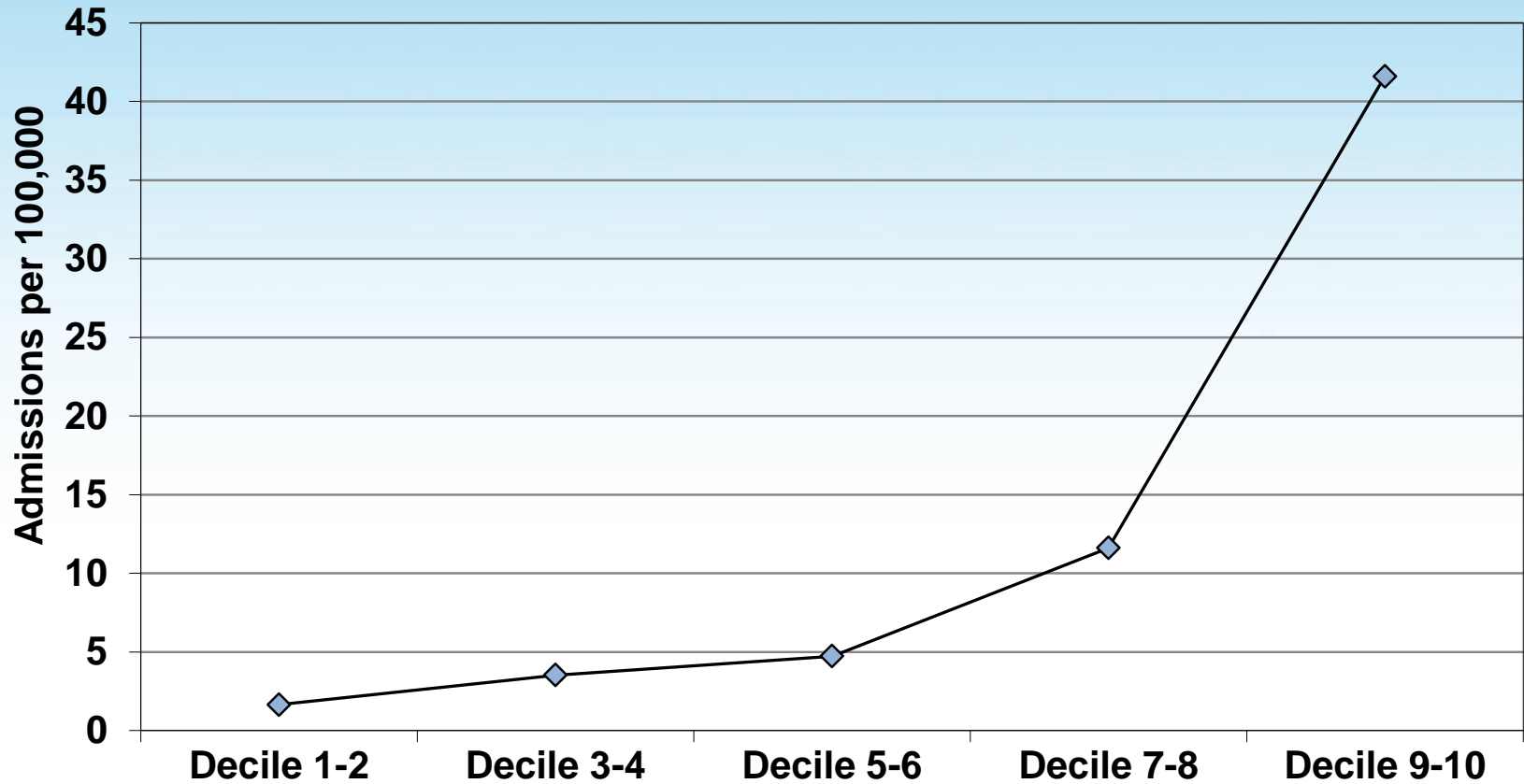
ARF Admissions by Ethnicity

0-24 Year Olds, NZ 2006-2010



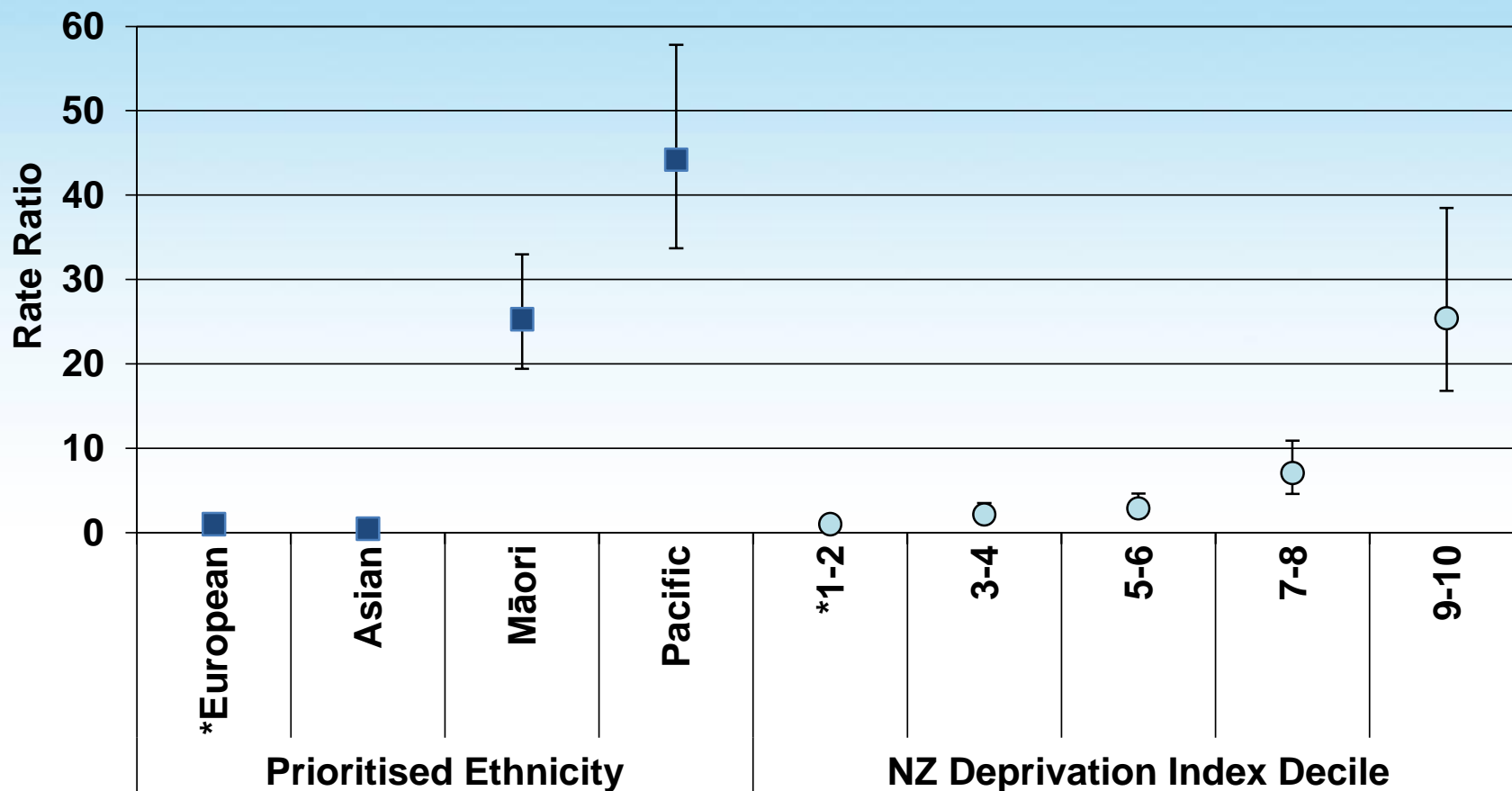
ARF Admissions by Deprivation

0-24 Year Olds, NZ 2006-2010

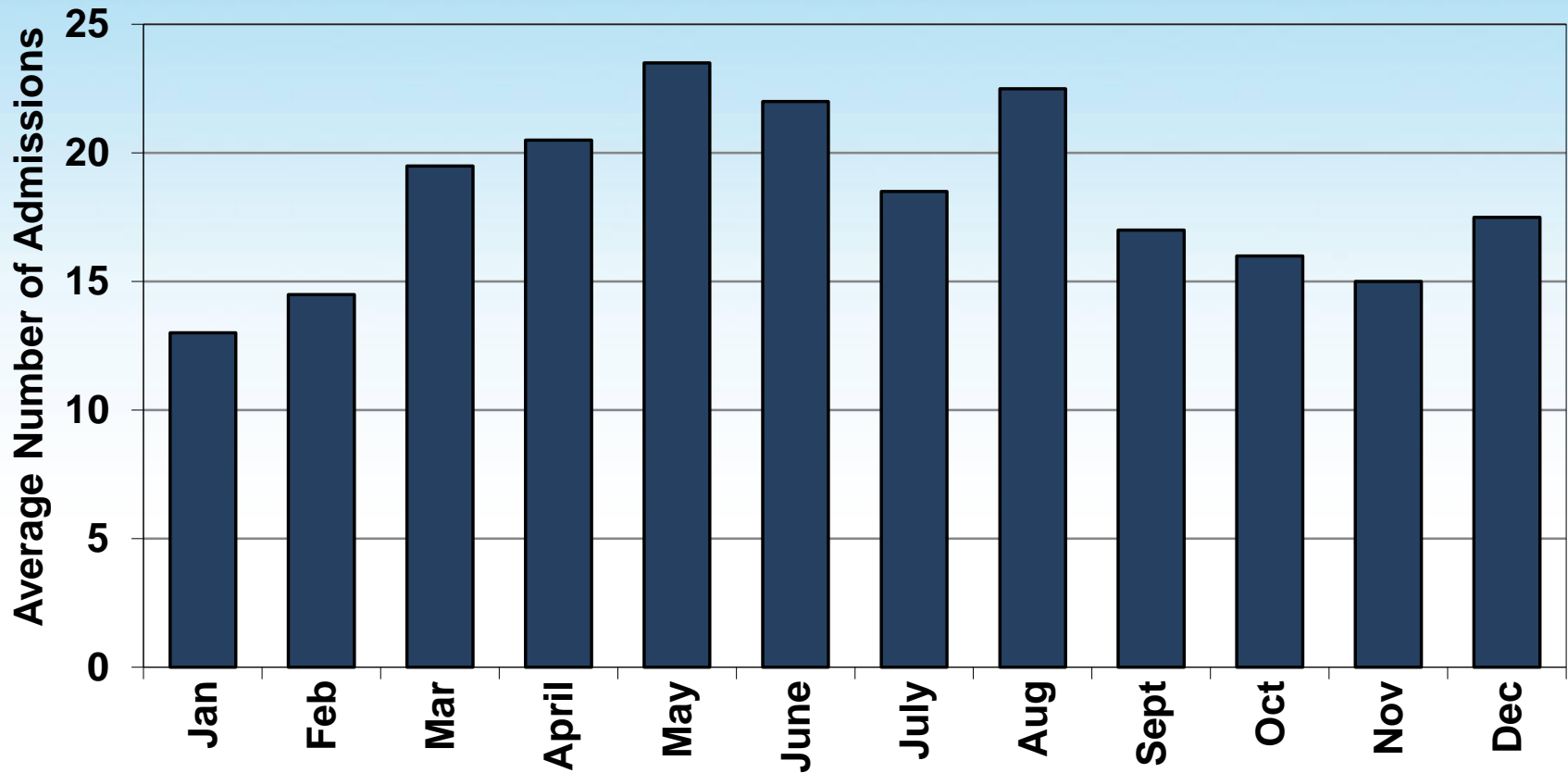


Relative ARF Admission Rates

0-24 Year Olds, NZ 2006-2010



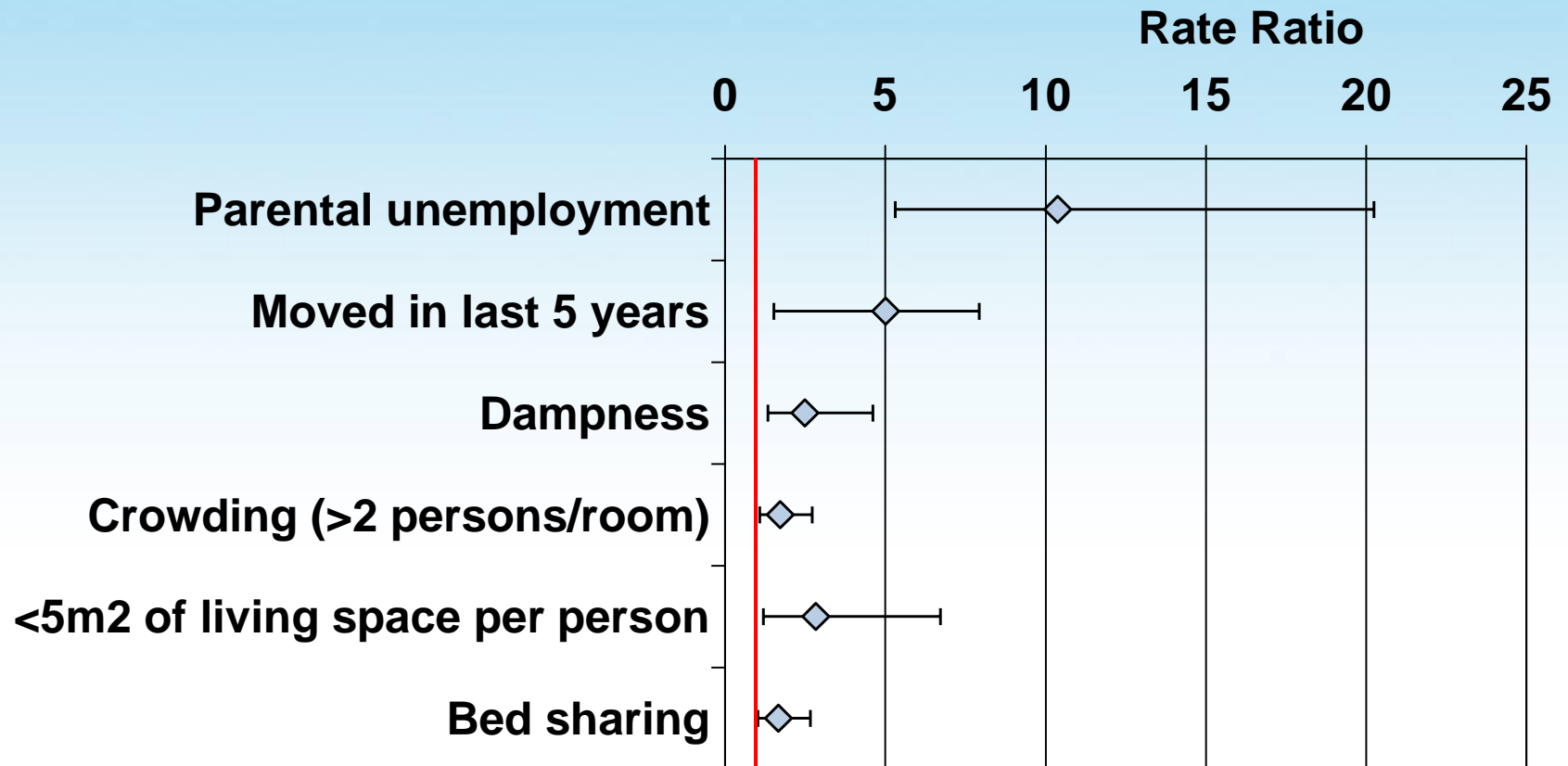
Average ARF Admission per Month 0-24 Year Olds, NZ 2006-2010



Household Crowding

- NZ Ecological Study – Jaine et al
 - PIDJ 2011 Apr;30(4):315-9
 - Weak association between HH crowding at CAU level and ARF rate
- European Study – Case Control
 - Adanja et al. J Hyg Epi Microbiol Immunol 1988;32(3):329-35

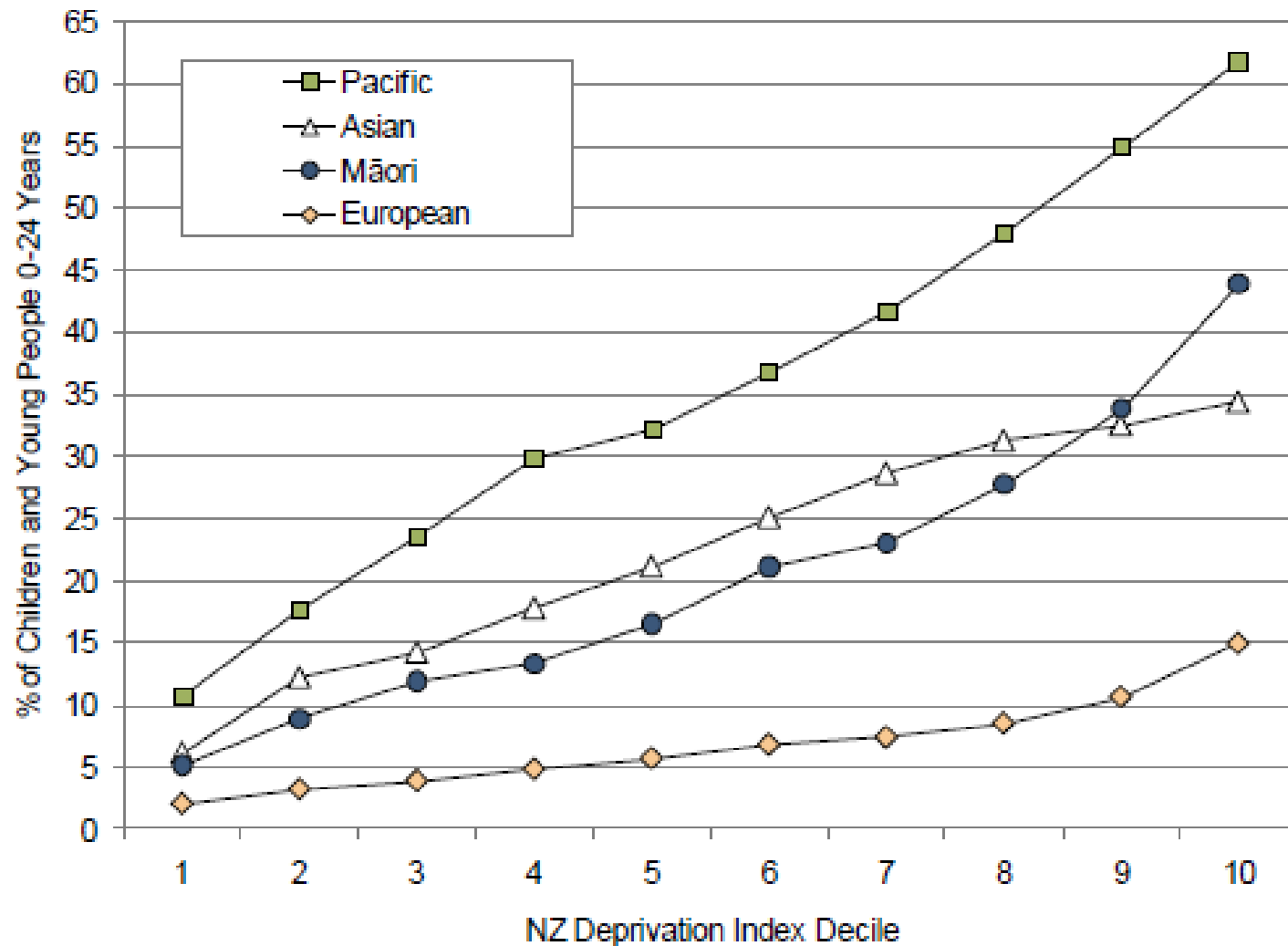
Socioeconomic factors in the aetiology of rheumatic fever



Adanja et al. J Hyg Epi Microbiol Immunol 1988;32(3):329-35

Household Crowding in NZ

0-24 Year Olds, 2006 Census

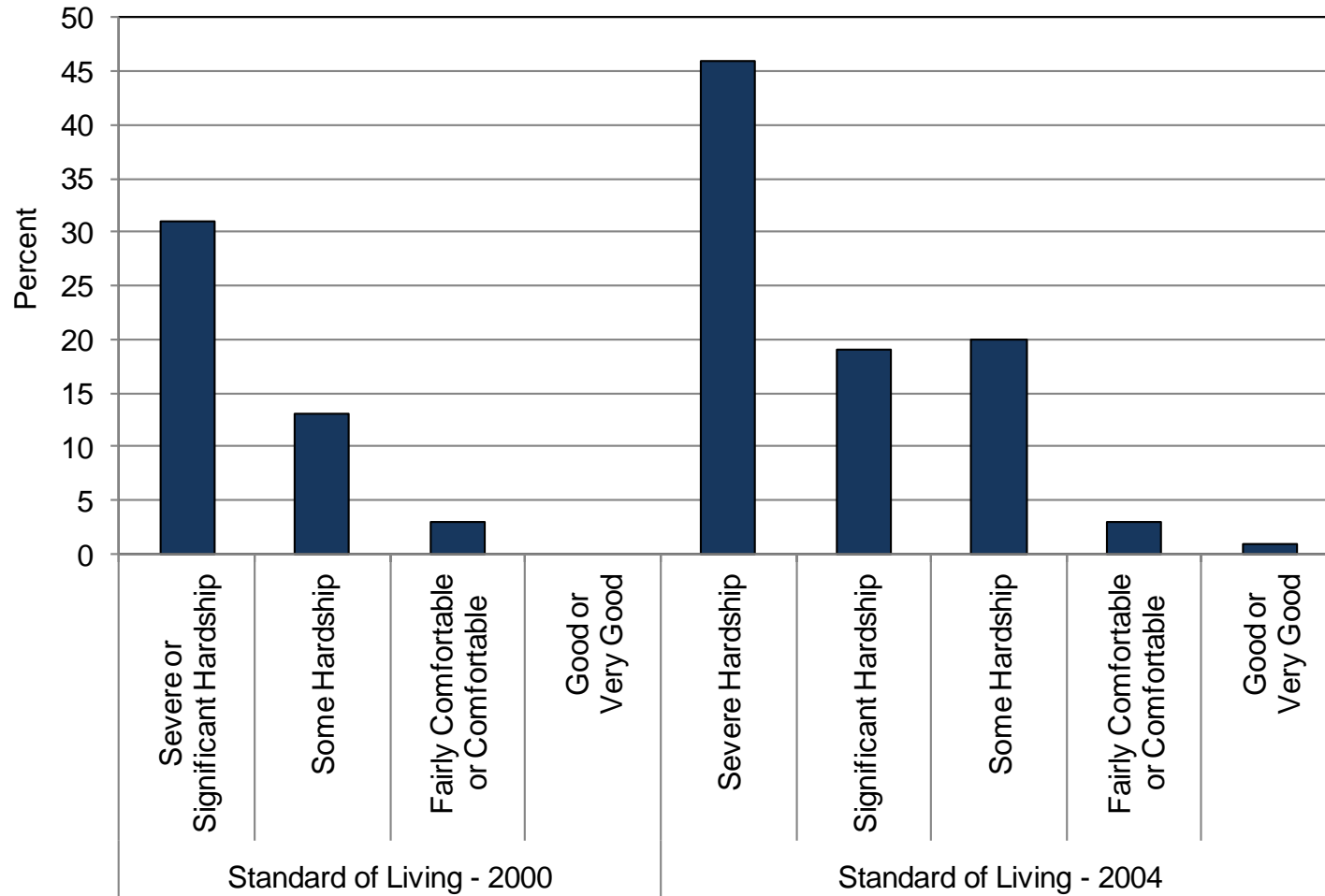


Access to Primary Healthcare

- Baltimore Study 1960s
 - Improving access to healthcare reduced ARF
 - Gordis L *NEJM* 1973;289(7):331-335

Postponed Child's Doctors Visit

NZ Living Standards Survey



Conclusion

- Among world's highest rates of RF in NZ
- Burden is borne by Māori, Pacific, and the most socio-economically disadvantaged
 - 1,500 on monthly penicillin injections
 - 550 admissions for rheumatic heart disease
 - 140 deaths annually
- Burden is inequitable