Regional Workshop on Integrating Policy and Research on Ageing in ASEAN:
Conversations across the Policy and Research Divide, CARE, DUKE-NUS & ERIA,
4 - 6 September 2019, Holiday Inn Singapore Atrium

Overview of the Availability of Survey Data and Study Findings on Ageing in Malaysia

CHAI Sen Tyng
Research Officer
Malaysian Research Institute on Ageing
Universiti Putra Malaysia, Serdang, Selangor

UNIVERSITI PUTRA MALAYSIA
AGRICULTURE ● INNOVATION ● LIFE

Content

Characteristics of Older Malaysians

Research on Ageing in Malaysia

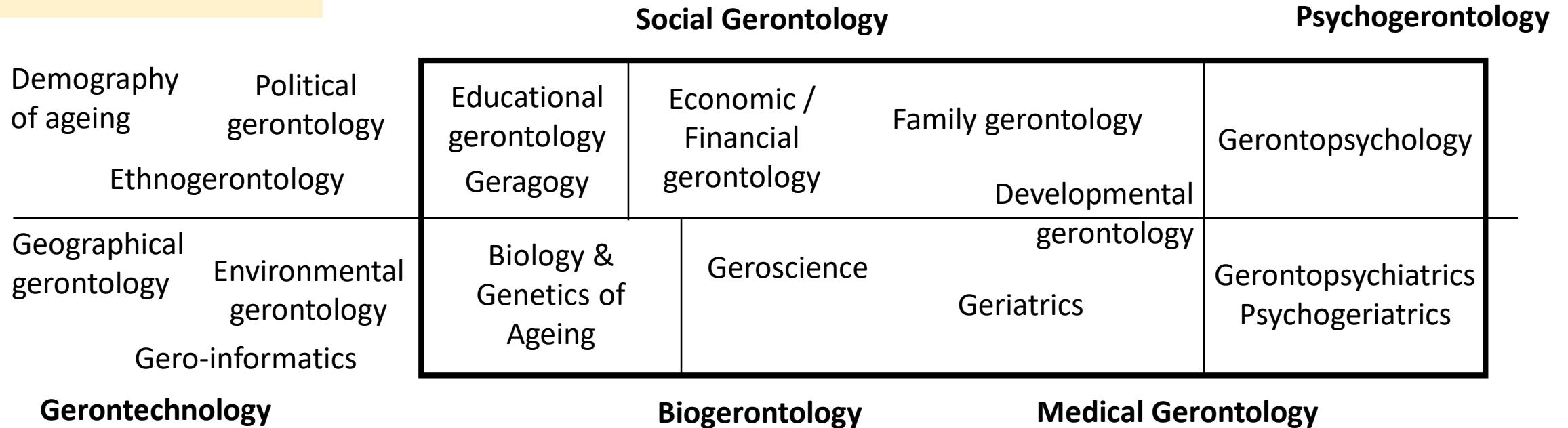**Key Findings and Discussion**

Conclusion and the Way Forward

UNIVERSITI PUTRA MALAYSIA
AGRICULTURE • INNOVATION • LIFE

MILESTONES

1990 – The *National Council of Senior Citizens Organizations Malaysia* or **NACSCOM** was founded

1991 – The *Golden Age Foundation*, later Persatuan Kebajikan **USIAMAS** Malaysia was founded

1992 – The *Gerontological Association of Malaysia* (**GEM**) was founded

  – On 1st October, Malaysia celebrated her first **National Day of Older Persons**

1995 – The first **National Policy for the Elderly** (NPE) was approved by the cabinet on 25th October

1996 – The **National Advisory and Consultative Council for the Elderly** (NACCE) was established

1997 – The **Plan of Action** for the National Policy for the Elderly was launched. The Ministry of Health established the **National Council of Health for the Elderly** and introduced a national **Elderly Health Care Program**

  – The *Alzheimer's Disease Foundation Malaysia* (**ADFM**) was registered in 1997.

2000 – The first **geriatric ward** opened at Seremban General Hospital

2002 – The **Institute of Gerontology** (IG) was established at UPM

  – The *Malaysian Healthy Ageing Society* (**MHAS**) was founded

2005 – **Basic Gerontology & Geriatric Services** was introduced as an elective subject for upper secondary students

2008 – The Ministry of Health launched a **National Health Policy for Older Persons**

2011 – The new **National Policy for Older Persons** (NPOP) was approved by the cabinet

  – The **Social Security Research Centre** (SSRC) was established at UM

2012 – The *Malaysian Society of Geriatric Medicine* (**MSGM**) was founded

  – The **Community Rehabilitation and Ageing Research Centre** (H-CARE) established at UKM

  – The **Minimum Retirement Age Act** (2012) was passed & the **Private Retirement Scheme** (PRS) was introduced

2015 – The **USM-RIKEN International Centre for Ageing Science** (URICAS) was established at USM

  – IG was rebranded by the cabinet as the **Malaysian Research Institute on Ageing** (MyAgeing), UPM

2016 – Monash University Malaysia launched its **Gerontechnology Lab**

2018 – **Private Aged Healthcare Facilities and Services Act** was passed in December 2017 and gazetted

  – The *Association for Residential Aged Care Operators of Malaysia* (**AgeCOpe**) was founded

2019 – **Income Tax (Deduction for Employment of Senior Citizen, Ex-Convict, Parolee, Supervised Person and Ex-Drug Dependant) Rules 2019** introduced

Locating the Field

Social Gerontology

Psychogerontology

Demography of ageing Political gerontology Ethnogerontology	Educational gerontology Geragogy	Economic / Financial gerontology Family gerontology Developmental gerontology	Gerontopsychology
Geographical gerontology Environmental gerontology Gero-informatics	Biology & Genetics of Ageing	Geroscience Geriatrics	Gerontopsychiatrics Psychogeriatrics

Gerontechnology

Biogerontology

Medical Gerontology

"...as we know, there are **known knowns**; there are things we know that we know.
There are **known unknowns**; that is to say, there are things that we now know we don't know.
But there are also **unknown unknowns**; there are things we do not know we don't know." 😂

- Donald Henry Rumsfeld, US Secretary of Defence, 2002

Regular Data on Ageing in Malaysia

Censuses & Surveys

- Census (decennial); Household Income & Expenditure Survey (once every 4 to 5 years); Labour Force Survey (annual); Migration Survey; Economic Census; Salary & Wages Survey (DOSM)

- Financial Capability & Inclusion Survey, 2011 & 2015 (BNM)

- National Health & Morbidity Survey, NHMS I-IV, 1986 - 2019 (MOH)

- Malaysian Family & Population Survey I-V, 1974 - 2014 (decennial) (NPFDB)

Administrative / Demographic Data

- Vital statistics (DOSM & NRD)

- Education statistics (MOE)

- Health statistics (MOH - IKU, CRC, etc.)

- Welfare statistics, e-Bantuan (DSW)

- Housing data (MHLG, NAPIC)

- Marriage & Divorce statistics (NRD)

- Social Protection statistics (KWSP, KWAP, SOCSO, Zakat/Baitulmal)

- Societies (ROS) & Companies (ROC, SC)

- Migrant Workers statistics (MHA)

- Crime & traffic statistics (Police, MIROS)

Living Arrangement by Generations, Malaysia, 2014

Generations Living Together	Households without Older Persons		Households with at Least 1 Older Persons		Total Households	
	n	%	n	%	n	%
Living Alone	472	4.78	281	5.66	753	5.07
1 Generation Household	949	9.61	786	15.84	1,619	10.91
2 Generation Households	7,636	77.31	2,025	40.82	9,535	64.26
3 Generation Households	538	5.45	1,564	31.53	2,095	14.12
4+ Generation Households	5	0.05	52	1.05	54	0.36
Skipped Generation Households	26	0.26	138	2.78	164	1.11
Undetermined	251	2.54	115	2.32	618	4.16
Total	**9,877**	**100.00**	**4,961**	**100.00**	**14,838**	**100.00**

UNIVERSITI PUTRA MALAYSIA
AGRICULTURE • INNOVATION • LIFE

Older Persons by Household Income Levels, 2014

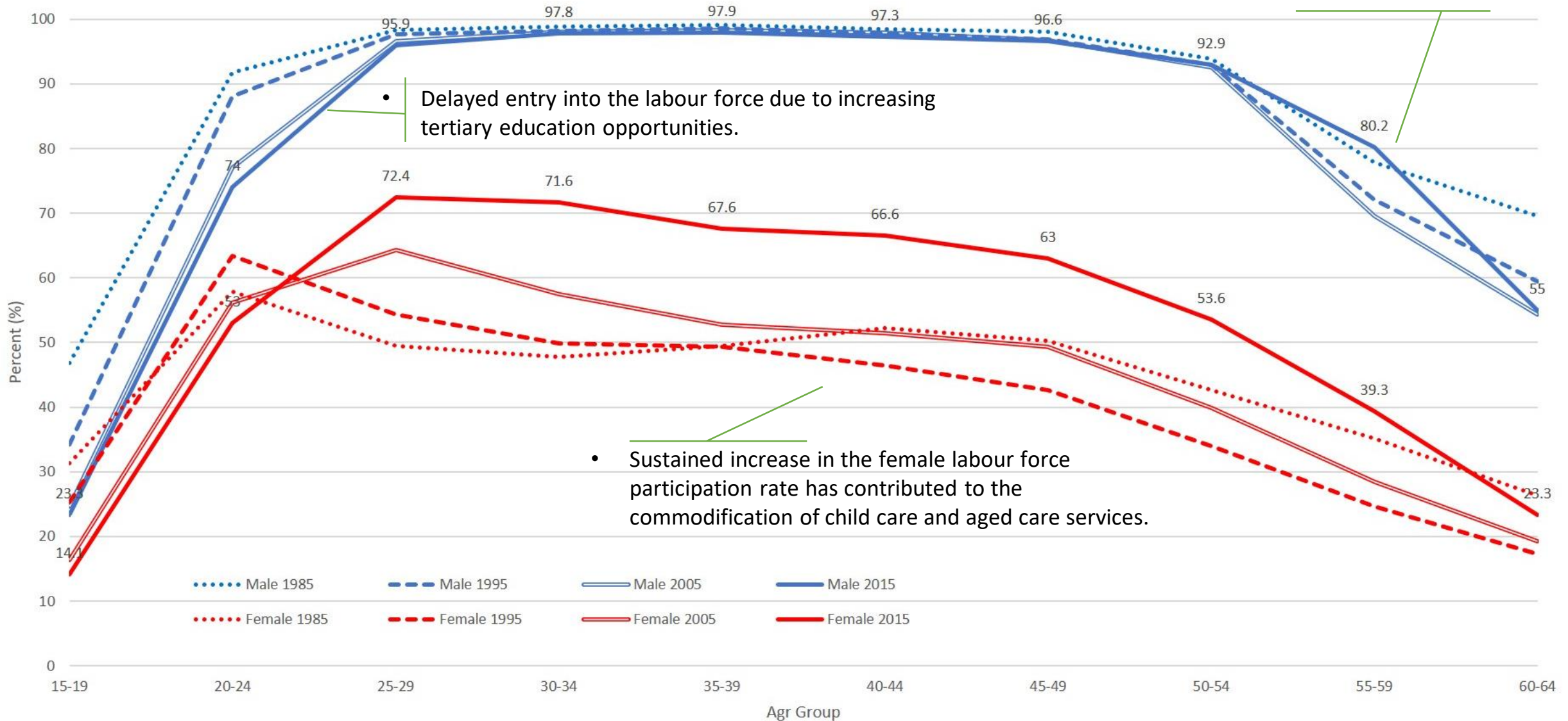| Household Income Levels	All Households	Households without Older Persons	Households with Older Persons	Number & Percentage of Older Persons
B40 **[≤RM3,531.52]**	5,935 (40%)	3,672 (37.2%)	**2,263** **(45.6%)**	3,139 (45.5%)
M40 **[RM3,531.53 - RM7,708.16]**	5,936 (40%)	4,103 (41.5%)	**1,833** **(37.0%)**	2,561 (37.1%)
T20 **[RM7,708.17+]**	2,967 (20%)	2,102 (21.3%)	**865** **(17.4%)**	1,197 (17.4%)
Poverty Line **(Hh 4.2p < RM930)**	193 (1.3%)	148 (1.5%)	**45** **(0.9%)**	59 (0.9%)
Total	14,838 Hh	9,877 Hh	**4,961 Hh**	6,897 OP

Source: HES2014 microdata, Dept. of Statistics Malaysia, 2016 [unpublished data]
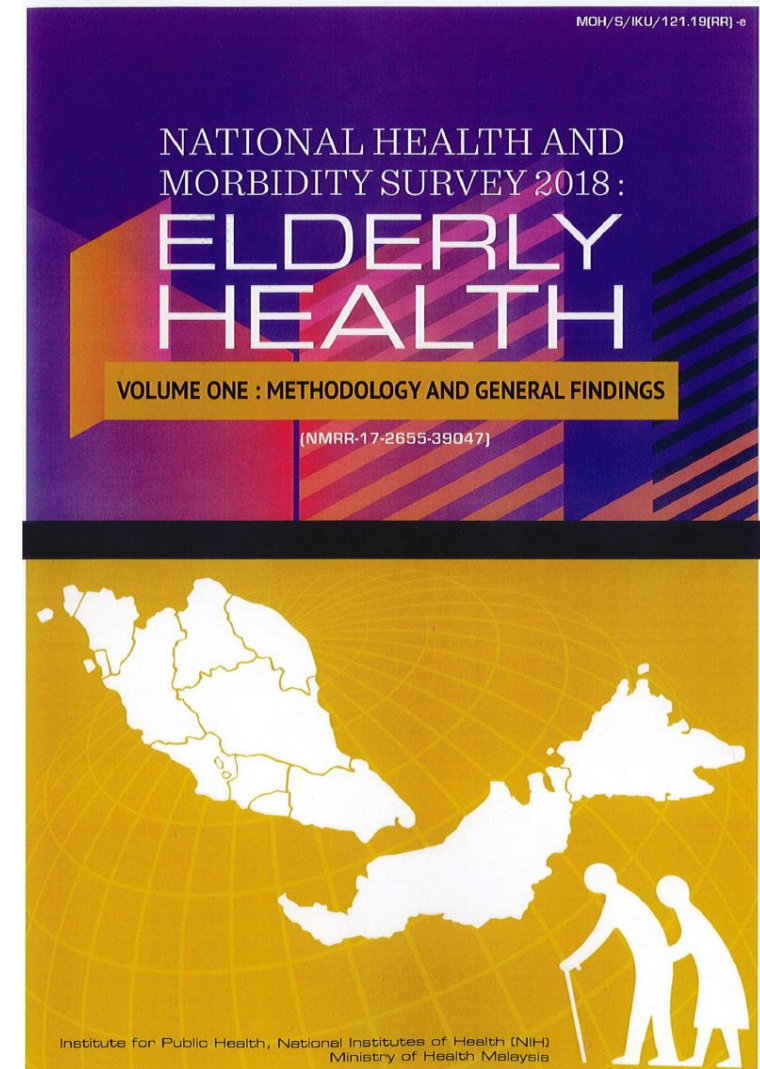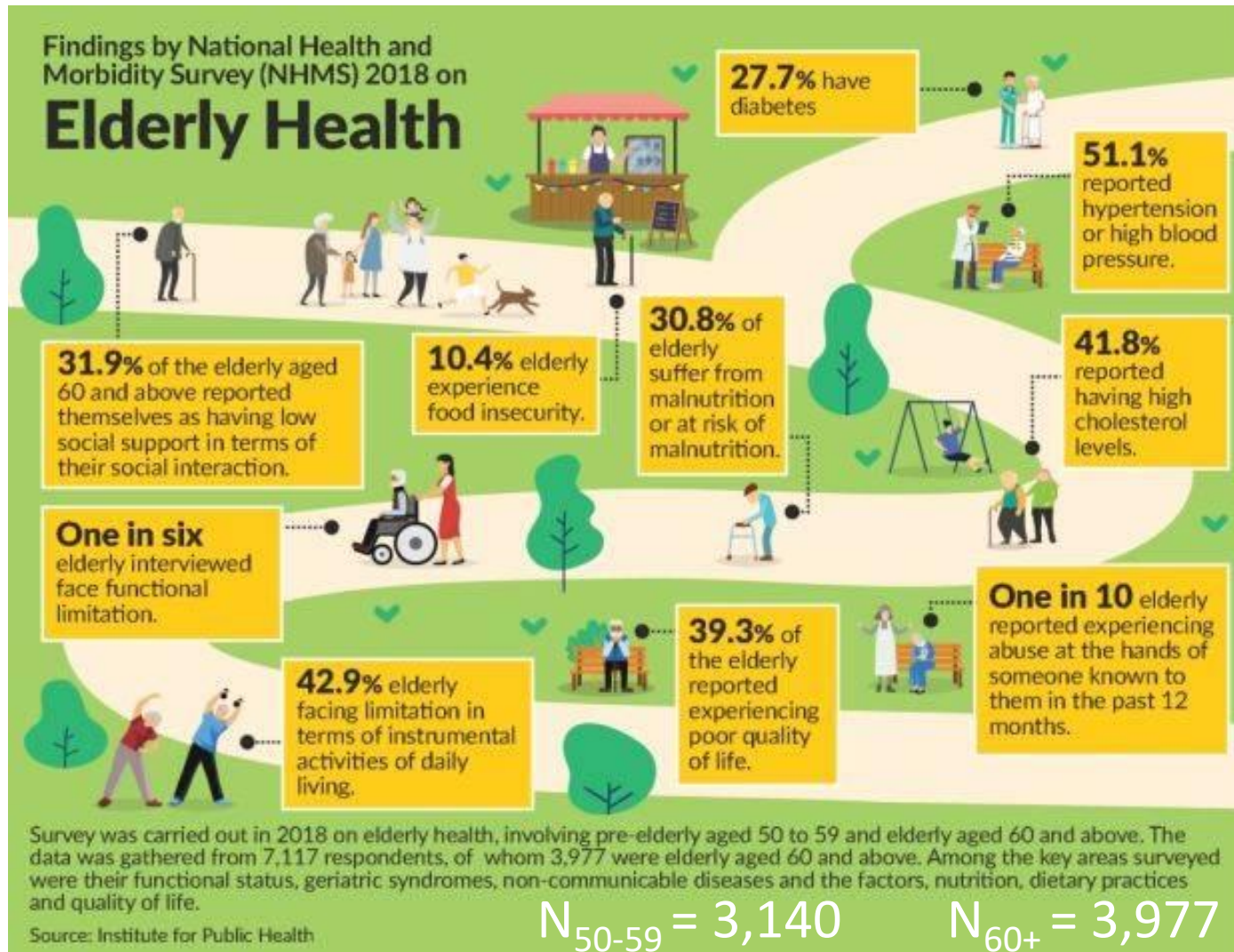
Labour Force Participation Rates by Age Group and Sex, Malaysia, 1985 – 2015

- Public: Mandatory retirement age was raised from 55 to 56 in 2001, increasing to 58 in 2008 and to 60 in 2012 (Act 227)
- Private: Minimum Retirement Age Act 2012 (Act 753)

- Delayed entry into the labour force due to increasing tertiary education opportunities.

- Sustained increase in the female labour force participation rate has contributed to the commodification of child care and aged care services.

National Health and Morbidity Survey, 2018

https://www.thestar.com.my/metro/metro-news/2019/08/23/looking-after-our-elderly

Penggajian dan Guna Tenaga Warga Emas di Malaysia, 2018

4,832 survey responses collected

Share of total responses[1]

Future work preferences

Cluster 1 — No interest
No intention of being in labour force — 40%

Cluster 2 — Self-employed
Intends to start/ continue working for oneself — 32%

Cluster 3 — Salaried
Intends to start/ continue work in a salaried position — 25%

Cluster 4 — Unpaid / volunteer
Intends to start/continue work in an unpaid position — 2%

Most common challenges

Family **obligations and restrictions** from working children

Sufficient **personal savings**, passive income, or income from family

Desire for more **leisure time** and less stressful activities

Perception that employers do not want older workers or prefer younger ones

Lack of information on available jobs and suitable opportunities

National Strategic Development Plan on Ageing Population

INCLUSION AND EMPLOYMENT OF MALAYSIA'S AGEING POPULATION

MINISTRY OF HUMAN RESOURCES

JANUARY 2019

Funded Research on Ageing in Malaysia

Preliminary Findings

- MOSTI/MESTECC - 27
  - (eScience) 2006-2016 – 11 projects
  - (IRPA) pre 2006 – ~16 projects
- MOHE - 64
  - 2011 - 2016 - 64 projects
    (FRGS - 47; RAGS - 5; ERGS - 11; LRGS - 1(5))
    - S&T - 13
    - Med & Health - 14
    - SS & Others - 37
      (e.g. economics, social support etc.)
- STEM grant value > than Social Sciences
- Information needed for varsity funded studies.

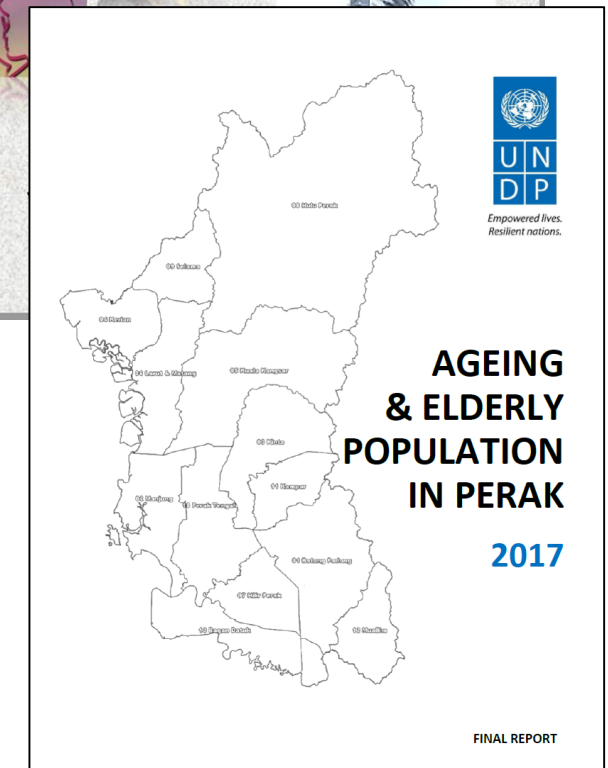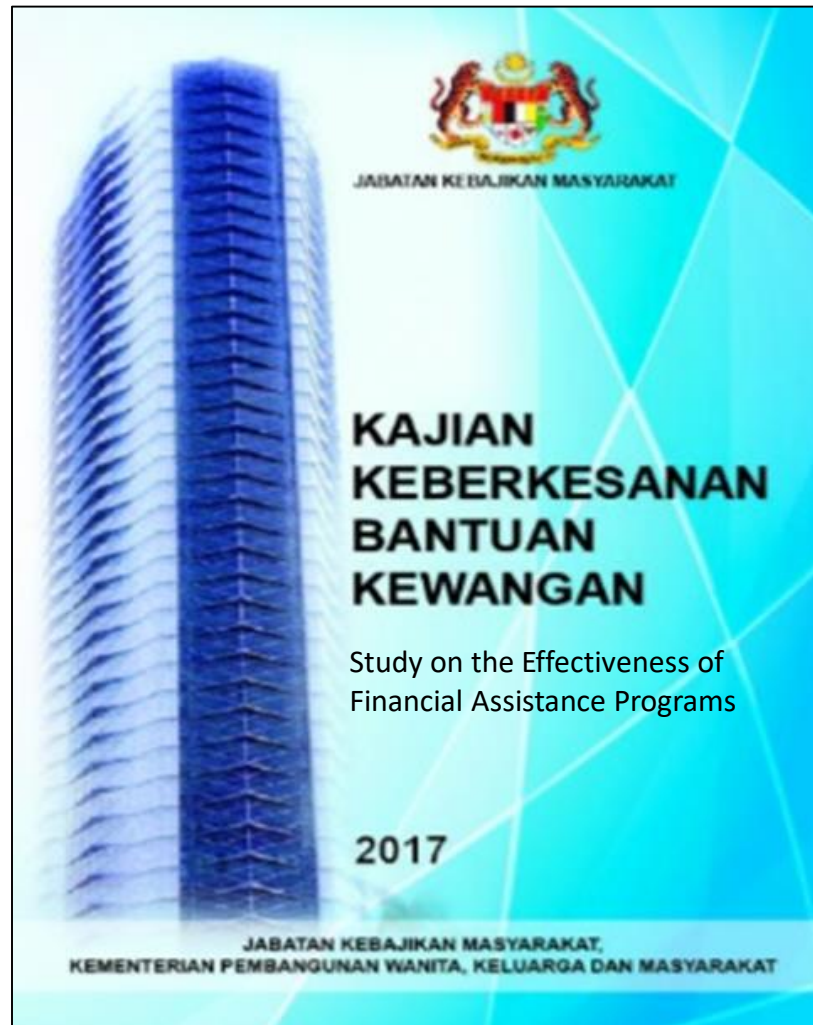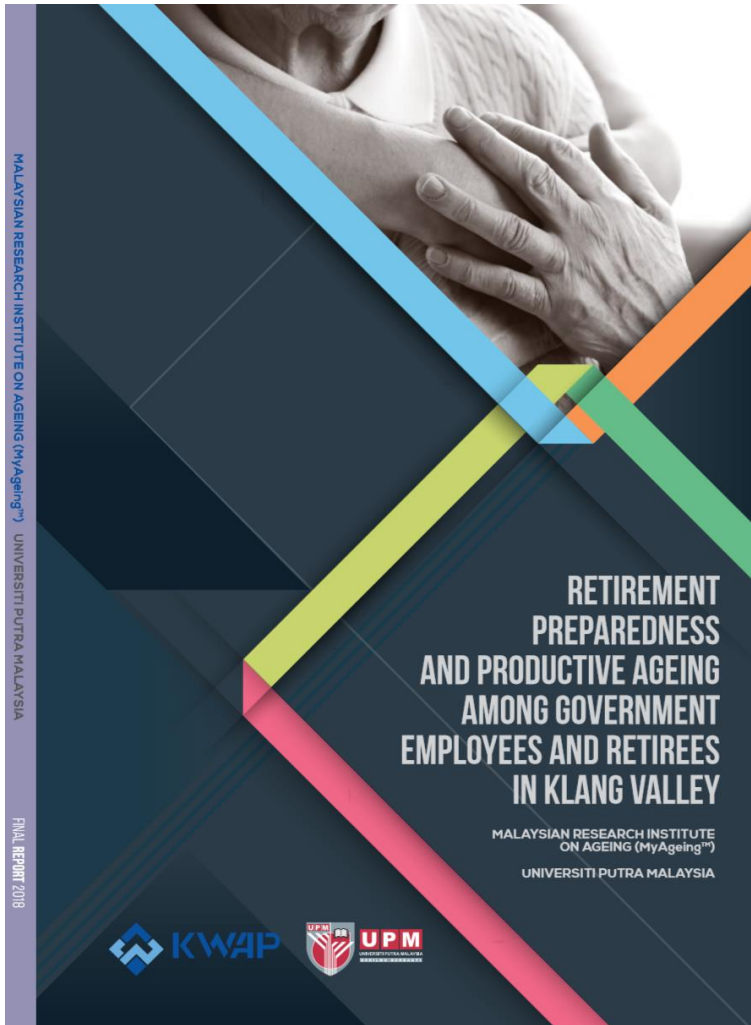| MOSTI	Total Projects	Ageing-related		
		S&T	M	SS
2006	1,169	2	0	1
2007	935	0	0	0
2008	415	2	1	0
2009	215	0	1	0
2010	101	0	0	0
2011	241	0	0	0
2012	~510	1	1	1
2013	~280	0	0	0
2014	~250	1	0	0
2015	~240	0	0	0
2016	~90	0	0	0

Source: Author's desk survey of projects

Major Surveys on Ageing by IG/MyAgeing

- **Perception of Needs and Problems of the Elderly** (1997)
  PI: *Tengku Aizan Hamid* [IRPA]; n = 1,794 (1999, 60+ 4 state [Johor, Perak, Kedah, Kelantan] study

- **Mental Health and Quality of Life of Older Malaysians** (2003)
  PI: *Tengku Aizan Hamid* [part of IRPA PR]; n = 2,780 (2005, 60+ nationwide)

- **Patterns of Social Relationships and Psychological Well-being among Older Persons in Peninsula Malaysia** (2007)
  PI: *Nurizan Yahya* [eScience]; n = 1,880 (2008, 60+ 4 zones in Peninsula Malaysia study

- **Review of the National Policy for the Elderly and Action Plan Survey** (2007)
  PI: *Tengku Aizan Hamid* [MWFCD]; n = 5,600 (18-25; 26-39; 40-59; 60+); n_{60} = 1,309 (2008/09, 60+ nationwide]

- **Determinants of Wellness among Older Malaysians** (2008)
  PI: *Tengku Aizan Hamid* [MOH]; n = 2,541 (2009, 60+ nationwide]

- **Consumer Behaviour and Income Adequacy among Older Consumers** (2015)
  PI: *Jariah Masud* [MDTCC]; n = 4,428 (50+); n_{60} = 2,379 (2016, 60+ nationwide]

- **Identifying Psychosocial & Economic Risk Factors & Quantifying the Costs of Age-related Cognitive Impairment: Implications of Population Ageing in Malaysia** (2013 - 2018)
  PI: *Tengku Aizan Hamid* [part of LRGS TUA]; $n_{baseline}$ = 2,322 (2013/14, 60+ 4-state study]

Recently Completed Consultancies

MALAYSIAN RESEARCH INSTITUTE ON AGEING (MyAgeing™) UNIVERSITI PUTRA MALAYSIA

FINAL REPORT 2018

RETIREMENT PREPAREDNESS AND PRODUCTIVE AGEING AMONG GOVERNMENT EMPLOYEES AND RETIREES IN KLANG VALLEY

MALAYSIAN RESEARCH INSTITUTE ON AGEING (MyAgeing™)
UNIVERSITI PUTRA MALAYSIA

JABATAN KEBAJIKAN MASYARAKAT

KAJIAN KEBERKESANAN BANTUAN KEWANGAN

Study on the Effectiveness of Financial Assistance Programs

2017

JABATAN KEBAJIKAN MASYARAKAT,
KEMENTERIAN PEMBANGUNAN WANITA, KELUARGA DAN MASYARAKAT

KAJIAN KEMUDAHAN DAN PERKHIDMATAN BAGI MENEPATI KEPERLUAN WARGA EMAS MENJELANG 2030

Study on the Facilities and Services to Meet the Needs of Older Malaysians by 2030

UNDP
Empowered lives.
Resilient nations.

AGEING & ELDERLY POPULATION IN PERAK

2017

FINAL REPORT

UNIVERSITI PUTRA MALAYSIA
AGRICULTURE · INNOVATION · LIFE

Other Major Surveys on Ageing in Malaysia

- **South East Asia Community Observatory** (SEACO, 2011) study
Contact: *Daniel D. Reidpath*, Monash Malaysia; $n_{baseline}$ = 44,902 in 13 355 Hh (2012/13, Segamat, Johor); n_{health} = 25,184 (5+, 2013/14); ~20% is 60+

- **Malaysian Elders Longitudinal Research** (MELoR, 2012)
PI: *Shahrulbahyah Kamaruzzaman*, UM [HIR Grant]; $n_{baseline}$ = 1,565 (55+, 2013/14, Greater Klang valley area in 3 parliamentary constituencies)

- **Longitudinal Study on Neuroprotective Model for Healthy Longevity (TUA) among Malaysian Older Adults** (TUA, 2012)
PI: *Suzana Shahar*, UKM [MOE LRGS]; $n_{baseline}$ = 2,322 (60+, 2013+2 waves, 4-state [Kelantan, Johor, Perak, Selangor] study)

- **Malaysian Elder Mistreatment Project** (MAESTRO) study (2012)
Prevent Elder Abuse and Neglect Initiative (PEACE) (2014)
PI: *Noran Naqiah Mohd Hairi*, UM; $n_{baseline}$ = 2,324 (60+, 2013+1 wave, Kuala Pilah, NS)

- **Malaysia Ageing and Retirement Survey** (MARS, 2018)
PI: *Norma Mansor*, UM; $n_{baseline}$ = targeted 7-8k (40+, 2019, nationwide)

Selected Findings

Highlights from Past Studies on Ageing in Malaysia

Intergenerational Transfers, 1999

Non-residential Children to Parents	Financial assistance	Cooked meals	Goods & groceries	House work	Transport service
	77.7	10.7	20.0	5.5	7.2

	11.4	20.4	7.3	13.2	25.7
Parents to Non-residential Children	Financial assistance	Cooked meals	Goods & groceries	House work	Babysitting service

Source: Tengku-Aizan et al. [Perception of Needs and Problems of the Elderly, 1999]

Expectations of Care in Sickness by Older Malaysians, 2005

Care Provider	Sex		Ethnicity			Stratum		Total (%)
	Male	Female	Malay	Chinese	Indian	Urban	Rural	
Spouse	30.3	9.3	19.4	25.9	9.8	21.2	20.1	20.7
Children	55.3	75.3	68.8	54.1	76.8	60.9	68.2	64.5
Grandchildren	0.5	2.4	1.8	1.0	0.0	0.7	2.3	1.4
Siblings	1.2	1.2	1.0	1.8	1.2	1.4	1.0	1.2
Relatives	0.8	2.8	1.1	1.3	2.4	2.2	1.1	1.7
Neighbours / Friends	0.8	0.8	1.0	1.0	0.0	1.0	0.8	0.8
Others	3.0	2.8	2.9	2.8	3.7	2.9	2.9	2.9
Nil	8.0	5.4	3.9	11.9	6.1	9.7	3.6	6.8

UNIVERSITI PUTRA MALAYSIA
AGRICULTURE • INNOVATION • LIFE

Mental Health of Older Malaysians, 2005

Summary of Logistic Regression Analysis Predicting Organic Disorder (n = 2542)

Predictor	B	SE	Wald	Odds Ratio	95% CI
Stratum	-0.300	0.127	5.594 *	0.741	0.578-0.950
Sex	-0.396	0.146	7.351 **	0.673	0.506-0.896
Ethnicity	0.825	0.180	20.999 **	2.281	1.603-3.246
Marriage Status	-0.134	0.142	0.893	0.874	0.662-1.155
Employment	-0.059	0.157	0.140	0.943	0.693-1.283
Income Category	-0.224	0.063	12.635 **	0.799	0.706-0.904
Age	0.034	0.008	16.054 **	1.034	1.017-1.052
Level of Education	-1.047	0.137	57.944 **	0.351	0.288-0.460
Constant	-3.714	0.666	31.106	0.024	

* $p < 0.05$. ** $p < 0.01$

Note: $\chi^2 = 298.869$, df = 8, $p = 0.000$, Nagelkerke's $R^2 = 0.198$
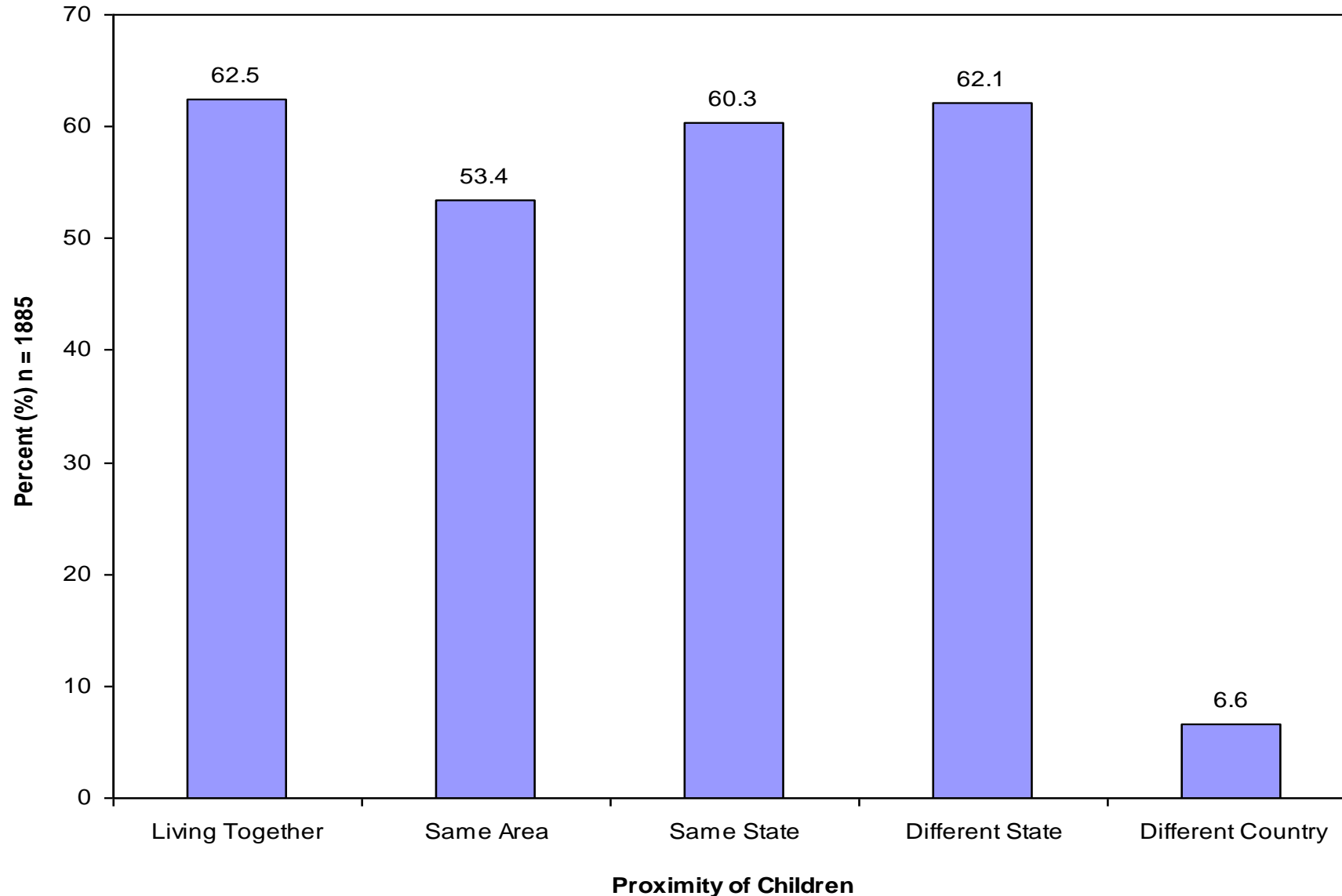
- The GMS-AGECAT analysis for the three syndrome clusters yielded a crude prevalence rate for organic disorder (14.4%), undifferentiated depression (11.7%) and anxiety (1.6%).

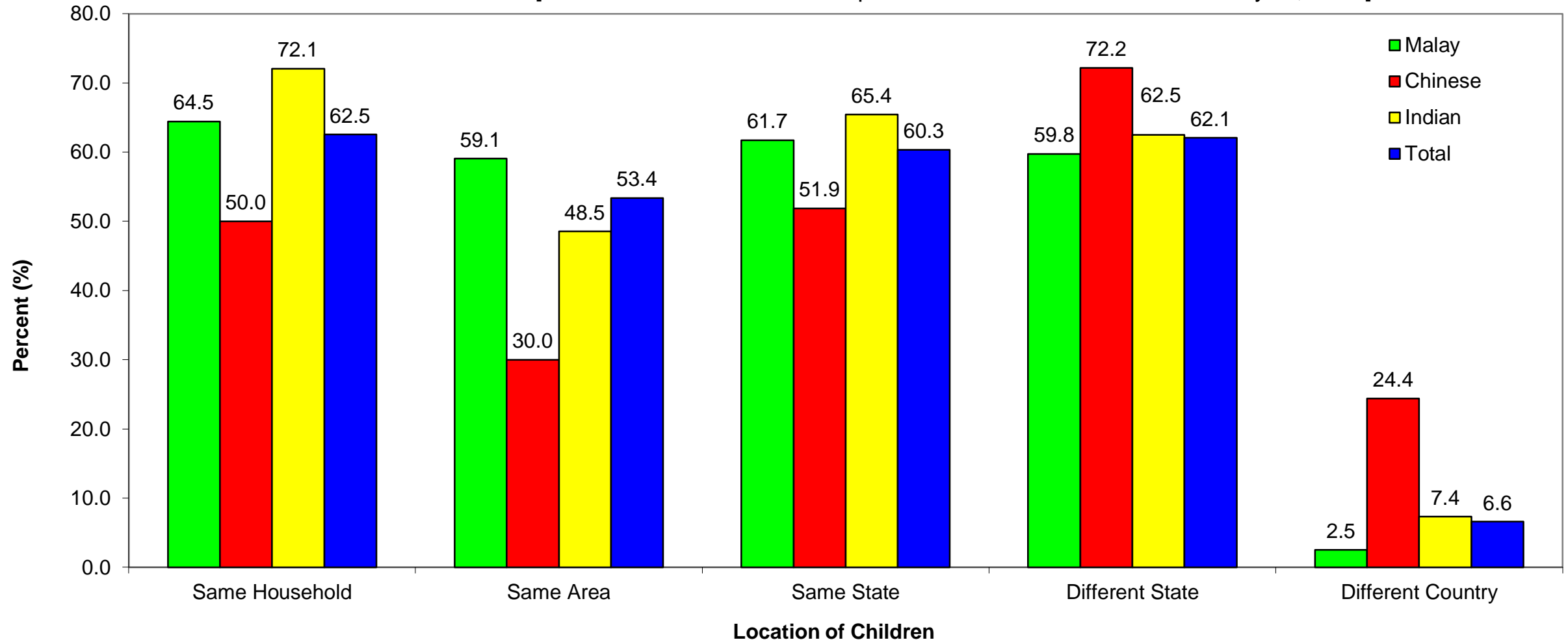# Location of Adult Children by Proximity, 2008

* at least one

- Most elderly (62.5%) live with their children or have other children living in the same area (53.4%).

- But there are significant ethnic differences.

Source: Nurizan et al. [Patterns of Social Relationship and PWB of Older Persons in Malaysia, 2008]
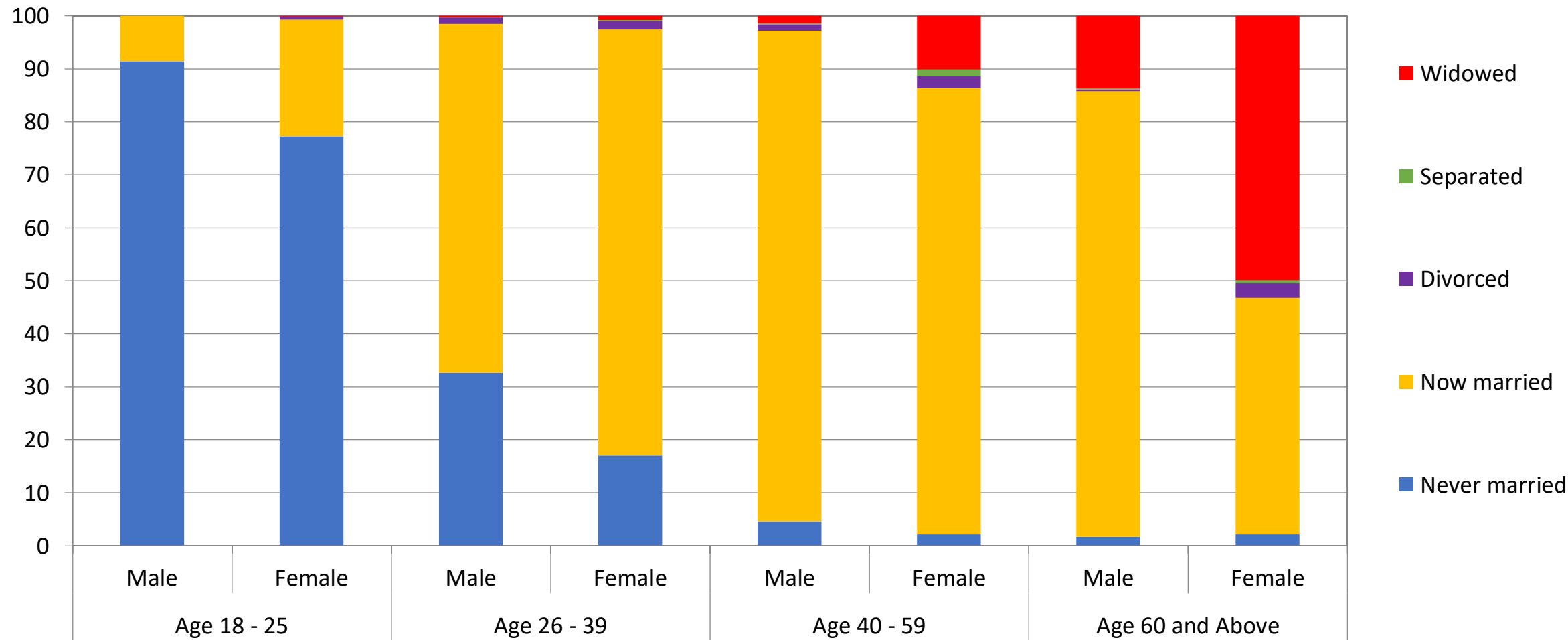
Location of Adult Children according to Distance by Ethnicity, 2008

Source: Nurizan et al. [Patterns of Social Relationship and PWB of Older Persons in Malaysia, 2008]

Percent (%)

Legend:
- Malay (green)
- Chinese (red)
- Indian (yellow)
- Total (blue)

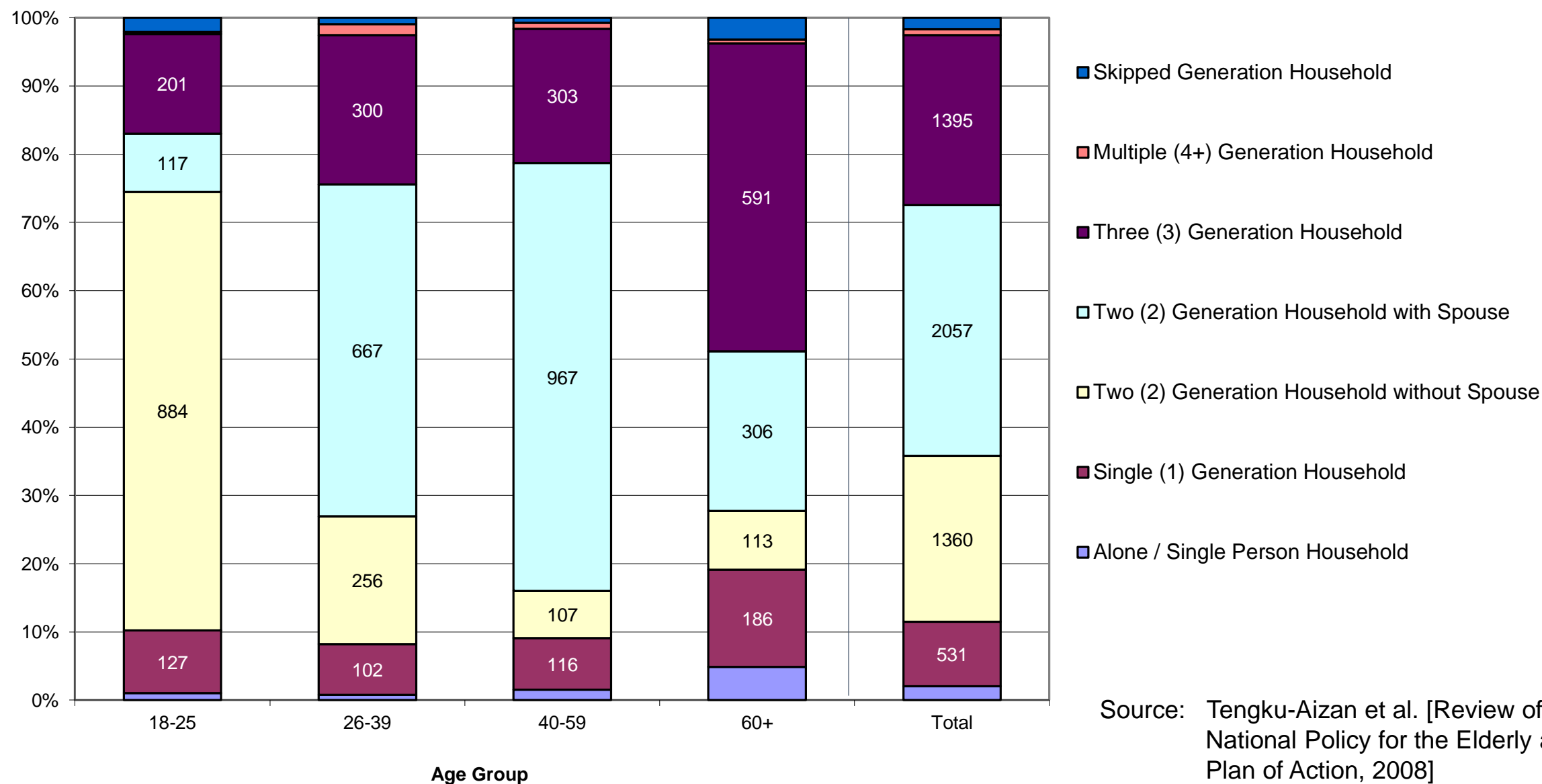| Location of Children	Malay	Chinese	Indian	Total
Same Household	64.5	50.0	72.1	62.5
Same Area	59.1	30.0	48.5	53.4
Same State	61.7	51.9	65.4	60.3
Different State	59.8	72.2	62.5	62.1
Different Country	2.5	24.4	7.4	6.6

Location of Children

Marital Status by Age Group & Gender, 2008

Source: Tengku-Aizan et al. [Review of the National Policy for the Elderly and Plan of Action, 2008]

Generations in a Household by Age Group, 2008

Legend:
- Skipped Generation Household
- Multiple (4+) Generation Household
- Three (3) Generation Household
- Two (2) Generation Household with Spouse
- Two (2) Generation Household without Spouse
- Single (1) Generation Household
- Alone / Single Person Household

Age Group	18-25	26-39	40-59	60+	Total
Three (3) Generation Household	201	300	303	591	1395
Two (2) Generation Household with Spouse	117	667	967	306	2057
Two (2) Generation Household without Spouse	884	256	107	113	1360
Single (1) Generation Household	127	102	116	186	531

Age Group

Source: Tengku-Aizan et al. [Review of the National Policy for the Elderly and Plan of Action, 2008]

Life Insurance Coverage, 2009

Age Group	Bottom 40% [RM0-RM2,303]	Middle 40% [RM2,304-RM6,522]	Top 20% [RM6,523+]	Total
18-25	10.5	20.5	25.0	14.9
26-39	13.4	40.3	61.4	25.2
40-59	12.5	36.9	60.9	23.2
60+	4.8	13.9	31.7	8.2
Total	**10.3**	**28.7**	**47.1**	**18.1**

Medical Insurance Coverage, 2009

Age Group	Bottom 40% [RM0-RM2,303]	Middle 40% [RM2,304-RM6,522]	Top 20% [RM6,523+]	Total
18-25	2.2	11.4	12.5	6.1
26-39	4.2	23.0	34.3	12.3
40-59	4.0	18.1	41.4	10.7
60+	1.7	7.1	26.8	4.0
Total	**3.1**	**15.4**	**29.7**	**8.5**

Source: UPM Consultancy, 2009 "Survey on the National Policy for the Elderly"

Life & Medical Insurance Coverage of Malaysians by Age Group and Income Level, 2009

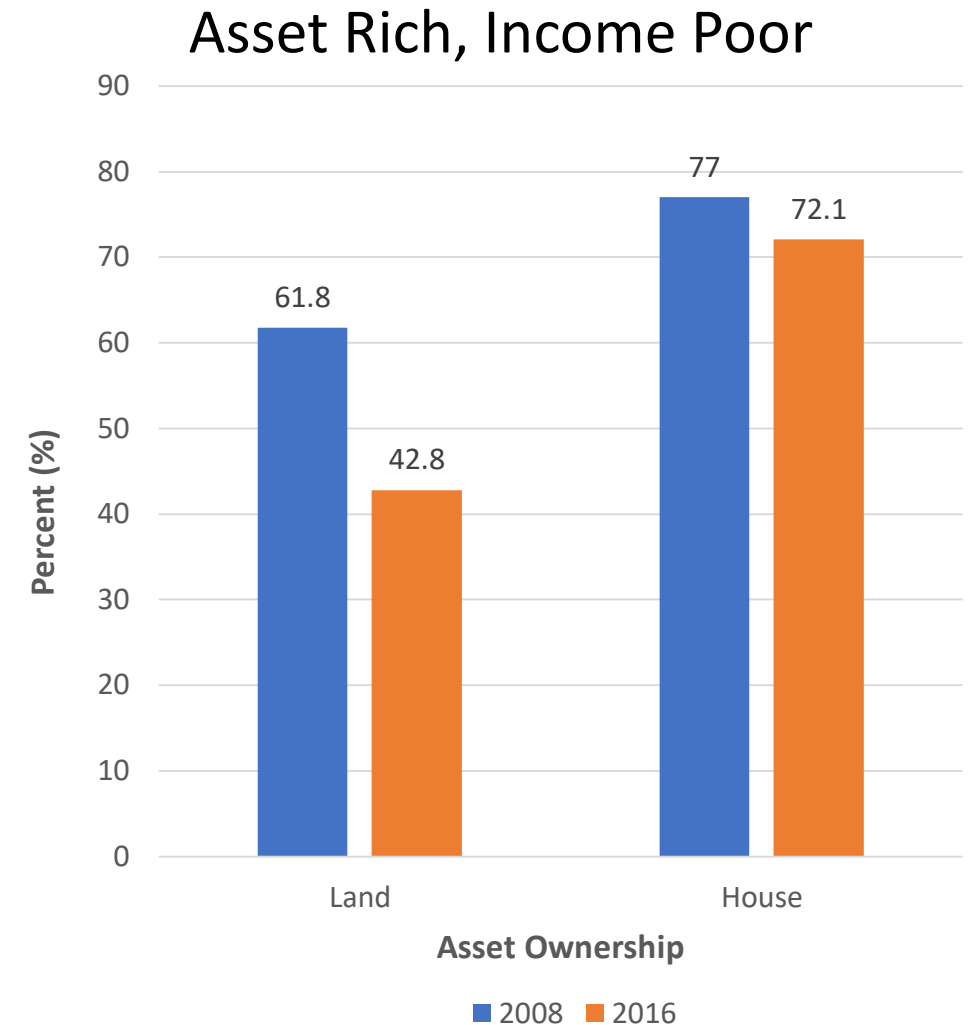# Utilization of Health Care Services by Ethnicity, 2008

past 6 months

Malay

5%
6%
14%
75%

Chinese

5%
7%
46%
42%

Indian

3%
5%
8%
84%

☐ Public health care services and facilities only
■ Private health care services and facilities only
☐ Both public and private health care services and facilities
☐ None / Others

χ^2 = 56.34
df = 12
p = 0.000

Other Bumiputera

4%
6%
10%
80%

Others

17%
17%
50%
16%
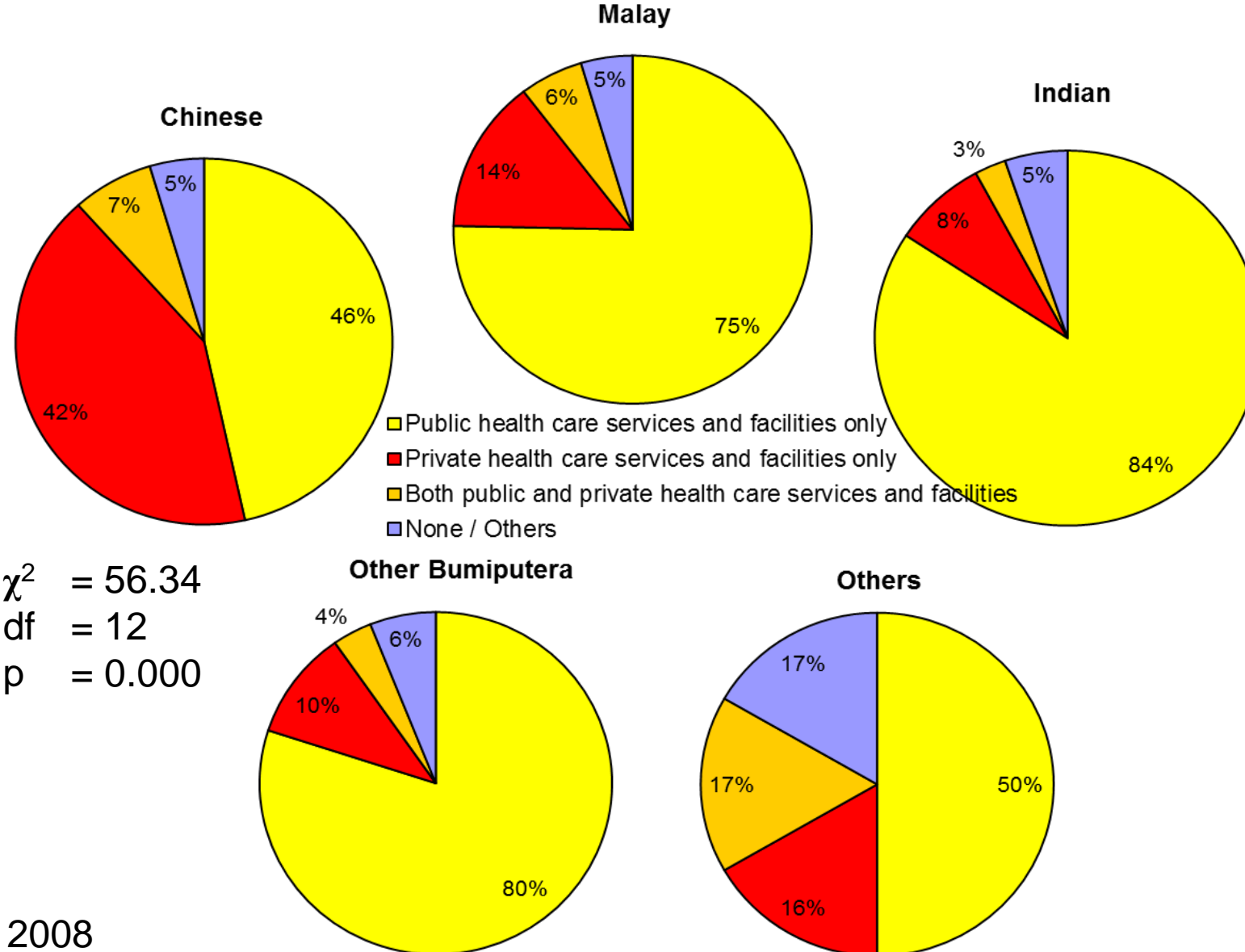
Source: DWEN, 2008

Income Security in Old Age, 2008 & 2016

Type	2008 (n = 1,309)	2016 (n = 2,379)
Salary / Wages	10.8	12.9
Business	10.5	9.9
Rent	2.8	2.6
Dividend	0.5	0.5
Welfare	2.4	12.4
Pension	12.7	18.6
SOCSO	n/a	1.0
Agriculture	10.7	11.1
Annuity	0.2	0.0
Children	52.9	56.2
Others	0.2	5.7

Asset Rich, Income Poor

Land: 2008 = 61.8, 2016 = 42.8
House: 2008 = 77, 2016 = 72.1

Percent (%) — Asset Ownership

■ 2008 ■ 2016

Source: Consumer Behaviour and Income Adequacy among Older Consumers, 2016; UPM Consultancy, 2009 - Survey on the NPE

Crude Prevalence Rates of Chronic Diseases among Older Malaysians (60+), 2005 & 2013

Diseases	MHQOLOM, 2005						TUA, 2013					
	Male		Female		Total (2,979)		Male		Female		Total (2,322)	
	N	%	N	%	N	%	N	%	N	%	N	%
Hypertension	404	29.5	505	34.5	909	**30.5**	521	46.8	647	53.6	1,168	**50.3**
Heart Problems	147	10.8	118	8.1	265	**8.9**	147	13.2	92	7.6	239	**10.3**
Diabetes	189	13.8	239	16.3	428	**14.4**	294	26.4	311	25.7	605	**26.1**
Kidney Problems	30	2.2	31	2.1	61	**2.0**	29	2.6	11	0.9	40	**1.7**
Cancer	5	0.4	6	0.4	11	**0.4**	6	0.5	31	2.6	37	**1.6**
Stroke / Angina	27	2.0	22	1.5	49	**1.6**	33	3.0	12	1.0	45	**1.9**
Gout	96	7.0	83	5.6	179	**6.0**	76	6.8	28	2.3	104	**4.5**

LRGS TUA Cognitive & Psychosocial Measures

Measures	Baseline, 2013 (n = 2,325)		Wave 1 , 2013 Matched-sample		Wave 3, 2016 (n = 1,232)	
	M	SD	M	SD	M	SD
MMSE	**22.62**	5.025	**23.15**	4.606	**24.15**	4.898
MoCA	**17.38**	6.776	**19.00**	5.616	**19.30**	5.944
Digit Span	**7.48**	2.437	**7.54**	2.341	**8.41**	2.997
Depression (GDS)	**2.70**	2.275	**2.60**	2.177	**3.03**	2.395
Social Support (MOS-SSS)	**39.52**	14.726	**40.3**	14.464	**38.22**	14.564
Satisfaction with Life (SWLS)	**8.16**	2.325	**8.15**	2.227	**9.36**	1.712
Flourishing	**13.81**	6.762	**13.53**	6.839	**16.65**	7.080
Loneliness	**3.28**	0.935	**3.23**	0.835	**3.47**	1.140
Perceived Stress (PSS-4)	**3.18**	3.040	**3.14**	2.965	**6.90**	2.037
Perceived QoL	**1.66**	0.690	**1.68**	0.675	**1.62**	0.648

Economic & Health Variables

Variables		Baseline, 2013 (n = 2,325)		Wave 1 , 2013 Matched-sample		Wave 3, 2016 (n = 1,232)	
		N / M	% / SD	N / M	% / SD	N / M	% / SD
Income Adequacy	Not enough	221	**9.7**	105	**8.7**	66	**5.4**
	E for basic needs	581	**25.6**	322	**26.5**	280	**22.8**
	E for most things	338	**14.9**	193	**15.9**	238	**19.4**
	E for all things	539	**23.7**	280	**23.1**	333	**27.2**
	E for all & can save	593	**26.1**	313	**25.8**	309	**25.2**
Hypertension		1,059	**45.5**	595	**48.3**	691	**56.1**
Hypercholesterolemia		595	**25.6**	382	**31.0**	548	**44.5**
Joint Pain		245	**10.5**	304	**24.7**	361	**29.4**
Heart Problem		203	**8.7**	120	**9.8**	96	**7.8**
Diabetes		553	**23.8**	291	**23.7**	335	**27.2**

- The sample shows some indication of survivorship bias.

Means Plot of Cognitive Measures' Changes
by Age Group and Trend (Wave 1 & 3), 2013 & 2016

Positive Trend

+MMSE, n = 695
+MOCA, n = 592

Negative Trend

-MMSE, n = 378
-MOCA, n = 498

— Mean MMSE Change   — Mean MoCA Change
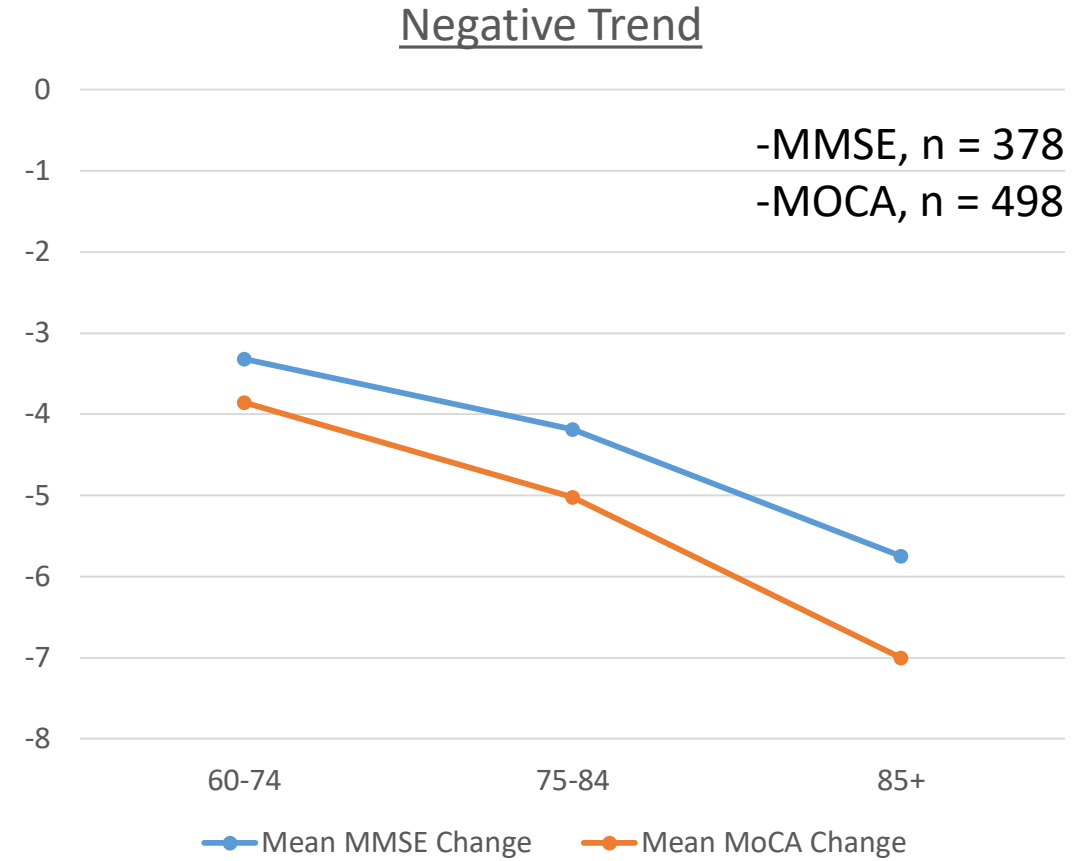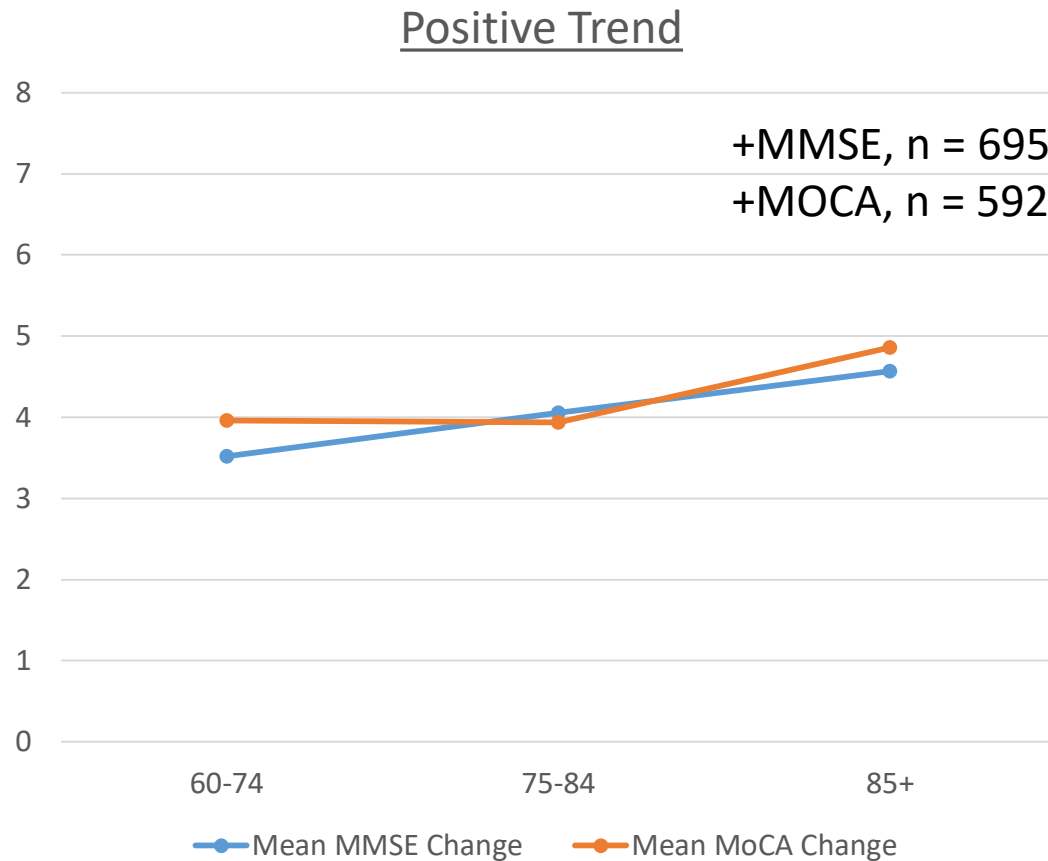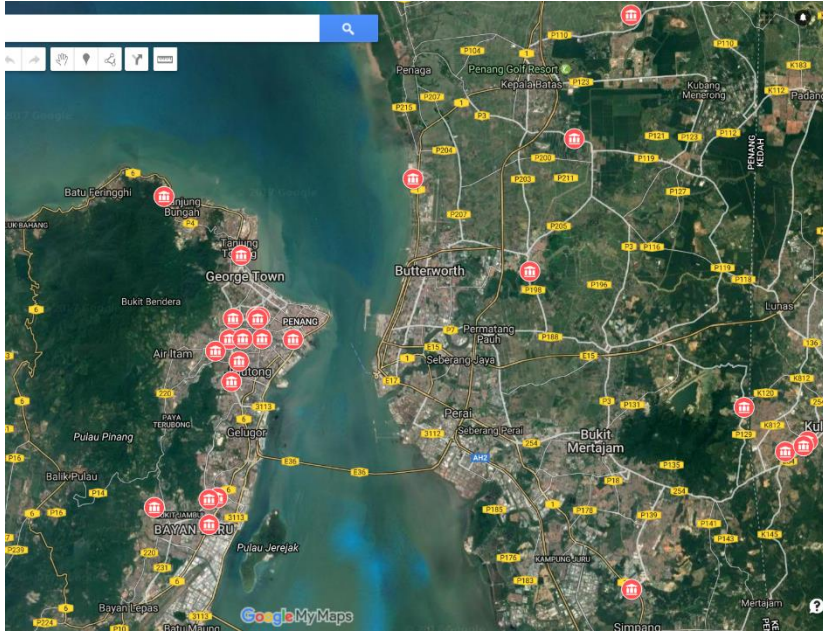
Mapping of Residential Aged Care Facilities in Malaysia (2016) *beta testing of geographical distribution*
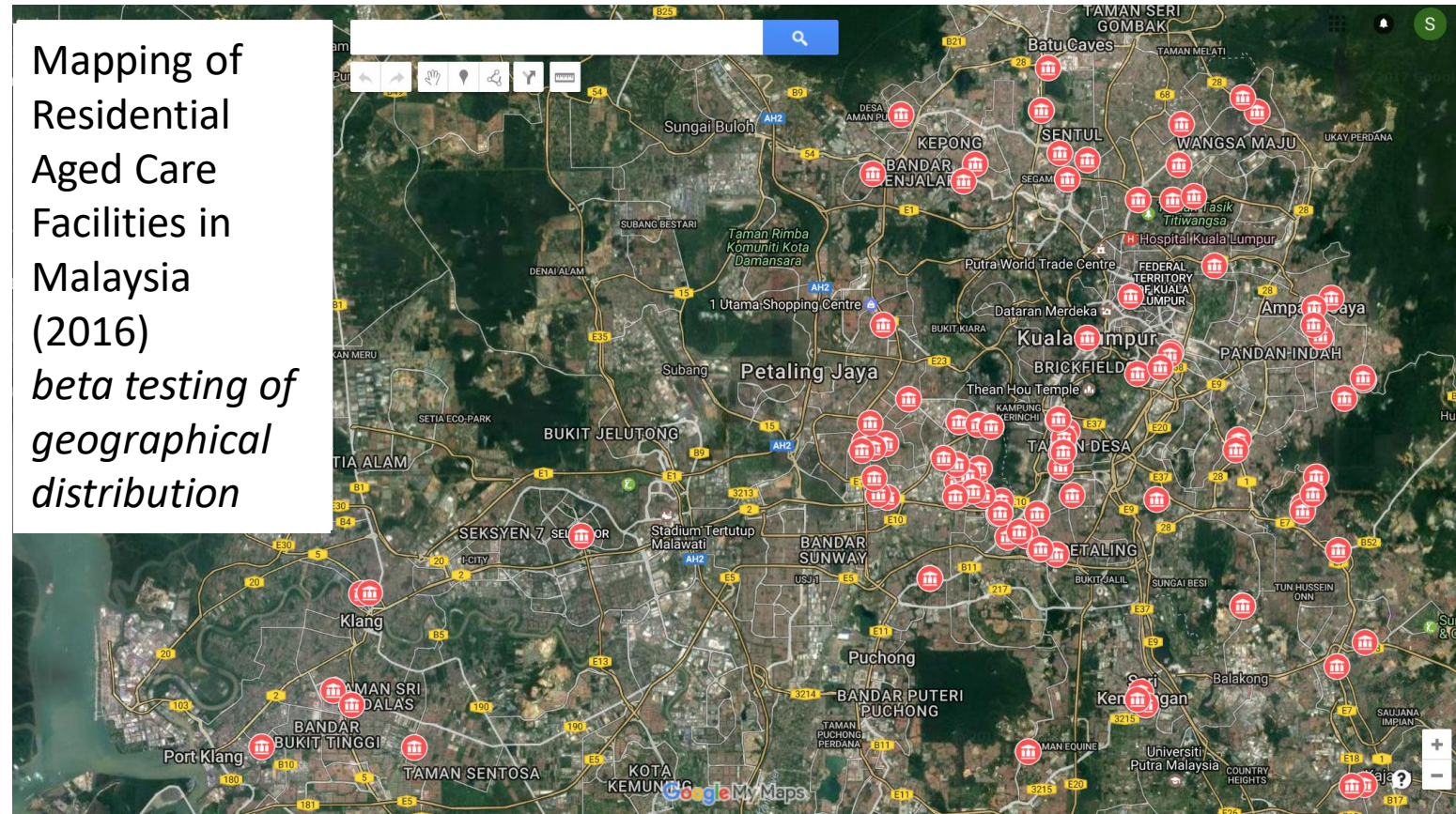
The Way Forward

- Need for survey of aged care operators, staff or Residents on a systematic basis.

- Analysis of social assistance, pension or retirement savings databases.

- Studies at local level, focusing on context/situation variables
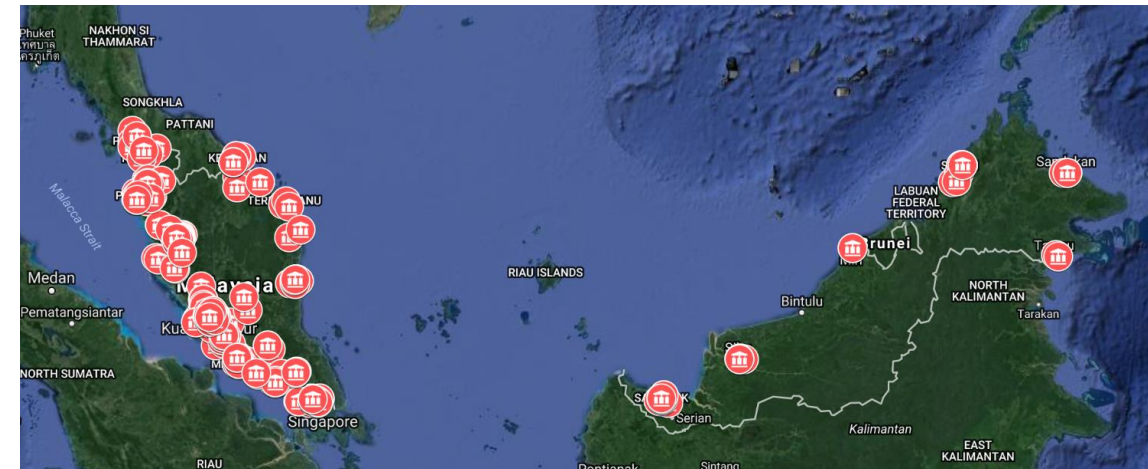
Issues and Challenges of Door-to-door Surveys

1. Access to and cooperation from target groups
   [urban-rural; Chinese; highrise residence; literacy level; interference]

2. Sampling method and sampling frame (e.g. multi-stage; boundaries)
   [center/facility-based; socio-economic status]

3. Language and interviewing skills (translation and inter-rater issues)
   [multilingual; multicultural; generation gap]

4. Data collection and data processing/entry methods
   [CAPI, web/paper-based; data capture (e.g. scans)/digitization]

5. High cost and resource intensive (e.g. remote areas; concurrent teams; cash advances)

6. Quality control measures (e.g. training, GIS, recordings; non-response analysis)

7. Feasibility of repeated surveys (e.g. respondent fatigue; test-retest reliability)
   [High drop-out rates]

Putting Things into Perspective
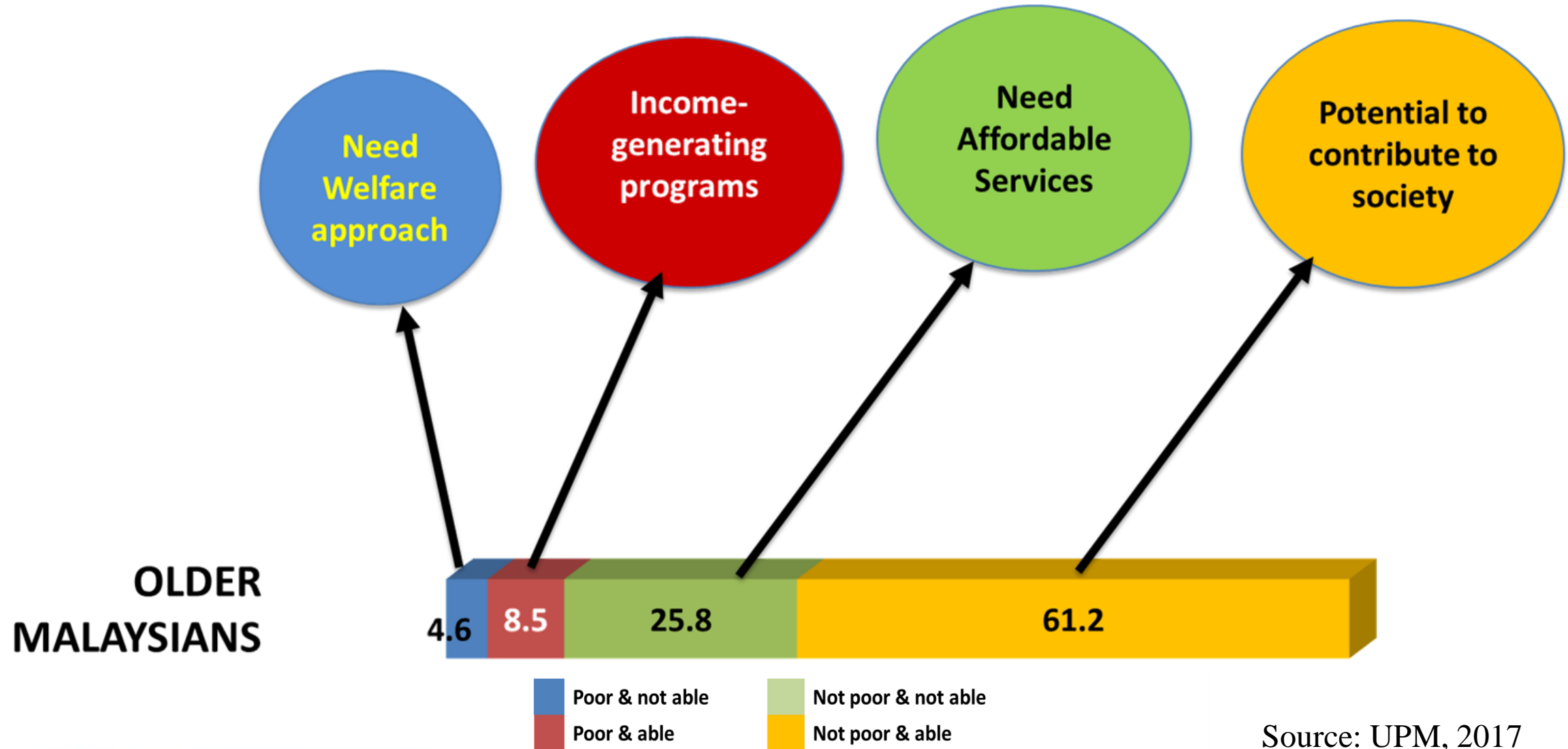
Source: UPM, 2017

TERIMA KASIH/*THANK YOU*

www.upm.edu.my

BERILMU BERBAKTI
WITH KNOWLEDGE WE SERVE