



World Health Organization Collaborating Centre
for Community Health Services
世界衛生組織社區健康服務合作中心

Life expectancy and associated factors in the Western Pacific Region ageing population

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Global Overview (UN, World Population Ageing report, 2019)

- ▶ Population ageing is a global phenomenon

There were 703 million persons aged 65 years or over in the world in 2019.

The number of older persons is projected to double to 1.5 billion in 2050.

Globally, the share of the population aged 65 years or over increased from 6% in 1990 to 9% in 2019.

- ▶ Population ageing has been fastest in Eastern and South-Eastern Asia and Latin America and the Caribbean.
- ▶ Population ageing will put increased financial pressure on old-age support systems.
- ▶ Limited data on ageing epidemiological issues in the Western Pacific Region except 'ageing' countries/regions (ie. Japan (17.9%), Australia (15%), NZ (15%), HK (17.9%))



Objectives

- ▶ Are there clusters of countries with similar characteristics in WPRO that could allow more regional health policy and planning?

In those aged 70+:

- ▶ What are some key indicators of health, years lived in disability (YLD) and mortality in WPRO? Is there a change in these factors (particularly those related to NCDs) over the past 20 years?
- ▶ What factors are associated with improved YLD and mortality rates in WPRO



Methods

- ▶ Analysis of the Global Burden of Disease (GDB) [Institute of Health Metrics and Evaluation, Washington U, Results Tool 2017)
- ▶ Focus on health variables, epidemiological indicators and YLD and Mortality in WPRO countries and data for those 70-94 years old
- ▶ Two-step cluster analysis
- ▶ Correlational tests
- ▶ Multiple regression (LME) models and generalized additive mixture models

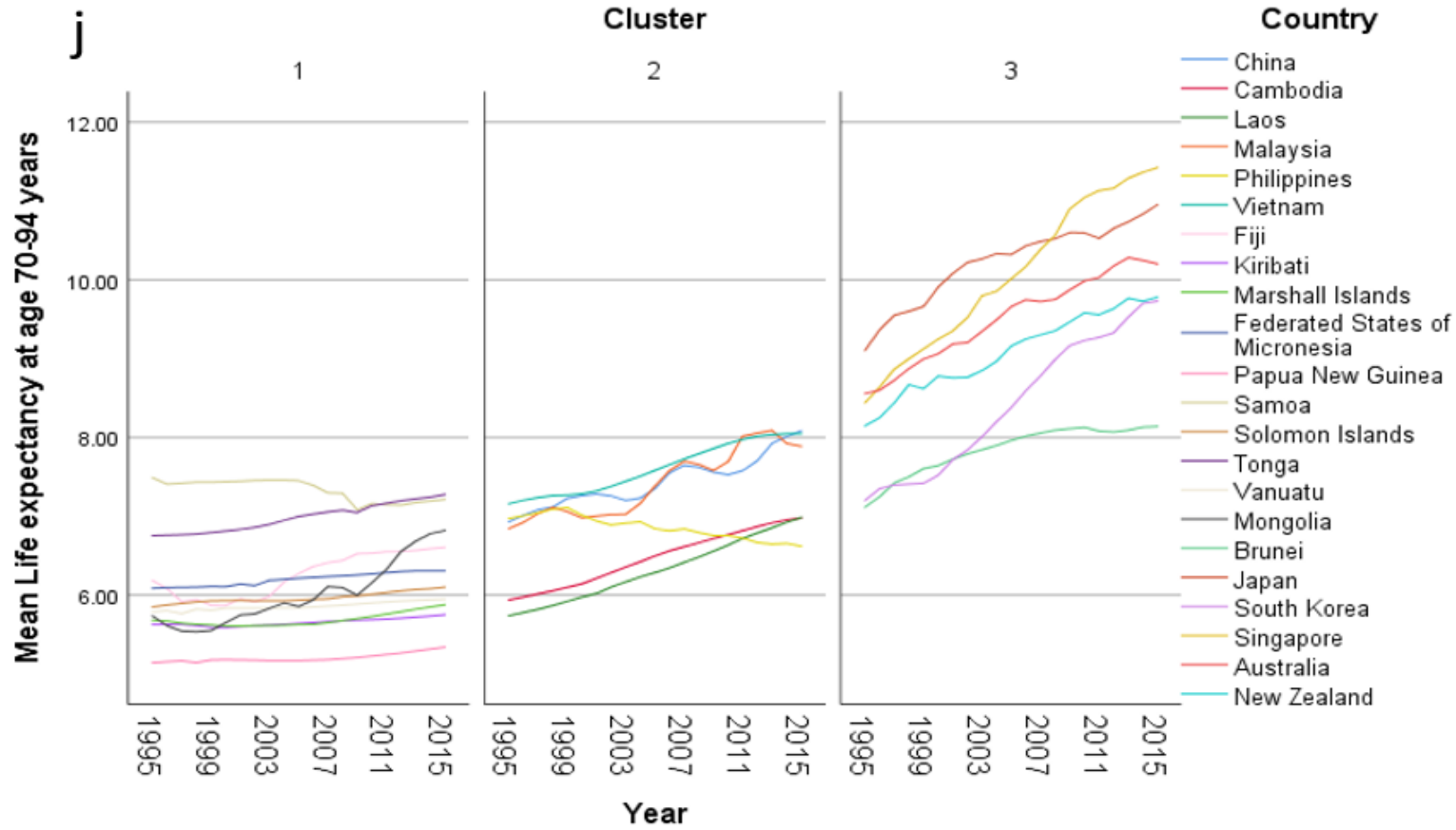


Country Clustering

	Cluster 1	Cluster 2	Cluster 3	Combined	Importance
	n = 420	n = 252	n = 252	N = 924	
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
THS per capita	223.56 (118.01)	273.9 (224.23)	2729.54 (983.21)	920.74 (1229.45)	1.00
Out-of-pocket spending per THS	0.14 (0.07)	0.48 (0.09)	0.25 (0.14)	0.26 (0.17)	0.75
GDP per capita in PPP	3663.34 (2153.8)	5967.59 (5767.29)	41441.75 (20823.35)	14594.98 (20013.67)	0.74
HAQI frontier	64.98 (7.7)	65.49 (9.21)	87.61 (2.59)	71.29 (12.32)	0.70
HALE at age 70-94 years	4.19 (0.51)	4.89 (0.61)	6.39 (1.02)	4.98 (1.15)	0.63
Fertility rate per 1000 at age < 25 years	0.08 (0.02)	0.06 (0.03)	0.02 (0.01)	0.06 (0.03)	0.62
Mortality rate per 100K of population	6520.54 (1048.99)	5276.2 (1145.61)	3234.53 (1042.76)	5284.99 (1730.52)	0.62
Education years at age 15+ years	7.81 (2.28)	6.35 (2.02)	11.43 (1.66)	8.4 (2.84)	0.42
Government spending per THS	0.65 (0.15)	0.37 (0.11)	0.67 (0.17)	0.58 (0.2)	0.38
YLD rate per 100K of population	11815.07 (1210.62)	10369.94 (1497.39)	9241.9 (1409.63)	10719.17 (1729.46)	0.32
Prepaid private spending per THS	0.02 (0.03)	0.09 (0.05)	0.08 (0.06)	0.06 (0.06)	0.26
LHE fraction at 70+	0.31 (0.01)	0.3 (0.02)	0.31 (0.02)	0.31 (0.02)	0.06
THS per GDP	0.06 (0.04)	0.04 (0.01)	0.06 (0.03)	0.06 (0.03)	0.05
	Mongolia Papua New Guinea All Pacific Island countries	China Cambodia Laos Vietnam Malaysia The Philippines	Japan South Korea Brunei Singapore Australia New Zealand		

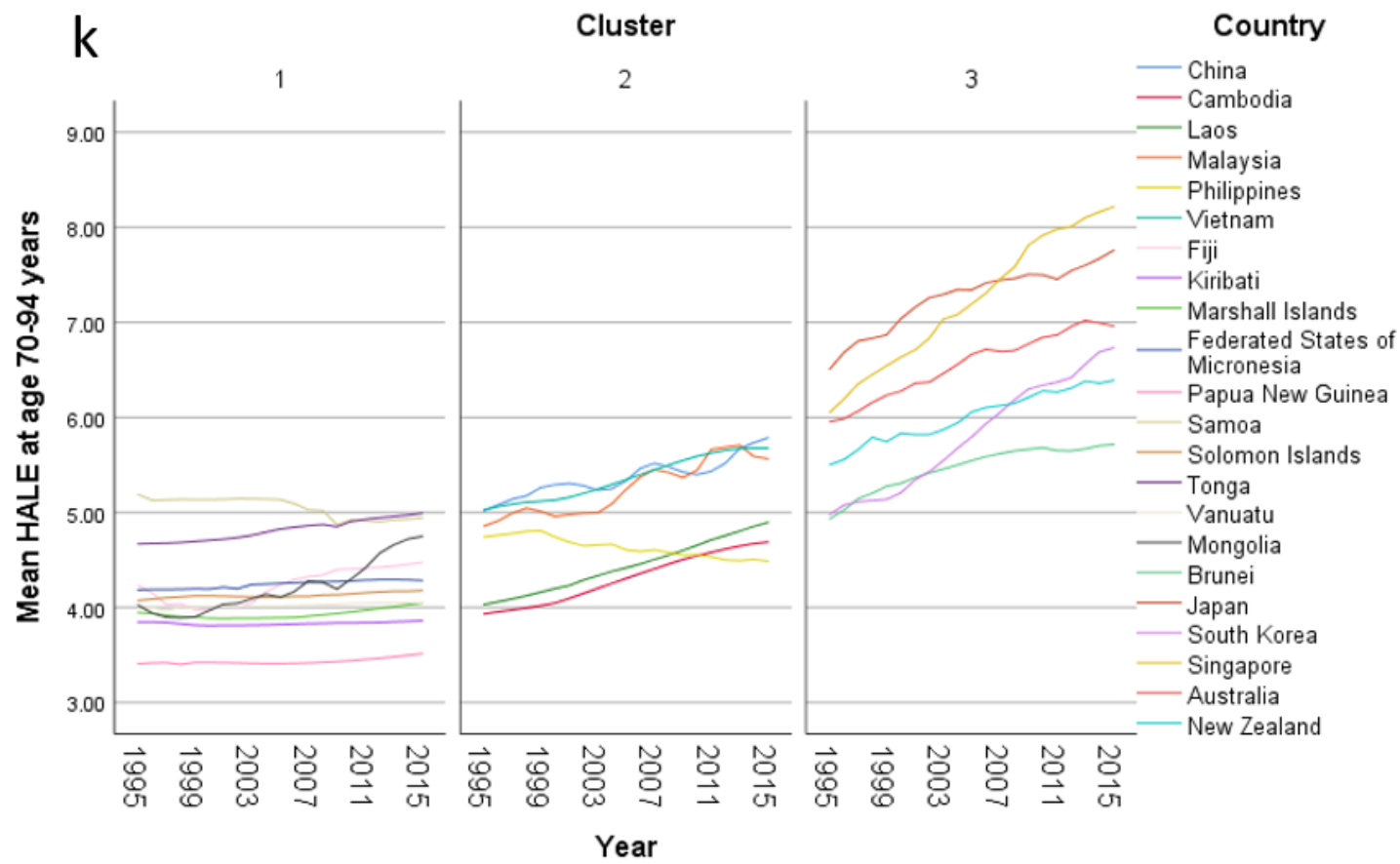


Mean Life expectancy at age 70-94





Mean healthy life expectancy





Associations between socioeconomic variables and YLD

	Met, CMNN	Met, NCD	Met, Inj	Env/Occ, CMNN	Env/Occ, NCD	Env/Occ, Inj	Beh, CMNN	Beh, NCD	Beh, Inj
Sociodemographic index (SDI)	-.792**	-.273**	.636**	-.786**	-.817**	.115**	-.766**	-.331**	.514**
HAQI frontier	-.763**	-.189**	.629**	-.735**	-.819**	.12**	-.763**	-.303**	.498**
GDP per capita in PPP	-.735**	-.202**	.620**	-.730**	-.755**	.140**	-.742**	-.284**	.505**
Education years at age 15+ years	-.611**	-0.055	.459**	-.546**	-.747**	.156**	-.721**	-.093**	.493**
Fertility rate per 1000 at age < 25 years	.709**	.379**	-.591**	.766**	.728**	-.101**	.676**	.322**	-.485**
THS per capita	-.677**	-.268**	.608**	-.690**	-.832**	.125**	-.739**	-.338**	.499**
THS per GDP	-0.037	-.099**	.188**	.062*	-.217**	-.132**	-.110**	-.098**	.185**
Government spending per THS	-.430**	.210**	.268**	-.127**	-.414**	.156**	-.318**	-0.044	.157**
Prepaid private spending per THS	-.274**	-.439**	.131**	-.414**	-.295**	-.107**	-.300**	-.292**	.162**
Out-of-pocket spending per THS	.182**	-.498**	-0.041	-.340**	.132**	-0.029	0.056	-0.056	.098**



Associations between socioeconomic variables and Mortality

	Met, CMNN	Met, NCD	Met, Inj	Env/Occ, CMNN	Env/Occ, NCD	Env/Occ, Inj	Beh, CMNN	Beh, NCD	Beh, Inj
Sociodemographic index	-.784**	-.537**	-.149**	-.876**	-.737**	-.343**	-.646**	-.539**	-.058*
HAQI frontier	-.75**	-.475**	-.147**	-.866**	-.751**	-.338**	-.632**	-.524**	-.087**
GDP per capita in PPP	-.729**	-.497**	-.119**	-.787**	-.705**	-.284**	-.575**	-.504**	-.058*
Education years at age 15+ years	-.589**	-.297**	-.134**	-.779**	-.622**	-.243**	-.503**	-.353**	0.009
Fertility rate per 1000 at age < 25 years	.726**	.678**	.119**	.795**	.677**	.306**	.556**	.565**	-0.003
THS per capita	-.673**	-.527**	-.122**	-.774**	-.729**	-.332**	-.547**	-.539**	-0.057
THS per GDP	-.089**	-.111**	.166**	-.135**	-.176**	-.231**	-.091**	-.169**	.115**
Government spending per THS	-.265**	.069*	-.211**	-.281**	-.203**	-.102**	-.262**	-.068*	-.208**
Prepaid private spending per THS	-.362**	-.372**	-0.015	-.348**	-.291**	-.224**	-.270**	-.291**	.077*
Out-of-pocket spending per THS	.077*	-.364**	.094**	-0.054	-.070*	0.04	.091**	-.130**	.259**



YLDs (Adjusted R-square= 0.43)

	Estimate	95% CI	t (df)	F (edf)
Intercept	10907.01	[9717.37, 12096.64]	17.97 (1006)***	
Gender	-182.29	[-934.68, 570.1]	-0.47 (1006)	
Year	298.71	[250.2, 347.22]	12.07 (1006)***	145.68 (1)***
Sociodemographic Index (SDI)	-847.47	[-1065.32, -629.63]	-7.62 (1006)***	58.14 (1)***
HAQI frontier	-19.3	[-104.58, 65.99]	-0.44 (1006)	0.2 (1)
THS per capita (\$)	-211.49	[-273.24, -149.74]	-6.71 (1006)***	45.06 (1)***

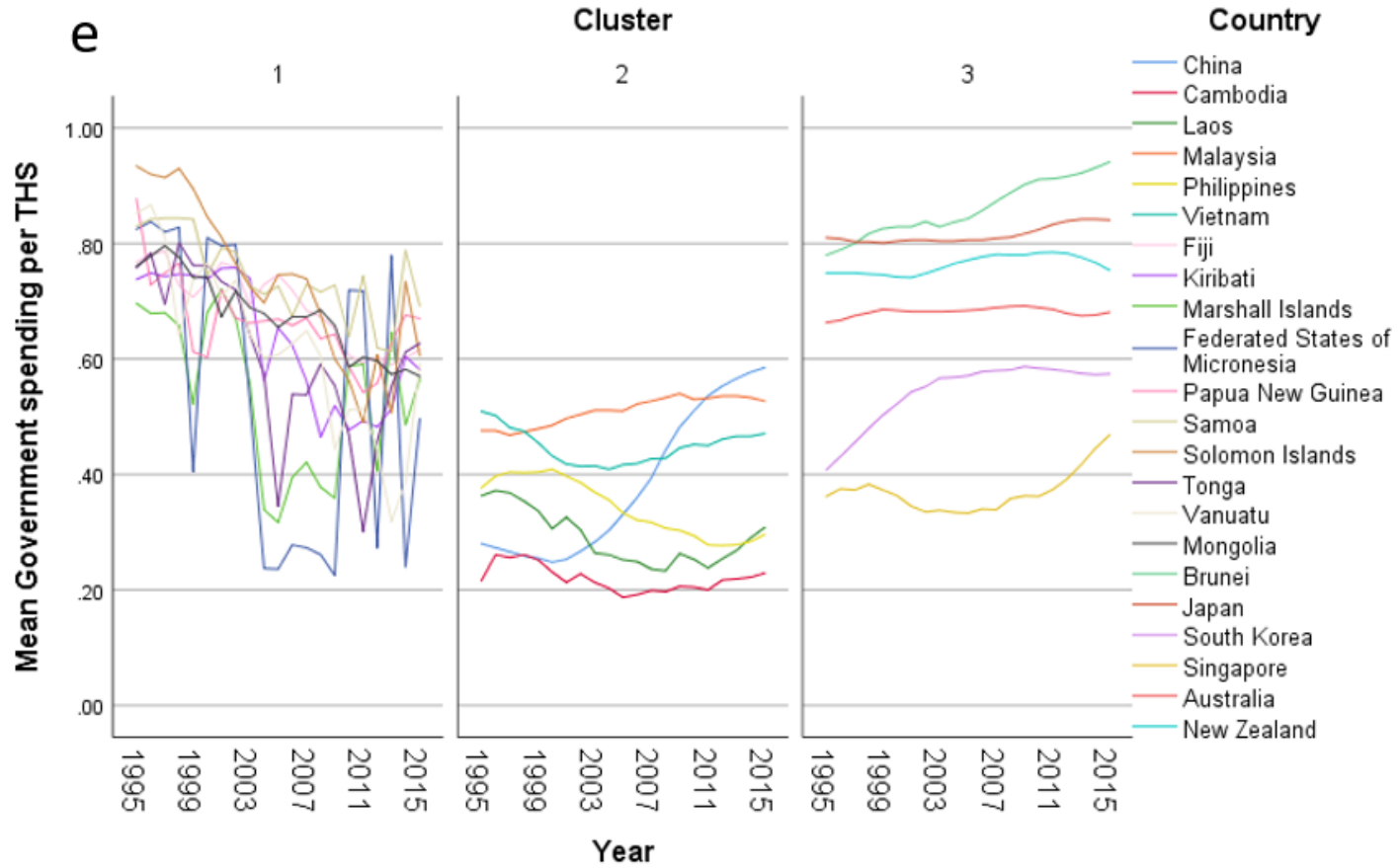


Mortality (Adjusted R-square= 0.78)

	Estimate	95% CI	t (df)	F (edf)
Intercept	10907.01	[9717.37, 12096.64]	17.97 (1006)***	
	Estimate	95% CI	t (df)	F (edf)
Intercept	7152.09	[6429.2, 7874.98]	19.39 (1006)***	
Gender	-1272.01	[-1728.81, -815.21]	-5.46 (1006)***	
Year	49.02	[-38.3, 136.34]	1.1 (1006)	1.33 (4.7)
Socioeconomic Index (SDI)	-1526.81	[-2499.83, -553.79]	-3.08 (1006)**	17.74 (15.52)***
HAQI frontier	44.34	[-77.47, 166.15]	0.71 (1006)	0.51 (1)
THS per capita	-57.38	[-155.95, 41.19]	-1.14 (1006)	1.3 (1)

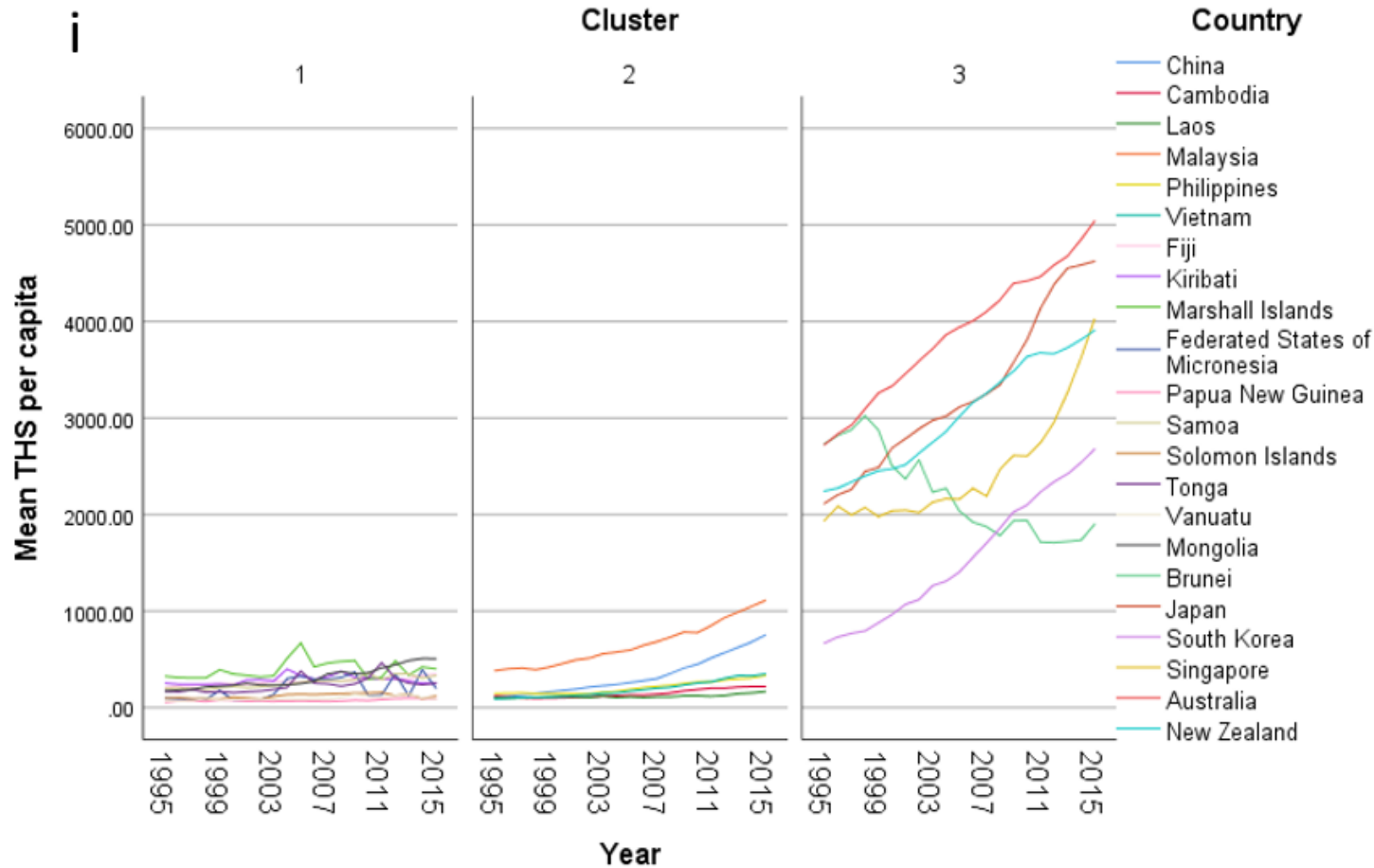


Mean government spending per THS



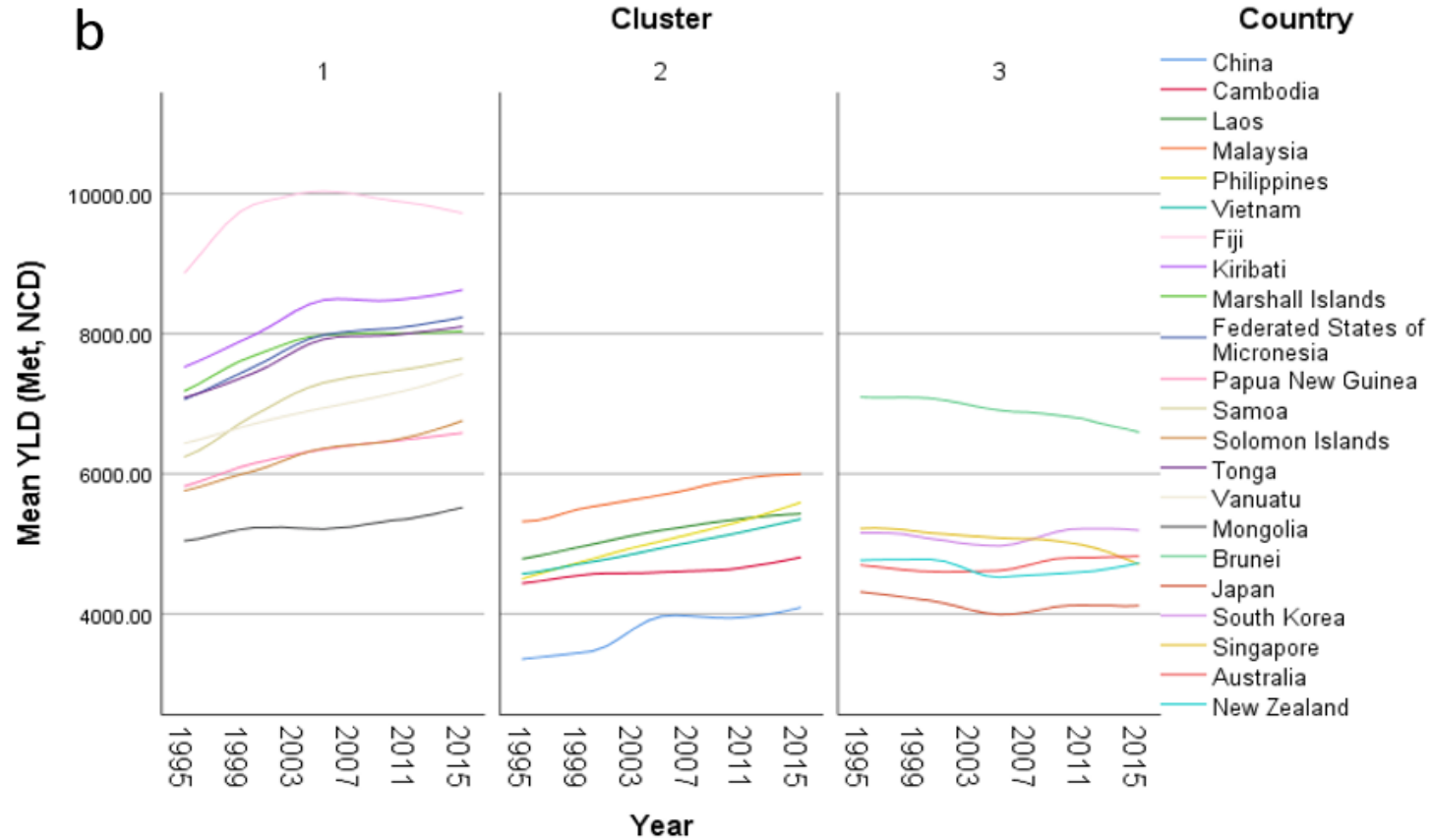


Mean Total Health Spending (THS) per capita



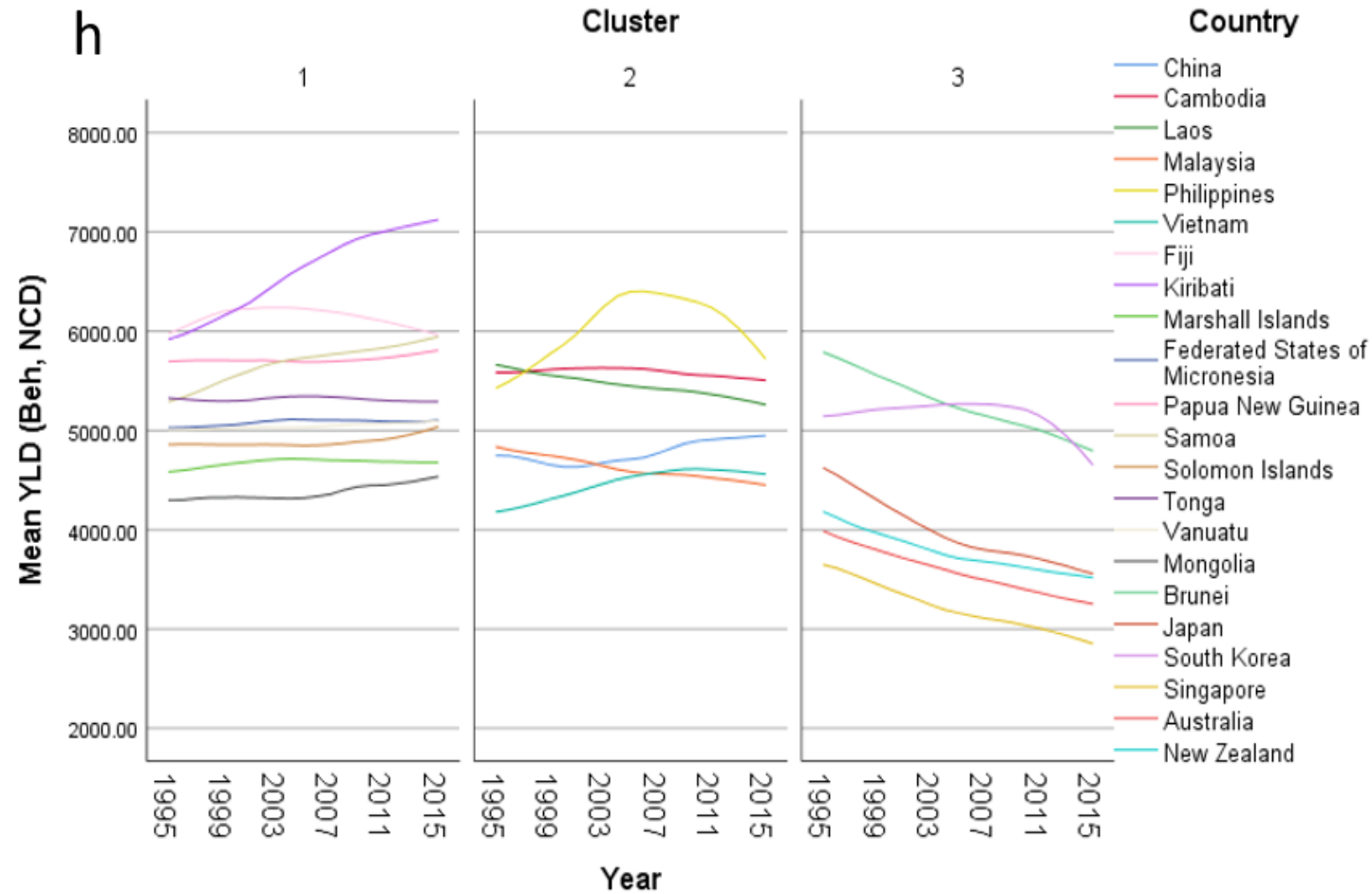


Mean YLDs (Metabolic NCDs; ie. High BP, high BMI, high glucose, etc)

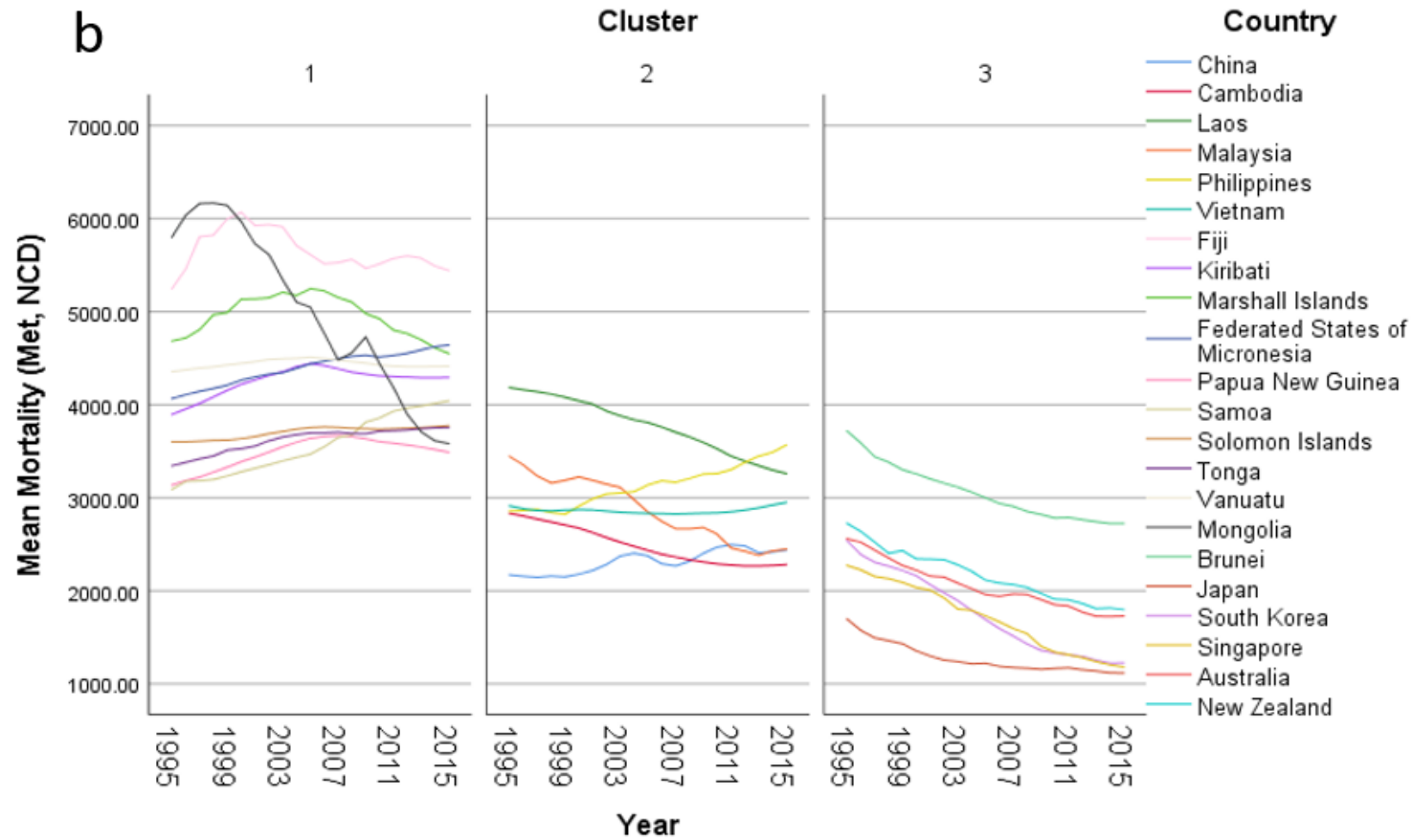




Mean YLDs (Behavioural NCDs; ie. smoking, low physical activity, alcohol use, dietary factors)

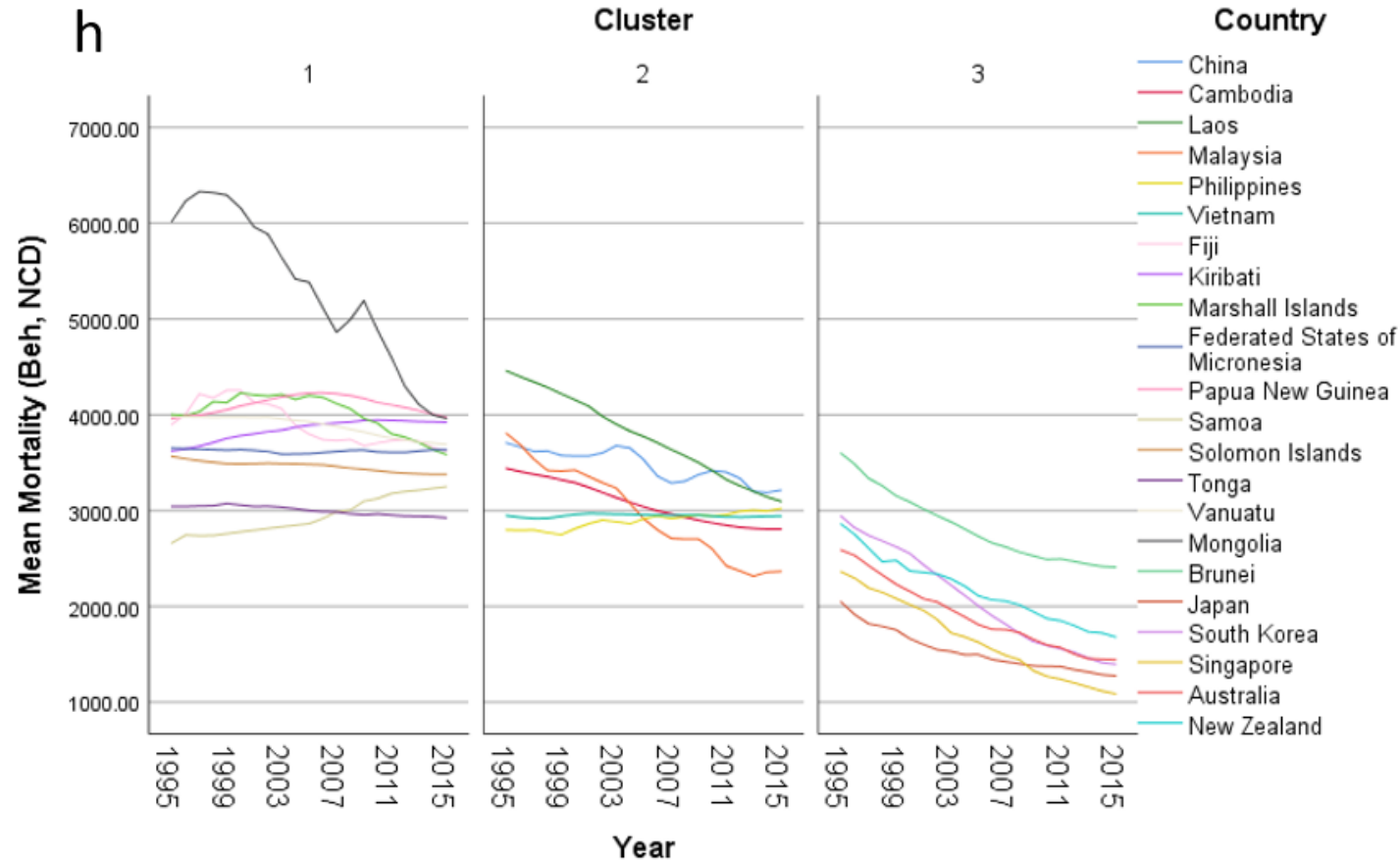


Mean Mortality (Metabolic NCDs; ie. High BP, high BMI, high glucose, etc)



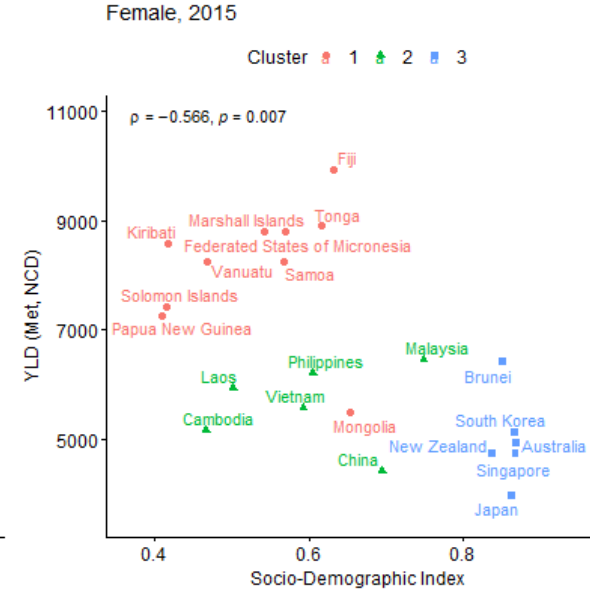
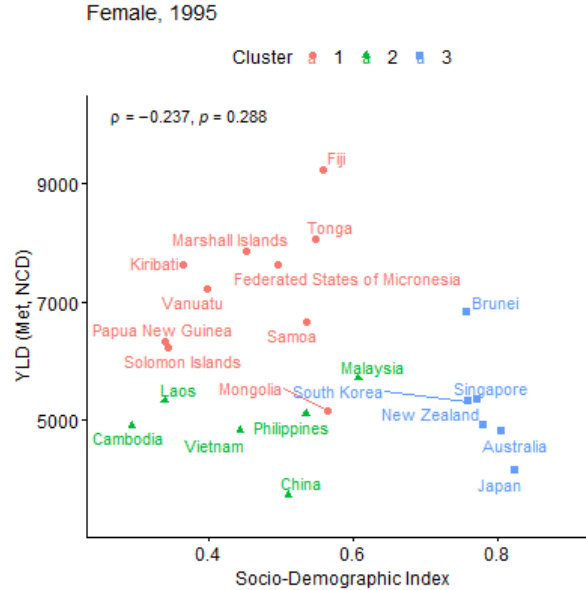
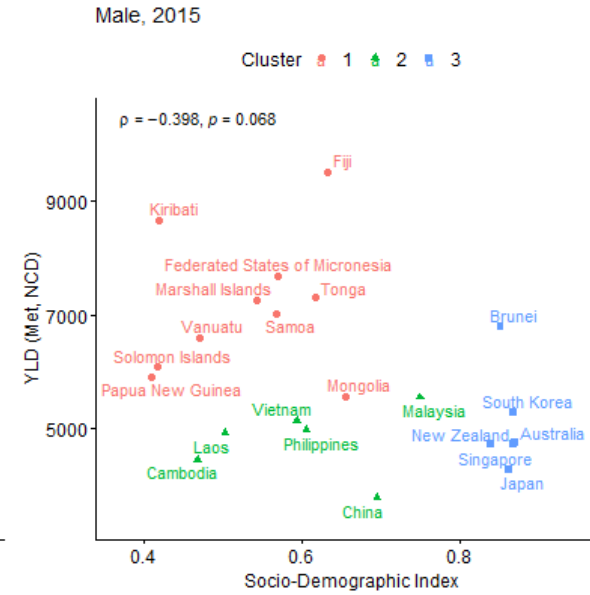
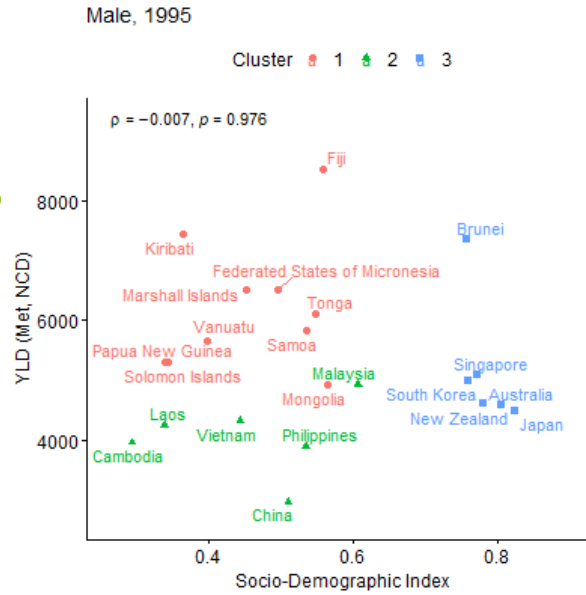


Mean Mortality (Behavioural NCDs; ie. smoking, low physical activity, alcohol use, dietary factors)





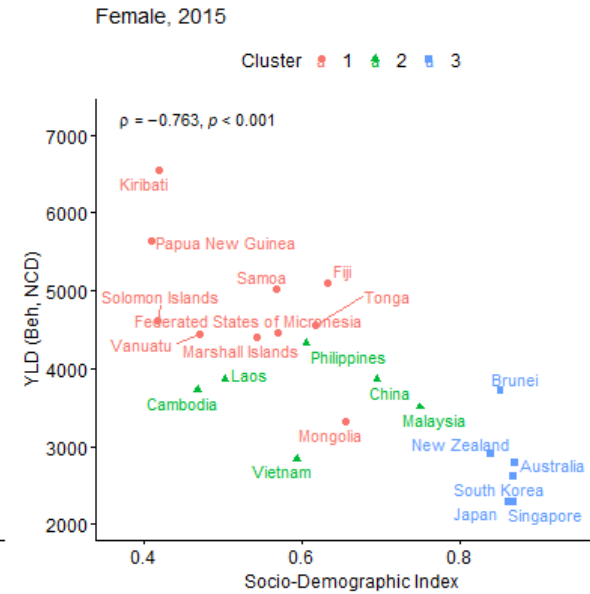
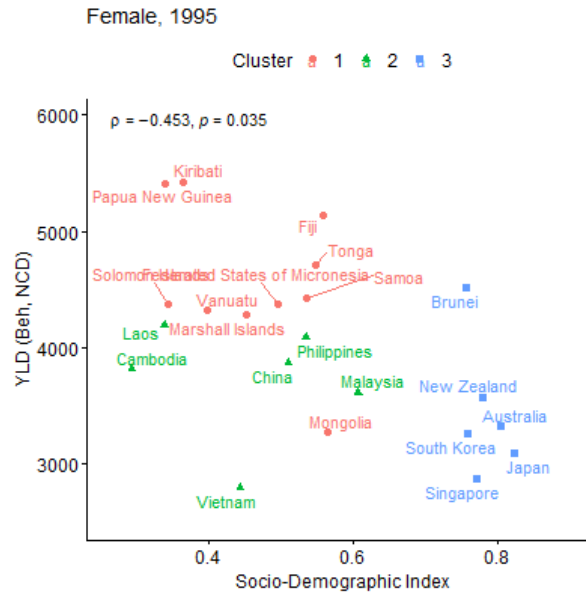
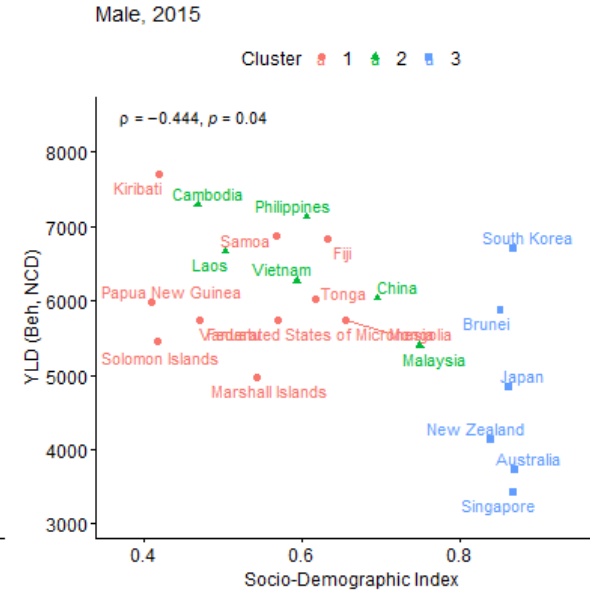
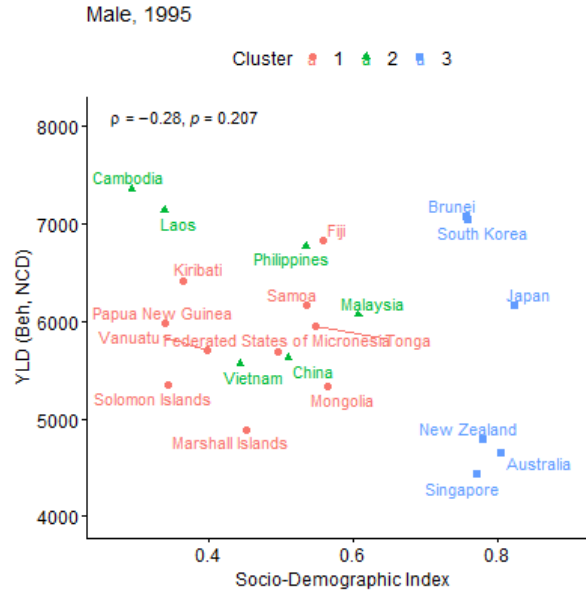
YLDs Metabolic NCDs





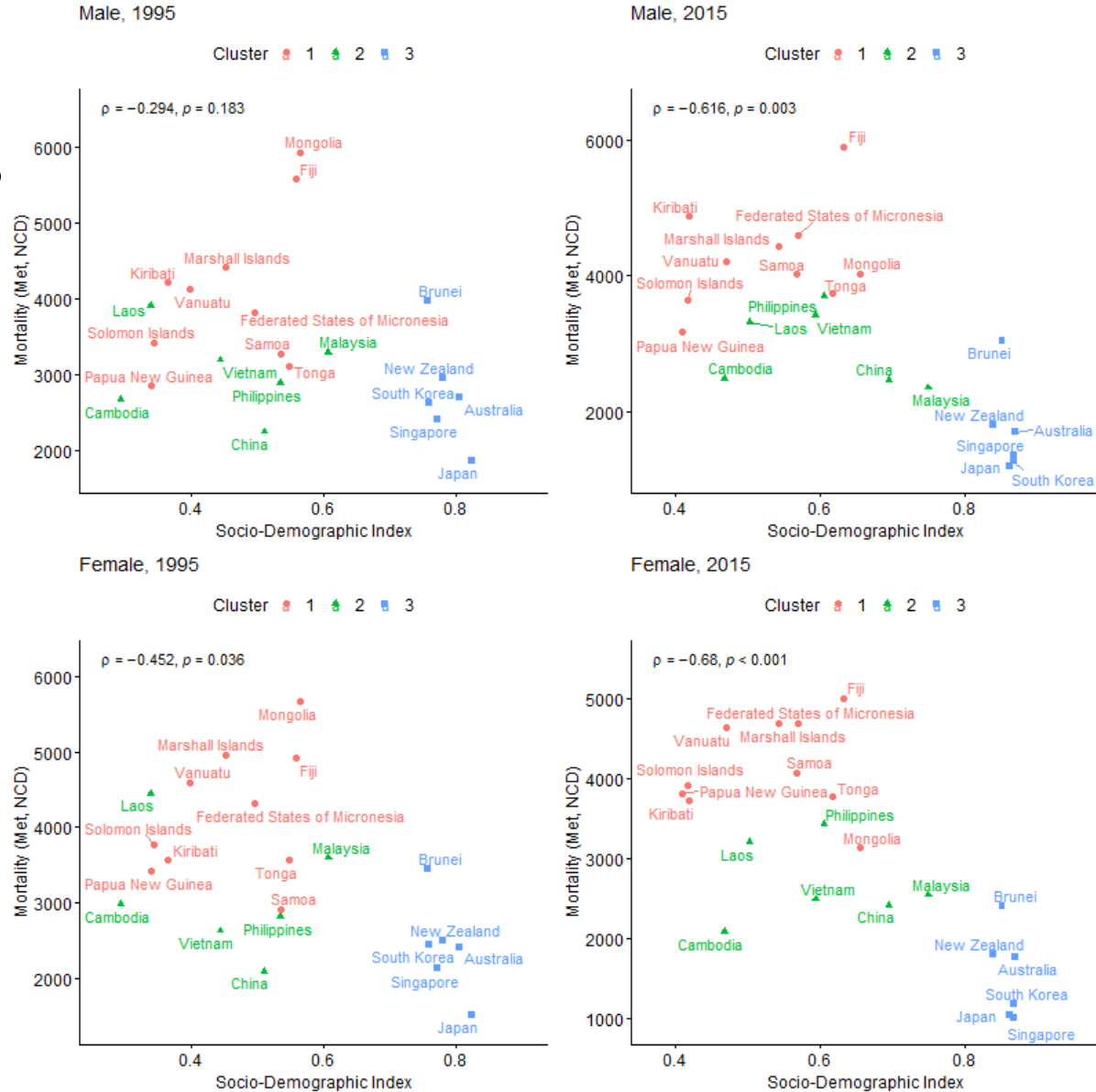
YLDs

Behavioural NCDs





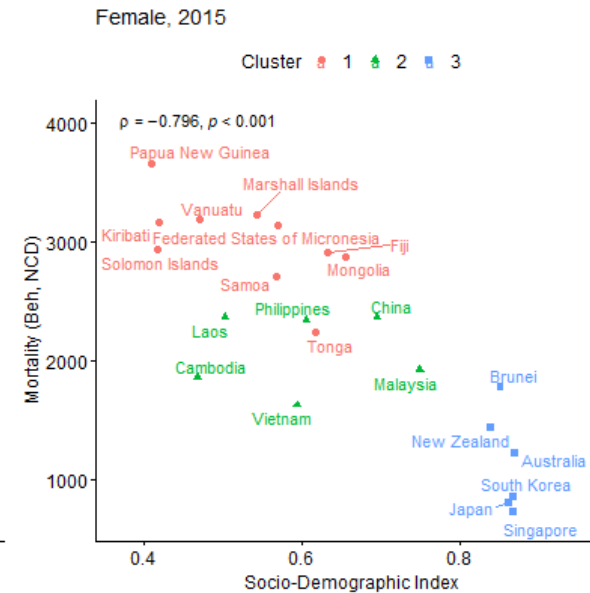
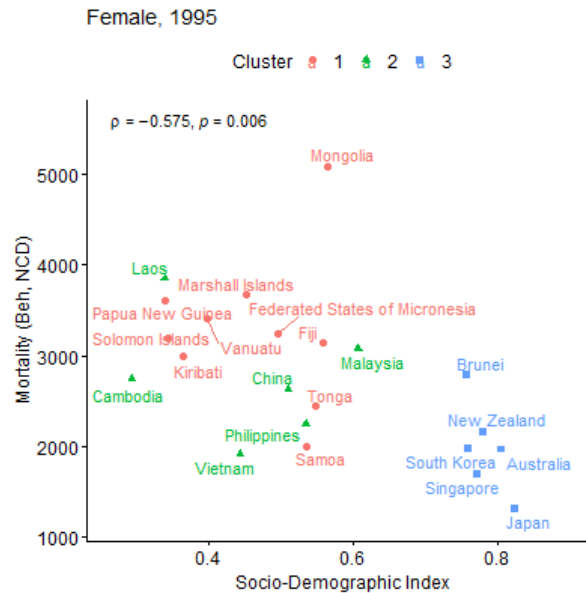
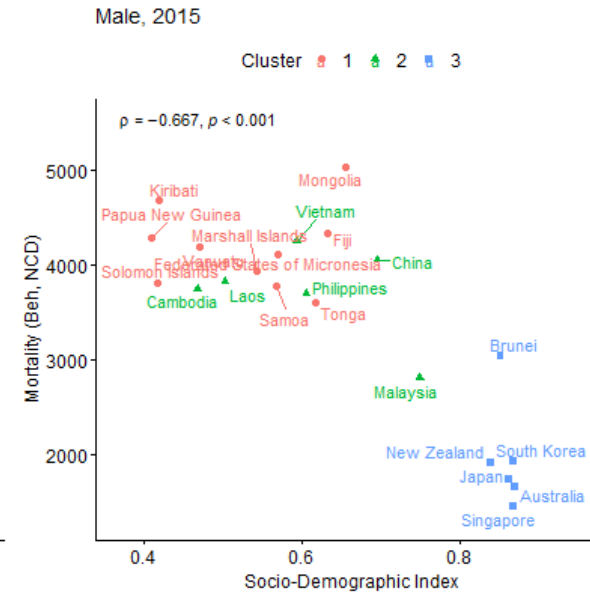
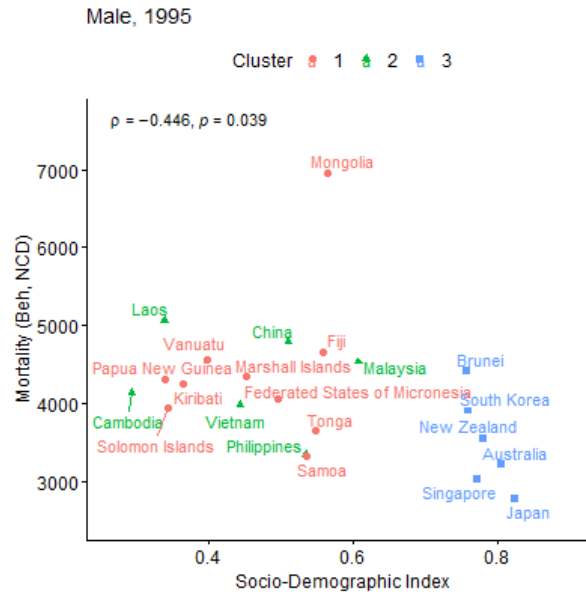
Mortality Metabolic NCDs





Mortality

Behavioural NCDs





Key findings

- ▶ The ageing population in WPRO is increasing with significant health burden (YLD and mortality rates) particularly in less developed countries
- ▶ Socioeconomic Index (SDI) is a key contributor to healthy ageing
- ▶ Health spending was not key contributor to healthy ageing nor contributed significantly to mortality
- ▶ Health burden and mortality higher in males than females and higher in cluster 1 countries than cluster 3 countries
- ▶ NCD burden higher in cluster 1 countries with little improvement or worsening over the past 20 years



Discussion points

- ▶ As ageing is increasing in all WPRO countries, so is the health burden particularly from NCDs
- ▶ More effective management of NCDs is needed, particularly at community level
- ▶ More health spending alone cannot fully address this health burden, different ways of spending are also needed
- ▶ As per UN report (2019), Population ageing does not lead inevitably to macroeconomic decline—with well-chosen policies, just the opposite may be true.

-to maximize the benefits and manage the risks associated with population ageing, governments should support continuing and lifelong education and health care for all;

-encourage savings behaviour and healthy lifestyles throughout the life course;

-promote employment among women, older persons and others traditionally excluded from the labour force, including through a gradual increase in the official retirement age; and

-support family friendly policies to facilitate work-life balance and increased gender equality in both public and private life.

- ▶ Time to take action to ensure that all individuals have the opportunity to live a long and healthy life (WHO 2020)