Created Equal:
Old data - New trick

Investigating dispartiy in health outcomes amon people with kidney disease in Aotearoa.

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Today's Korero

- Old data – New trick – Using Indigenous knowledge to enhance quantitative analysis.

The question...

- What is a systemic response to indigenous health disparities?

The approach...

- How can indigneous knowledge inform quantitative approaches to identify and address systematic health inequalities?

The Study...

- 3 projects

Quantitative Project

- Primary outcomes for Māori and non-Māori (living in New Zealand) registered on the Australian New Zealand Dialysis and Transplantation registry between 2002-2011.

Old Data: the ANZDATA Registry

What is the ANZDATA Registry?

Old Data: the ANZDATA Registry

- The old way of looking at the data

Old Data: the ANZDATA Project

- Novel data linkage
- Completed preliminary analysis of ANZDATA (2002-2011 NZ cohort n=4777) investigating rates of Renal Replacement Therapy by indigenity.

Case Study

Baseline characteristics of renal replacement therapy patients 2002-2011 by indigenity

	Maori n=1459	Non-Maori n=3312	Standardised Difference
Age, years (m)	56 (12)	58(15)	-0.15
Women	601(41)	1310 (40)	0.02
Domicile Code			
Urban	981(67)	2728(83)	-0.38
Independent	268(18)	342(10)	0.23
Rural	206(14)	234(7)	0.23
Deprivation score			
1 to 5	206(14)	1184(36)	-0.53
	396(27)	1086(33)	-0.13
	854 (59)	1034(31)	0.59
	406(28)	1663(50)	-0.46
	679(47)	1243(38)	0.18
	373(26)	404(12)	0.36
	783(350)	721(333)	0.18
	108(17)	110(17)	-0.12
	33(8)	28(7)	0.67
	1010(69)	1143(35)	0.72
	80(5)	446(14)	-0.31
	228(16)	941(28)	-0.29
polycystic kidney disease	23 2)	241(7)	-0.24
Obstruction	25(2)	146(4)	-012
Other	93(6)	395(12)	-0.21
Comorbid medical conditions			
Diabetes			
Type 1	27(2)	116(4)	-0.12
Type 2	1042(72)	1241(37)	0.75
Coronary artery disease	410(28)	875 (26)	0.05
Peripheral vascular disease	281(19)	458(14)	0.14
Cerebrovascular disease	156(11)	373(11)	0
Chronic lung disease	275(19)	354(11)	0.23
Cancer	204(14)	692(21)	
Dialysis Characteristics			
Commenced on peritoneal dialysis at first treatment code	420(29)	1110(34)	-0.11
First treatment code (HD)	1027(70)	2063(62)	0.17
Transplant as first treatment	12 (1)	139(4)	-0.19
Access at first haemodialysis			
Arteriovenous fistula	206(23)	468(26)	-0.07
Arteriovenous graft	18(2)	21(1)	0.08
Tunnelled central venous catheter	247(28)	546(30)	-0.04
Non-tunnelled central venous catheter	419(47)	766(43)	0.08
Year of starting renal replacement therapy			
2002-2003	282(19)	609(18)	0.03
2004-2006	430(30)	955(29)	0.02
2007-2008	289(20)	643(19)	0.03
2009 - 2011	458(31)	1105(34)	-0.06
Late referral seen <3 mths before first treatment.	371(25)	620(19)	0.15

Māori renal replacement therapy patients were more likely to be impoverished than non-Māori renal replacement therapy patients.

Māori renal replacement therapy patients were more likely to live rurally than non-Māori renal replacement therapy patients.

It was more likely that for Māori renal replacement patients diabetes was the primary cause of renal disease

New Trick: Propensity Score Matching

- Compare treated and comparison individuals who have similar "propensities" or likelihoods for receiving treatment, conditional on a set of several covariates

Baseline Characteristics after propensity matching

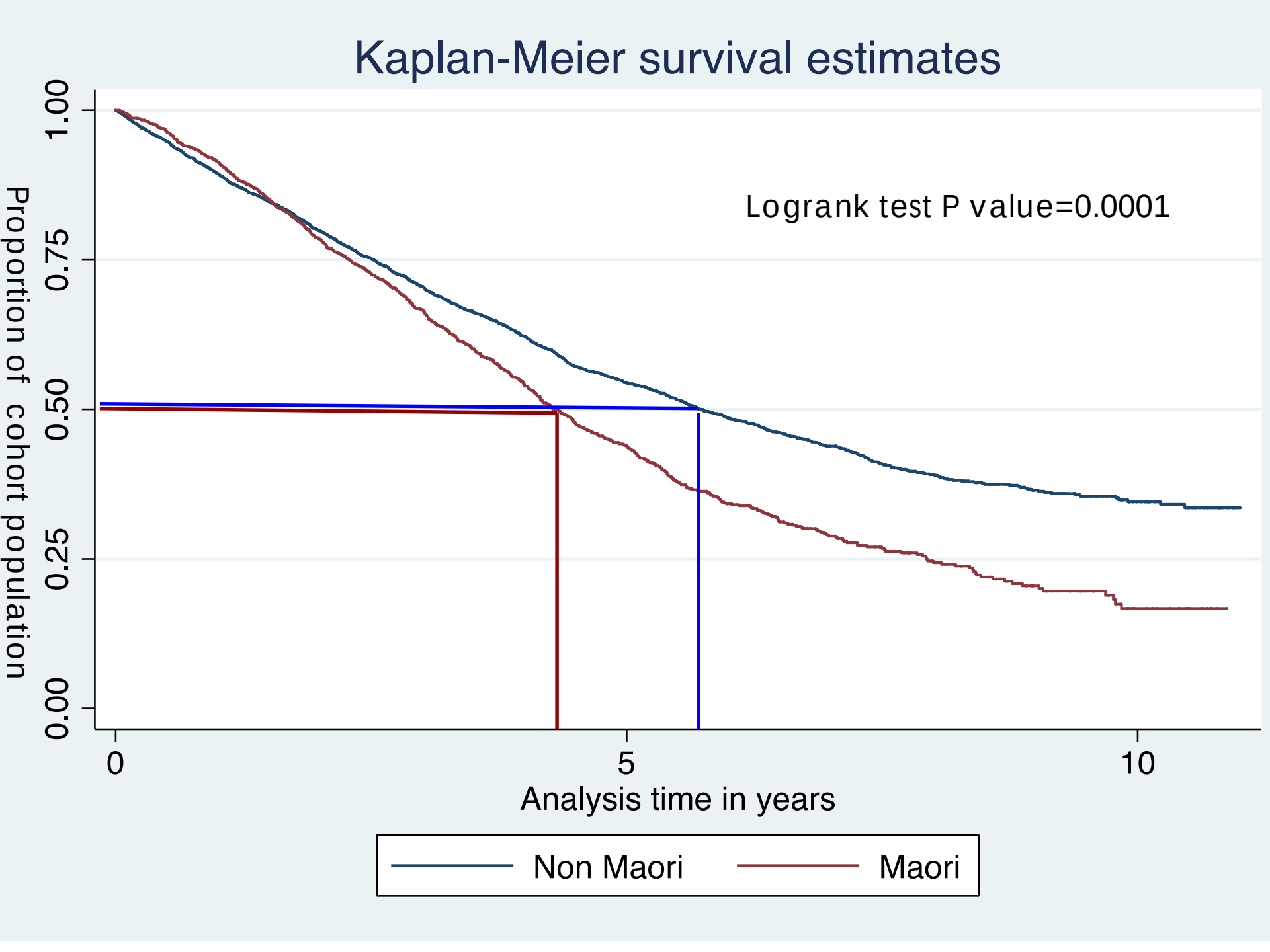
	Whole Cohort			Cohort after propensity matching		
	Maori n=1459	Non-Maori n=3312	Standardised Difference	Maori n=1039	Non-Maori n=1026	Standardised Difference
ge, years	56 (12)	58(15)	-0.15	55(12)	55(13)	-0.03
Vomen	601(41)	1310 (40)	0.02	595(41)	564 (39)	0.04
Domicile Code						
Jrban	981(67)	2728(83)	-0.38	974(67)	1270(88)	-0.52
ndependent	268(18)	342(10)	0.23	264(18)	130(9)	0.27
tural	206(14)	234(7)	0.23	206(14)	45(3)	0.50
Deprivation score						
to 5	206(14)	1184(36)	-0.53	205(14)	202(14)	0.00
to 8	396(27)	1086(33)	-0.13	393(27)	426(29)	-0.04
to 10	854 (59)	1034(31)	0.59	847(59)	817(57)	0.04
Smoking status						
Never	406(28)	1663(50)	-0.46	402(28)	441(31)	-0.07
Former	679(47)	1243(38)	0.18	671(46)	652(45)	0.02
Current	373(26)	404(12)	0.36	372(26)	352(24)	0.05
Laboratory variables						
Serum Creatinine µmol/L	783(350)	721(333)	0.18	782(350)	753(322)	0.09
Haemoglobin, g/L	108(17)	110(17)	-0.12	108(17)	109(17)	-0.06
Body mass index kg/m^2	33(8)	28(7)	0.67	33(8)	33(9)	0.00
Primary renal disease						
Diabetes	1010(69)	1143(35)	0.72	1001(69)	940(65)	0.09
Hypertension/ischaemic	80(5)	446(14)	-0.31	79(5)	88(6)	-0.04
Glomerulonephritis	228(16)	941(28)	-0.29	228(16)	250(17)	-0.03
Polycystic kidney disease	23 2)	241(7)	-0.24	22(2)	37(3)	-0.06
Obstruction	25(2)	146(4)	-012	25(2)	35(2)	0.00
Other	93(6)	395(12)	-0.21	90(6)	95(7)	-0.04
Comorbid medical conditions						
Diabetes						
Type 1	27(2)	116(4)	-0.12	27(2)	69(5)	-0.16
Type 2	1042(72)	1241(37)	0.75	1033(71)	1014(70)	0.02
Coronary artery disease	410(28)	875 (26)	0.05	402(28)	415(29)	-0.02
Peripheral vascular disease	281(19)	458(14)	0.14	273(19)	260(18)	0.03
Cerebrovascular disease	156(11)	373(11)	0	153(11)	181(13)	-0.06
Chronic lung disease	275(19)	354(11)	0.23	273(19)	196(14)	0.14
Cancer	204(14)	692(21)	-0.19	203(14)	192(13)	0.03
Dialysis Characteristics						
Peritoneal dialysis as first treatment	420(29)	1110(34)	-0.11	418(29)	420(29)	0.00
Hemodialysis as first treatment	1027(70)	2063(62)	0.17	1015(70)	998(69)	0.02
Transplant as first treatment	12 (1)	139(4)	-0.19	12(1)	27(2)	-0.08
Access at first haemodialysis						
Arteriovenous fistula	206(23)	468(26)	-0.07	205(23)	224(26)	-0.07
Arteriovenous graft	18(2)	21(1)	0.08	18(2)	11(1)	0.08
Tunnelled central venous catheter	247(28)	546(30)	-0.04	242(28)	288(33)	-0.11
Non-tunnelled central venous catheter	419(47)	766(43)	0.08	414(47)	337(30)	0.35
Year of starting renal replacement therapy						
2002-2003	282(19)	609(18)	0.03	274(19)	260(18)	0.03
2004-2006	430(30)	955(29)	0.02	393(27)	366(25)	0.05
2007-2008	289(20)	643(19)	0.03	413(29)	366(25)	0.09
2009 - 2011	458(31)	1105(34)	-0.06	365(25)	453(31)	-0.13
Late referral seen <3 mths before first treatment.	371(25)	620(19)	0.15	293(20)	365(25)	-0.12

After PSM Deprivation std differences decreased

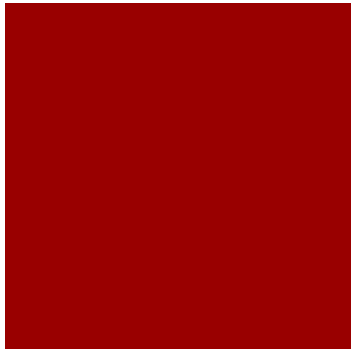
After PSM Māori patients were more likely to live rurally

The std difference of Diabetes as the primary cause of Renal disease decreased after PSM

After PSM the std difference of receiving a non-tunneled catheter as first access increased for Māori patients'


Kaplan-Meier survival estimates
Logrank test P value=0.0001
Proportion of cohort population
1.00
0.75
0.50
0.25
0.00
0
5
10
Analysis time in years
Non Maori
Maori

New Trick – Propensity Score Matching.



- What does this mean for the data?

What the ‘old data’ tells us about mortality rates on RRT?

That Māori have increased risk of ESRD 5yr mortality because…

- Māori experience disparate rates of diabetes as the primary cause of disease.
- Māori experience increased comorbidities such as high BMI and higher rates of COPD
- Māori experience greater social economic deprivation.

What does the ‘new trick’ tell us…

That Māori have increased risk of ESRD 5yr mortality because…

- Māori are more likely to receive differential access to best practice treatment.
- Māori are more likely to have limited access to health services.
- Māori rates of mortality at 5 years are markedly higher than NZ European.

How does the ‘new trick’ support systemic approaches to health disparities?

- Burden of Disease or Burden of lack of access to best practice?

Recommendations

- Need for identification of systemic decisions that influence clinical practice patterns.

- Need for auditing health systems to measure response to Indigenous health inequities.

Nga Mihi

- Health Research Council NZ
- My supervisors

Suetonia Palmer Renal physician and data analyses wizard

Lutz Beckert Respiratory physician

Suzanne Pitama Associate Dean Māori

- Advisors

Jonathan Williment Biostatistician

Bridget Robson Indigenous Epidemiology Guru

- Most importantly I would like to acknowledge the whanau who consented their data could be accessed via the ANZDATA registry for research.

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