Te Whatu Ora
Health New Zealand

Closing the loop

Understanding outcome variation in dialysis outcomes in Aotearoa New Zealand

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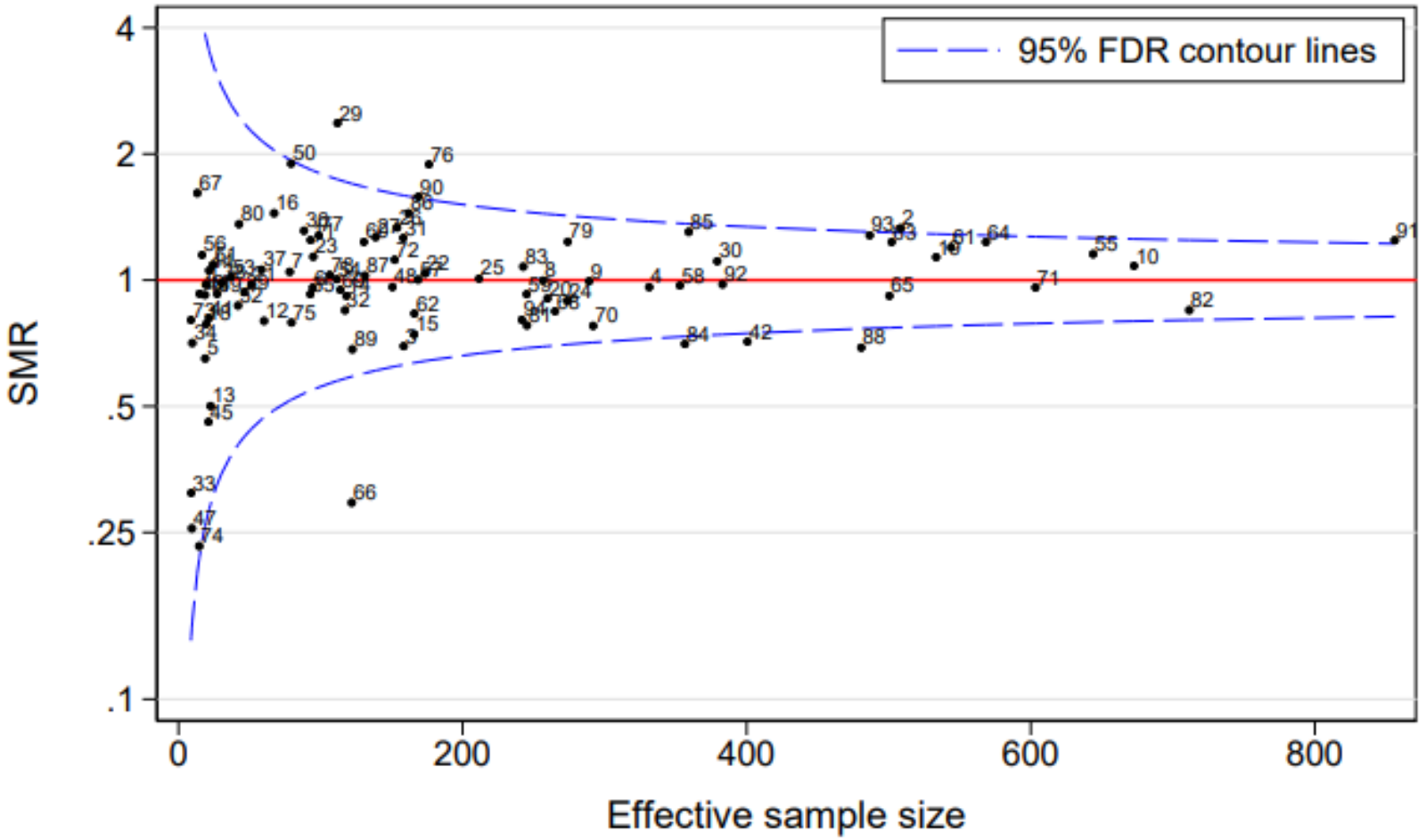
ANZDATA 2014-2019 Dialysis Centre Report



https://www.anzdata.org.au/wp-content/uploads/2021/02/abridgedDX_2014_2019_20201210_v1.0.pdf

ANZDATA 2014-2019 Dialysis Centre Report

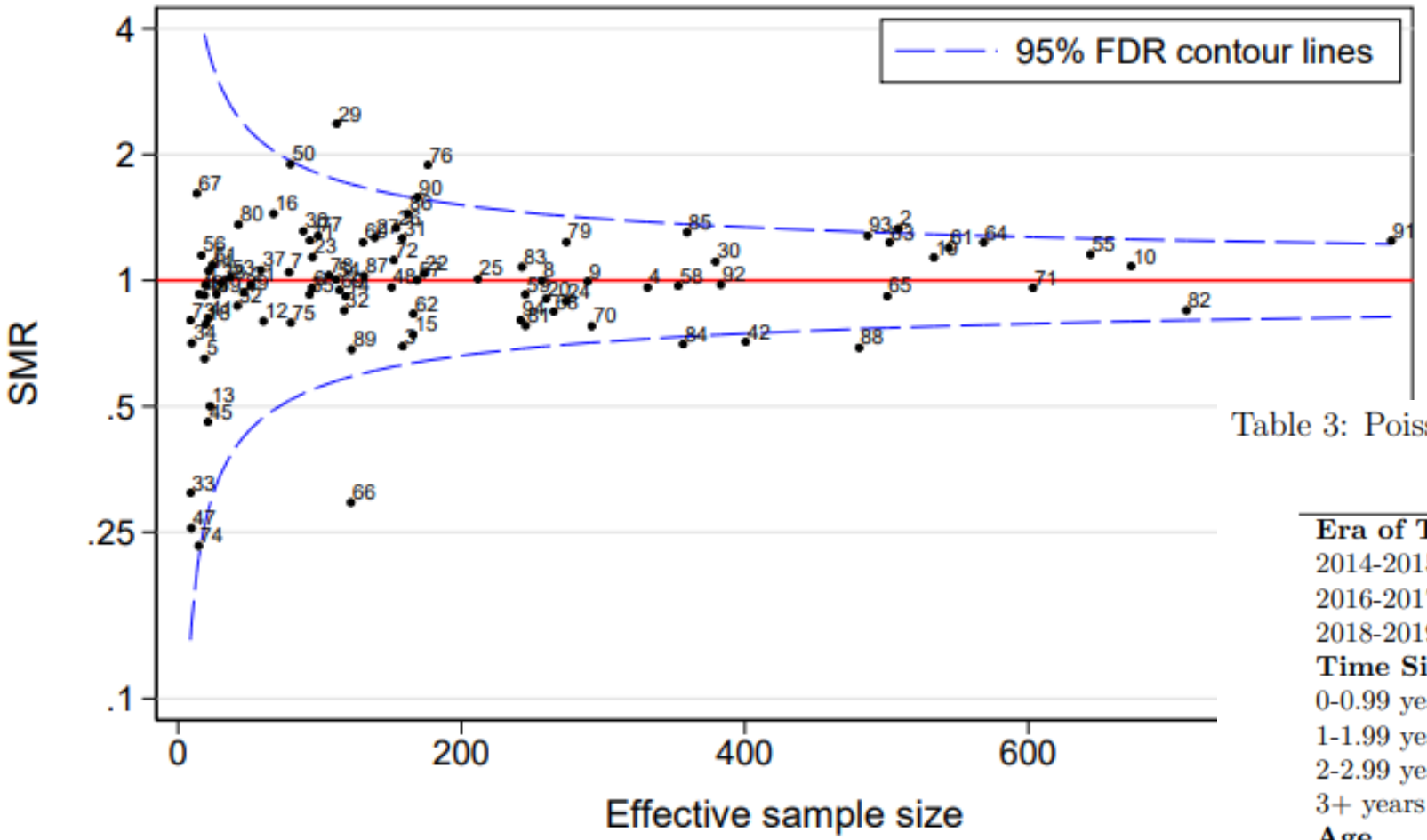
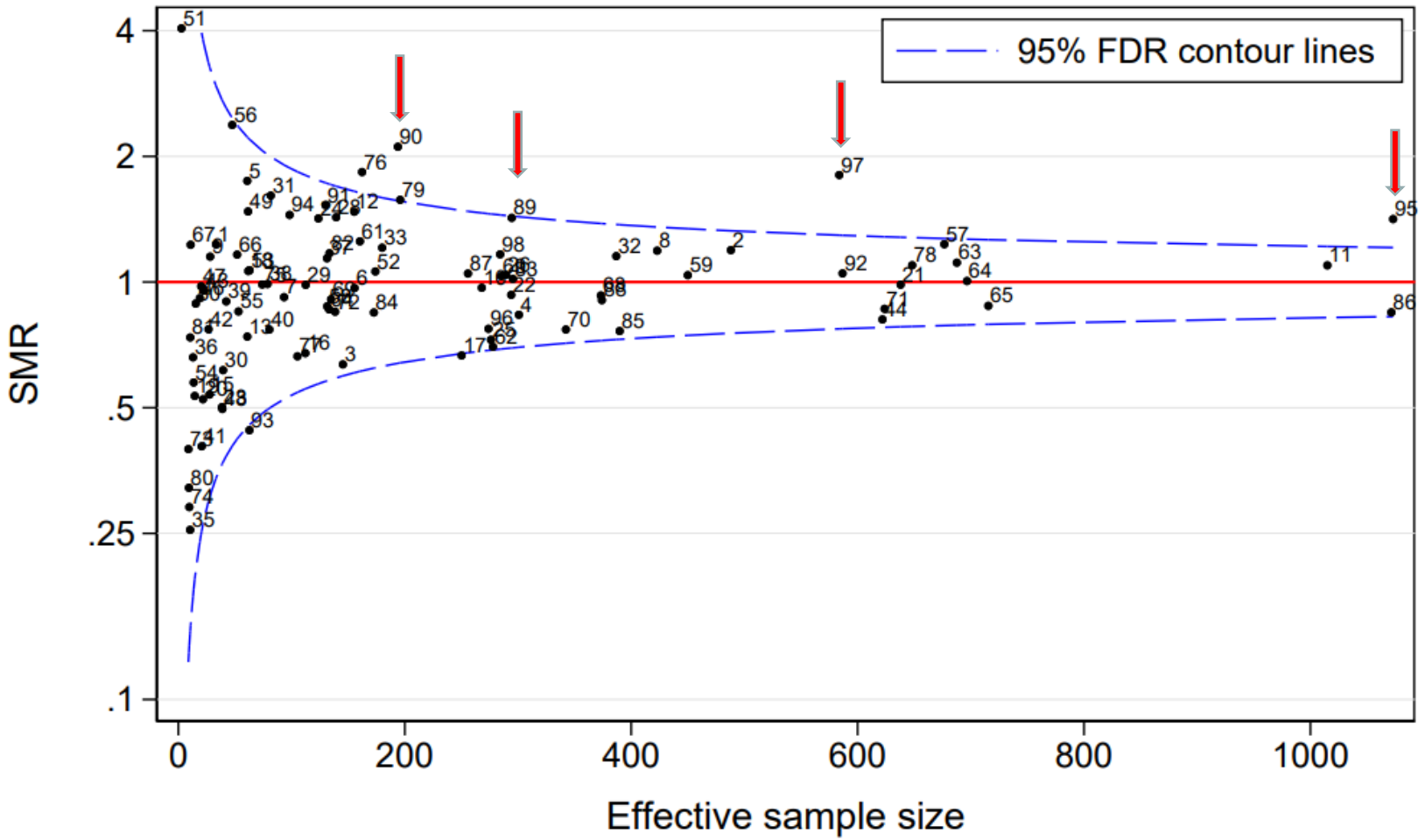


Table 3: Poisson regression model incidence rate ratios (IRR)

	IRR	95% CI
Era of Treatment Start		
2014-2015	ref.	
2016-2017	1.036	(0.965-1.113)
2018-2019	0.974	(0.877-1.083)
Time Since Beginning Dialysis		
0-0.99 years	ref.	
1-1.99 years	1.195	(1.101-1.297)
2-2.99 years	1.494	(1.362-1.638)
3+ years	1.776	(1.611-1.959)
Age	1.027	(1.024-1.030)
Male	1.060	(0.990-1.134)
New Zealand	1.332	(1.156-1.536)

ANZDATA 2016-2021 Dialysis Centre Report
No NZ adjustment in poisson model



SMR (95% FDR CI)
0.91 (0.66-1.25)
1.42 (0.99-2.05)
2.11 (1.35-3.30)
1.53 (0.88-2.64)
1.05 (0.81-1.36)
0.44 (0.20-0.97)
1.45 (0.77-2.72)
1.41 (1.17-1.71)
0.77 (0.53-1.13)
1.80 (1.39-2.34)
1.16 (0.80-1.69)

3/12 centres <1
3 centres where 95% lower >1

Comparing each NZ centre with the comparator being all Australian patients

Australia	**1**	
1	0.99	0.767-1.28
2	0.81	0.62-1.06
3	1.42	1.16-1.74
4	1.86	1.51-2.29
5	1.56	1.08-2.26
6	3.05	1.78-5.22
7	1.43	0.98-2.08
8	1.13	0.91-1.41
9	0.47	0.277-0.80
10	1.35	0.88-2.08
11	1.16	0.86-1.57

What's in the model?

(and what's not)

Table 3: Poisson regression model incidence rate ratios (IR

	IRR	95% CI
Era of Treatment Start		
2016-2017	ref.	
2018-2019	0.946	(0.884-1.013)
2020-2021	0.939	(0.850-1.038)
Time Since Beginning Dialysis		
0-0.99 years	ref.	
1-1.99 years	1.152	(1.065-1.245)
2-2.99 years	1.394	(1.275-1.523)
3+ years	1.681	(1.531-1.846)
Age	1.027	(1.024-1.029)
Male	1.013	(0.949-1.081)
Diabetes (as comorbidity)	1.162	(1.056-1.280)
Chronic Lung Disease	1.251	(1.160-1.349)
Peripheral Vascular Disease	1.315	(1.223-1.414)
Cerebrovascular Disease	1.214	(1.115-1.321)
Coronary Artery Disease	1.417	(1.326-1.514)
Current or Former Smoker	1.126	(1.057-1.199)
Late Referral	1.302	(1.203-1.408)
BMI		
Underweight	1.293	(1.060-1.577)
Normal	ref.	
Overweight	0.862	(0.797-0.933)
Obese	0.759	(0.702-0.820)
Primary Kidney Disease		
Glomerular Disease	ref.	
Diabetic Kidney Disease	1.608	(1.444-1.790)
Hypertension	1.192	(1.054-1.350)
Polycystic Disease	0.654	(0.518-0.825)
Reflux Nephropathy	1.020	(0.716-1.455)
Other	1.623	(1.440-1.829)
Uncertain diagnosis	1.326	(1.130-1.556)

What is different between Australia and NZ?

Ethnicity

Aus RRT: 15% Indigenous Australian

NZ RRT: 61% Māori or Pacific

Population Statistics and inequity in health outcomes

Māori live 7.5 years less than NZ Europeans
Pacific people live 5.5 years less than NZ Europeans

NZ European	**1**	
Māori	1.01	(0.84-1.21)
Pacifica	0.83	(0.68-1.03)

Phosphate?

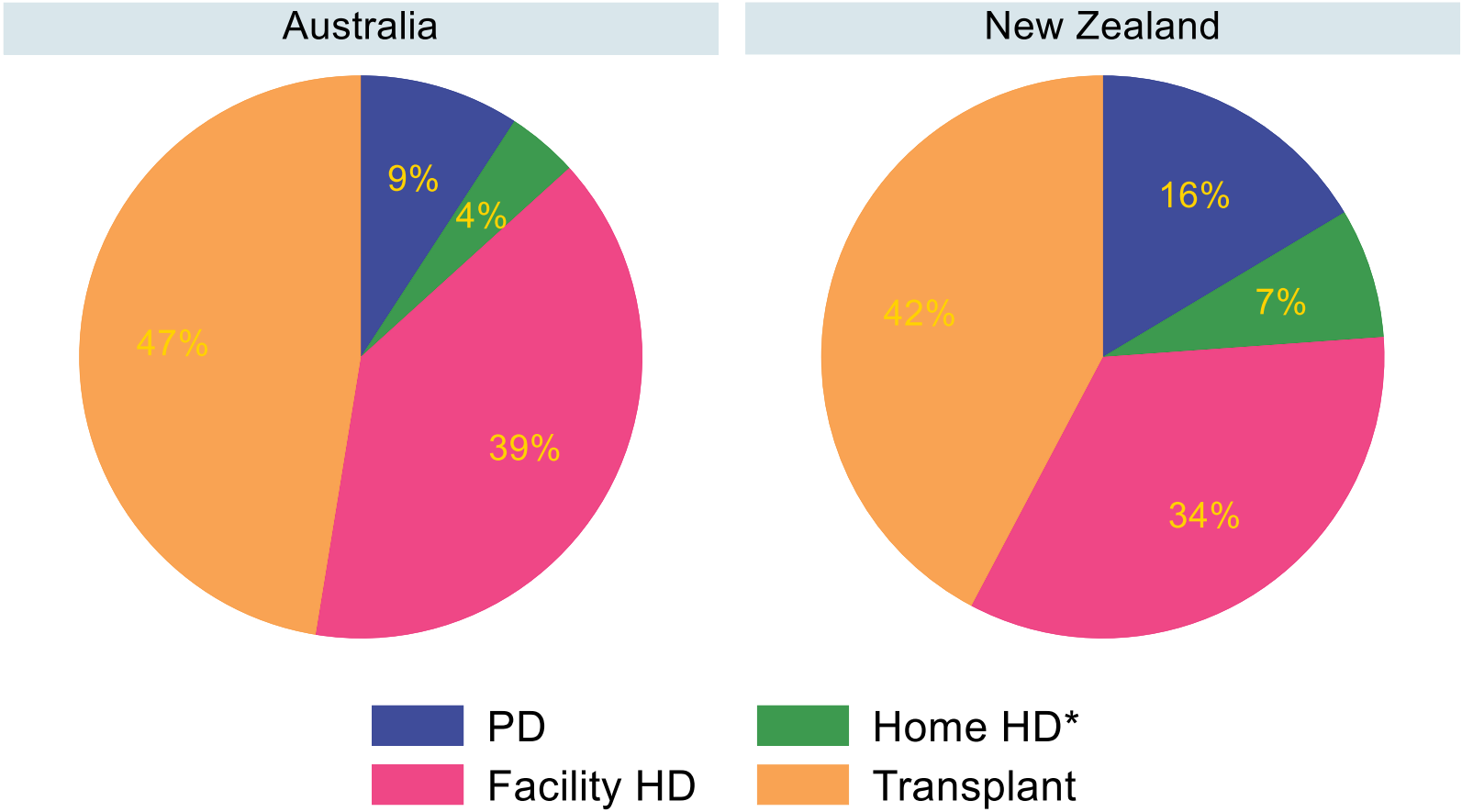
NZ has no access to novel phosphate binders

Options are Calcium Carbonate or Aluminium Hydroxide

Does a higher PO4 lead to an increased death rates?

PO4 0.8-1.6	**1**	
PO4 outside of Range	0.98	0.927-1.05

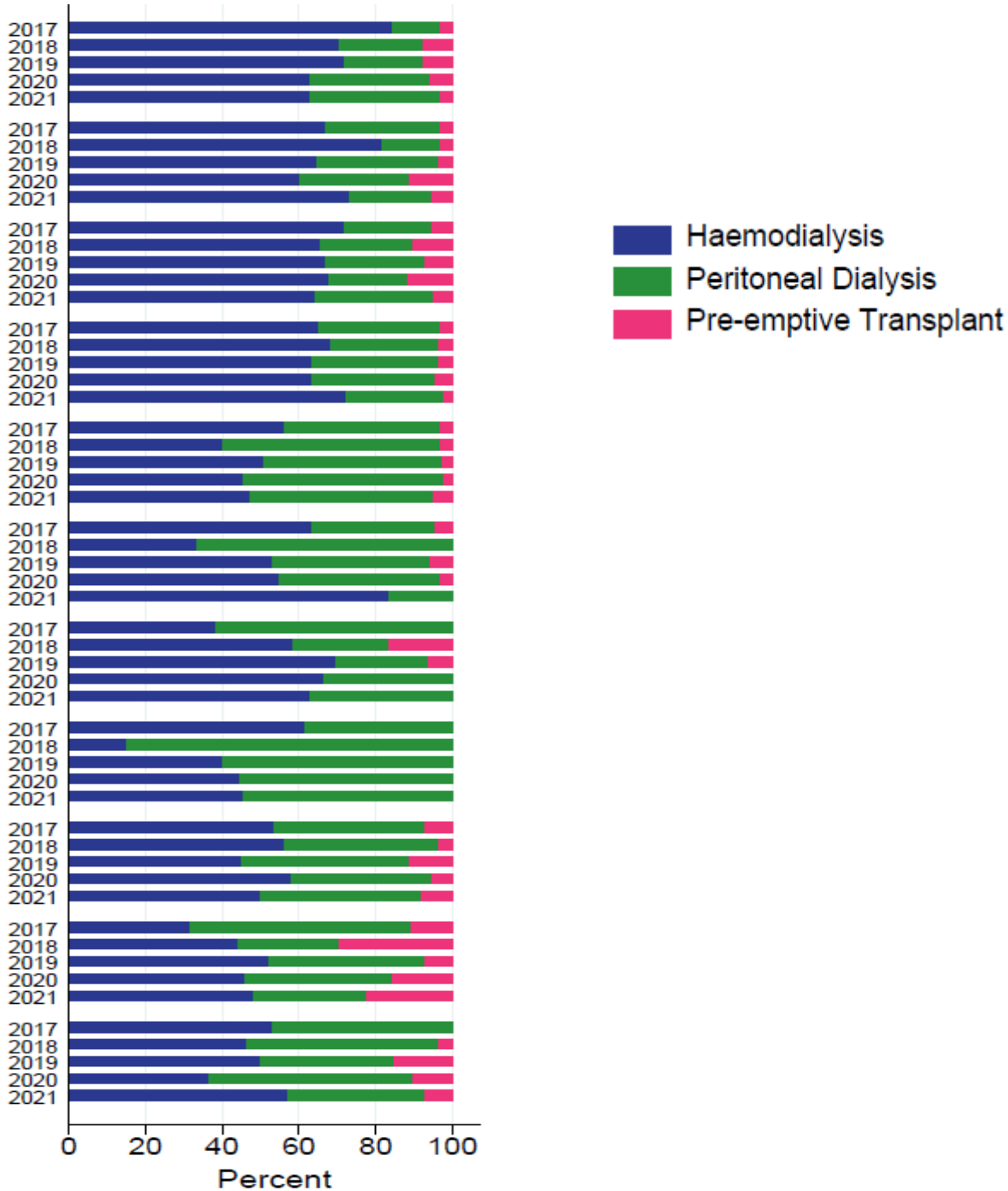
KRT Modality by Country 2020



*Includes Community House HD

2021 ANZDATA Annual Report, Figure 2.3

Incident modality



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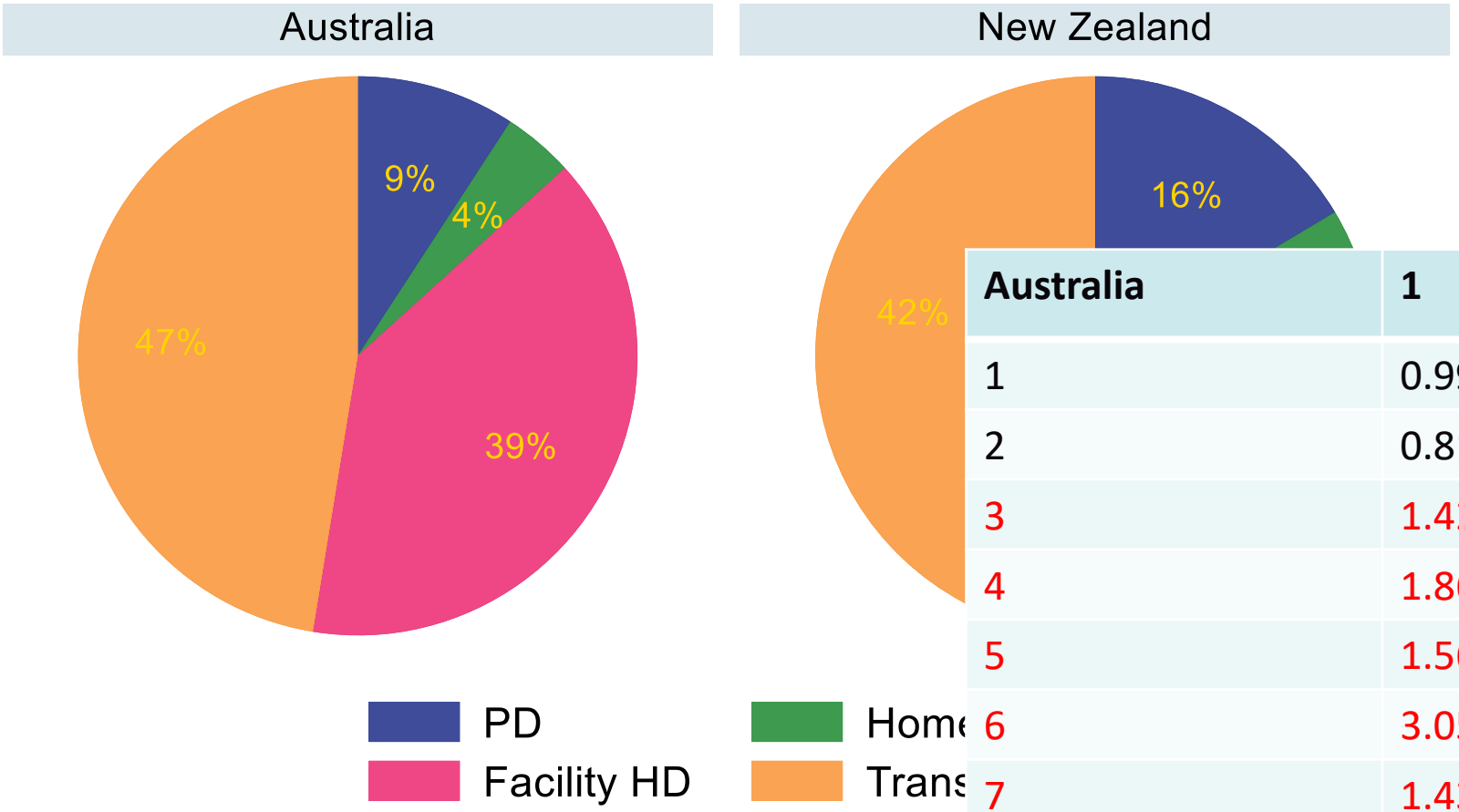

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2021 ANZDATA Annual Report, Figure

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Modality/ Access and outcome NZ

AVF/AVG ICHD	**1**	
AVF/AVG HHD	0.66	0.49-0.90
CVC ICHD	1.61	1.48-1.75
CVC HHD	0.55	0.27-1.1
PD	1.24	1.13-1.35

Modality Access and outcome NZ

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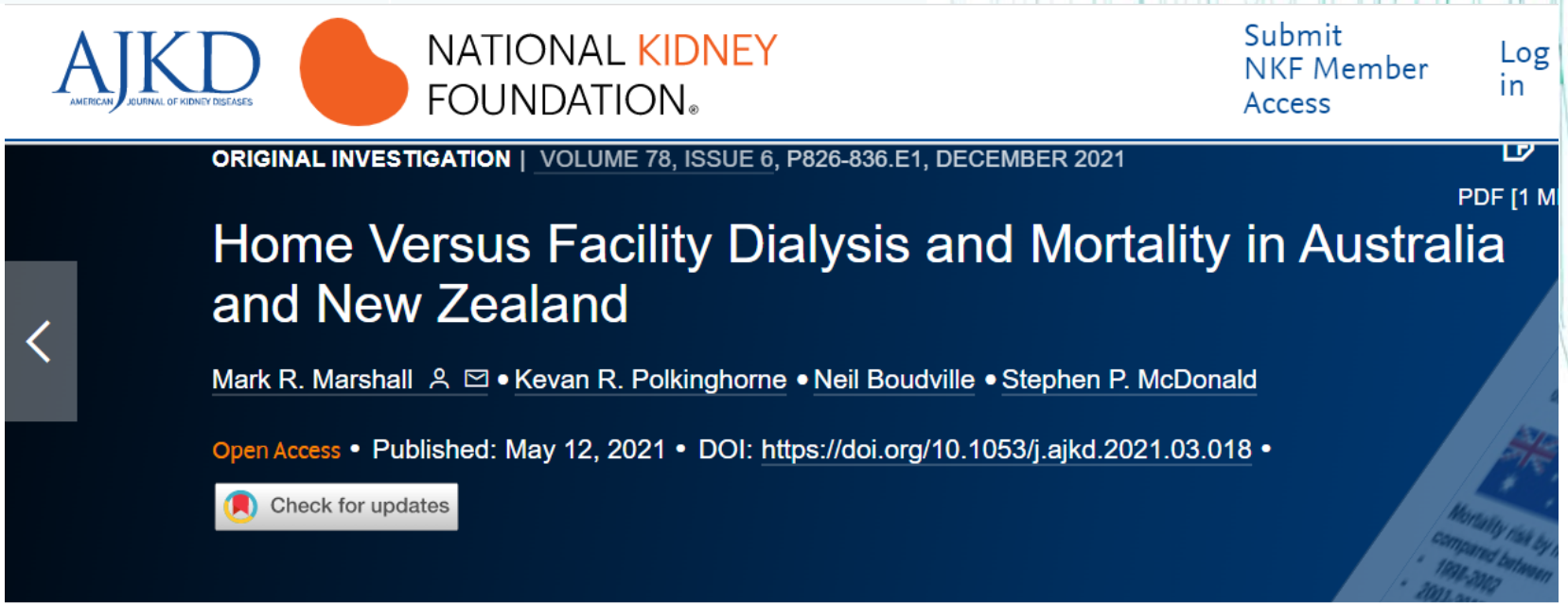


Proportion of PD patients at a centre

Prevalent PD Population influenced by new starts to PD and patients switching to HD

PD incidence rates in NZ vary significantly by centre due to ICHD constraint and a home first ethos

Anecdotally switching occurs late due to ICHD constraint

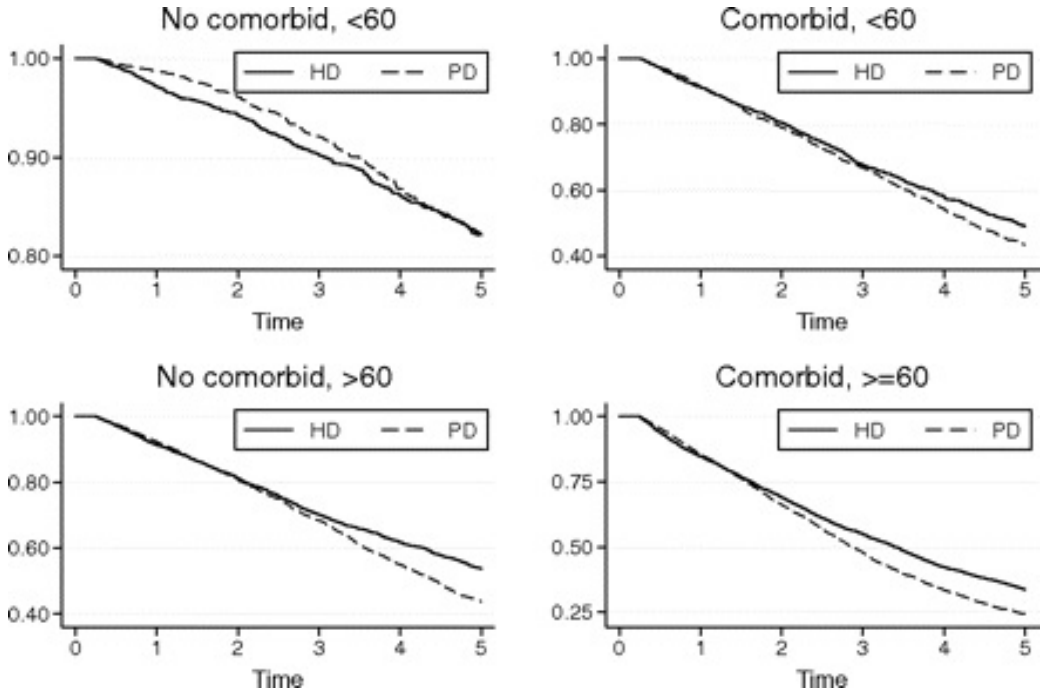
Proportion of PD patients at a centre

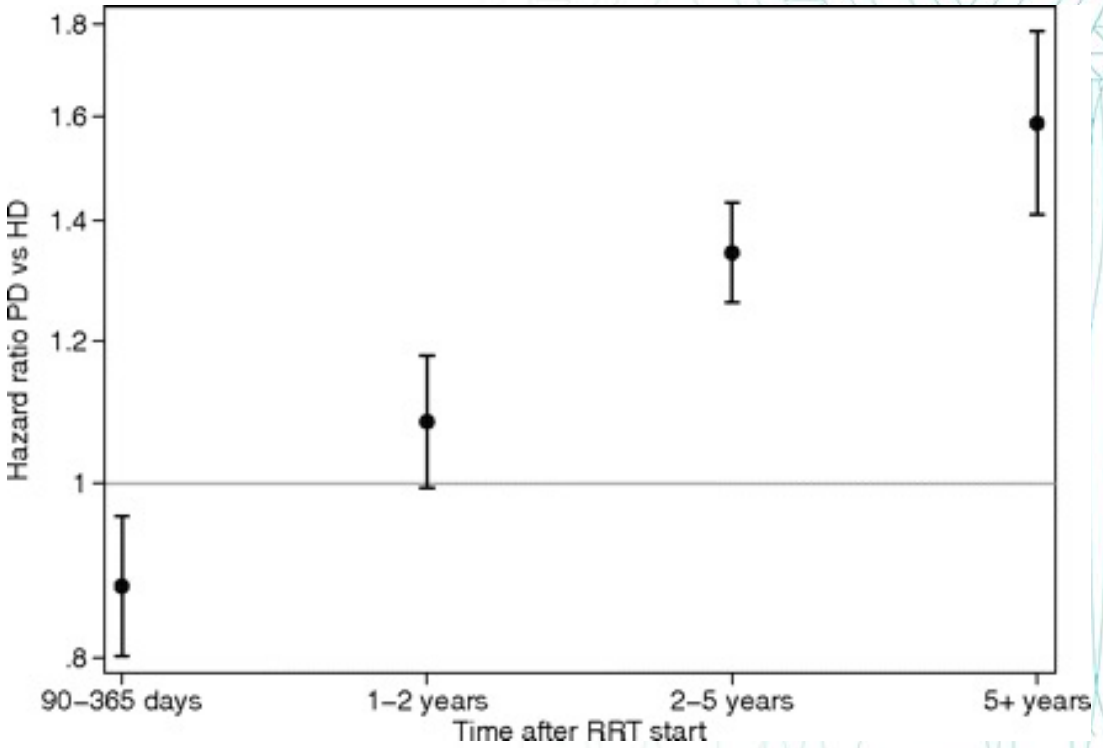
Prevalent PD Population influenced by new starts to PD and patients switching to HD

PD incidence rates in NZ vary significantly by centre due to ICHD constraint and a home first ethos

Anecdotally switching occurs late due to ICHD constraint

%PD <30% Australia	**1**	
%PD >30% Australia	1.06	0.95-1.17
New Zealand	1.10	0.84-1.45
%PD >30% and NZ	1.49	1.24-1.78





Relationship between Dialysis Modality and Mortality

McDonald, Stephen P.; Marshall, Mark R.; Johnson, David W.; Polkinghorne, Kevan R.
Journal of the American Society of Nephrology 20(1):p 155-163, January 2009.

Conclusions

Mortality in Aotearoa NZ is higher than in Australia

There is significant variation in outcomes between centres in Aotearoa NZ

Being dialysis in a centre with a PD population >30% is associated with a higher SMR

This appears to be a major contributory factor in the difference in SMR rate between Aotearoa NZ and Australia

Potential next steps

Centre level analysis:

Patient characteristics of PD vs HD patients at 90d

Variation in PD vintage

Peritonitis rates

Model to predict benefit of ICHD vs PD for shared decision making

Changes in models of care for centres with high PD populations

Acknowledgments

Dr Chris Davies

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Dr Georgina Irish