

# Evaluating the impact of new prescribing restrictions for proton pump inhibitors in Australia: an interrupted time series analysis

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## Background

In May 2019 tightened prescribing restrictions were introduced for proton-pump inhibitors (PPIs) publicly-subsidised through Australia's Pharmaceutical Benefits Scheme (PBS), requiring prescribers to obtain permission to prescribe high and standard strength PPIs. The impact of these restrictions on PPI use in Australia is not yet known.

## Methods

- Setting:** Australia maintains a publicly funded healthcare system entitling all citizens and eligible residents to subsidised prescription medicines through the PBS
- Data:** PPI dispensing records from national 10% sample of PBS beneficiaries and national pharmaceutical sales data (Table 1)
- Outcomes:** Monthly PPI dispensings, kilograms of PPIs sold/dispensed, and switches from higher to lower strength formulations per 10,000 treated; January 2017 to December 2020.
- Statistical analyses:** Interrupted time series analysis using autoregressive models.

## Results

- Immediate decrease (-7,830 [95%CI: -8,818 to -6,842]) in standard strength PPI dispensings/month; slowly rebounded to exceed pre-intervention levels by December 2020 (Figure 1)
- High strength dispensings more than halved their pre-intervention average/month; low strength dispensings more than doubled their pre-intervention average/month (Fig 1)
- Transient increases in switches to lower strength formulations in May (478/10,000) and June (375/10,000) 2019; returned to pre-intervention levels by 2020
- Kilograms of PPIs sold/month followed a similar pattern to PBS kilograms dispensed/month except for standard strength formulations, where kilograms dispensed decreased by -74 (95%CI: -93 to -55) but sales remained unchanged (Figure 2)

## Conclusions

- Tightened prescribing restrictions had an immediate and sustained impact on PPI use in Australia
- PPI use was more closely aligned with guideline recommendations from May 2019
- Some patients likely switched to private market prescriptions for standard strength PPIs

Table 1. PPI medicine availability in Australia.

PPI	Strength	PBS strength classification	Availability in Australia		
			PBS	Private	OTC
Esomeprazole	40 mg	High	✓	✓	-
Esomeprazole	20 mg	Standard	✓	✓	✓
Lansoprazole	30 mg	Standard	✓	✓	-
Lansoprazole	15 mg	Low	✓	✓	-
Omeprazole	20 mg	Standard	✓	✓	✓
Omeprazole	10 mg	Low	✓	✓	✓
Pantoprazole	40 mg	Standard	✓	✓	-
Pantoprazole	20 mg	Low	✓	✓	✓
Rabeprazole	20 mg	Standard	✓	✓	-
Rabeprazole	10 mg	Low	✓	✓	✓

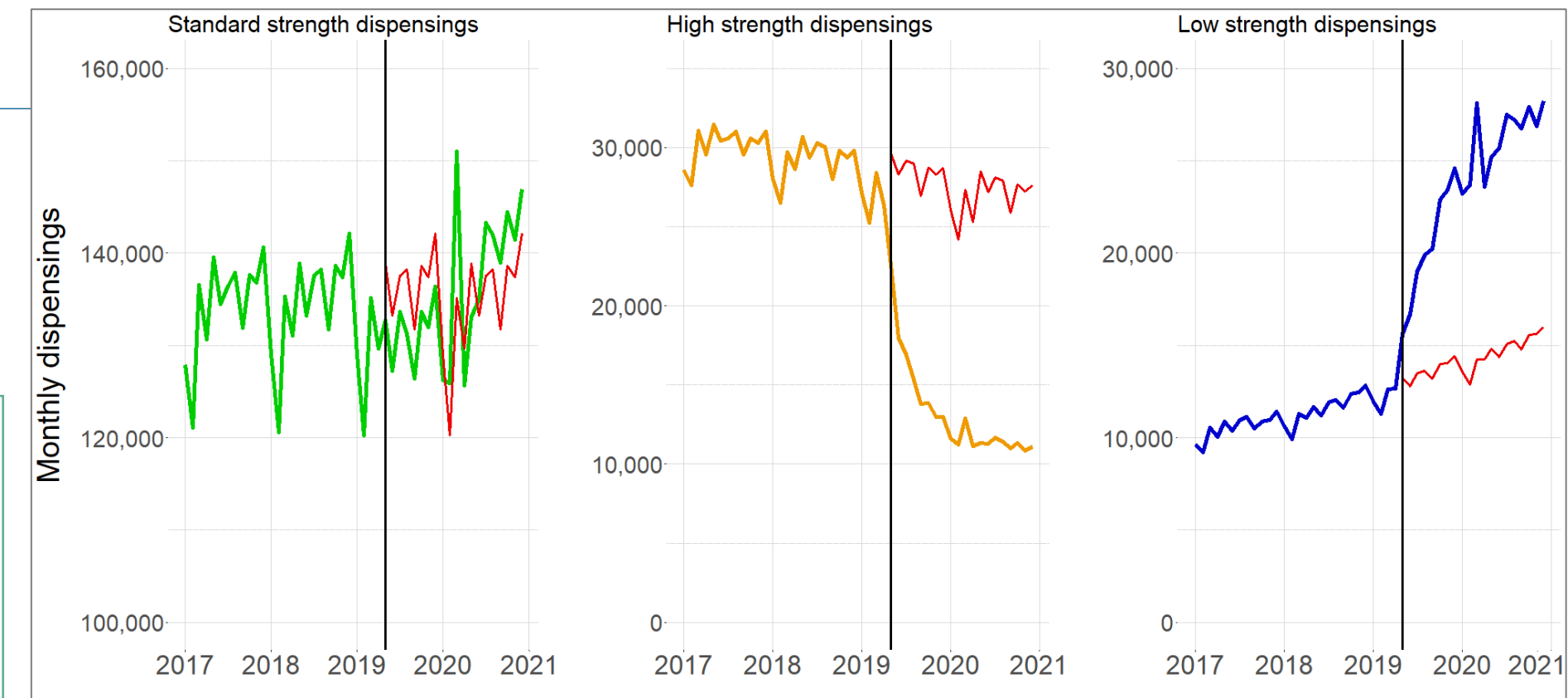


Figure 1. Monthly PPI observed dispensings and predicted dispensings (red) based on the pre-May 2019 trend; by strength. Vertical black line indicates May 2019.

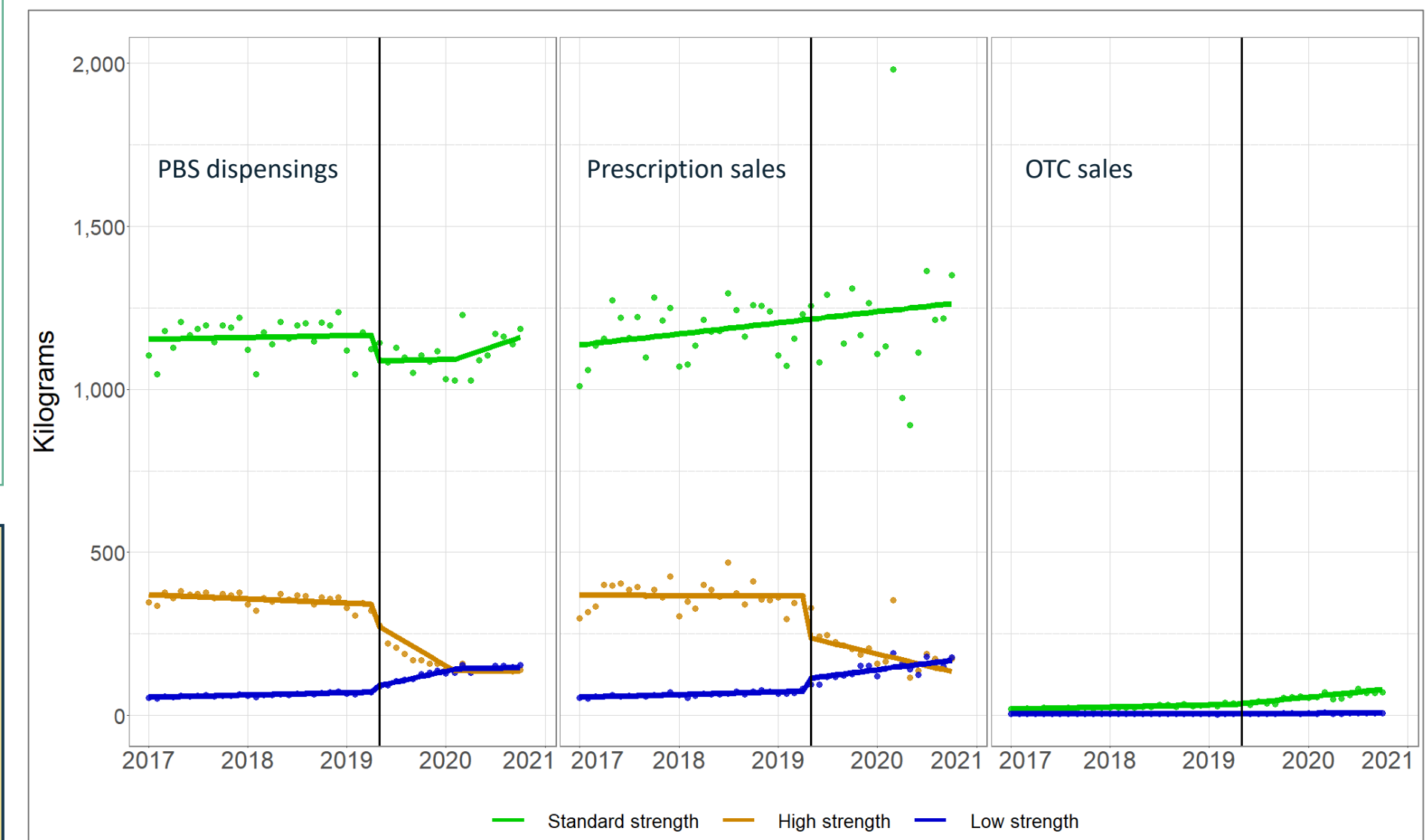


Figure 2. Volume (kgs) dispensed via the PBS (left), sold via prescription (centre), and sold via OTC (right), per month. Points: observed kilograms dispensed/sold; solid line: fitted linear trend; vertical black line indicates May 2019.

## Acknowledgements

We thank the Australian Government Services Australia for providing the PBS data and Melisa Litchfield for her assistance with the data access and ethical approvals for this project.



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