Trends in dispensing ADHD medication to New Zealand youth

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Disclaimer

Access to the data presented was managed by Statistics New Zealand under strict micro-data access protocols and in accordance with the security and confidentiality provisions of the Statistic Act 1975. Our findings are not Official Statistics. The opinions, findings, recommendations, and conclusions expressed are those of the researchers, not Statistics NZ.

National Science Challenges

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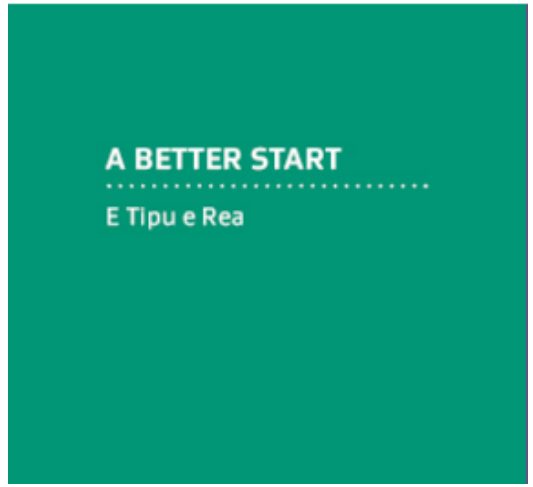
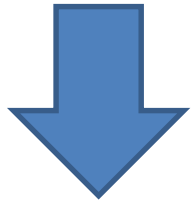
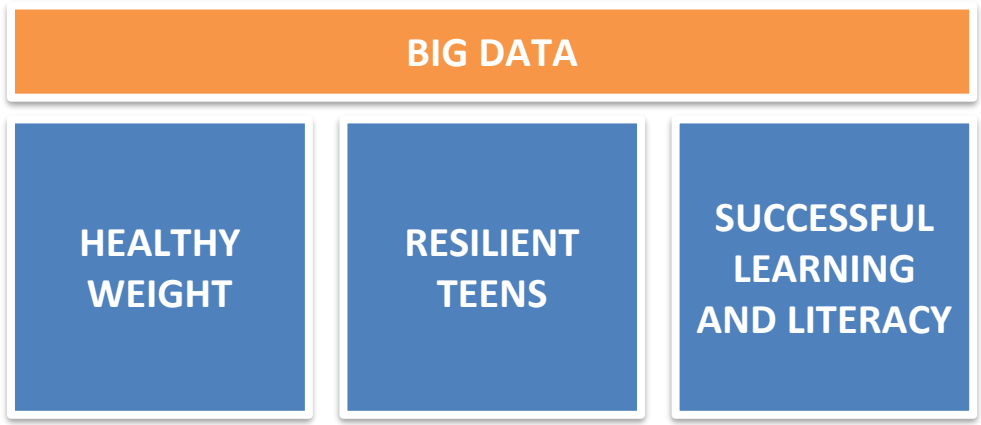






Attention-deficit/hyperactivity disorder

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®).*

DSM-5 Diagnostic Criteria

- **16 years or under:** 6+ symptoms
- **17 years plus:** 5+ symptoms

- Behaviour/symptoms are:
  - Present for 6 months
  - Inappropriate for developmental level
  - Disruptive
  - Present before 12 years and in multiple settings

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®).*

Management

Counselling/therapy

Lifestyle changes

Medication

Prevalences

Worldwide prevalence of ADHD - 3.4%

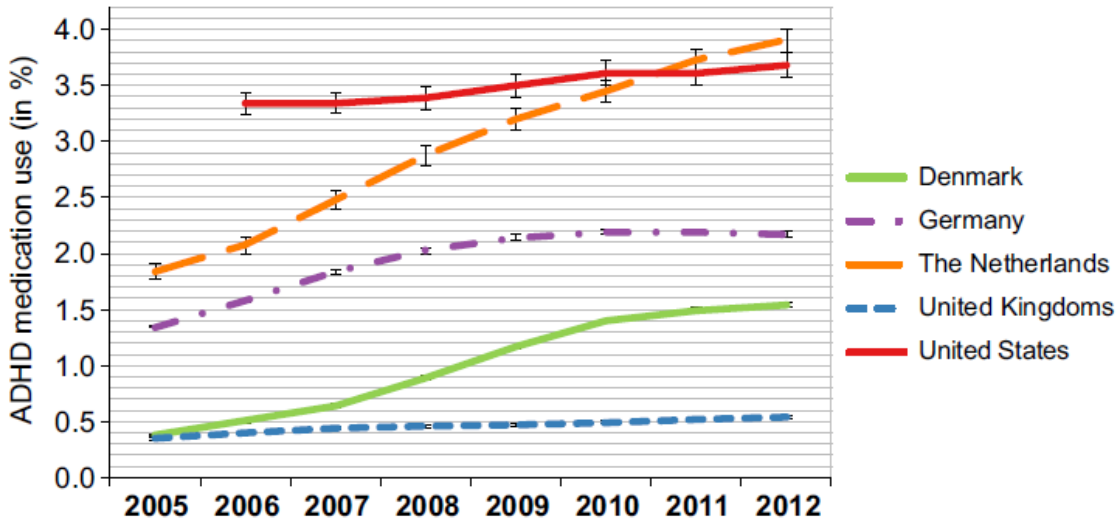


Figure 1. Percent prevalence of ADHD medication use in children and adolescents (0–19 years) in youth cohorts from five countries, 2005/6–2012. Adapted from Bachmann et al. (2017).

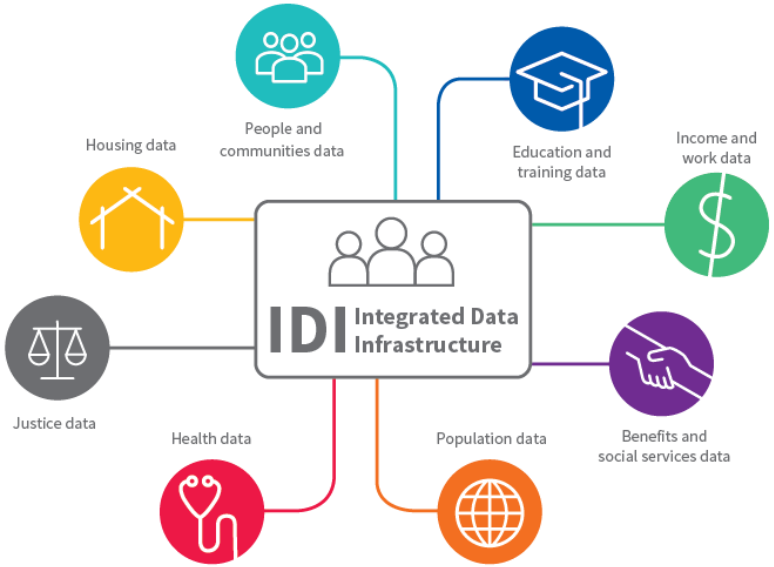
Figure 2. Overall annual prevalence of attention deficit hyperactivity disorder medication use in children aged 3–18 years. Adapted from Raman et al. (2018).

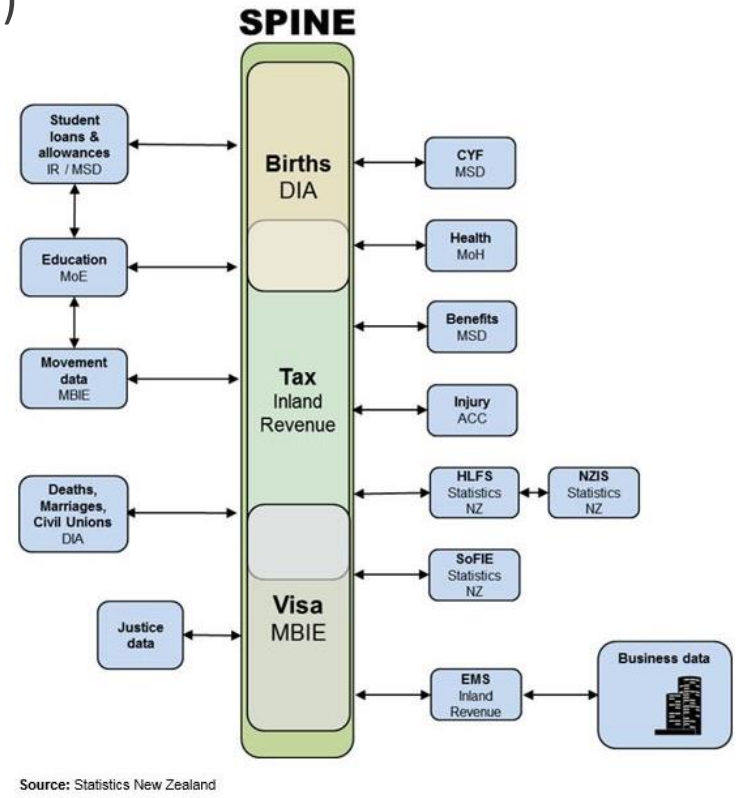
Bachmann et al. (2017). *European Neuropsychopharmacology.*
Raman et al. (2018). *Lancet Psychiatry.*
Polanczyk et al. (2015). *The Journal of Child Psychology and Psychiatry.*

The Integrated Data Infrastructure

Data Source: Statistics New Zealand Integrated Data Infrastructure (IDI)

- Large database of de-identified administrative and survey data.
- Linked at the individual level
- Can connect information about a person across different sources





The Integrated Data Infrastructure

Source: Statistics New Zealand

ADHD medication in NZ

Obtained from the community pharmaceutical collection.

- Methylphenidate hydrochloride
- Dexamphetamine sulfate
- Atomoxetine
- Modafinil
- Clonidine

ADHD medication in NZ

Sample: All individuals in NZ aged 1 – 24 years from 1st July 2007 – 30th June 2017

- *N* = 2,395,209

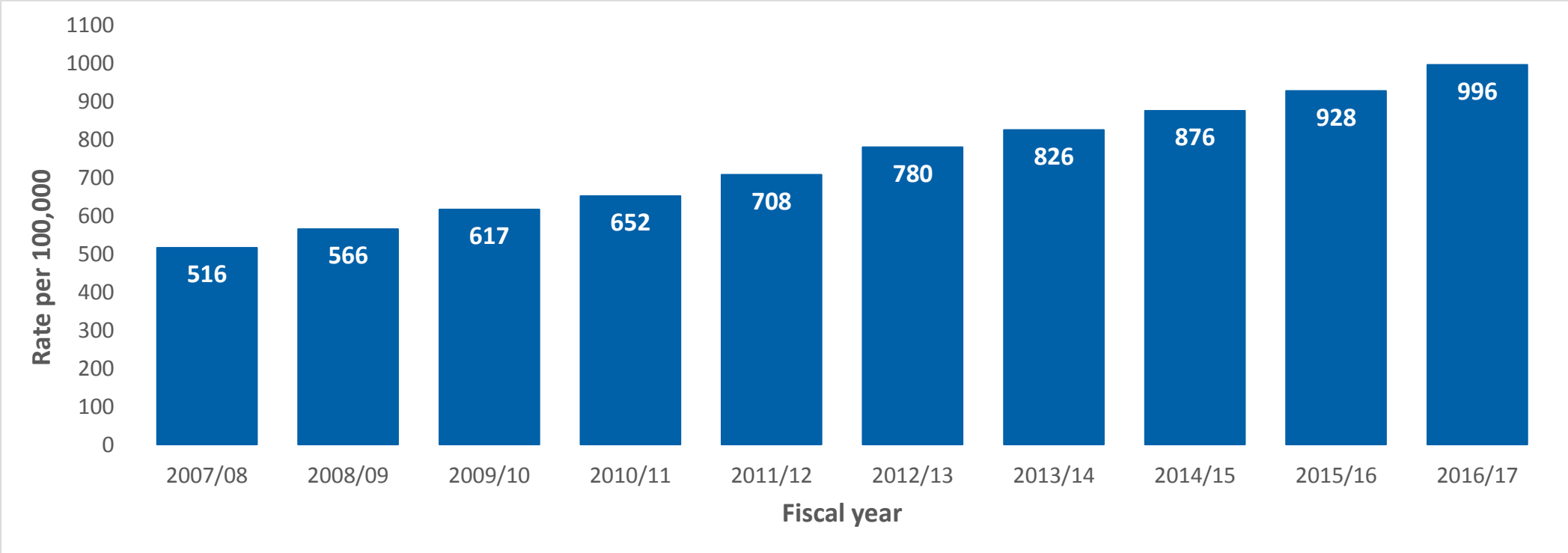
Data analysis: Dispensing prevalence for each fiscal year

$$\frac{\text{Number with one or more dispensing}}{\text{Total number in resident youth population}} \times 100{,}000$$

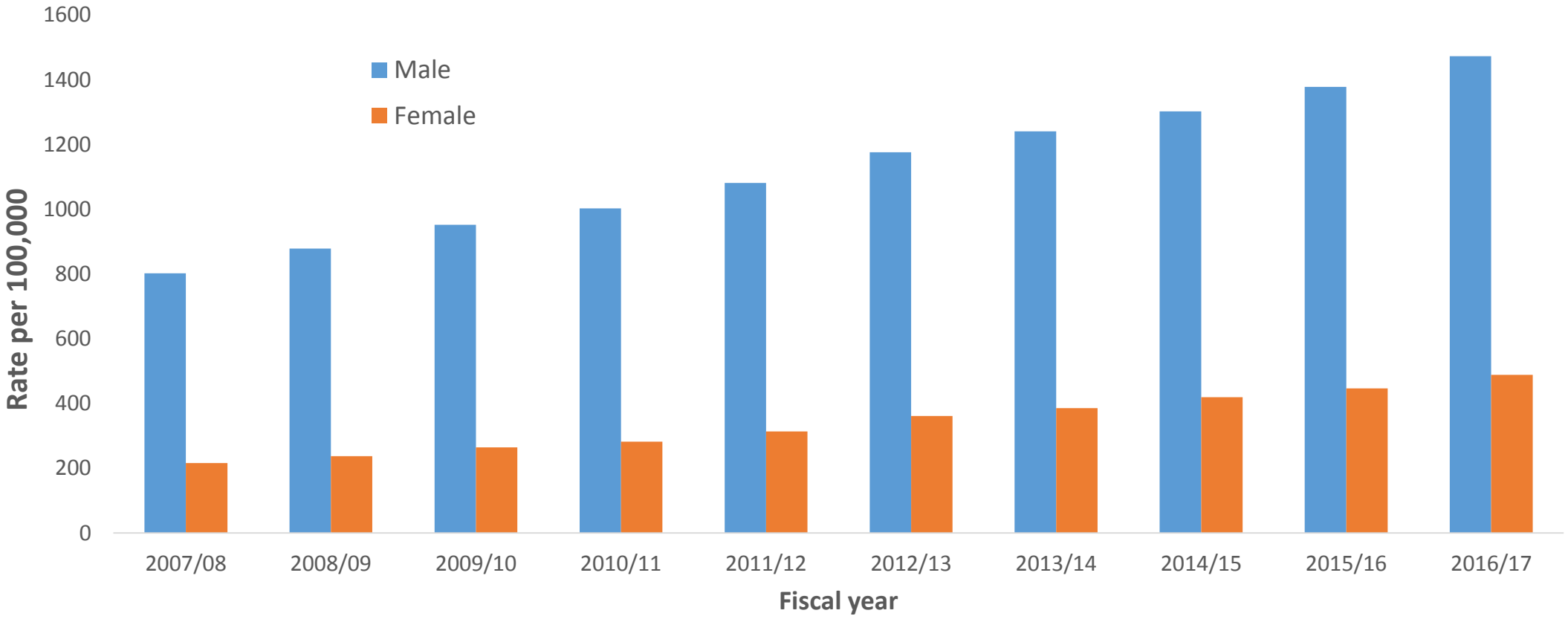
Prevalence also calculated for each sex, age group, ethnicity (total response), 2013 NZDep quintile, and DHB.

Total population dispensing prevalence

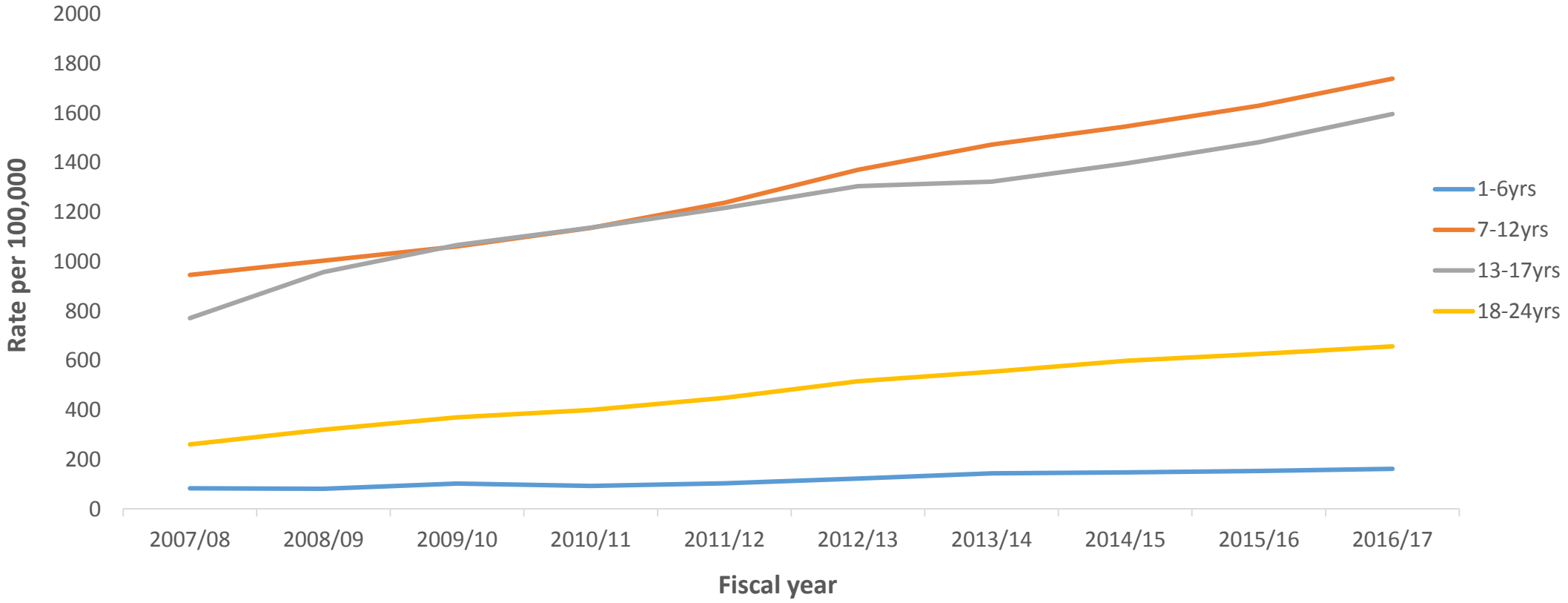
Period prevalence was 1,182 per 100,000 population



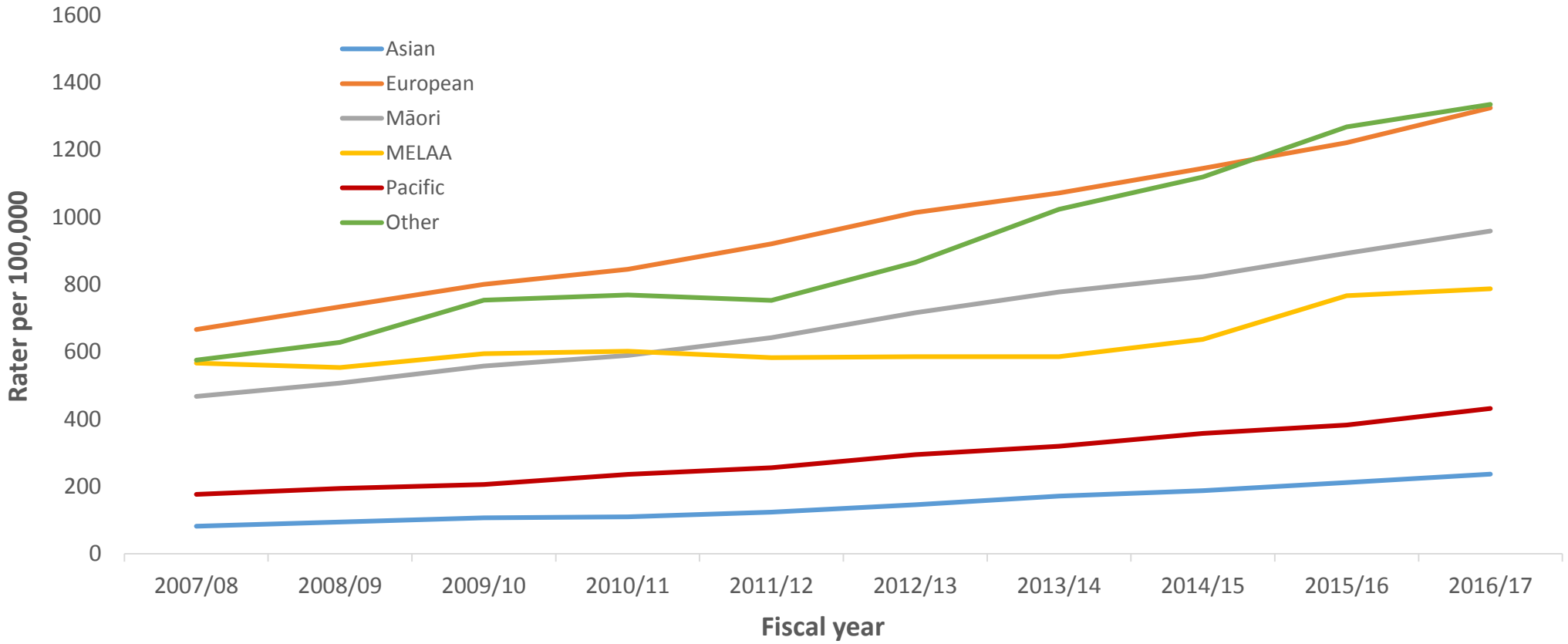
Dispensing prevalence by sex



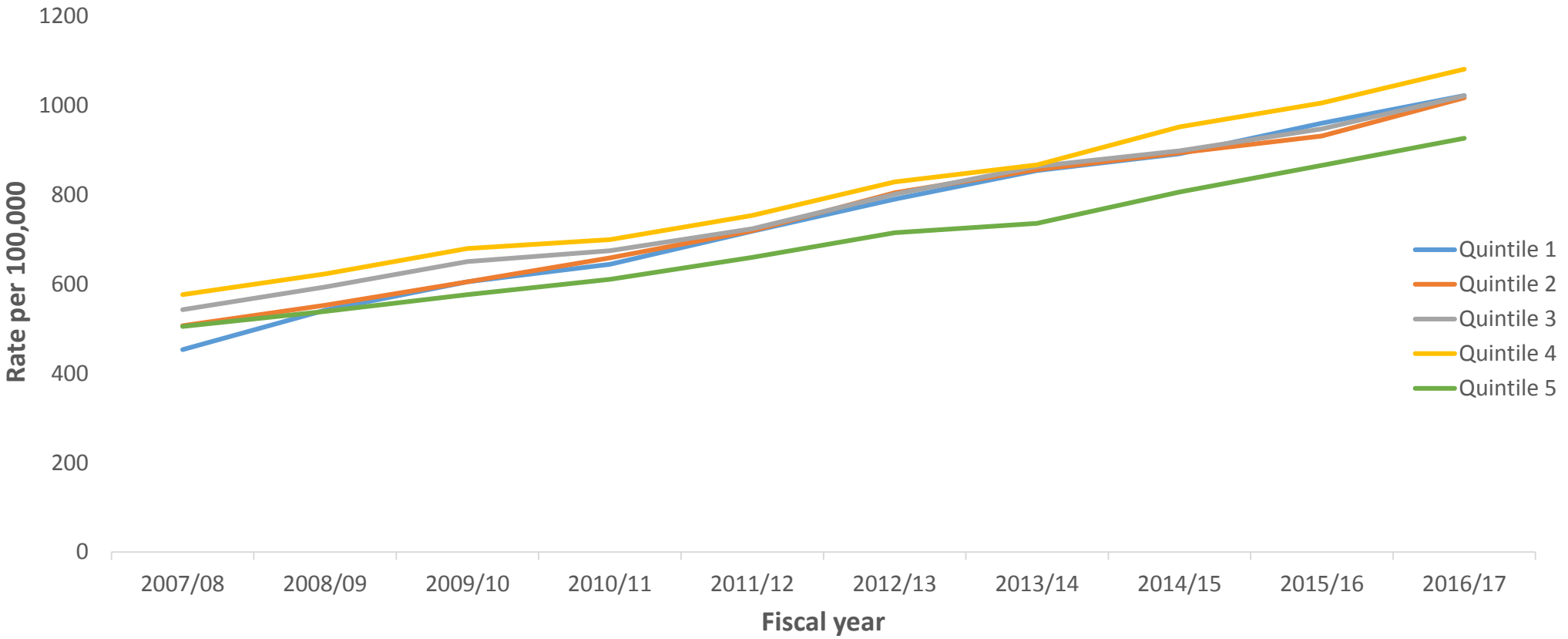
Dispensing prevalence by age



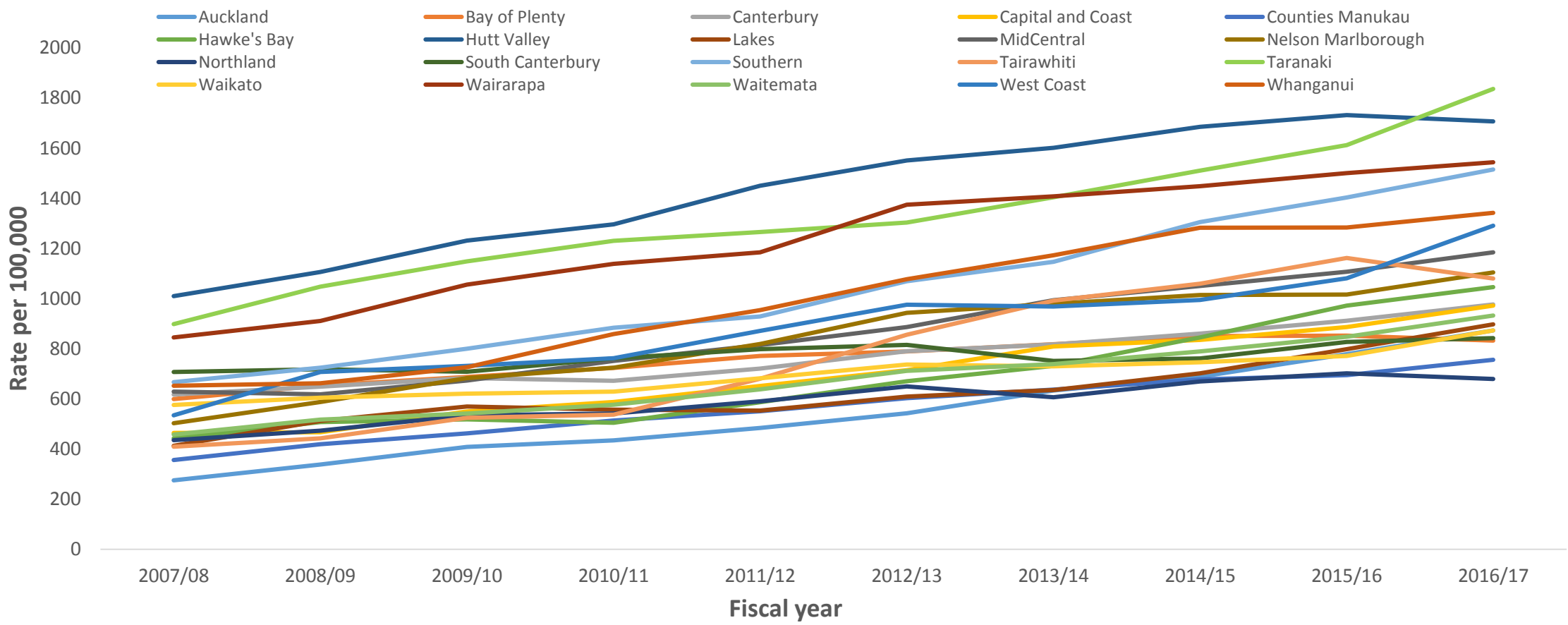
Dispensing prevalence by ethnicity



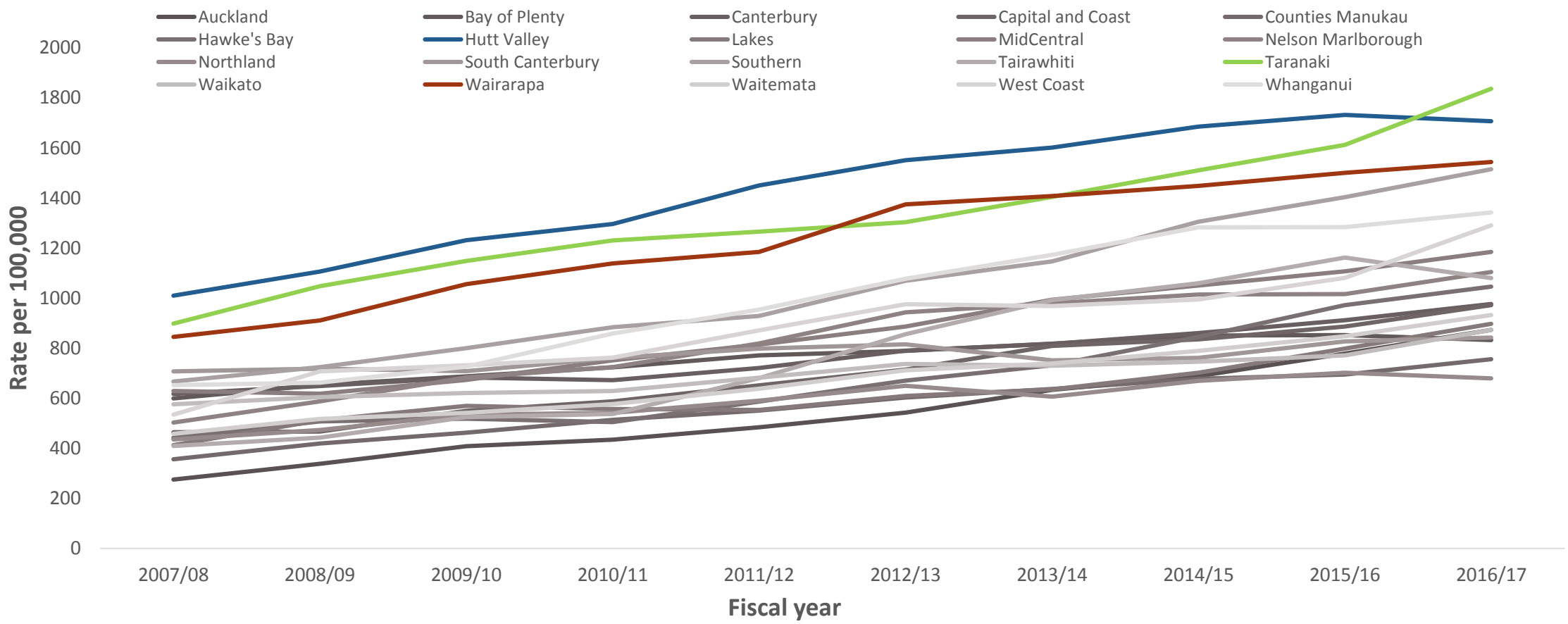
Dispensing prevalence by deprivation



Dispensing prevalence by DHB



Dispensing prevalence by DHB



Prevalence by medication type (per 100,000)

Fiscal year	Methylphenidate	Clonidine	Dexamphetamine	Atomoxetine	Modafinil
2007/08	462	50	36	<1	<1
2008/09	507	51	33	12	<1
2009/10	555	50	28	28	<1
2010/11	586	52	26	28	<1
2011/12	638	57	28	31	1
2012/13	703	66	29	35	1
2013/14	744	70	30	37	1
2014/15	790	79	32	39	1
2015/16	834	89	31	42	1
2016/17	899	98	34	46	1

Comparison to other regions

Overall prevalence in ADHD medication dispensing was 1.18% (95% CI 1.17 – 1.20)

Region	Prevalence (%)	95% CI
Asia and Australia	0.95	0.35–1.56
North America	4.48	2.86–6.10
Northern Europe (Nordic countries)	1.95	1.47–2.44
Western Europe (France, Spain, UK)	0.70	0.31–1.10

Table 1. Prevalence (95% CI) in ADHD medication dispensing. Adapted from Raman et al. (2018)

Raman et al. (2018). *Lancet Psychiatry.*

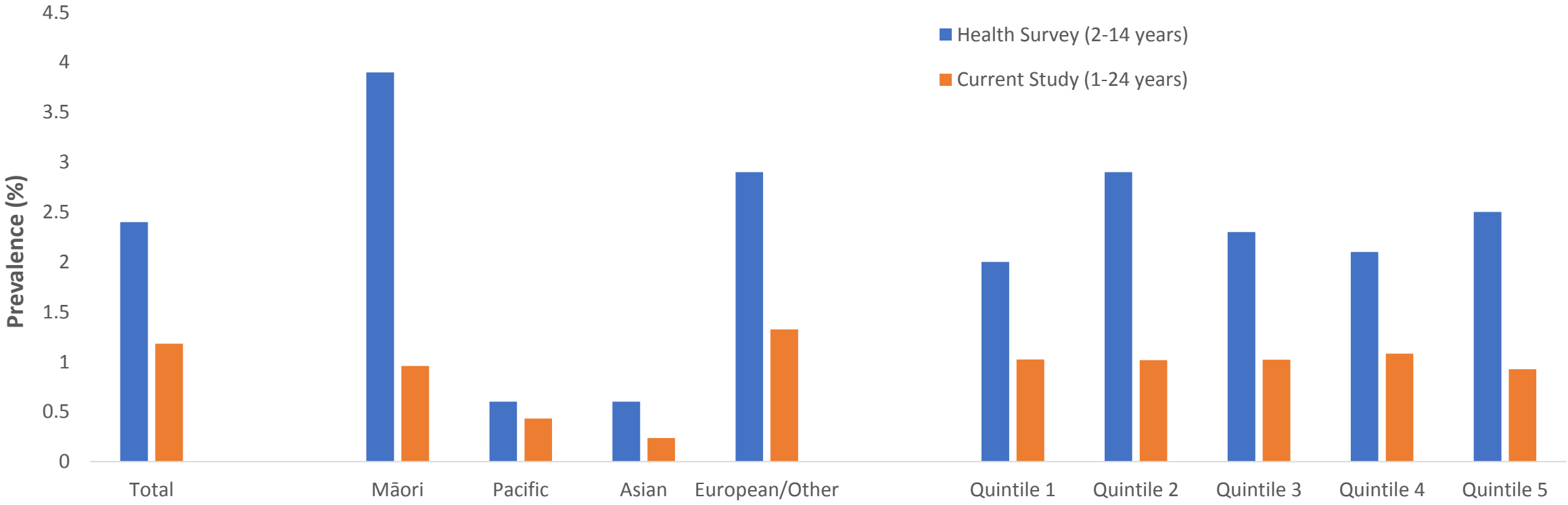
Comparison with disorder prevalence

Polanczyk and colleagues

- Worldwide-pooled prevalence of ADHD – 3.4%
- Variability in ADHD prevalence estimates explained by methodological factors
- No evidence that ADHD prevalence is increasing

Polanczyk et al. (2014). *International Journal of Epidemiology*.
Polanczyk et al. (2015). *The Journal of Child Psychology and Psychiatry.*

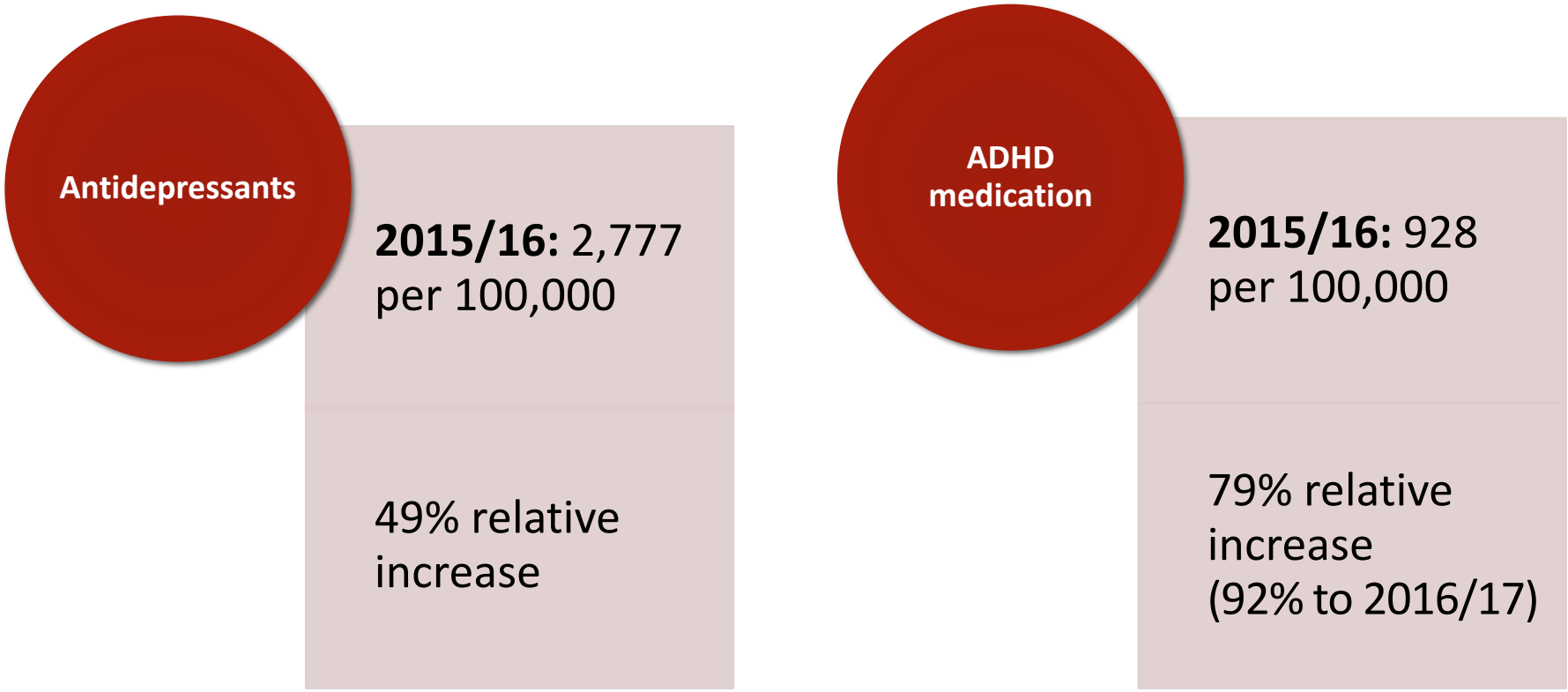
Comparison with disorder prevalence in NZ Health Survey (2016/17)



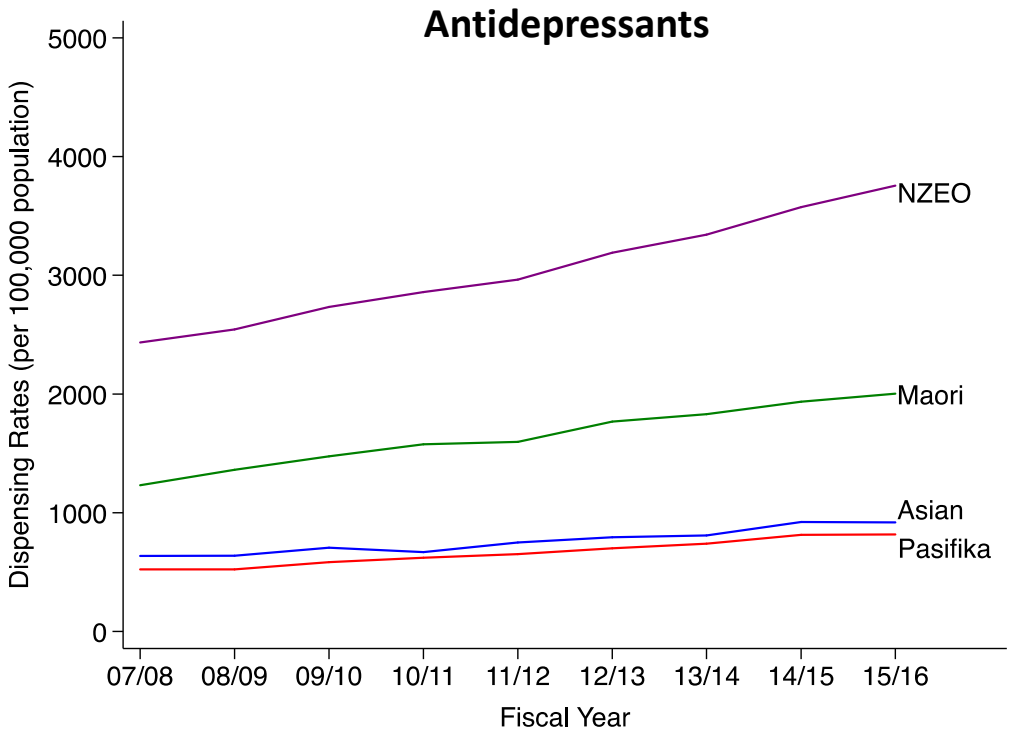
Ministry of Health (2017). Annual Data Explorer 2016/17: New Zealand Health Survey.

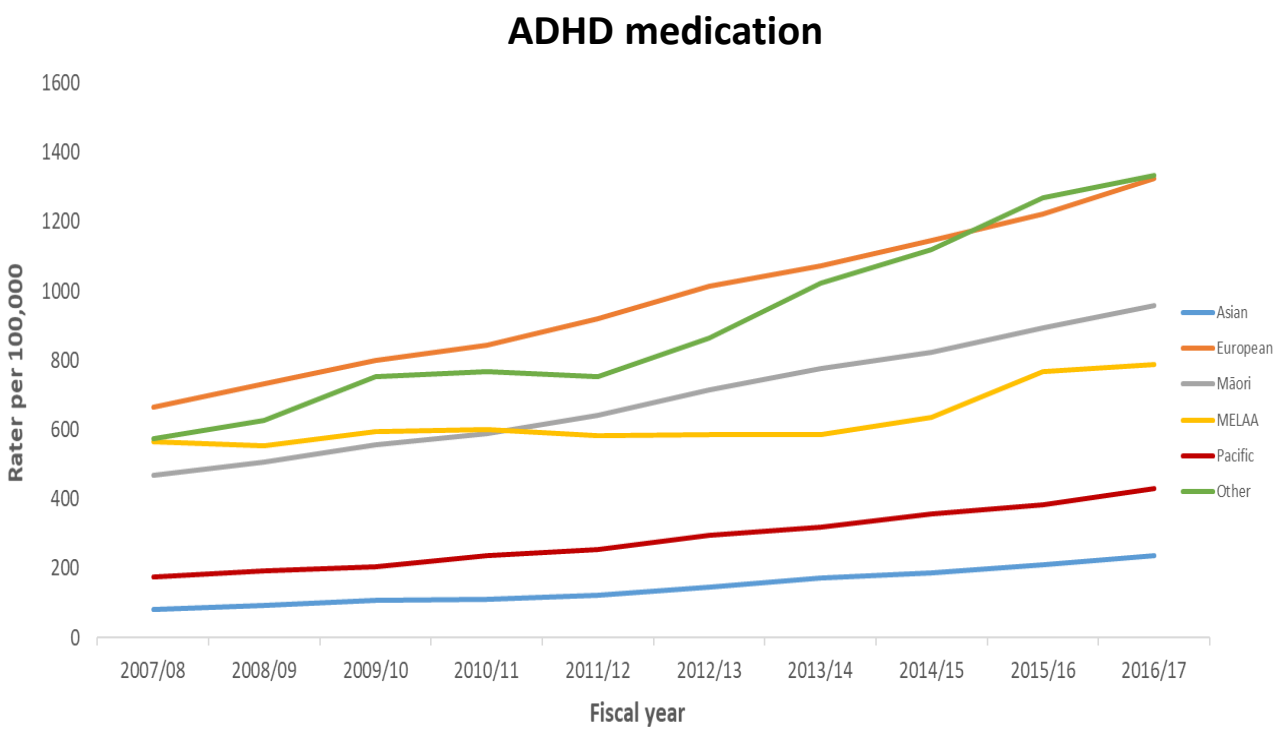
Comparison with antidepressant dispensing

Bowden et al. (under review) – from 2006/07 to 2015/16

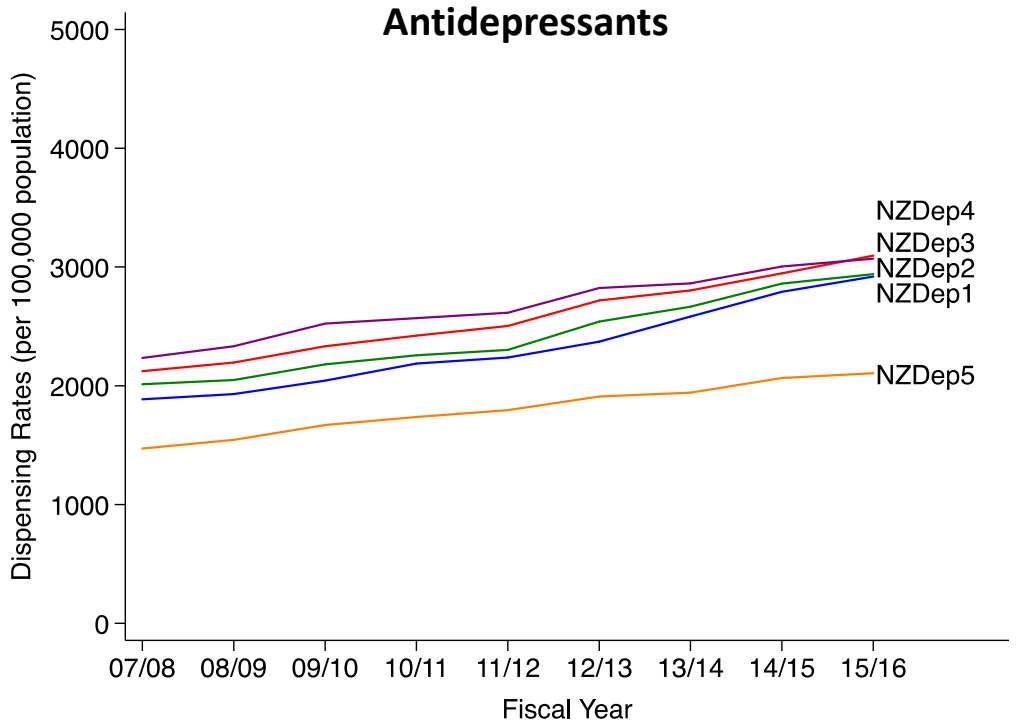


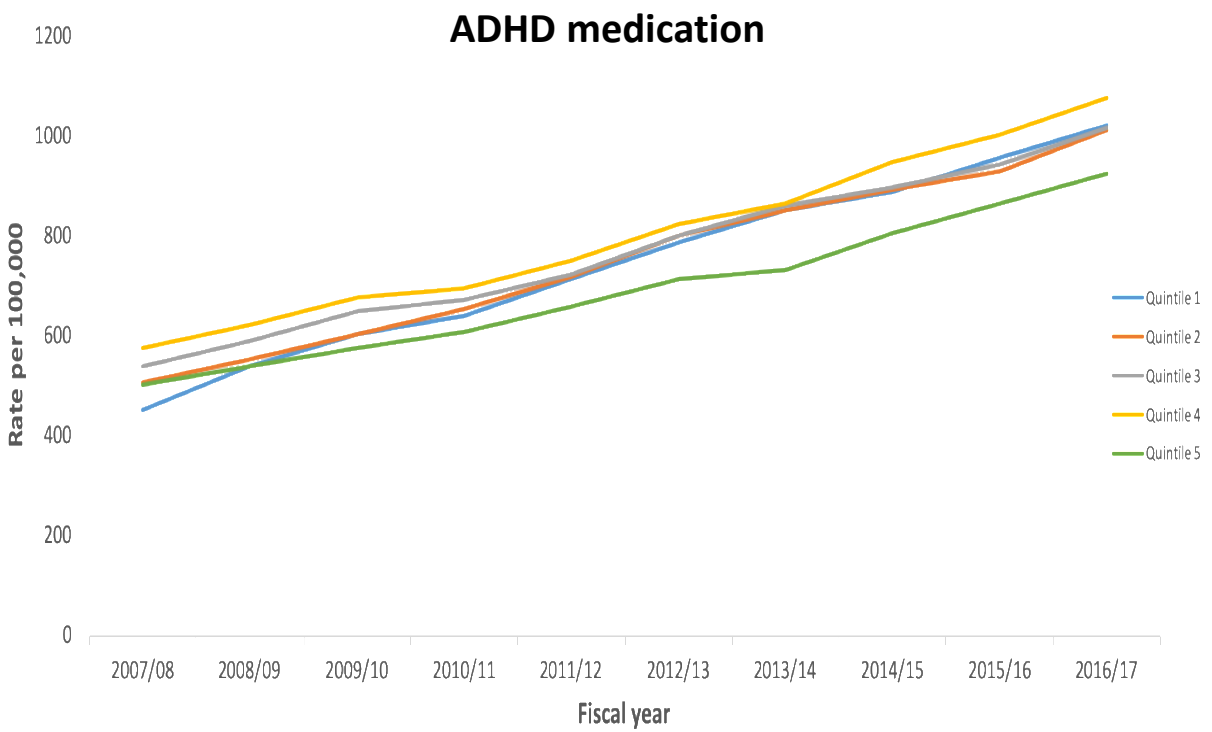
Comparison with antidepressant dispensing





Comparison with antidepressant dispensing





Concluding thoughts

- Increase in dispensing prevalence rates from 2007/08 to 2016/17
- Medication dispensing prevalence lower than disorder prevalence
- Differences across DHBs in dispensing prevalence
- Group differences in rates may reflect differences in access to healthcare and medication
  - Ethnicity: cultural variation in the perception of ADHD and treatment
  - Sex and age: genuine differences in prevalence of ADHD in these groups

Limitations

- Dispensings not prescriptions
- Medications may be prescribed for other conditions
- Lack of information on other treatments
- IDI not sufficient in exploring reasons for discrepancies in dispensing prevalence rates

Acknowledgements

- COMPASS team
- Better Start team
- Public Policy Institute
- Stats NZ

Questions

Attention-deficit/hyperactivity disorder

Inattention symptoms	Hyperactivity/Impulsivity symptoms
Fails to give close attention to details or makes careless mistakes.	Fidgets with or taps hands or feet, or squirms in seat.
Has trouble holding attention.	Leaves seat in situations when remaining seated is expected.
Does not seem to listen when spoken to directly.	Inappropriately runs about or climbs (adolescents or adults may be limited to feeling restless).
Does not follow through on instructions and fails to finish tasks.	Unable to play or take part in leisure activities quietly.
Has trouble organizing tasks and activities.	“On the go” acting as if “driven by a motor”.
Avoids, dislikes, or is reluctant to do tasks that require mental effort over a long period of time.	Talks excessively.
Loses things necessary for tasks and activities.	Blurts out an answer before a question has been completed.
Easily distracted.	Trouble waiting his/her turn.
Forgetful in daily activities.	Interrupts or intrudes on others.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®).*