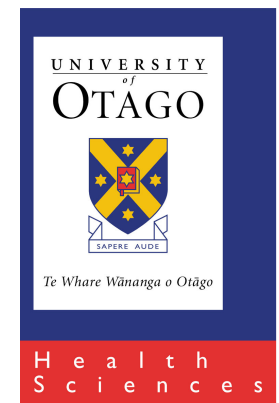


Influenza risk factors and ethnic differences

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Outline

- Risk factors for what?
 - Infection vs. Progression
- Why identify risk factors?
 - Socio-demographic vs. Modifiable?
- Hospitalisations in Auckland
 - Seasonal, 2000-09
 - Pandemic influenza, 2009
- Conclusions & discussion points

Infection vs. Progression

Influenza exposure:

Seasonal virus load
Household crowding
Children in house
School & Work exposure
Urban domicile
Weather
Indoor air

Influenza susceptibility:

Influenza vaccination
Age
Obesity
Immune competence
Smoking

Influenza progression co-factors:

Age, Sex, Ethnicity
Chronic illness, Pregnancy
Immune deficits
Obesity, Smoking
Pneumococcal immunisation
Primary care access
Antiviral treatment
Quality of hospital care

Influenza infection

Influenza illness

Serious influenza

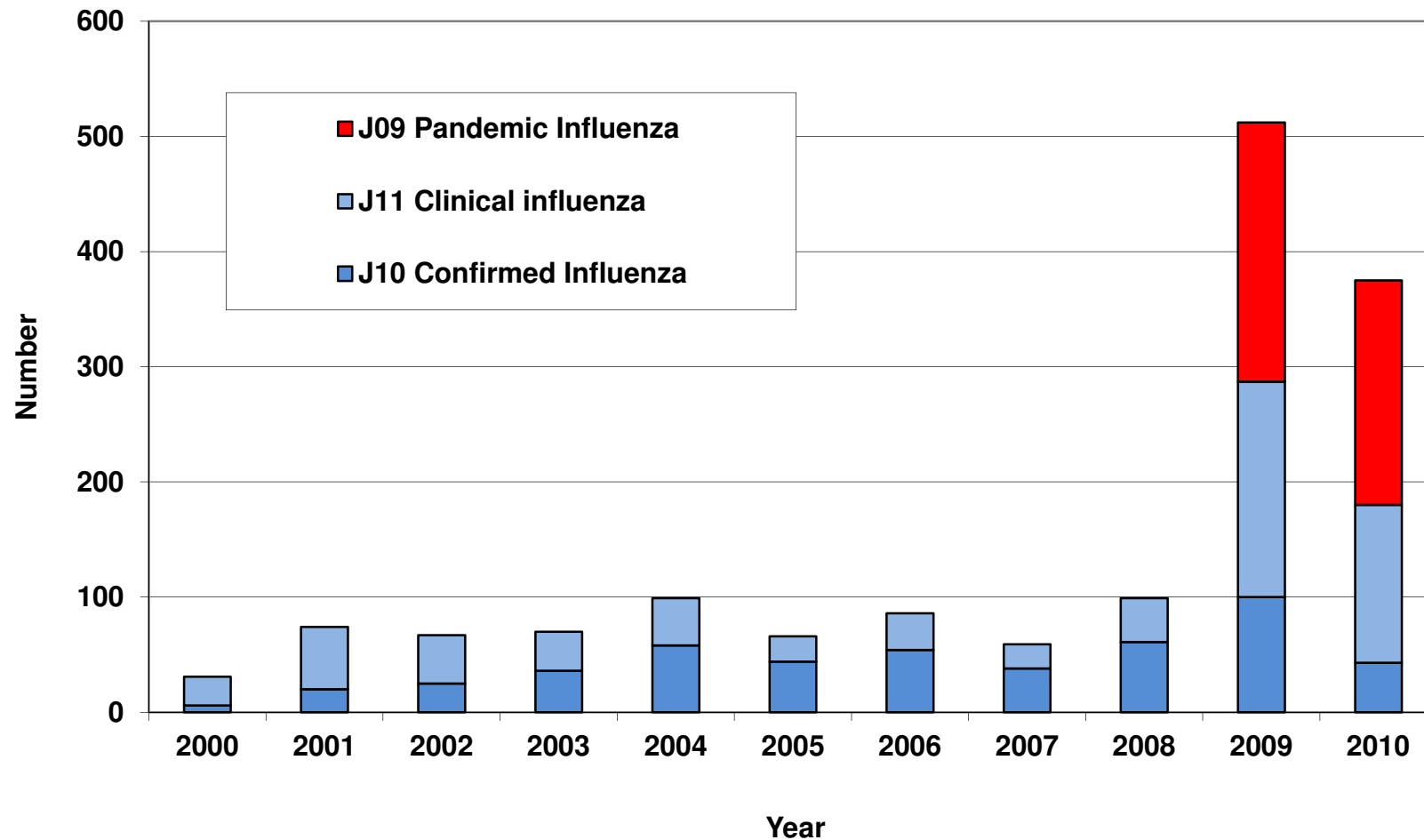
Influenza death

Modifiable risk factors

Risk factors for infection and/or poor outcome	Evidence
<i>Exposure factors</i>	
Household crowding	*
Poor indoor air quality in household	*
<i>Susceptibility factors</i>	
Lack of influenza vaccination	***
Active & Passive smoke exposure	**
Immune deficiencies	**
<i>Progression factors</i>	
Micronutrient deficiencies eg vitamin D deficiency	*
Obesity	*
Chronic illness, eg COPD, asthma, diabetes	**
Poor access to primary healthcare	*
Lack of antiviral treatments	**
Lack of pneumococcal vaccination	*
<i>Broad determinants</i>	
Poverty	**

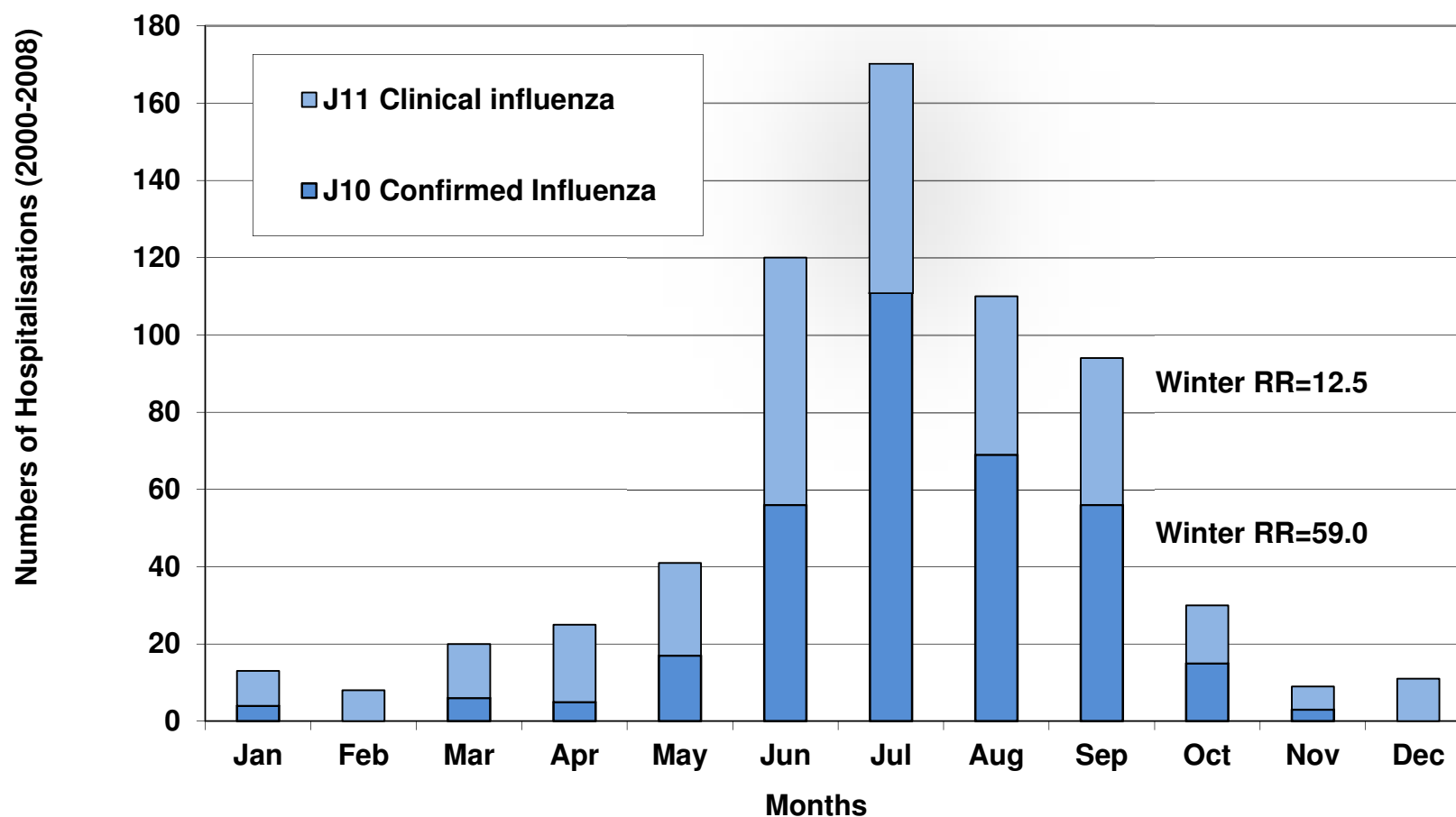
Risk factors

Influenza hospitalisations by year, Auckland 2000-10 (J09=474, J10=367, J11=569)



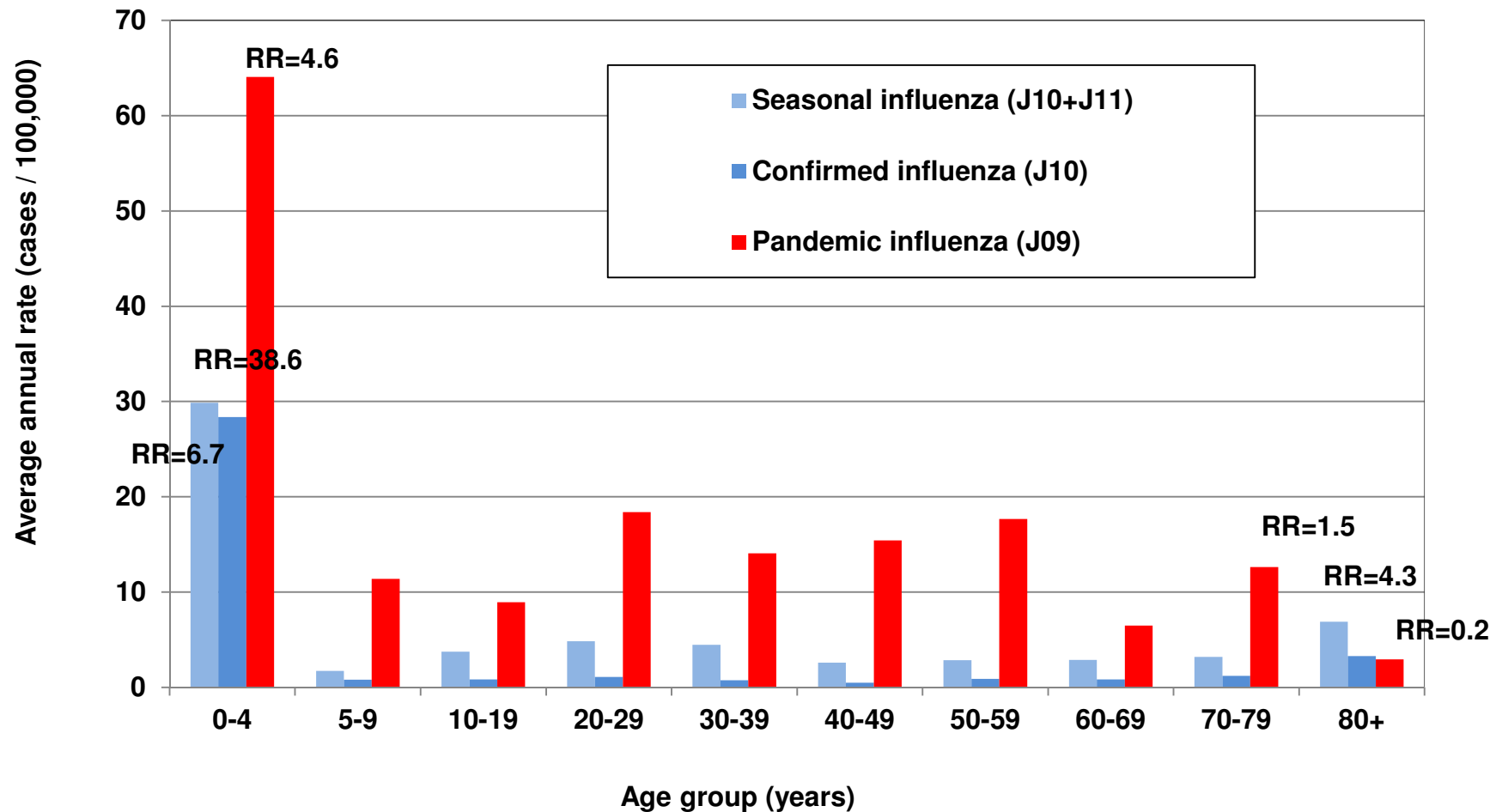
Risk factors

Influenza hospitalisations by month, Auckland 2000-08 (Ref = Summer)



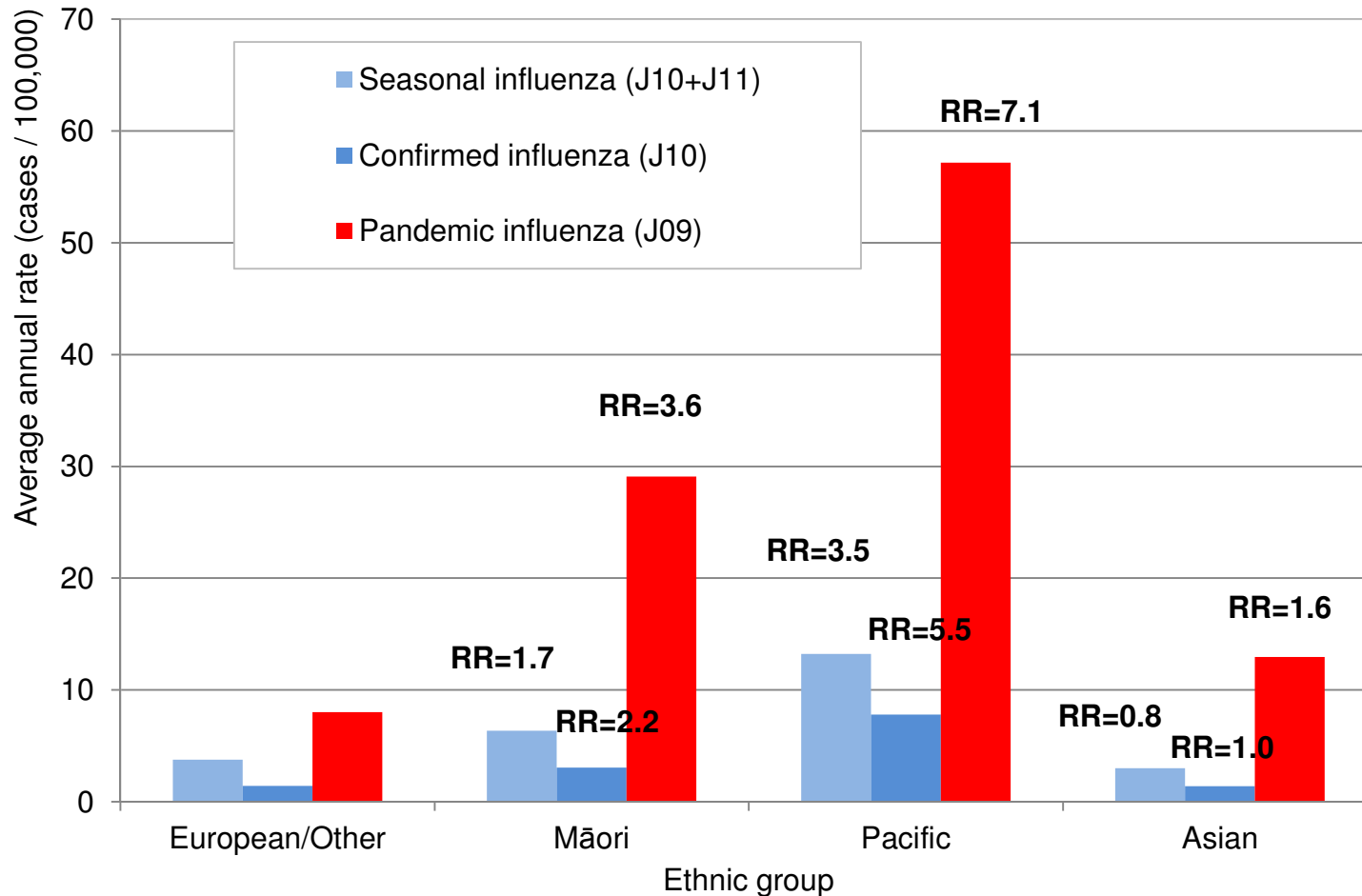
Risk factors

Influenza hospitalisation rate by age group, Auckland 2000-08 (Ref = 30-39 years)



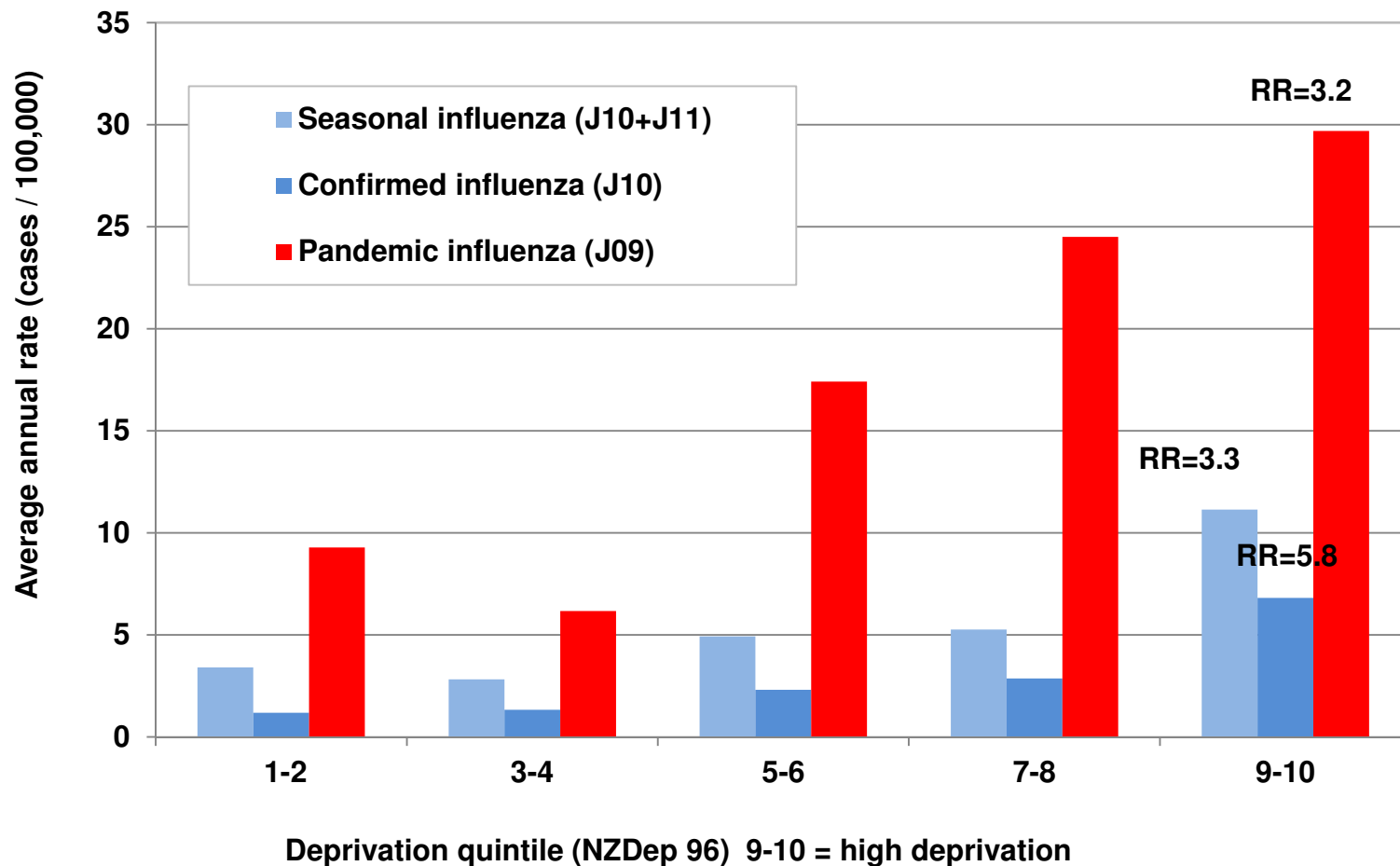
Risk factors

Influenza hospitalisation rate by ethnicity, Auckland 2000-08 (Ref = European/Other)



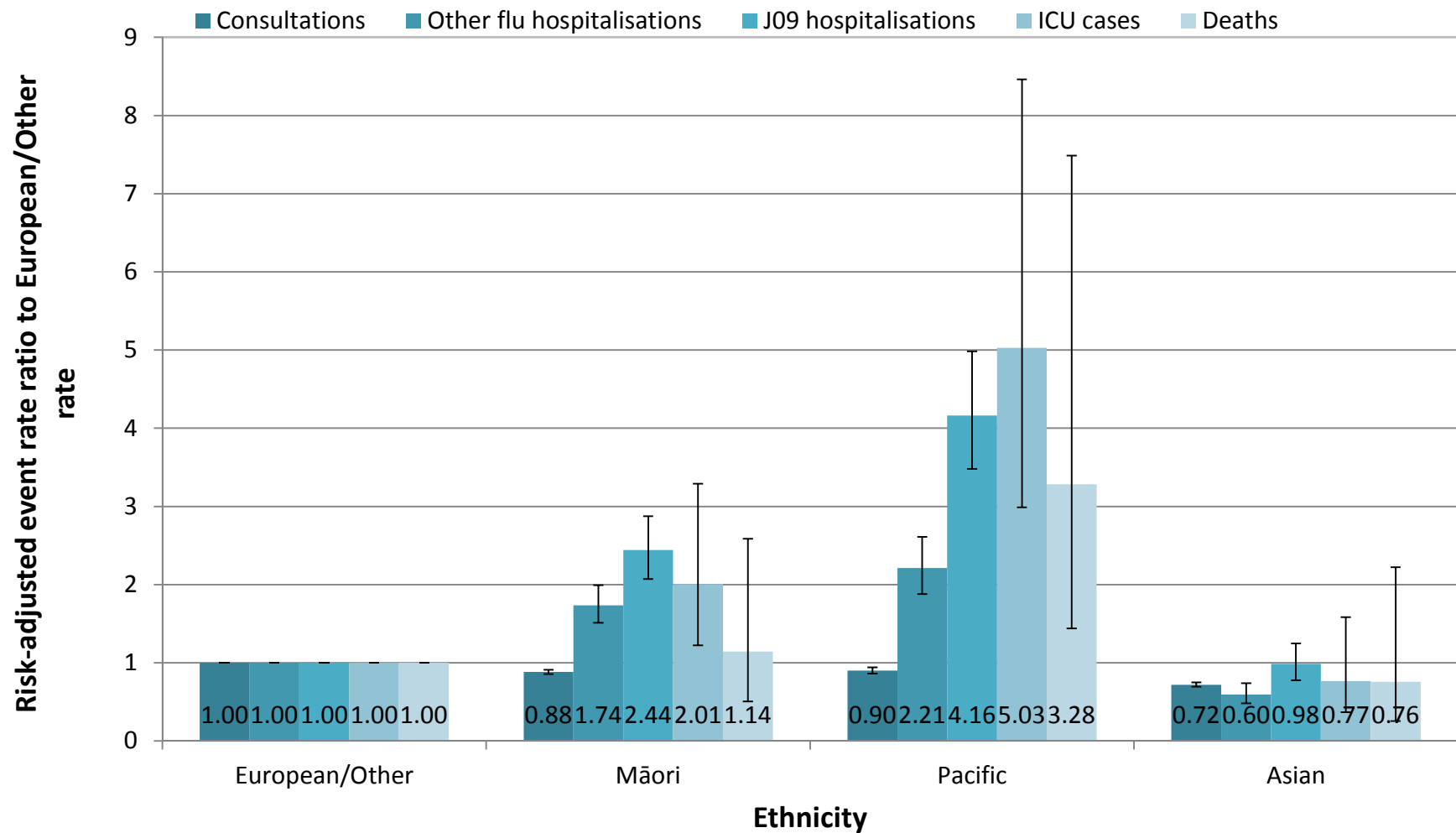
Risk factors

Influenza hosp rate by deprivation, Auckland 2000-08 (Ref = NZDep 1-2)



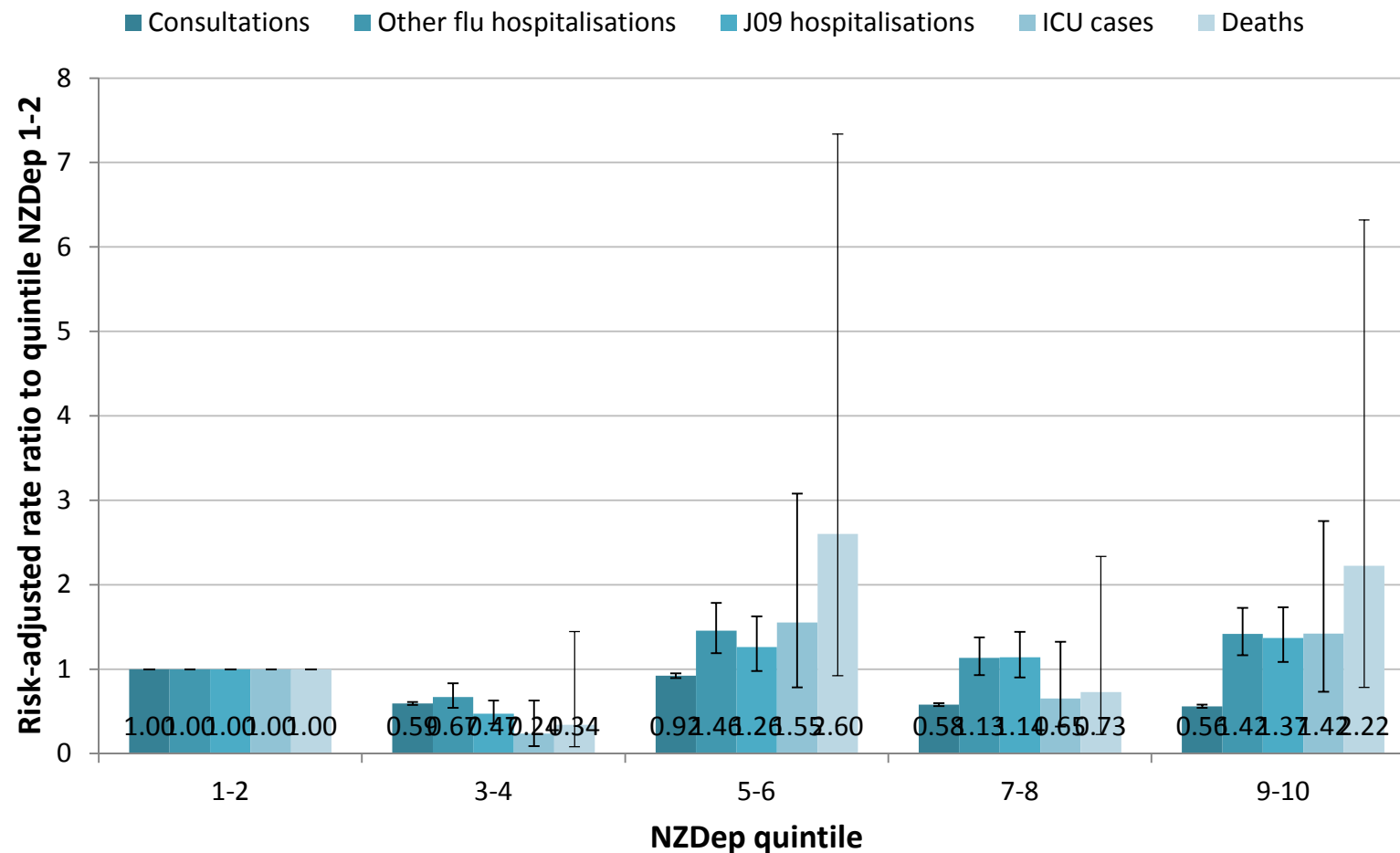
Risk factors

Pandemic influenza rate ratios for outcomes by ethnic group, NZ 2009 (age & dep stand.)



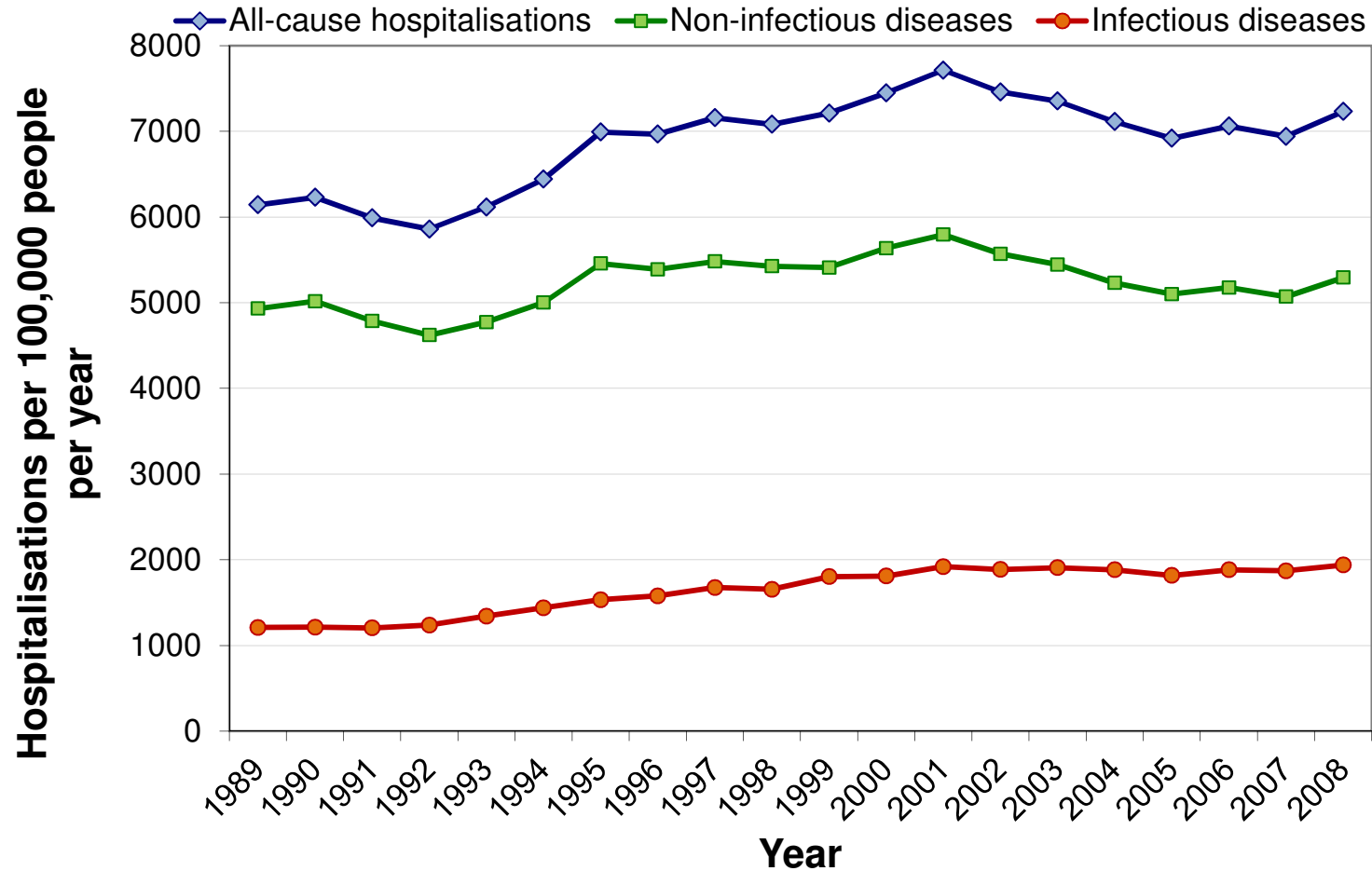
Risk factors

Pandemic influenza rate ratios for outcomes by deprivation, NZ 2009 (age & ethnicity stand.)



Respiratory infections, NZ

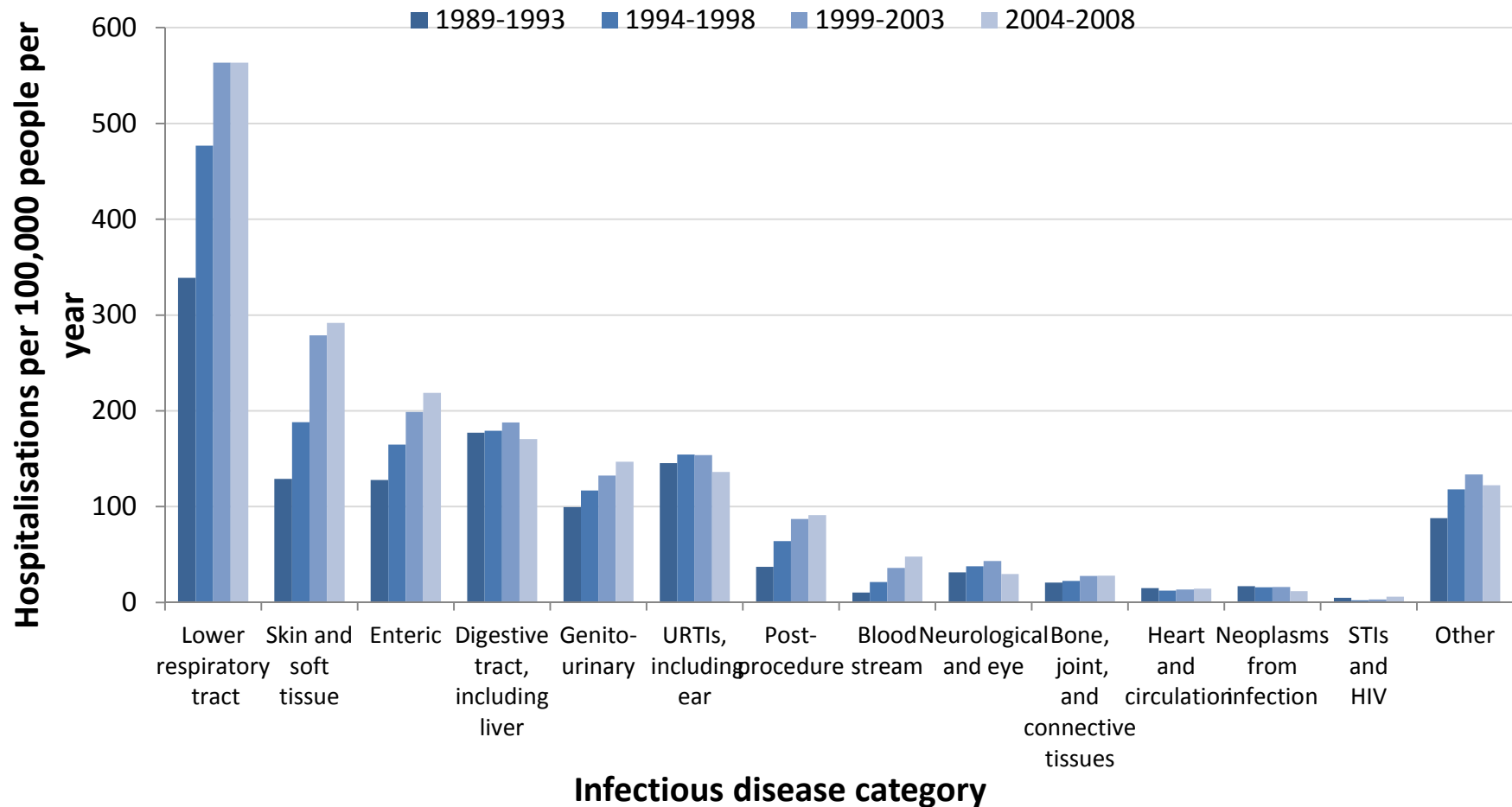
Hosp. rates for IDs vs. Non-IDs, 1989-2008



Source: Baker et al 2012, Lancet in press

Respiratory infections, NZ

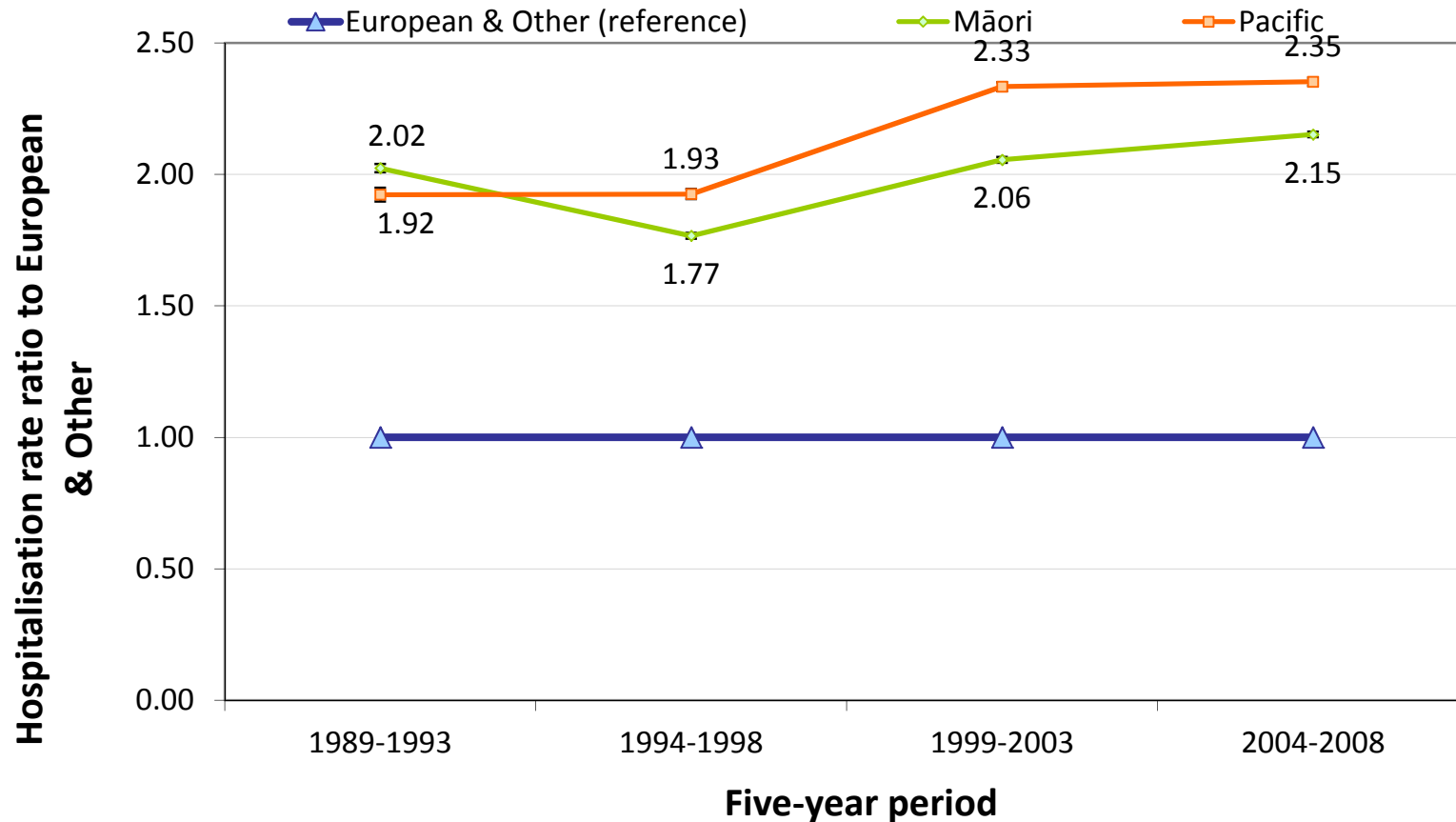
Hospitalisation rates for ID categories, 2009



Source: Baker et al 2012, Lancet in press

Respiratory infections, NZ

Hosp. SRR for IDs, by ethnicity, 1989-2008



Source: Baker et al 2012, Lancet in press

Conclusions

- Large differences in occurrence of serious influenza (hospitalised) across population groups \Rightarrow differences in risk factors
- Relatively high rates of hospitalisation & serious outcomes for Māori and Pacific
- Risk factors include: Exposure factors; Susceptibility factors; Progression factors
- Some risk factors are modifiable \Rightarrow important to identify these
- Small existing research base for seasonal influenza, some studies for pandemic influenza 2009

Discussion Points

- What are 'modifiable' risk factors for influenza?
- Do modifiable risk factors matter vs. increasing vaccine coverage?

Acknowledgements

- University of Otago: Jane Zhang, Lucy Telfar Barnard, James Stanley, Nick Wilson, and others
- ESR: Sue Huang, Don Bandaranayake, Graham Mackereth and others
- NZ Ministry of Health
- US Centers for Disease Control and Prevention and NZ Health Research Council for funding support