How healthy are older Singaporeans?

Findings on Physical Health, Health Behaviors and Psychosocial Well-Being
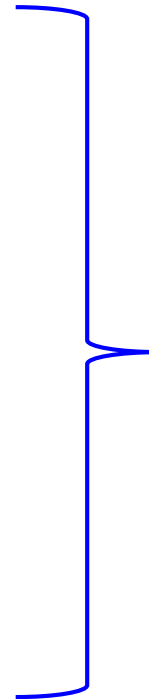
from THE SIGNS Study-I

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Older Singaporeans at a Crossroads
Centre for Ageing Research & Education (CARE) 2019 Symposium
8 May 2019

Contents

- **Physical Health**
  - Functional Limitations
  - Chronic Health Conditions
  - Body Mass Index Categories
- **Health Behaviors**
  - Physical Activity
  - Cancer Screening
- **Psychosocial well-being**
  - Loneliness

Overall

- **Age**

- **Gender**

- **Education**

- **Health status over time: PHASE-I and THE SIGNS Study-I**

Physical Health

- Functional Limitations

- Chronic Health Conditions

- Body Mass Index Categories

Functional Limitations
(Activities of Daily Living [ADLs] and Instrumental Activities of Daily Living [IADLs])
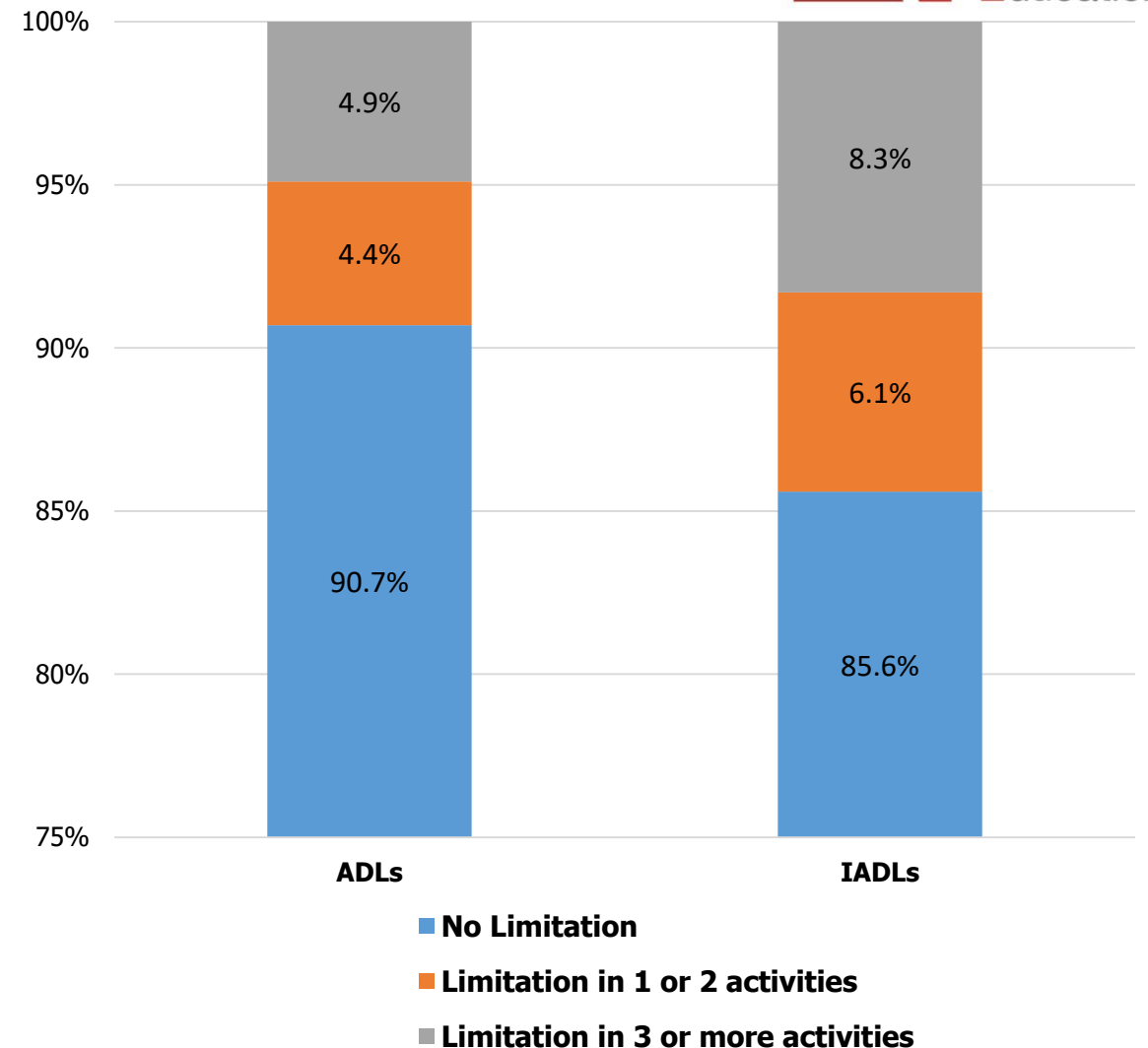

Why assess functional limitations?

- Downstream to chronic diseases.

- Advances in medical care result in a larger proportion of patients with chronic diseases surviving with residual impairments and functional limitations.

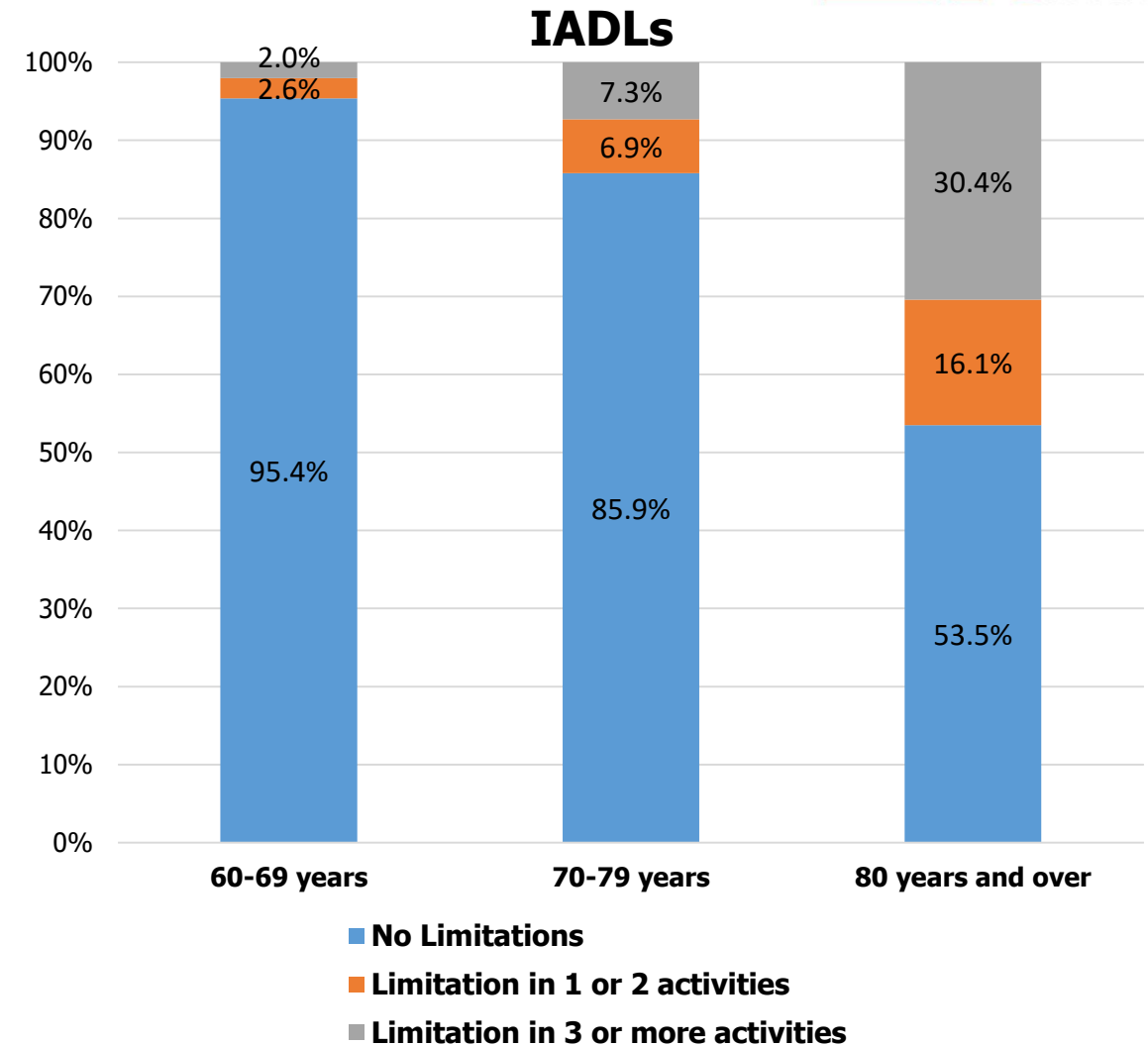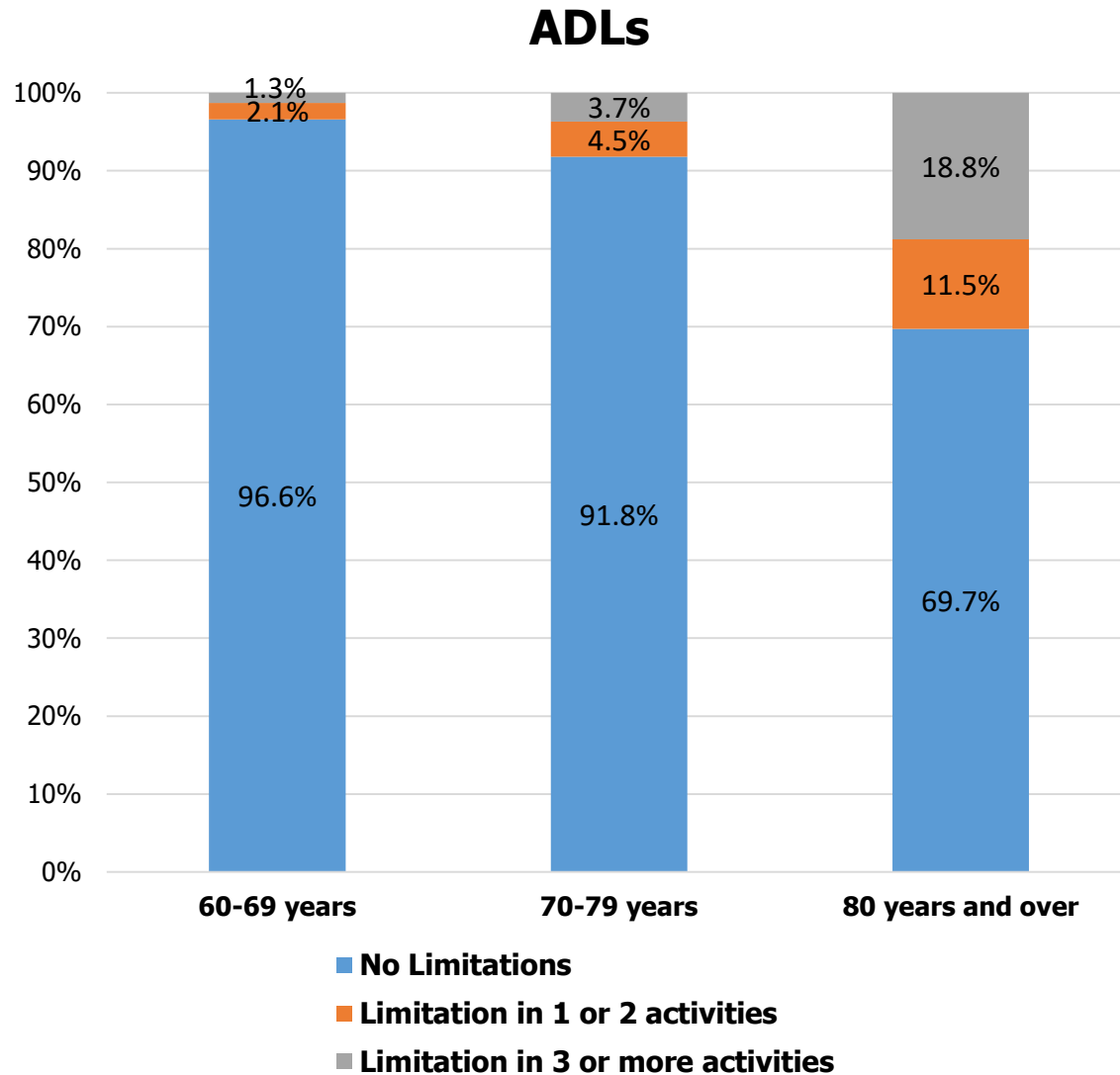- Implications for long-term care services and insurance.

How were they assessed?
"Do you find it difficult to perform this activity alone without the assistance of a person or assistive device <u>due to your health or physical state</u>?"
- 6 ADLs: take a bath/shower; dress up; eat; stand up from a bed/chair or sitting down on a chair; walk (around the house); and use the sitting toilet.
- 7 IADLs: prepare own meals; leave the home to purchase necessary items or medication; take care of financial matters e.g. paying utilities; use the phone; dust, clean-up and other light housework; take public transport to leave home; and take medication as prescribed.

K.B. DeSalvo, V.S. Fan, M.B. McDonell, S.D. Fihn, Predicting mortality and healthcare utilization with a single question, Health Serv Res 40(4) (2005) 1234-46.
S. Wu, R. Wang, Y. Zhao, X. Ma, M. Wu, X. Yan, J. He, The relationship between self-rated health and objective health status: a population-based study, BMC Public Health 13 (2013) 320.
L. Abuladze, N. Kunder, K. Lang, S. Vaask, Associations between self-rated health and health behaviour among older adults in Estonia: a cross-sectional analysis, BMJ Open 7(6) (2017) e013257.

Functional Limitations by Age: Increase

ADLs

	60-69 years	70-79 years	80 years and over
Limitation in 3 or more activities	1.3%	3.7%	18.8%
Limitation in 1 or 2 activities	2.1%	4.5%	11.5%
No Limitations	96.6%	91.8%	69.7%

IADLs

|	60-69 years	70-79 years	80 years and over
Limitation in 3 or more activities	2.0%	7.3%	30.4%
Limitation in 1 or 2 activities	2.6%	6.9%	16.1%
No Limitations	95.4%	85.9%	53.5%

- No Limitations
- Limitation in 1 or 2 activities
- Limitation in 3 or more activities

Number of ADL and IADL limitations increase with increasing Age
(Those aged 80 years and over especially at risk)
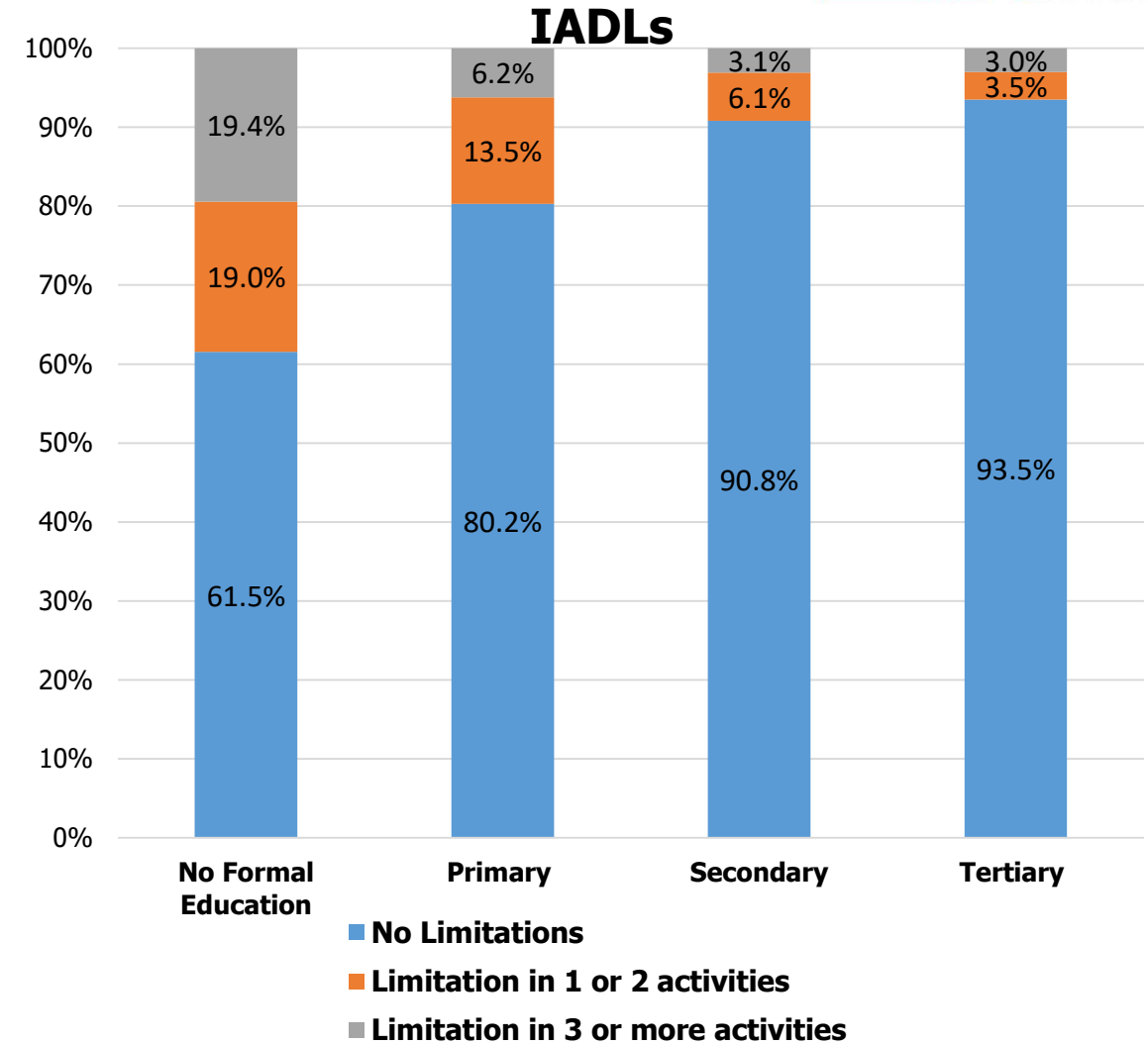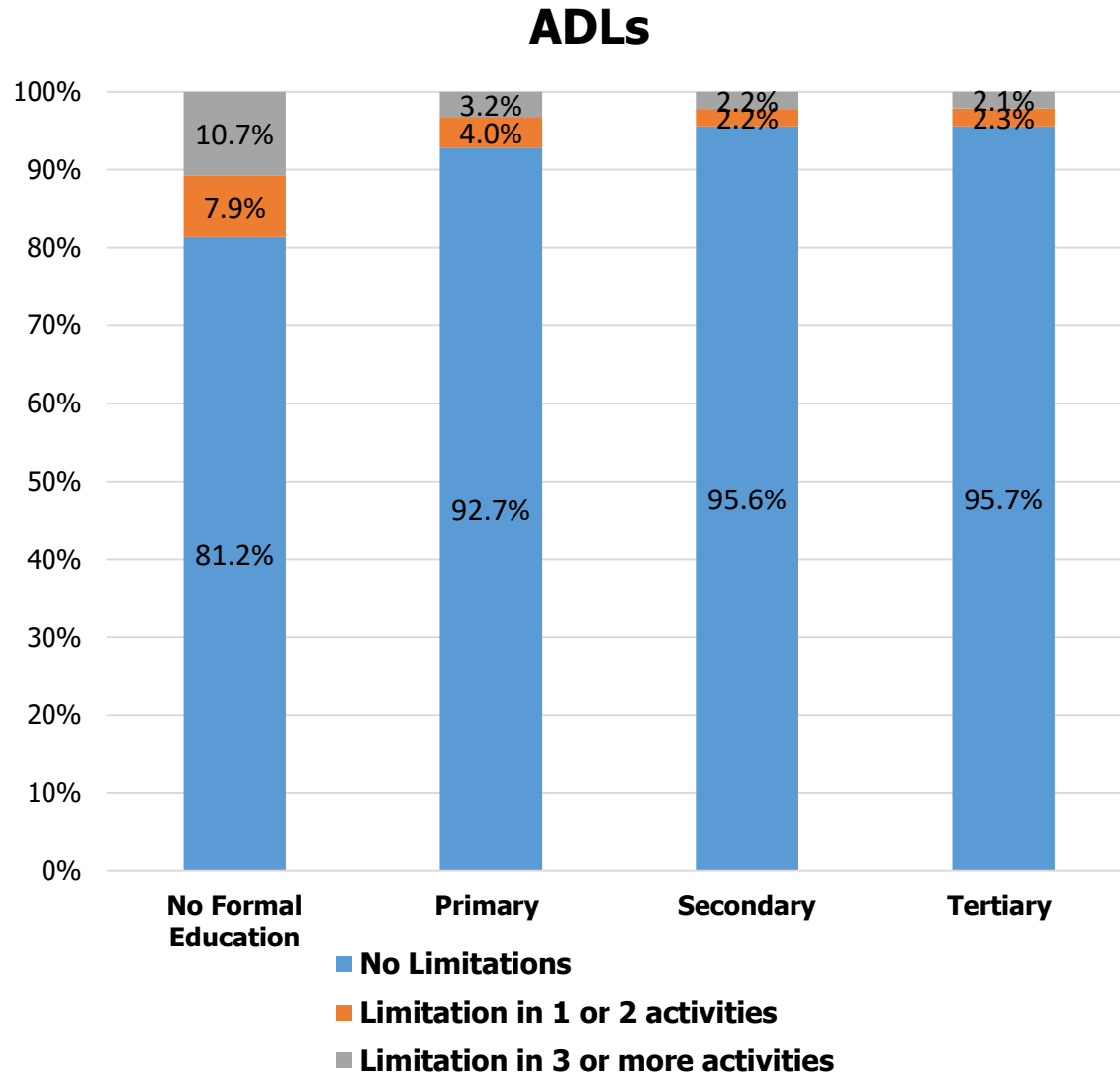
Functional Limitations by Gender: Females at risk
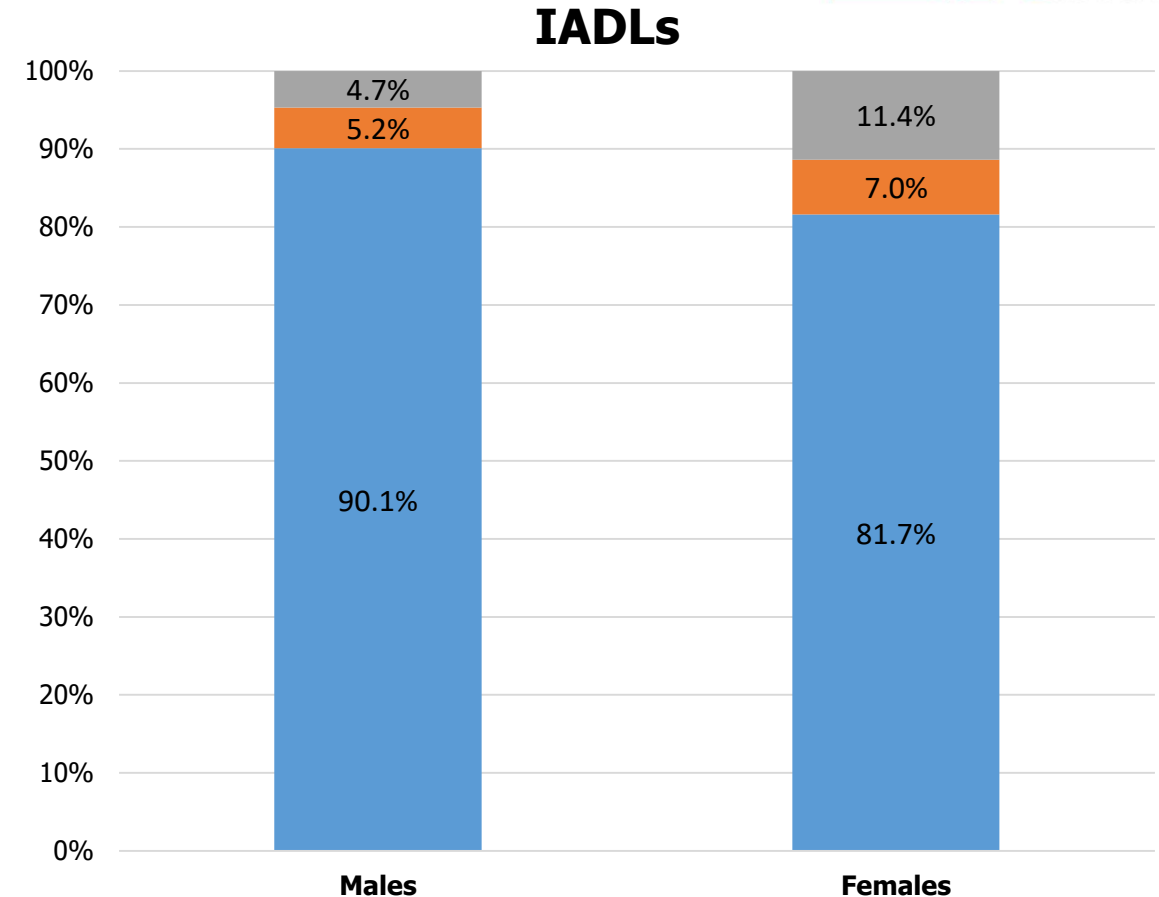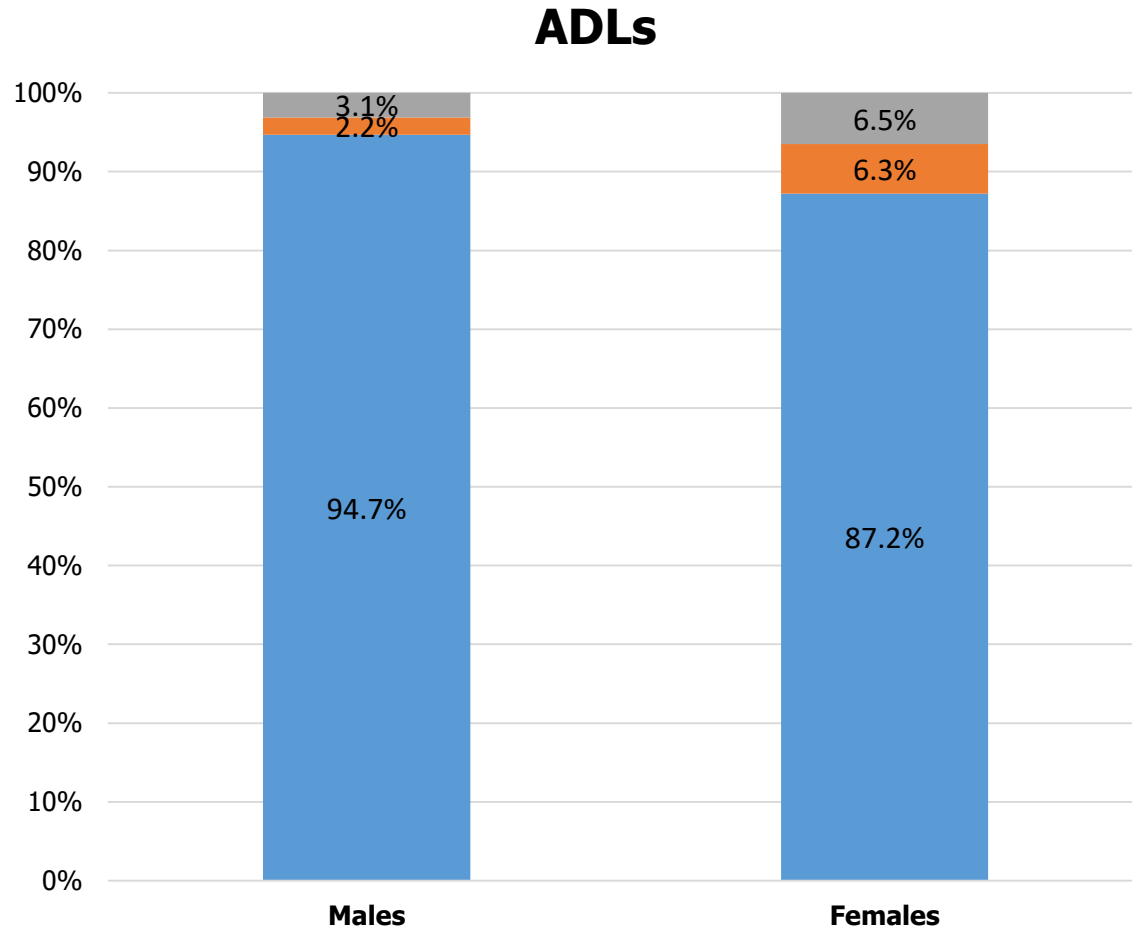
ADLs

	Males	Females
Limitation in 3 or more activities	3.1%	6.5%
Limitation in 1 or 2 activities	2.2%	6.3%
No Limitations	94.7%	87.2%

- No Limitations
- Limitation in 1 or 2 activities
- Limitation in 3 or more activities

IADLs

	Males	Females
Limitation in 3 or more activities	4.7%	11.4%
Limitation in 1 or 2 activities	5.2%	7.0%
No Limitations	90.1%	81.7%

- No Limitations
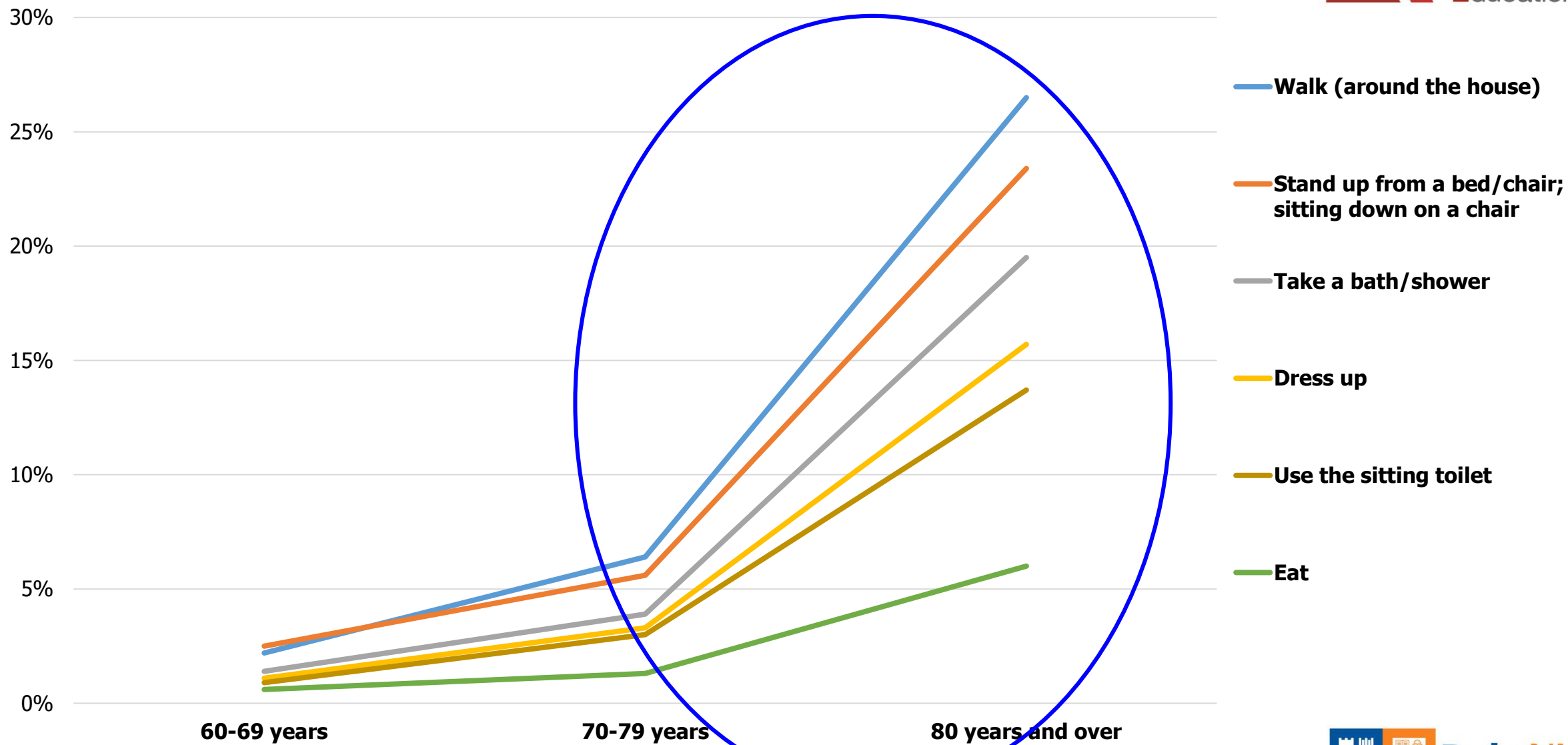- Limitation in 1 or 2 activities
- Limitation in 3 or more activities

Number of ADL and IADL limitations are <u>higher for Females</u>

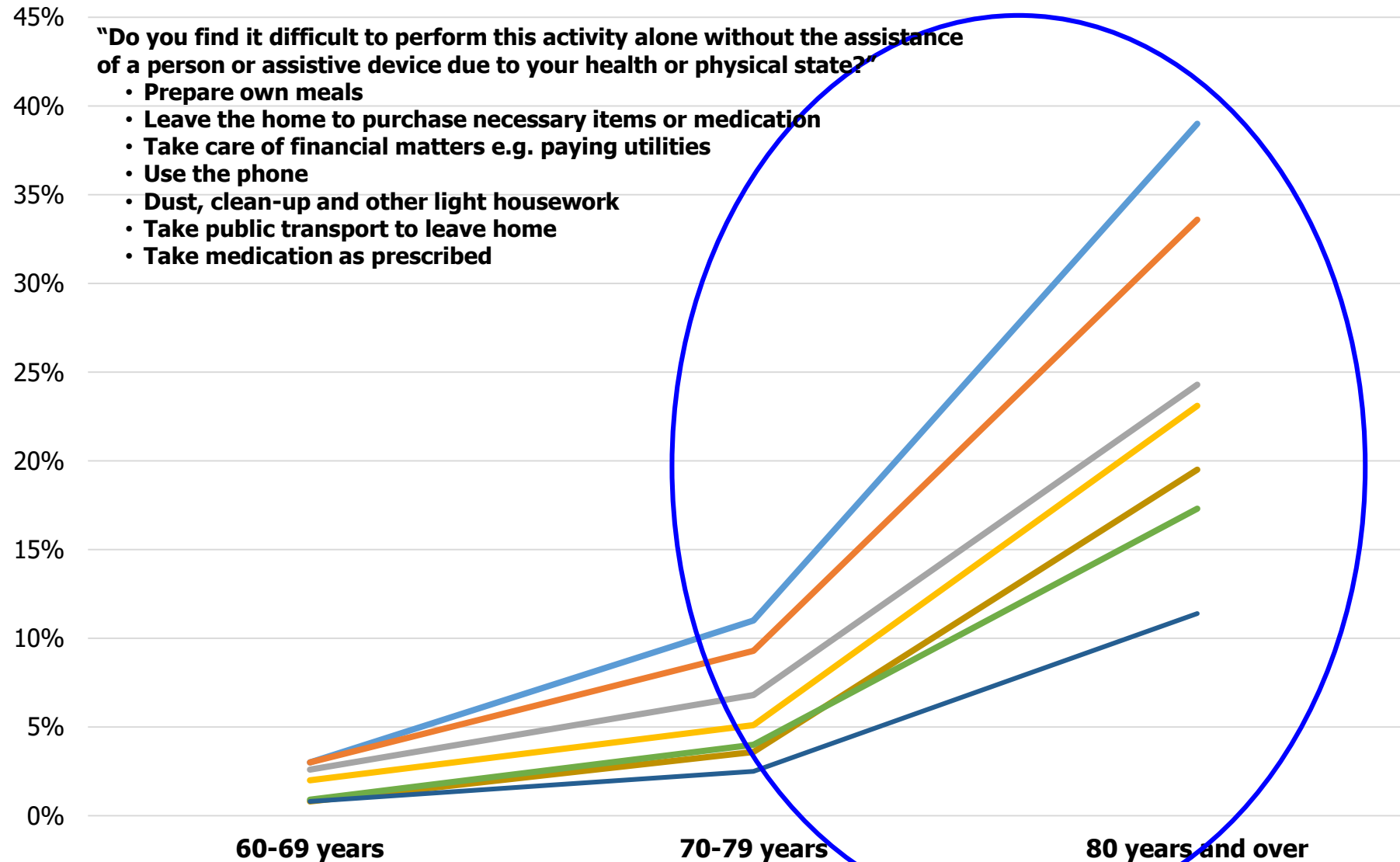# Functional Limitations by Education: Strong gradient

ADLs

Education	No Limitations	Limitation in 1 or 2 activities	Limitation in 3 or more activities
No Formal Education	81.2%	7.9%	10.7%
Primary	92.7%	4.0%	3.2%
Secondary	95.6%	2.2%	2.2%
Tertiary	95.7%	2.3%	2.1%

IADLs

Education	No Limitations	Limitation in 1 or 2 activities	Limitation in 3 or more activities
No Formal Education	61.5%	19.0%	19.4%
Primary	80.2%	13.5%	6.2%
Secondary	90.8%	6.1%	3.1%
Tertiary	93.5%	3.5%	3.0%

- No Limitations
- Limitation in 1 or 2 activities
- Limitation in 3 or more activities

Educational gradient: Number of ADL and IADL limitations increase with lower Education

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Limitation in Individual ADLs by Age

Legend:
- Walk (around the house)
- Stand up from a bed/chair; sitting down on a chair
- Take a bath/shower
- Dress up
- Use the sitting toilet
- Eat

X-axis: 60-69 years | 70-79 years | 80 years and over

Y-axis: 0% to 30%

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Limitation in Individual IADLs by Age

"Do you find it difficult to perform this activity alone without the assistance of a person or assistive device due to your health or physical state?"
- **Prepare own meals**
- **Leave the home to purchase necessary items or medication**
- **Take care of financial matters e.g. paying utilities**
- **Use the phone**
- **Dust, clean-up and other light housework**
- **Take public transport to leave home**
- **Take medication as prescribed**

Chronic Health Conditions (Self-reported)

Why assess chronic health conditions?

- Affect the nature of healthcare provided.

- Reflect lifelong health behaviors.

How were they assessed?
"Have you ever been diagnosed by a medical professional with: list of 20 health conditions (heart attack/angina/myocardial infarction; heart failure; other forms of heart diseases; cancer; cerebrovascular disease; high blood pressure/hypertension; high blood sugar/diabetes; high blood cholesterol or lipids; chronic respiratory illness; chronic back pain; joint pain/arthritis/rheumatism/nerve pain; osteoporosis; glaucoma; age-related macular degeneration; autoimmune disorder; chronic skin conditions; epilepsy; thyroid disorders; migraine; and Parkinson's disease)"

Prevalence of Chronic Health Conditions
(N=4549, weighted %)
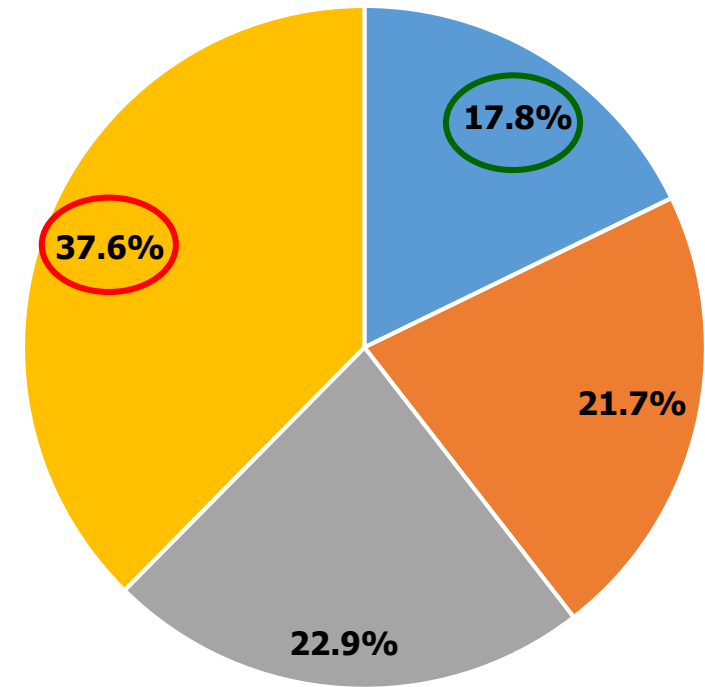
- ■ No chronic health condition
- ■ 1 chronic health condition
- ■ 2 chronic health conditions
- ■ ≥3 chronic health conditions

17.8%
21.7%
22.9%
37.6%

Institute of Medicine (US). Committee on Living Well with Chronic Disease: Public Health Action to Reduce Disability and Improve Functioning and Quality of Life. Living well with chronic illness: A call for public health action. National Academies Press; 2012.

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Chronic Health Conditions (Self-reported) by Age and Gender
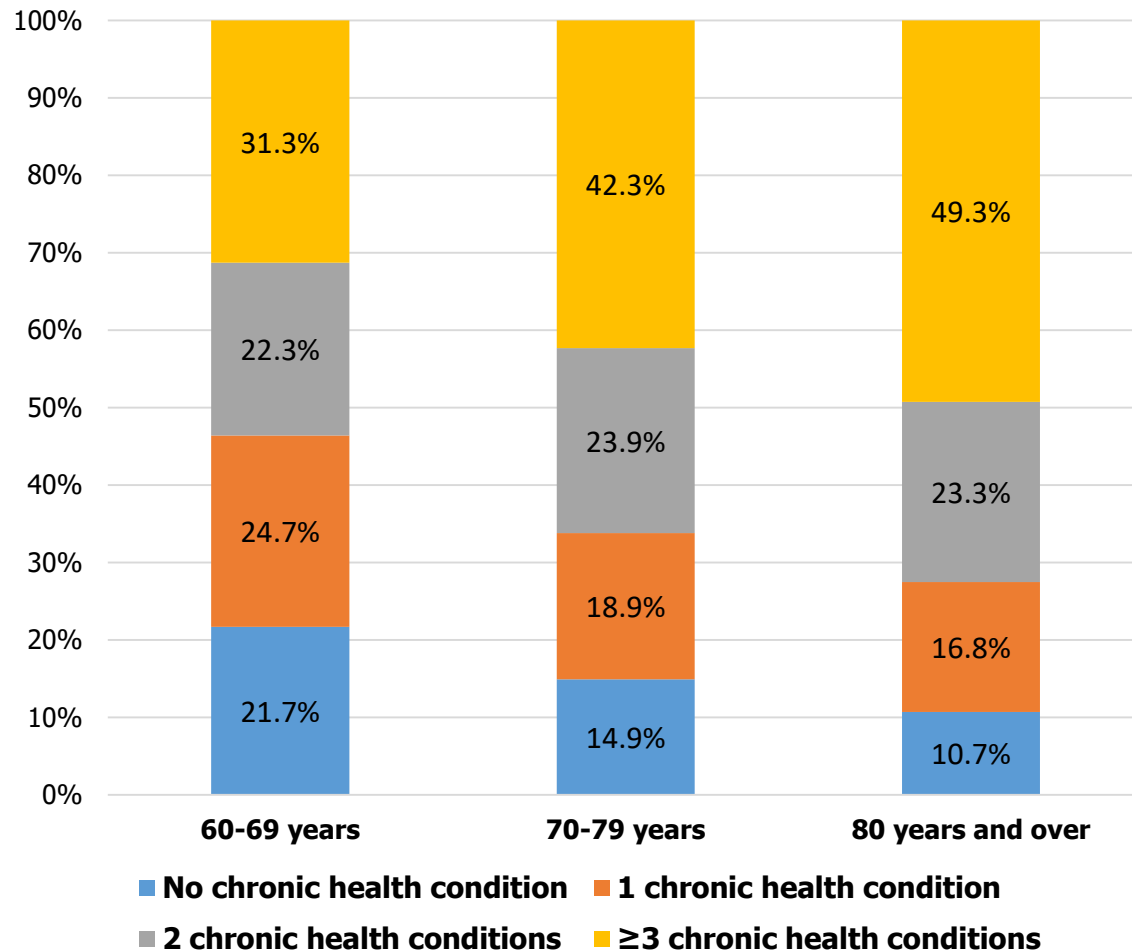
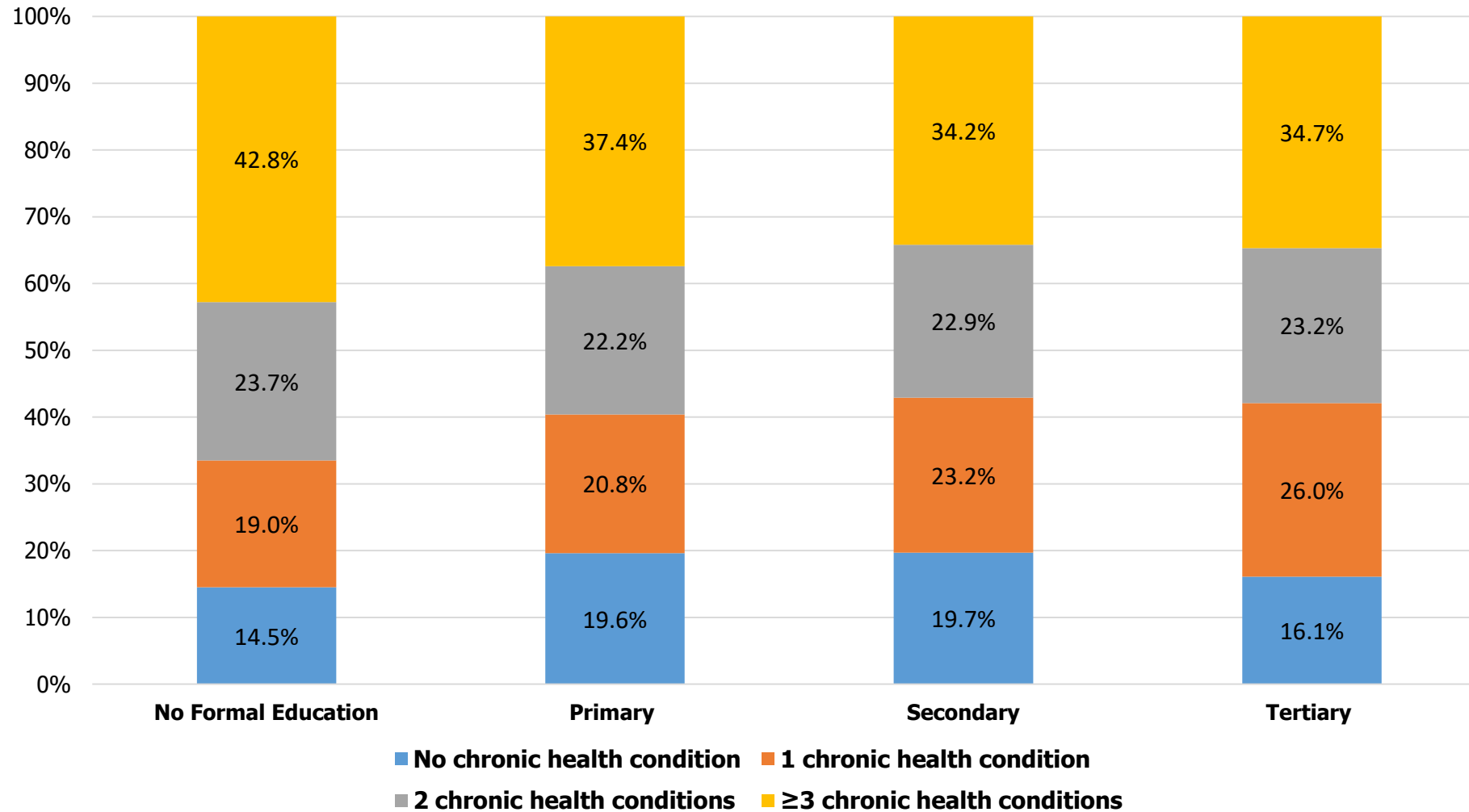
Number of conditions **increase with increasing Age**
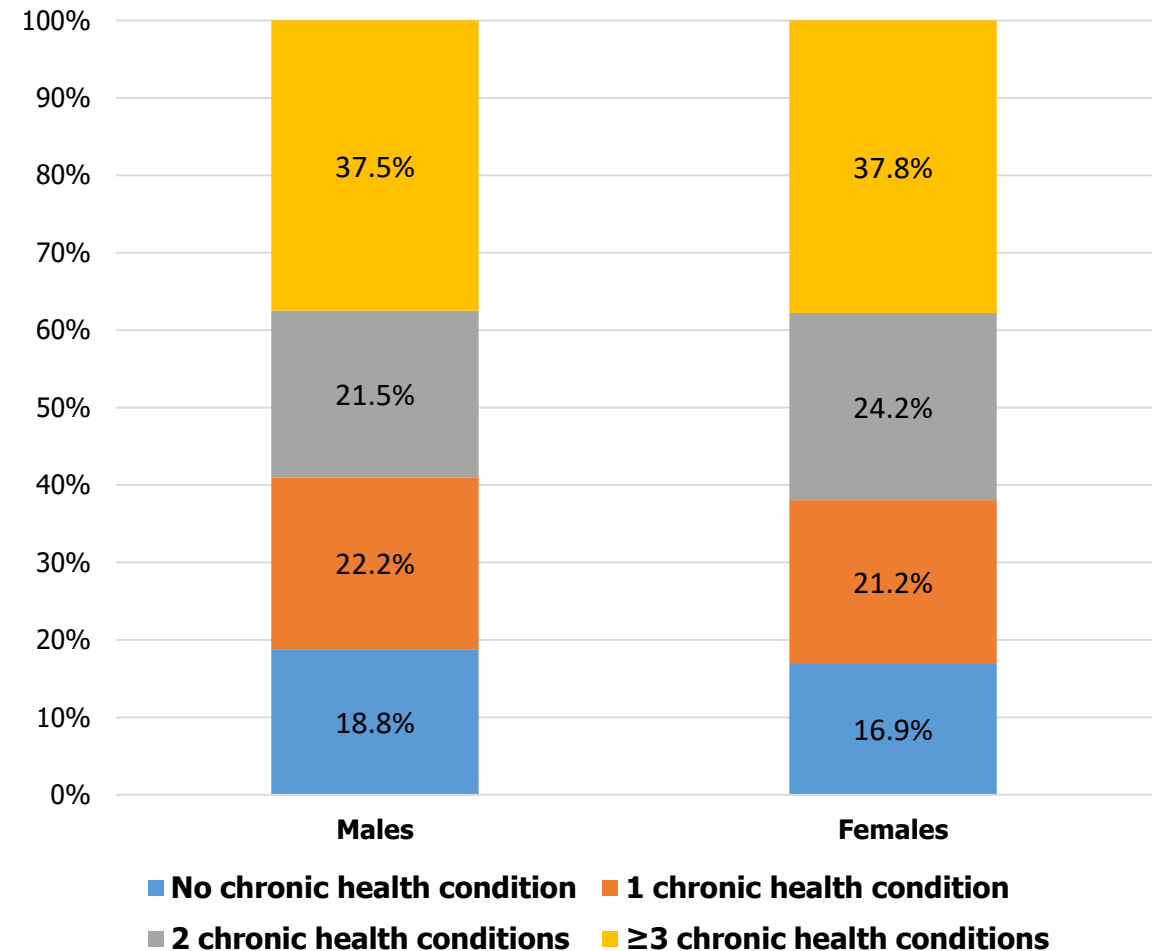
No difference by Gender

Chronic Health Conditions (Self-reported) by Education

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No difference by Education *(Educational gradient explained by Age)*

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Body Mass Index (BMI)

Why is BMI important?

- Risk factor for chronic diseases.

- Linked with life expectancy and health expectancy.

Prevalence of BMI Categories
(N=3854, weighted %)

6.6%
9.3%
30.2%
53.9%

- Underweight
- Normal Weight
- Pre-Obesity
- Obesity

How was it assessed?
- Using **measured** weight (in kg) and height (in meters)
- BMI = Weight (kg) / [Height (m)]^2
- Categorized using the World Health Organization **international** classification for adults: Underweight (BMI ≤18.5 kg/m^2), Normal Weight (BMI: 18.5-24.9), Pre-Obesity (BMI: 25-29.9) and Obesity (BMI ≥30.0)
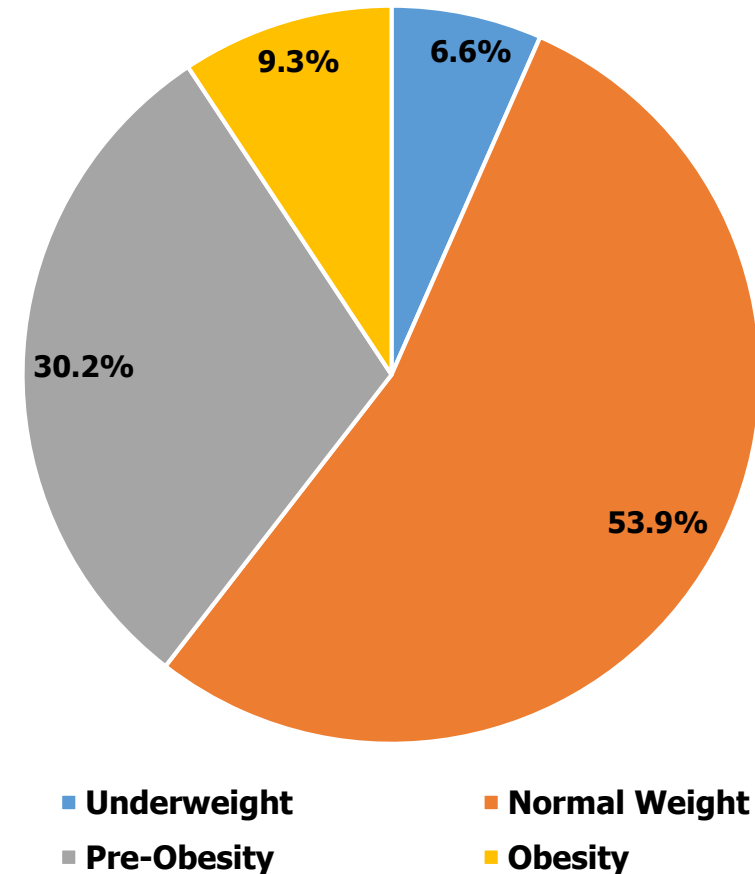
Samper-Ternent, R., & Al Snih, S. (2012). Obesity in Older Adults: Epidemiology and Implications for Disability and Disease. Reviews in Clinical Gerontology, 22(1), 10-34.
Stenholm, S., Head, J., Aalto, V., Kivimäki, M., Kawachi, I., Zins, M., . . . Vahtera, J. (2017). Body mass index as a predictor of healthy and disease-free life expectancy between ages 50 and 75: a multicohort study. International Journal of Obesity, 41(5), 769-775.
Tayback, M., Kumanyika, S., & Chee, E. (1990). Body Weight as a Risk Factor in the Elderly. Archives of Internal Medicine, 150(5), 1065-1072.
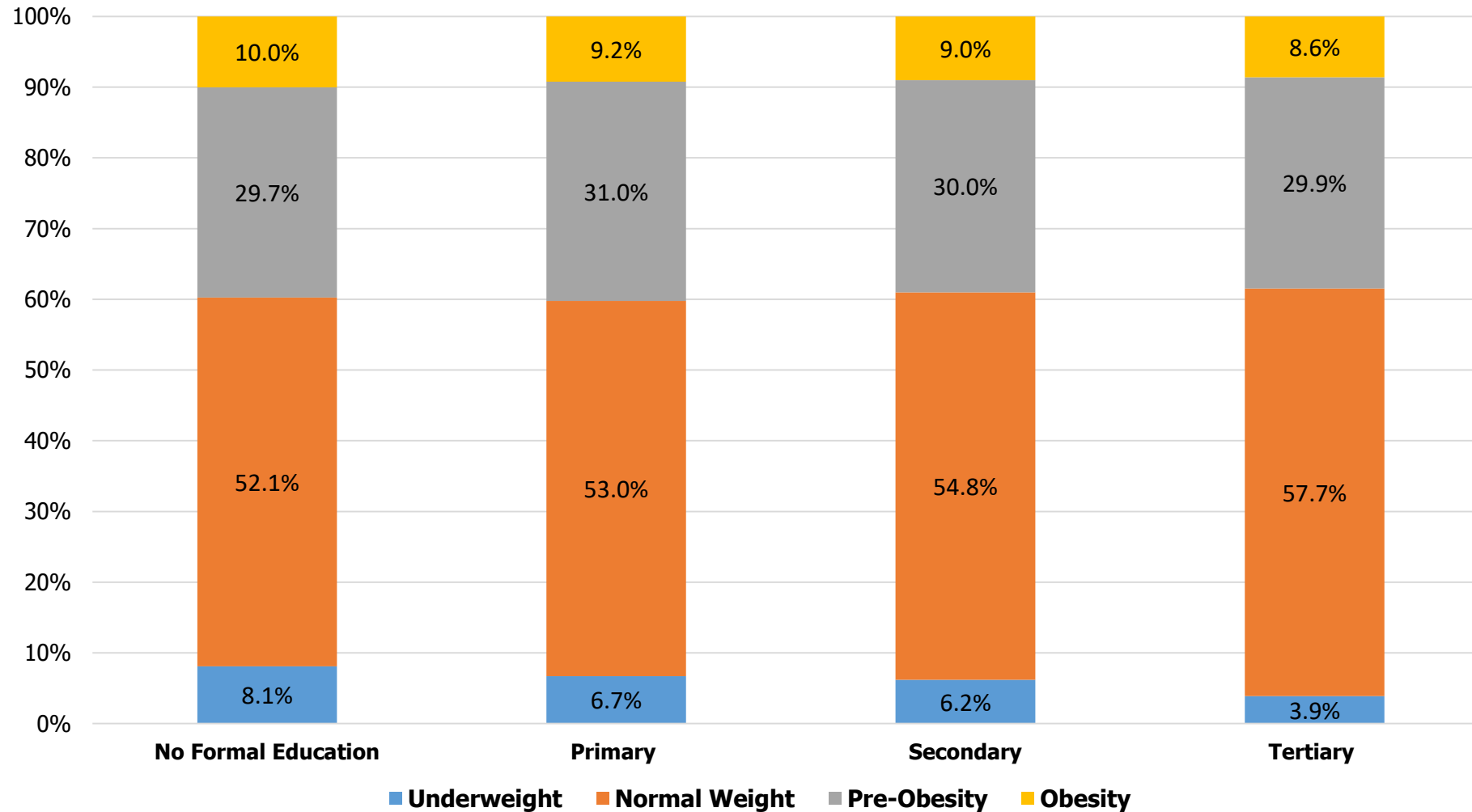
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BMI Categories by Age and Gender
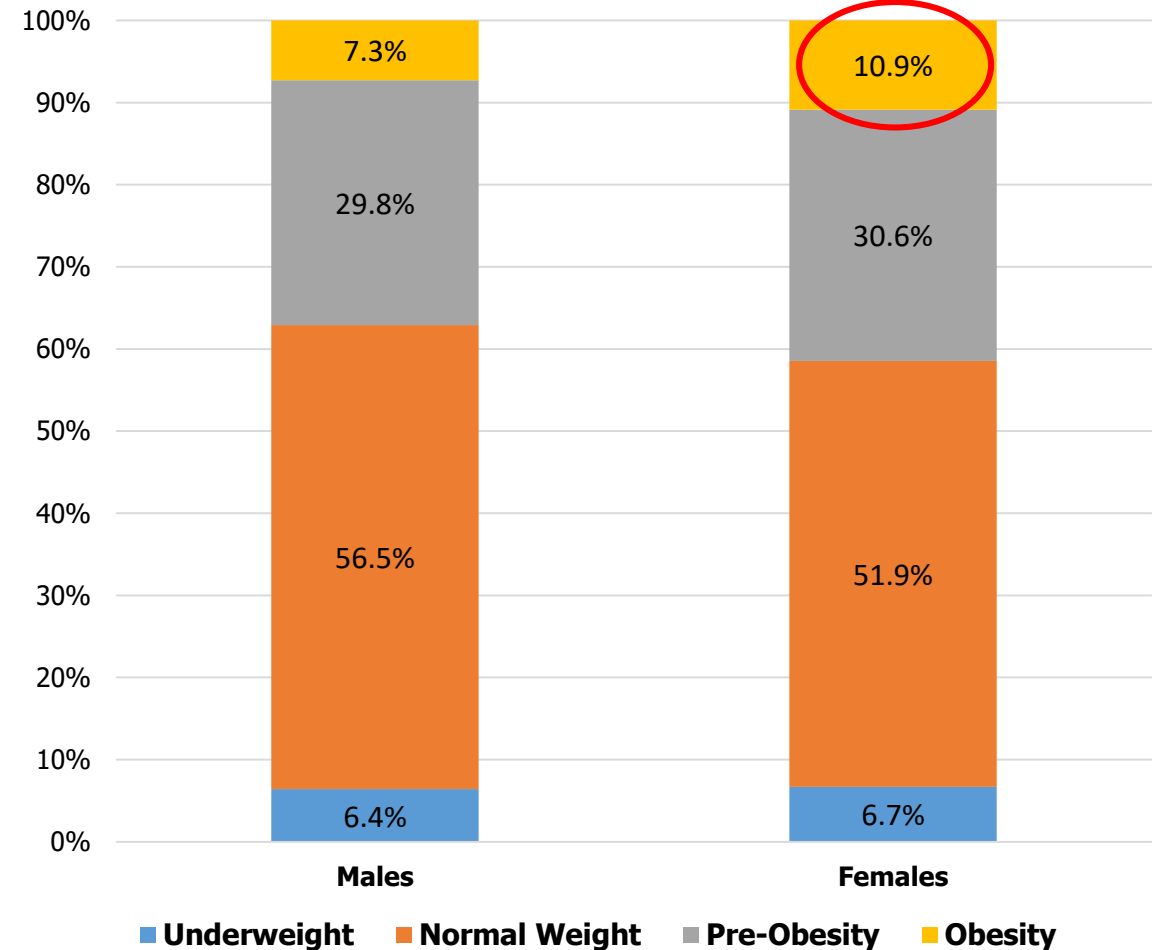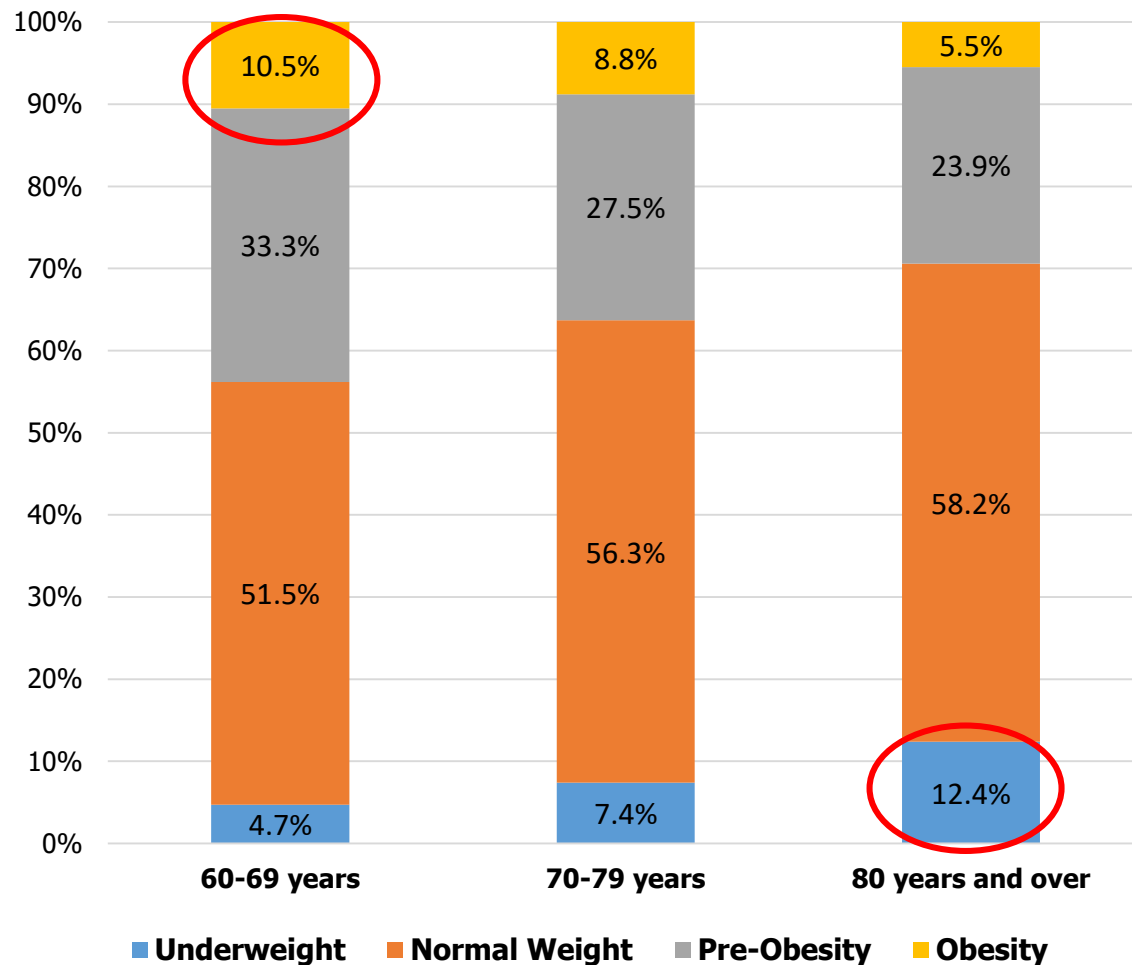
With **increasing Age**, there is an
increase in the likelihood of having **Underweight**, and
decrease in the likelihood of having **Pre-Obesity or Obesity**
(vs. Normal Weight)

Females are **more** likely to have Obesity (vs. Normal Weight)

Health Behaviors

- Physical Activity

- Cancer Screening

Sufficient Physical Activity Levels
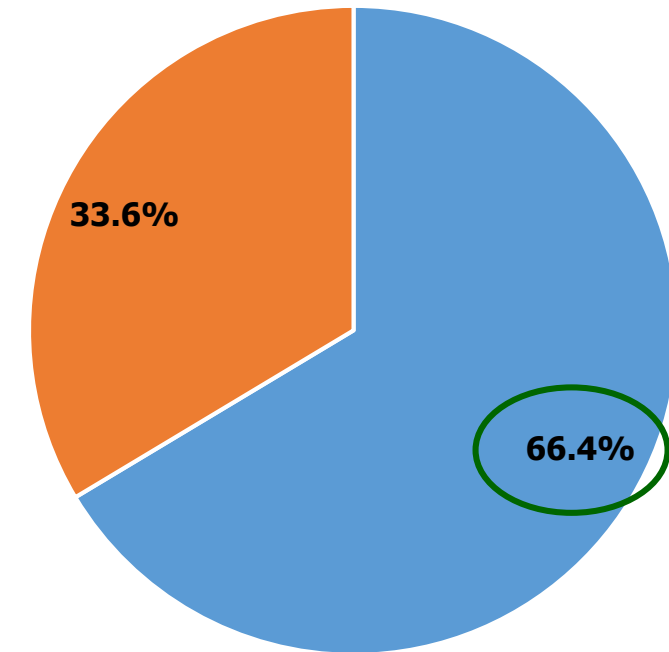
Why assess physical activity levels in the elderly?

- Lower levels of physical activity are associated with a higher incidence of diseases and premature mortality.

How was it assessed?
- WHO Global Physical Activity Questionnaire (GPAQ).
- GPAQ assesses time spent in a typical week in vigorous and moderate activities at work and leisure, as well as during travel and sedentary behaviour.
- Respondents whose total physical activity Metabolic Equivalent (MET) minutes per week were ≥600 were classified as meeting the WHO recommendation on physical activity for health ~ sufficient physical activity level.
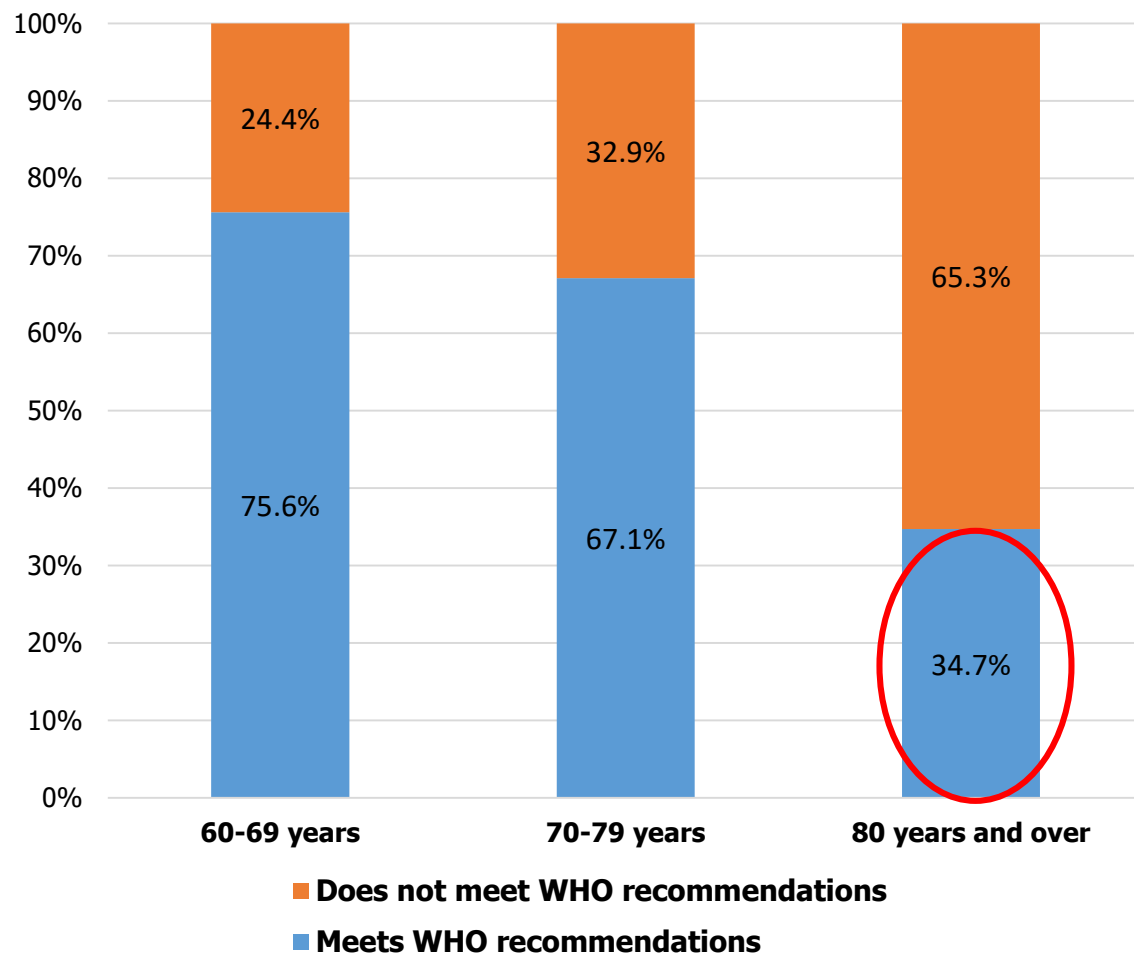
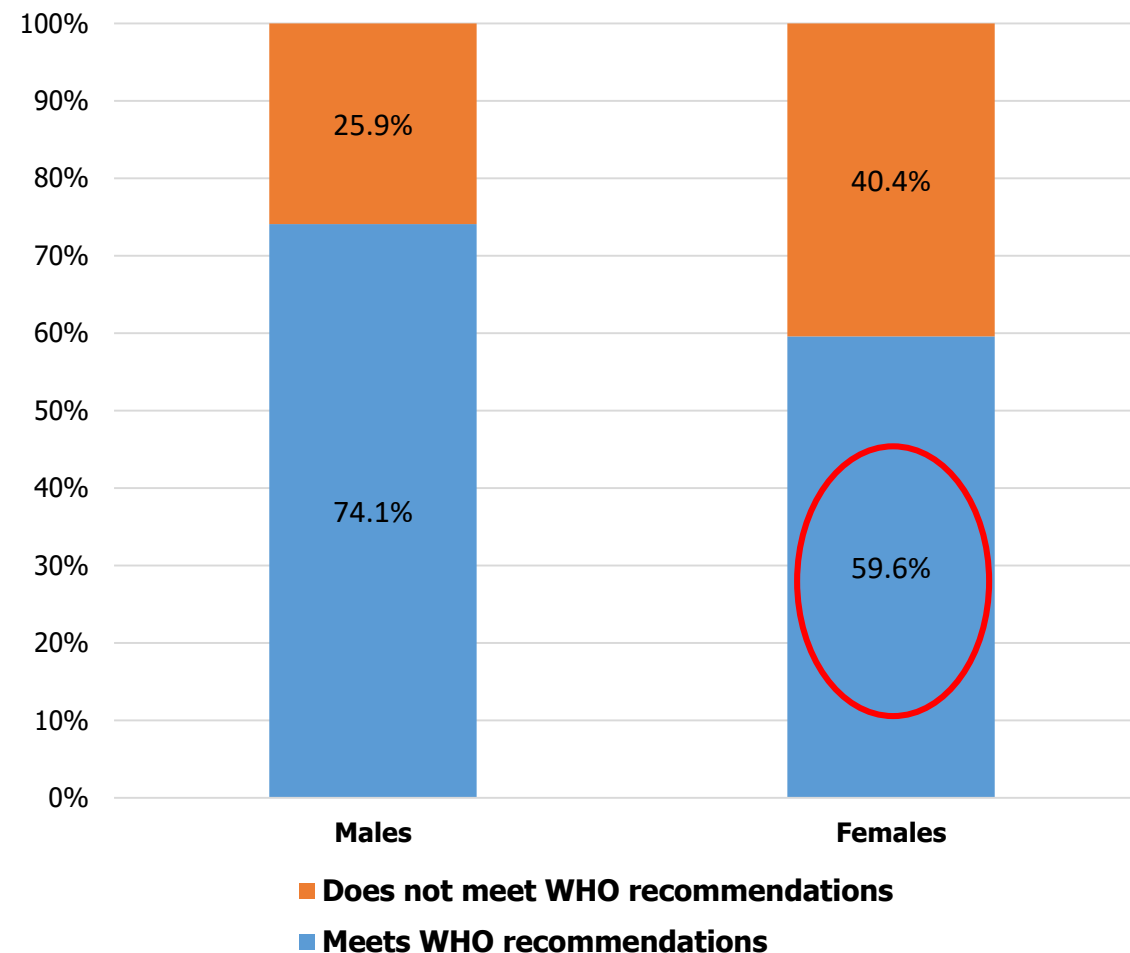**Prevalence of Sufficient Physical Activity Levels**
(N=2240, weighted %)

33.6%

66.4%

■ **Meets WHO recommendations**

■ **Does not meet WHO recommendations**

World Health Organization. Global Physical Activity Questionnaire (GPAQ): Analysis Guide. Geneva: World Health Organization. Available at https://www.who.int/ncds/surveillance/steps/GPAQ/en/.
I.M. Lee, E.J. Shiroma, F. Lobelo, P. Puska, S.N. Blair, P.T. Katzmarzyk, G. Lancet Physical Activity Series Working, Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy, Lancet 380(9838) (2012) 219-29.

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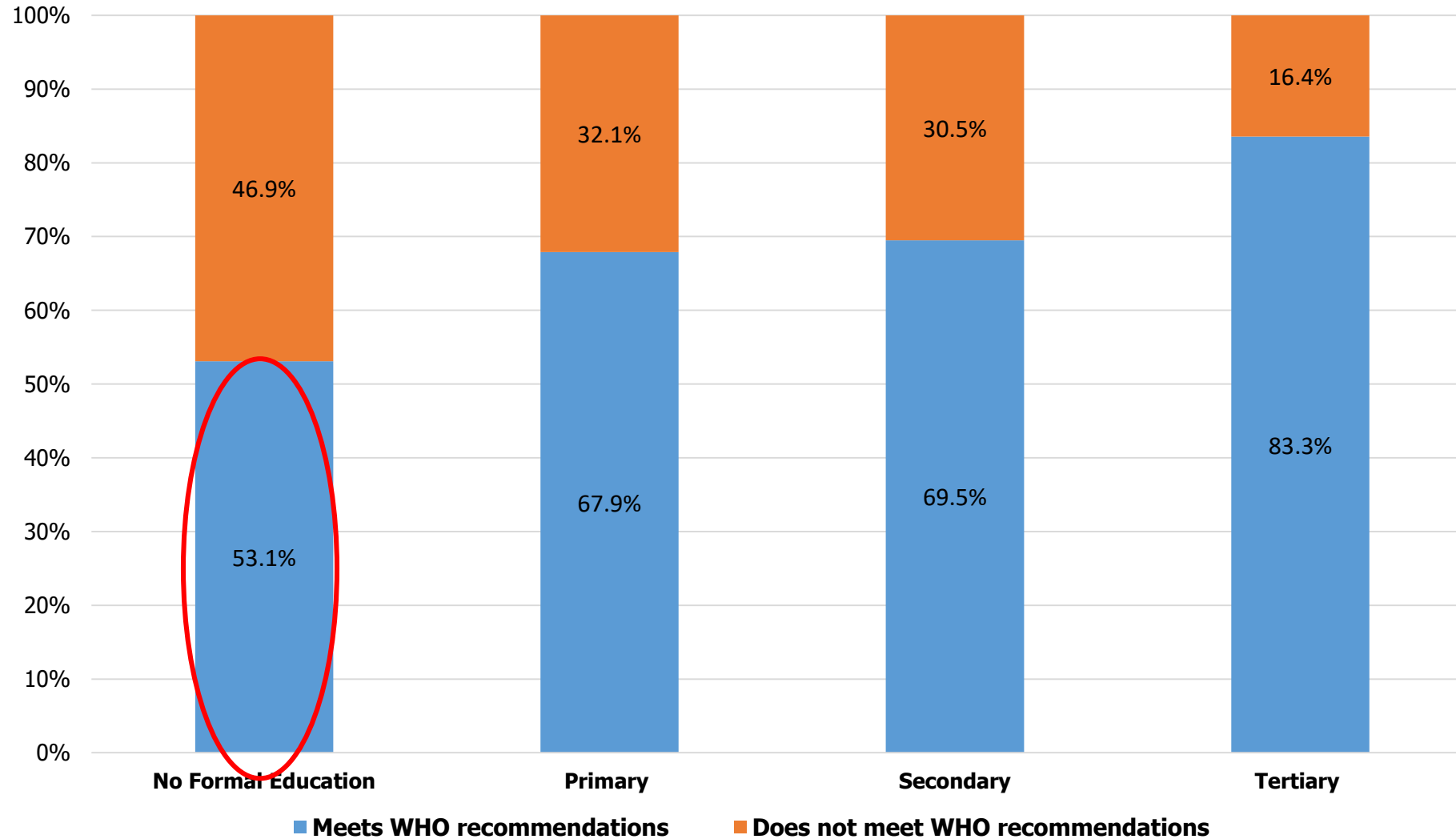# Sufficient Total Physical Activity Levels by Age and Gender

Likelihood of Sufficient Physical Activity <u>declines with increasing Age</u>

<u>Females</u> are <u>less likely</u> to have Sufficient Physical Activity

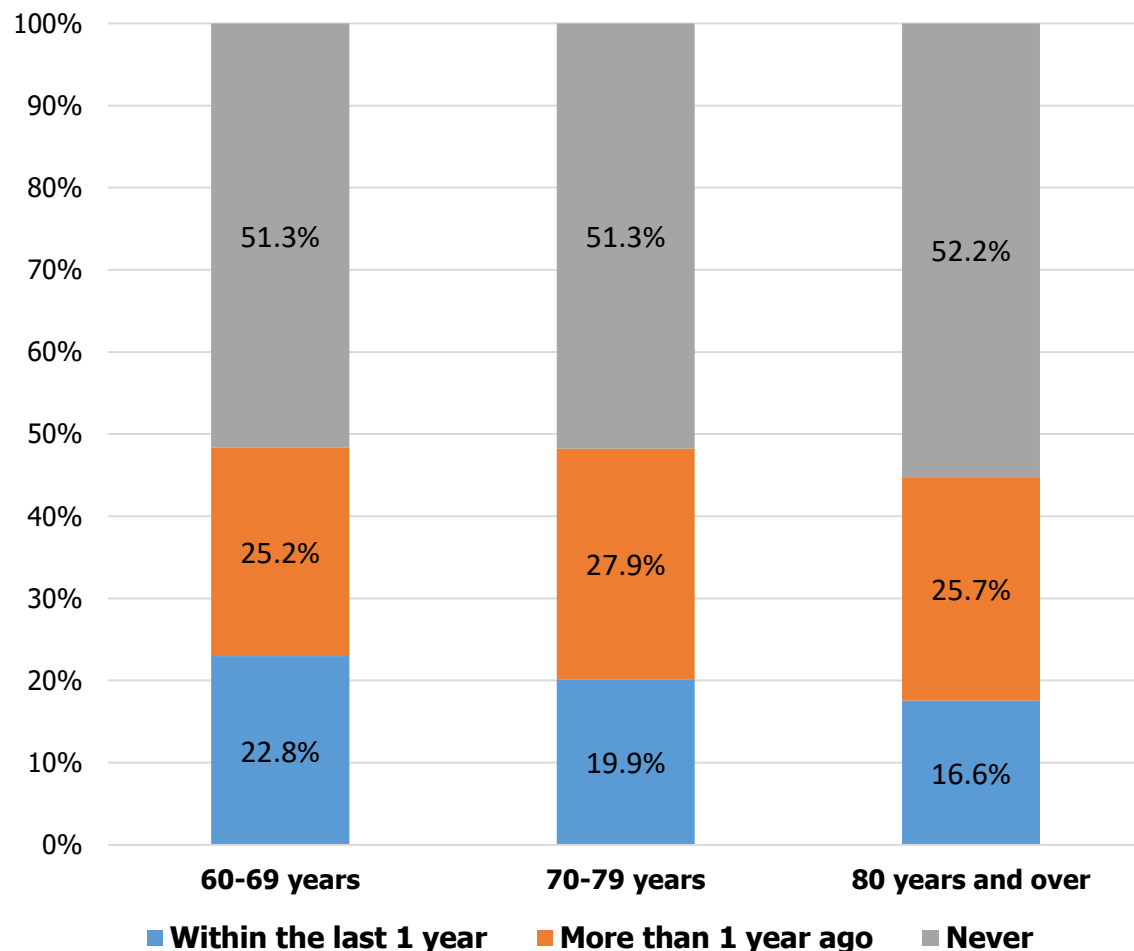# Cancer Screening

Why study cancer screening behaviour?

- Key strategy for cancer control.

- Prevents the development of complications early and increases survival rates.

How was it assessed?

- "The next few questions are about your participation in health screening programs."

  - *Colorectal Cancer Screening:* "A blood stool test is a test to determine whether the stool contains blood. How long has it been since you had your last blood stool test? "

  - *Pap Smear:* "A Pap smear test is a simple test involving the scrapping of cells from the mouth of the womb to detect cervical cancer. How long ago did you have your last Pap smear test done?"

  - *Mammogram:* "A mammogram is an X-ray of each breast to look out for breast cancer. How long has it been since you had your last mammogram? "

Jamison DT, Breman JG, Measham AR, et al., editors. Priorities in Health. Washington (DC): The International Bank for Reconstruction and Development / The World Bank; 2006. Chapter 5, Cost-Effective Strategies for Noncommunicable Diseases, Risk Factors, and Behaviors. Available from: https://www.ncbi.nlm.nih.gov/books/NBK10246/
Weller DP, Patnick J, Mcintosh HM, Dietrich AJ. Uptake in cancer screening programmes. Lancet Oncol 2009;10:693-9.
Thorpe KE. Chronic disease management and prevention in the US: the missing links in healthcare reform. Eurohealth 2009;15:5-7.
Wong HZ, Lim WY, Ma SS, Chua LA, Heng DM. Health Screening Behaviour among Singaporeans. Ann Acad Med Singapore. 2015;44(9):326-334.

Colorectal Cancer Screening (Blood Stool Test) Uptake

Prevalence of Colorectal Cancer Screening
(N=2277, weighted %)

20.9%

51.5%

26.1%

■ Within the last 1 year   ■ More than 1 year ago
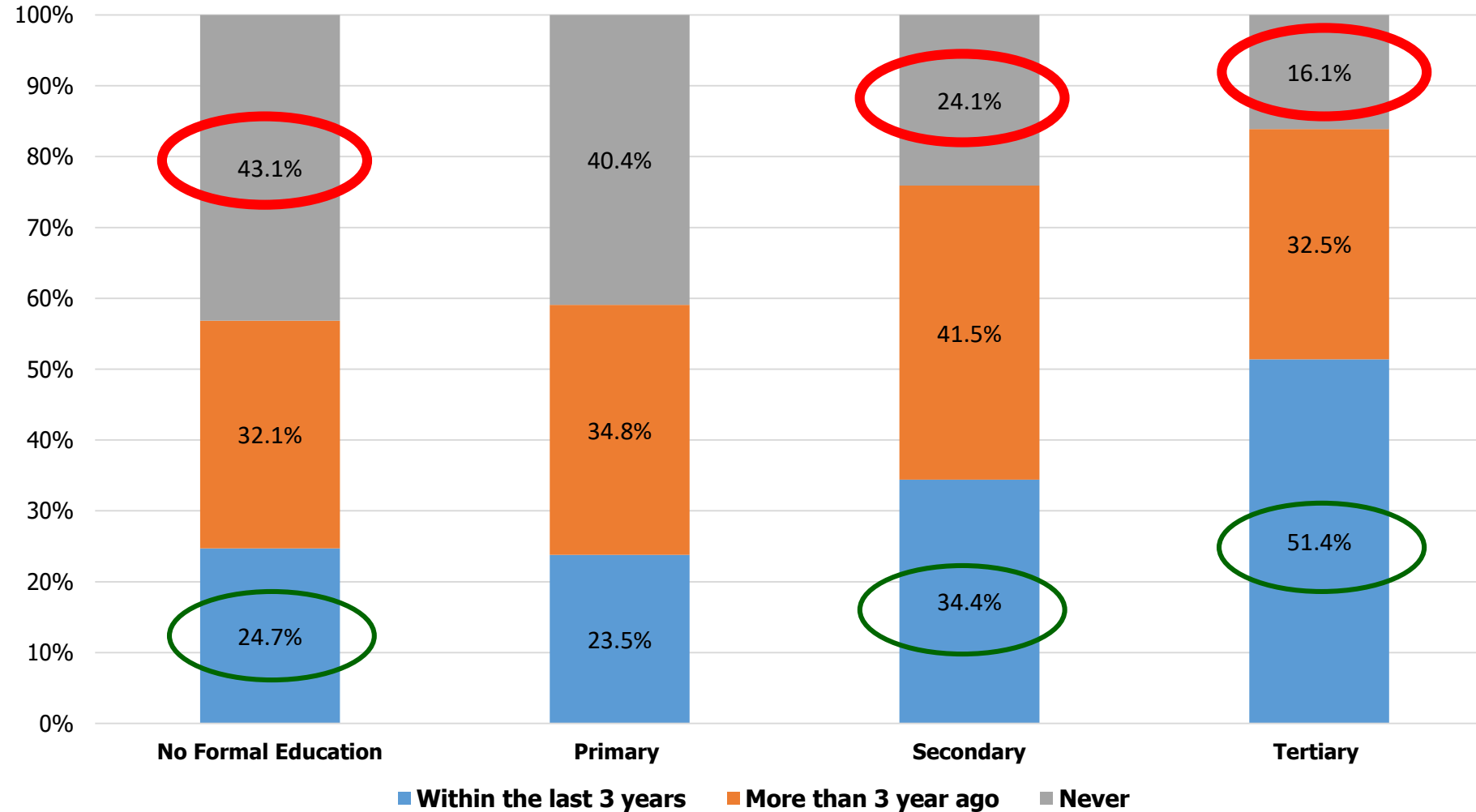■ Never
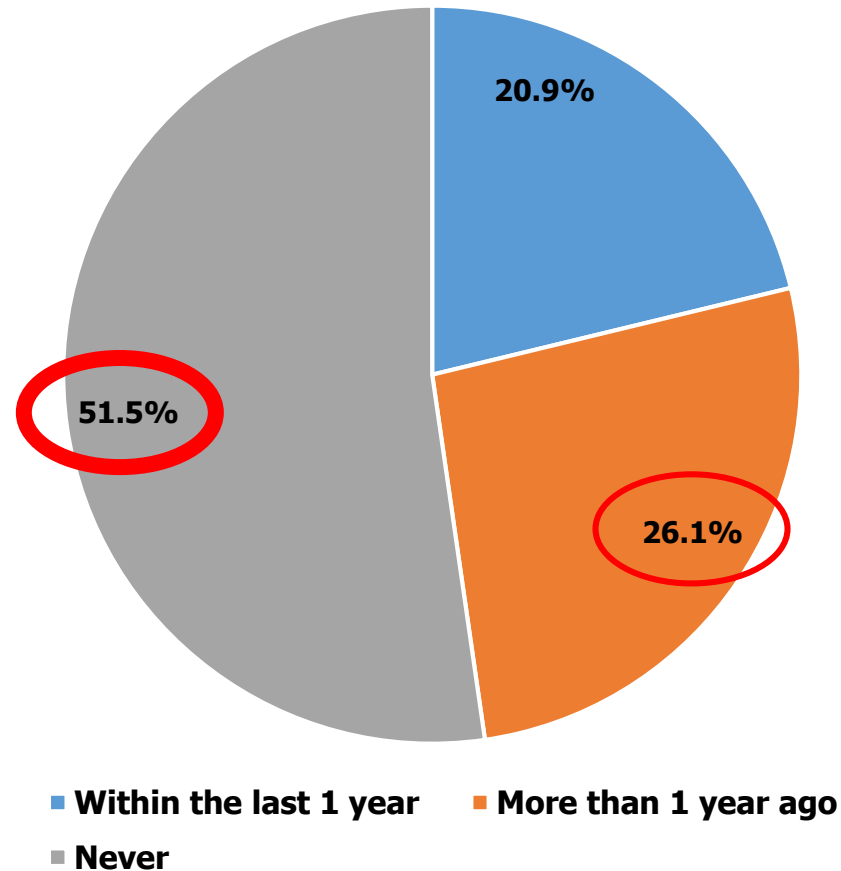
Colorectal Screening Uptake (Blood Stool Test) by Education
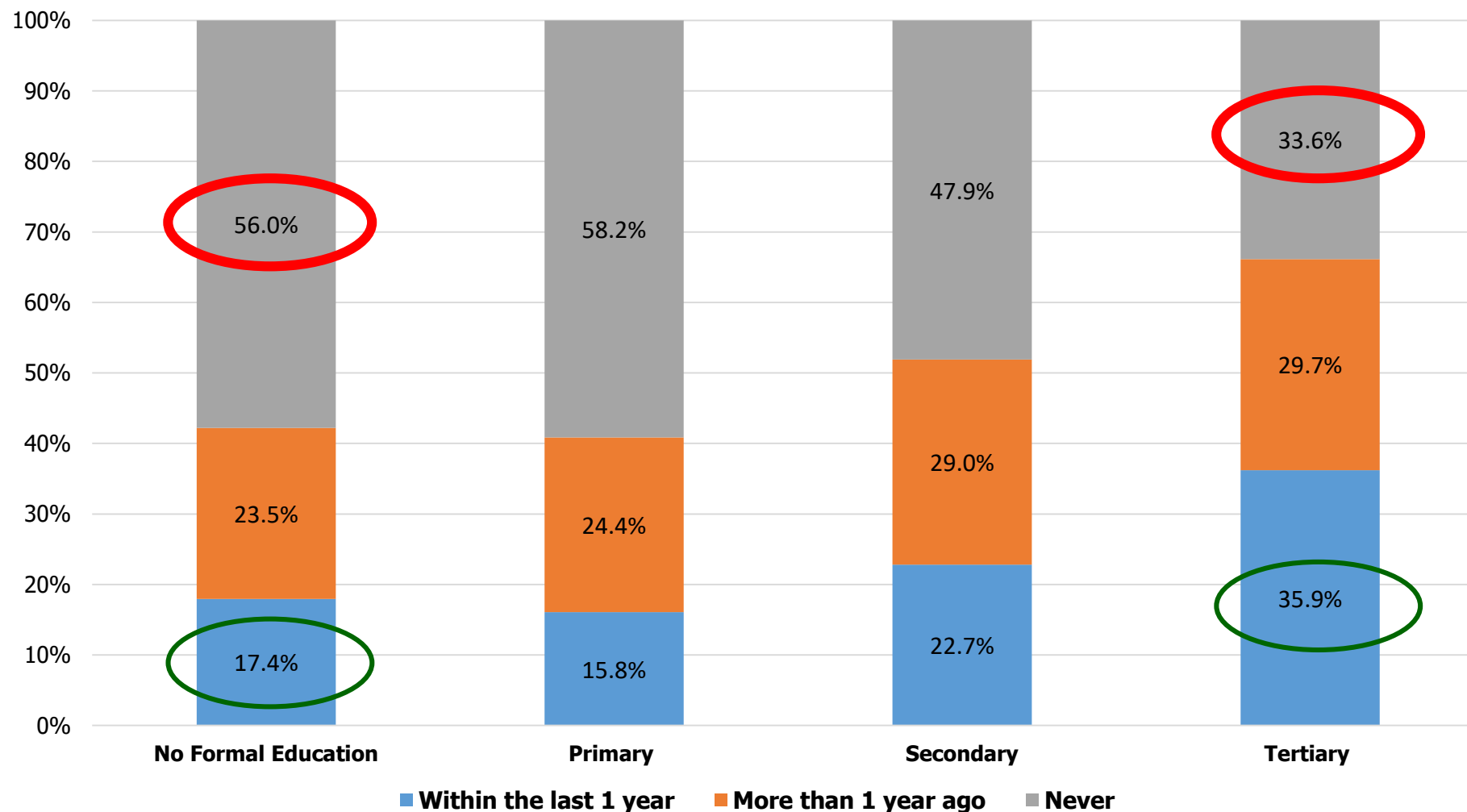
Those with No Formal education (vs. Tertiary Education) **are** *less* **likely to have the screening in accordance with the recommendations and** *more* **likely to have never been screened**

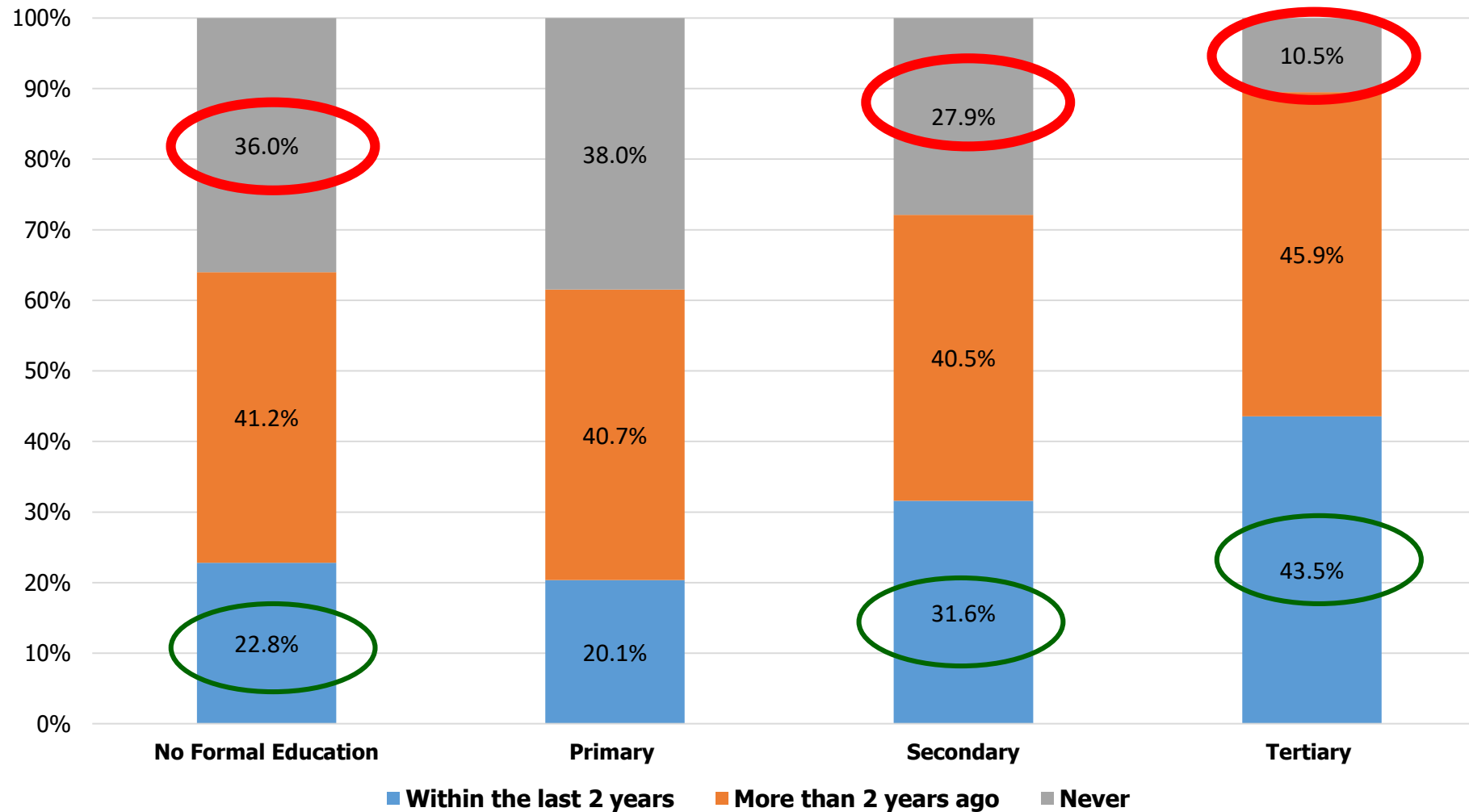# Cervical Cancer (Pap Smear) Screening Uptake by Education

(Females aged 60-69)

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Education

No Formal Education
- Never: 43.1%
- More than 3 year ago: 32.1%
- Within the last 3 years: 24.7%

Primary
- Never: 40.4%
- More than 3 year ago: 34.8%
- Within the last 3 years: 23.5%

Secondary
- Never: 24.1%
- More than 3 year ago: 41.5%
- Within the last 3 years: 34.4%

Tertiary
- Never: 16.1%
- More than 3 year ago: 32.5%
- Within the last 3 years: 51.4%

Legend: ■ Within the last 3 years ■ More than 3 year ago ■ Never

Those with No Formal education (vs. Secondary or Tertiary Education) **are *less* likely to have the screening in accordance with the recommendations and *more* likely to have never been screened**

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Breast Cancer (Mammogram) Screening Uptake by Education
(Females aged 60-69)

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No Formal Education: 36.0% Never, 41.2% More than 2 years ago, 22.8% Within the last 2 years

Primary: 38.0% Never, 40.7% More than 2 years ago, 20.1% Within the last 2 years

Secondary: 27.9% Never, 40.5% More than 2 years ago, 31.6% Within the last 2 years

Tertiary: 10.5% Never, 45.9% More than 2 years ago, 43.5% Within the last 2 years

Legend:
- Within the last 2 years
- More than 2 years ago
- Never

Those with No Formal education (vs. Secondary or Tertiary Education) **are** *less* **likely to have the screening in accordance with the recommendations and** *more* **likely to have never been screened**

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Psychosocial Well-Being

- Loneliness

Loneliness

Why assess Loneliness?

- Associated with healthcare utilisation.

- Linked to poor health outcomes e.g. cardiovascular disease, quality of life, functional decline and mortality.
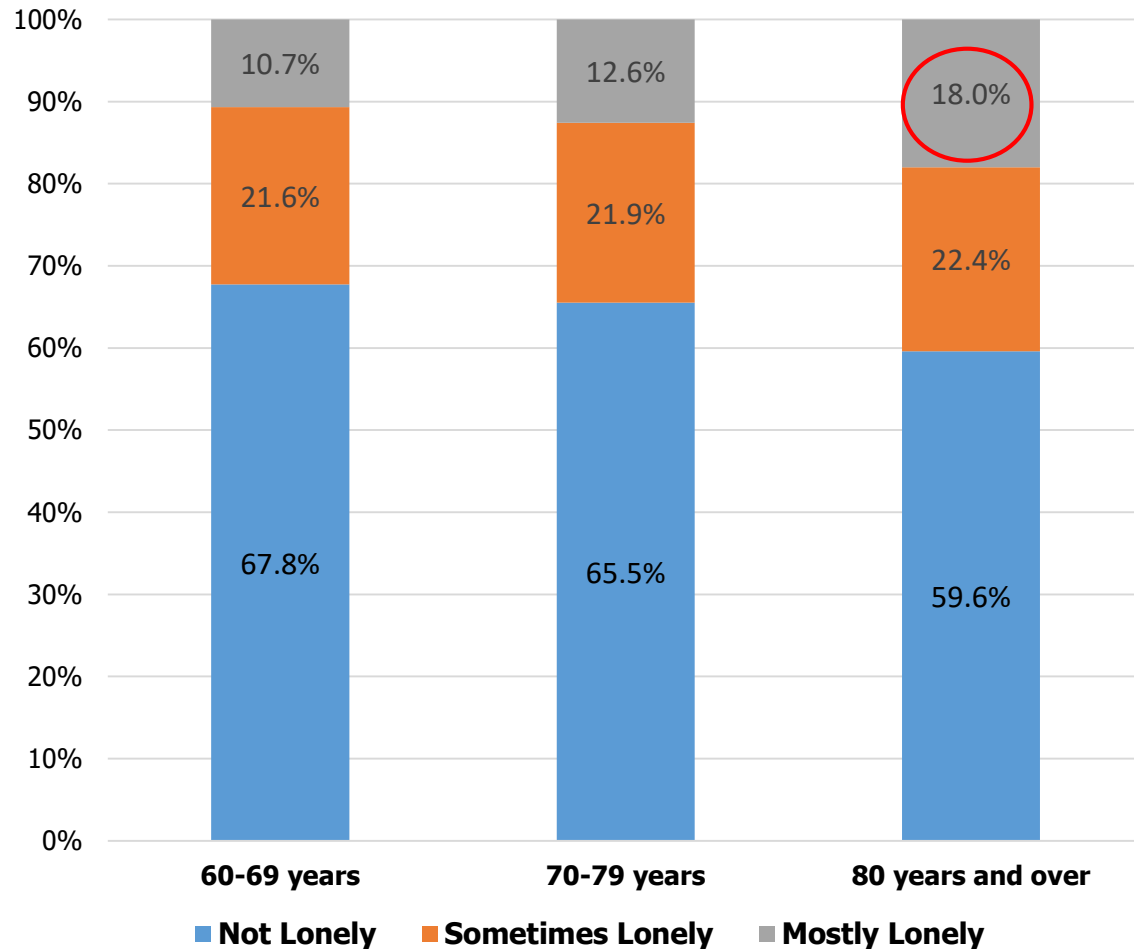
- Modifiable.

How were they assessed?
- 3-item University of California, Los Angeles (UCLA) loneliness scale.
- The participants were asked "How often do you feel you lack companionship?" "How often do you feel left out?" and "How often do you feel isolated from others?"
- Total score: 0 to 12; Classified as Not Lonely (total score = 0), Sometimes Lonely (total score = 1 to 3) and Mostly Lonely (total score = 4 or more)

Prevalence of Loneliness
(N=2030, weighted %)

- **Not Lonely** ■ **Sometimes Lonely** ■ **Mostly Lonely**

66.1%
21.8%
12.1%

Chan, A., Raman, P., Ma, S., & Malhotra, R. (2015b). Loneliness and all-cause mortality in community-dwelling elderly Singaporeans. Demographic Research, 32, 1361-1382.
Hughes ME, Waite LJ, Hawkley LC, Cacioppo JT. A Short Scale for Measuring Loneliness in Large Surveys: Results from Two Population-based Studies. Research on Aging. 2004; 26(6): 655-672.
Lim KK, Chan A. Association of loneliness and healthcare utilisation among older adults in Singapore. Geriatr Gerontol Int. 2017;17(11):1789-1798.
Gerst-Emerson K, Jayawardhana J. Loneliness as a public health issue: the impact of loneliness on health care utilisation among older adults. Am J Public Health. 2015;105(5):1013-1019.

Loneliness Status by Age and Gender
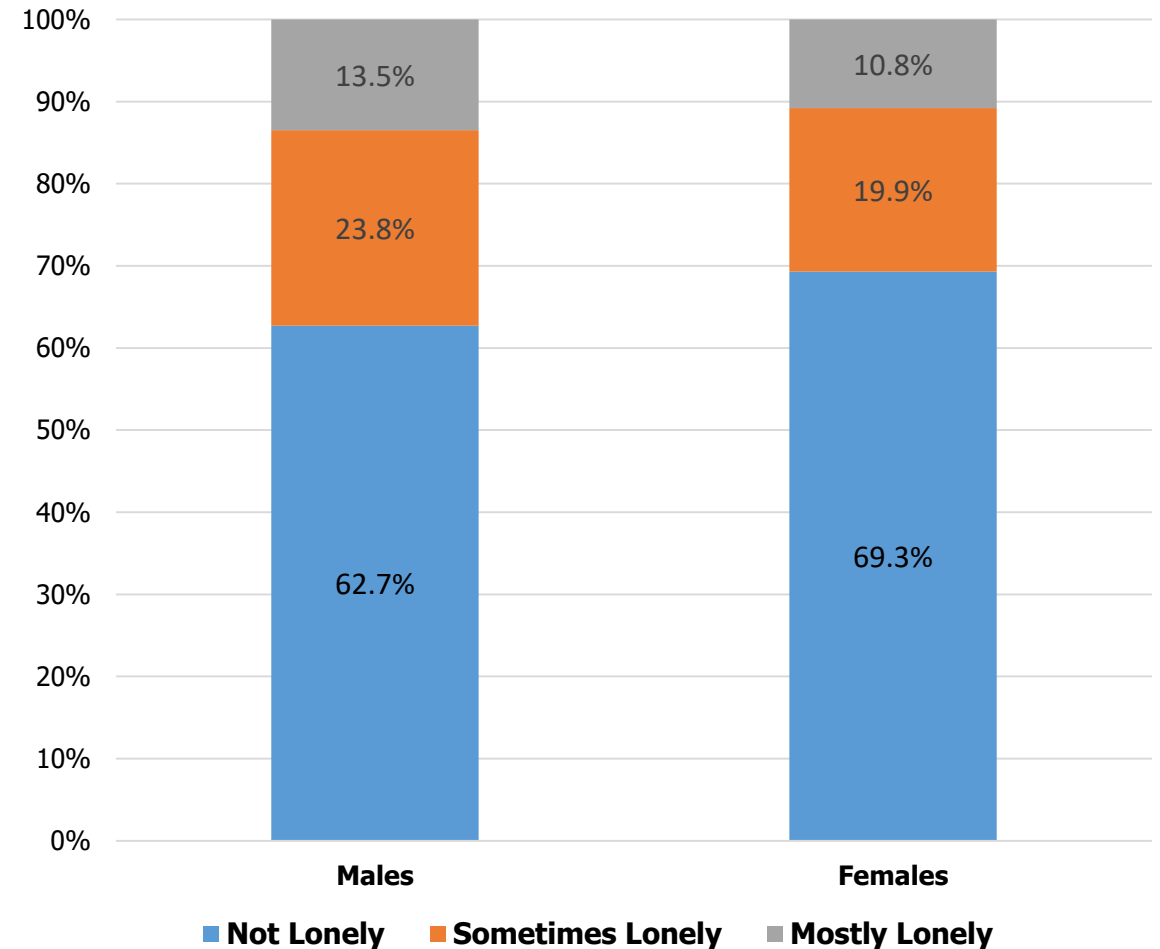
With **increasing Age**, there is an **increase** in the likelihood of feeling **Mostly Lonely**, and **decrease** in the likelihood of feeling **Never Lonely**
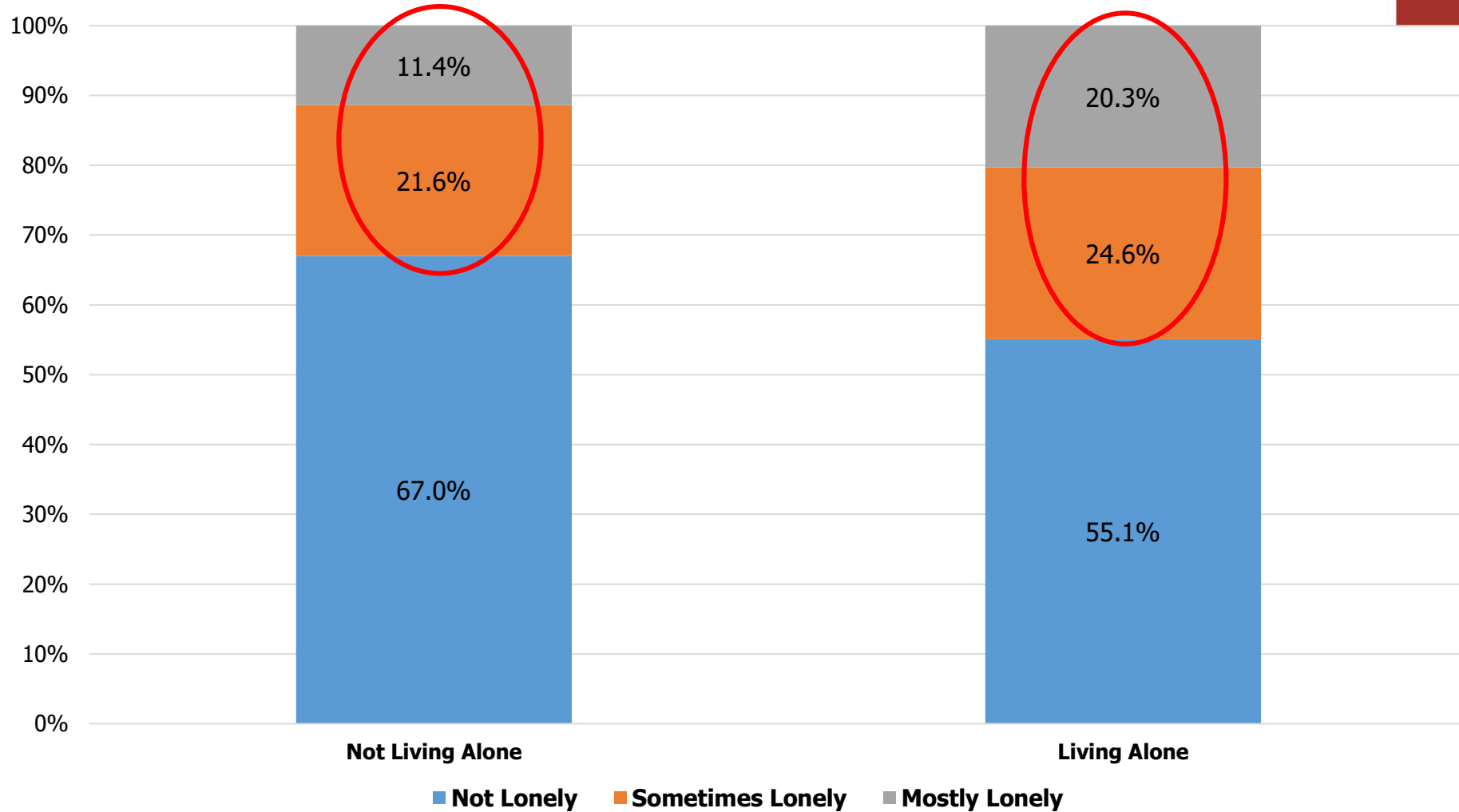
Males are more likely to feel **Sometimes Lonely** or **Never Lonely**

Loneliness Status by Education
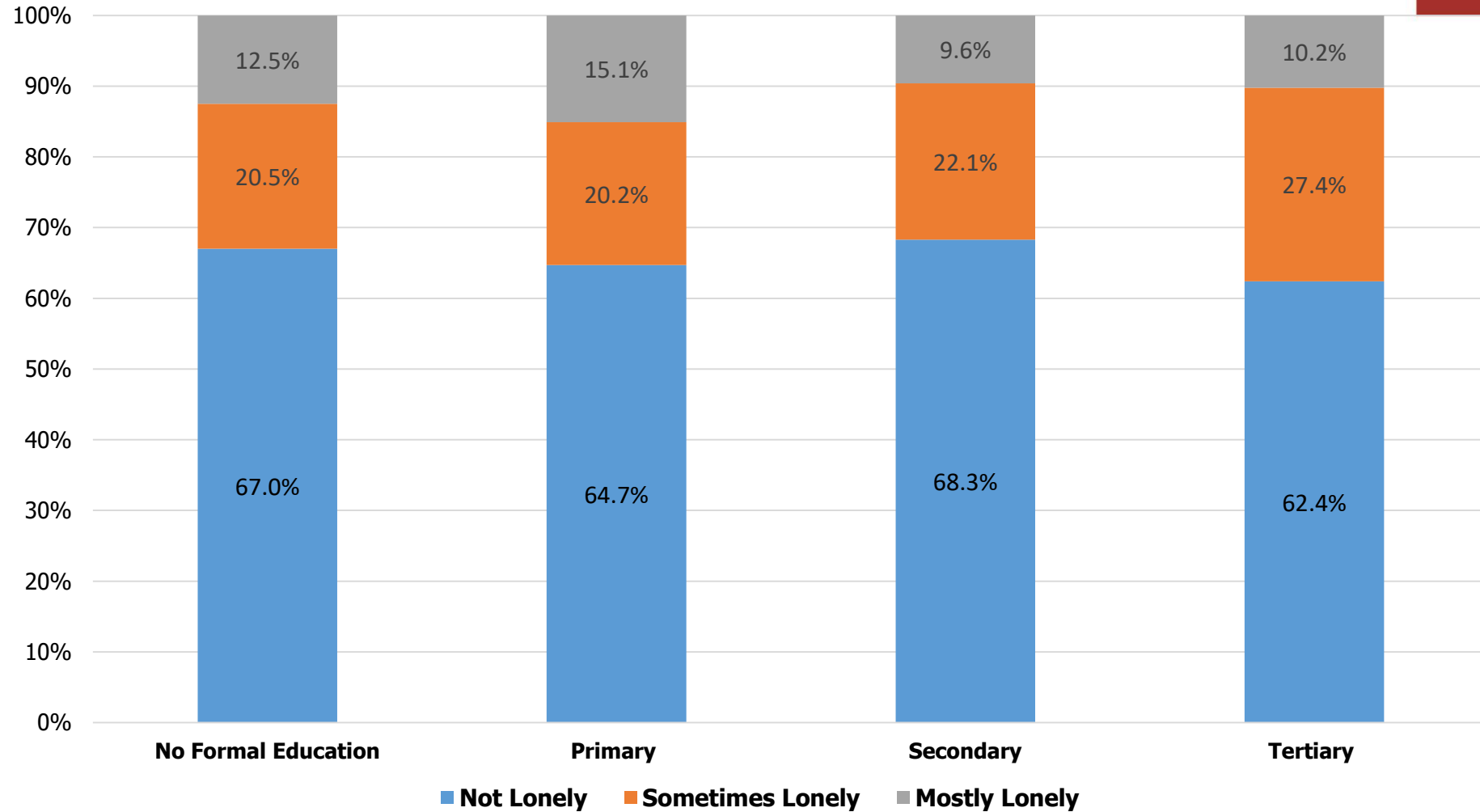
No difference by Education

Loneliness Status by Living Arrangement

Those Living Alone are more likely to feel Mostly Lonely and less likely to feel Never Lonely,

Self Rated Health

Self-Rated Health (SRH)

Why is SRH important?

- ***Excellent single measure of perceived health***.
  - ➢ Predicts mortality and healthcare utilisation.
  - ➢ Linked with prevalence of diseases and health behaviours.

Prevalence of SRH Categories
(N=4549, weighted %)

3.0%
11.4%
47.5%
29.9%
8.0%

■ Excellent ■ Very Good ■ Good ■ Fair ■ Poor
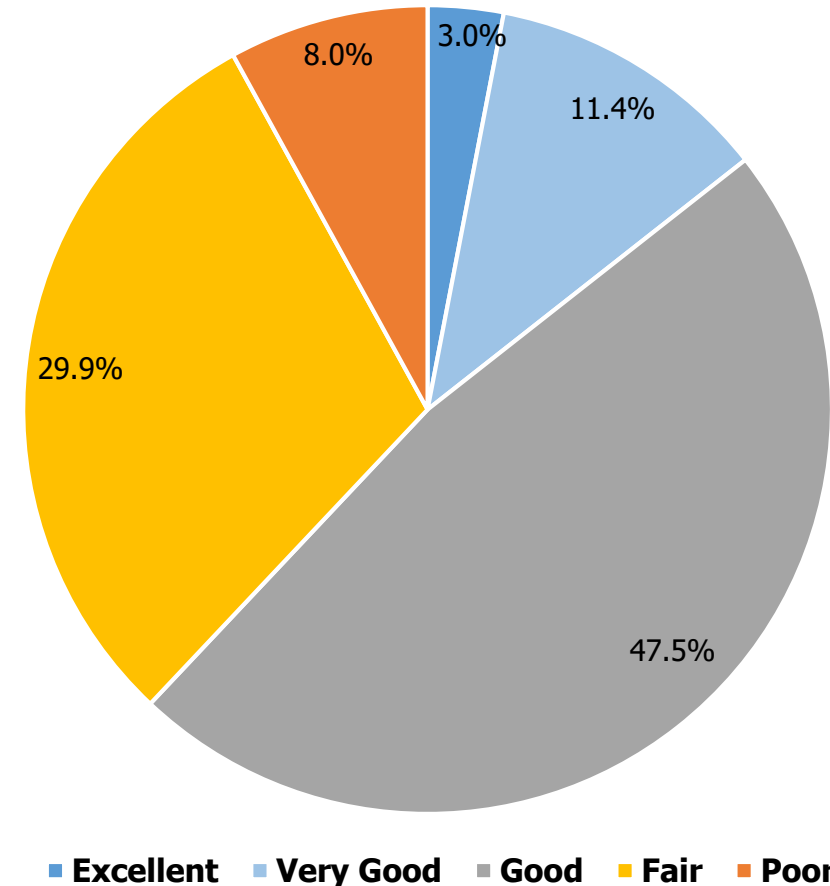
How was it assessed?

"In general, would you describe your state of health as excellent, very good, good, fair or poor?"

K.B. DeSalvo, V.S. Fan, M.B. McDonell, S.D. Fihn, Predicting mortality and healthcare utilization with a single question, Health Serv Res 40(4) (2005) 1234-46.
S. Wu, R. Wang, Y. Zhao, X. Ma, M. Wu, X. Yan, J. He, The relationship between self-rated health and objective health status: a population-based study, BMC Public Health 13 (2013) 320.
L. Abuladze, N. Kunder, K. Lang, S. Vaask, Associations between self-rated health and health behaviour among older adults in Estonia: a cross-sectional analysis, BMJ Open 7(6) (2017) e013257.

Self-Rated Health (SRH) by Age and Gender
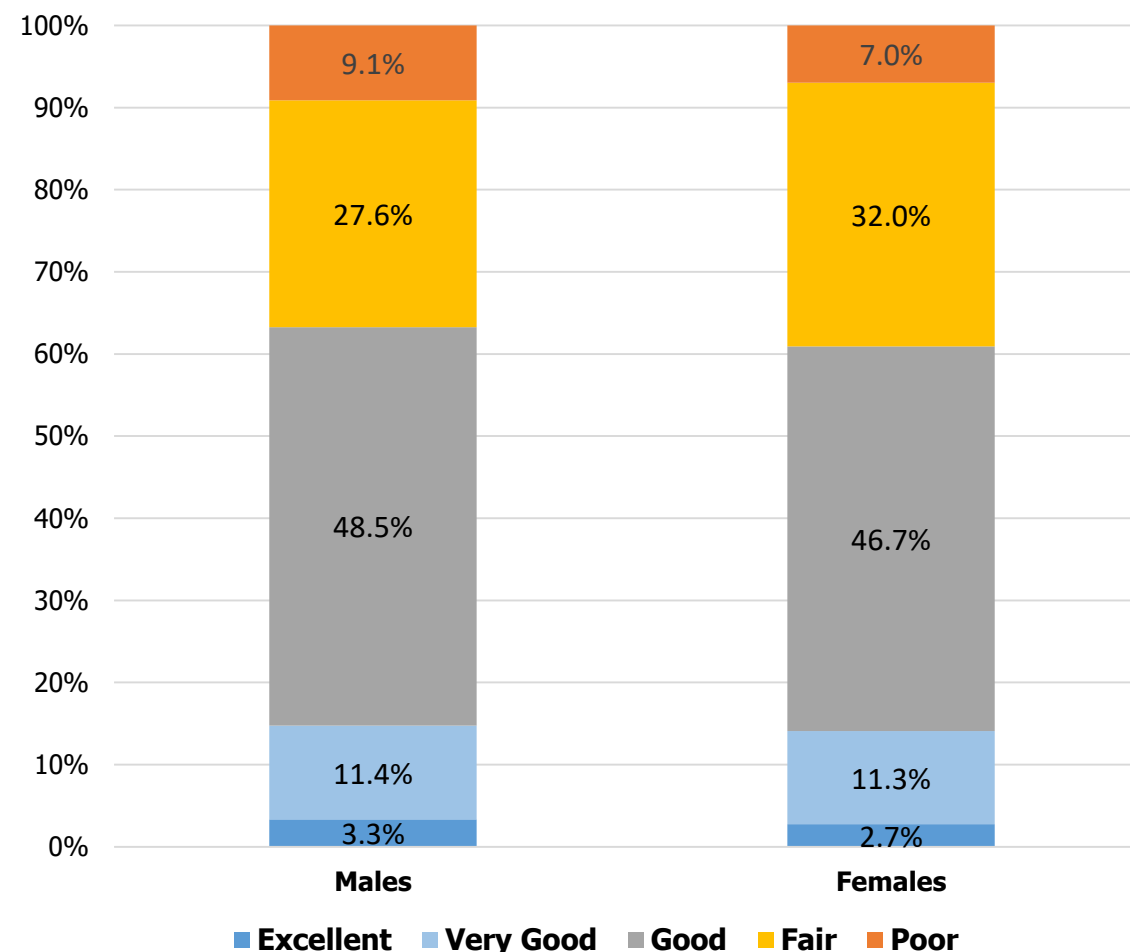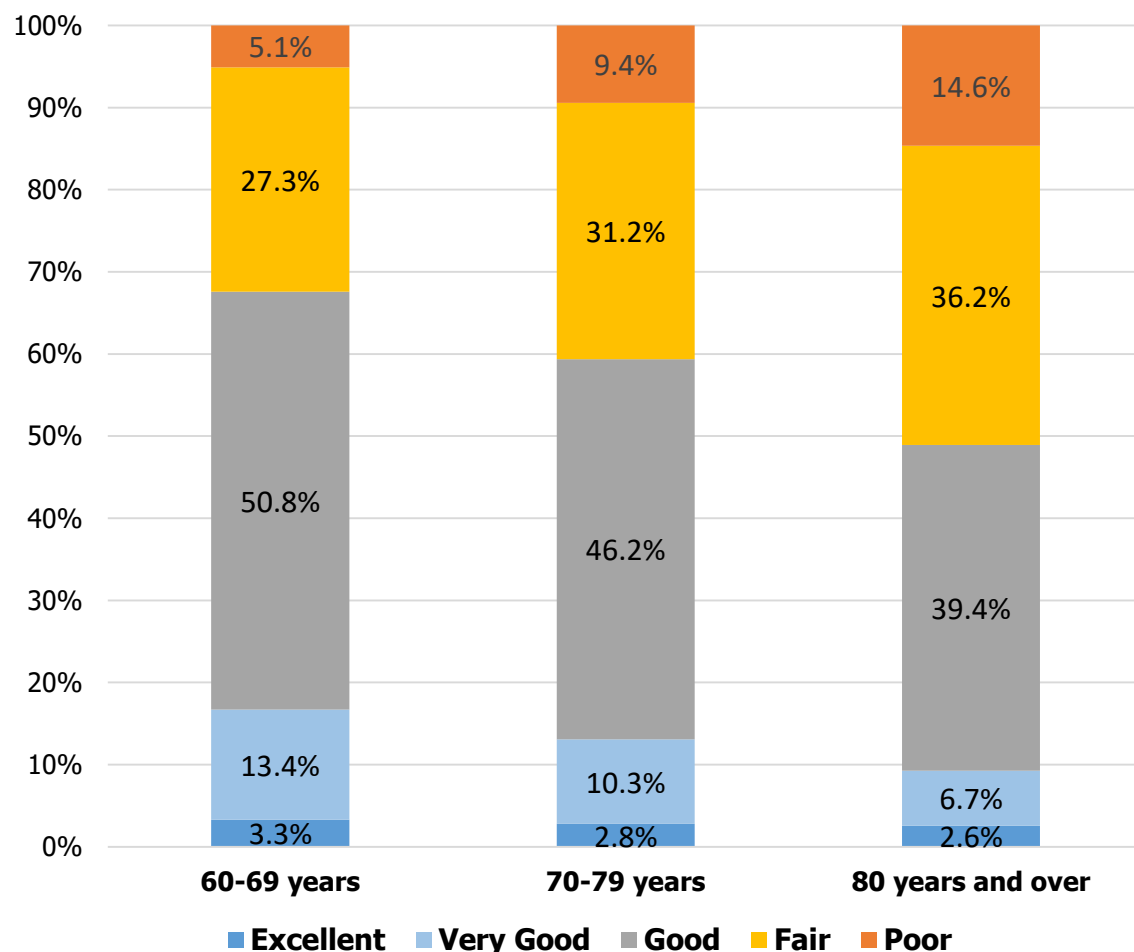
Fair or Poor SRH (vs. Good SRH) **increases** with **increasing Age**

Females are more likely to report **Poor SRH** (vs. Good SRH)

Self-Rated Health (SRH) by Education
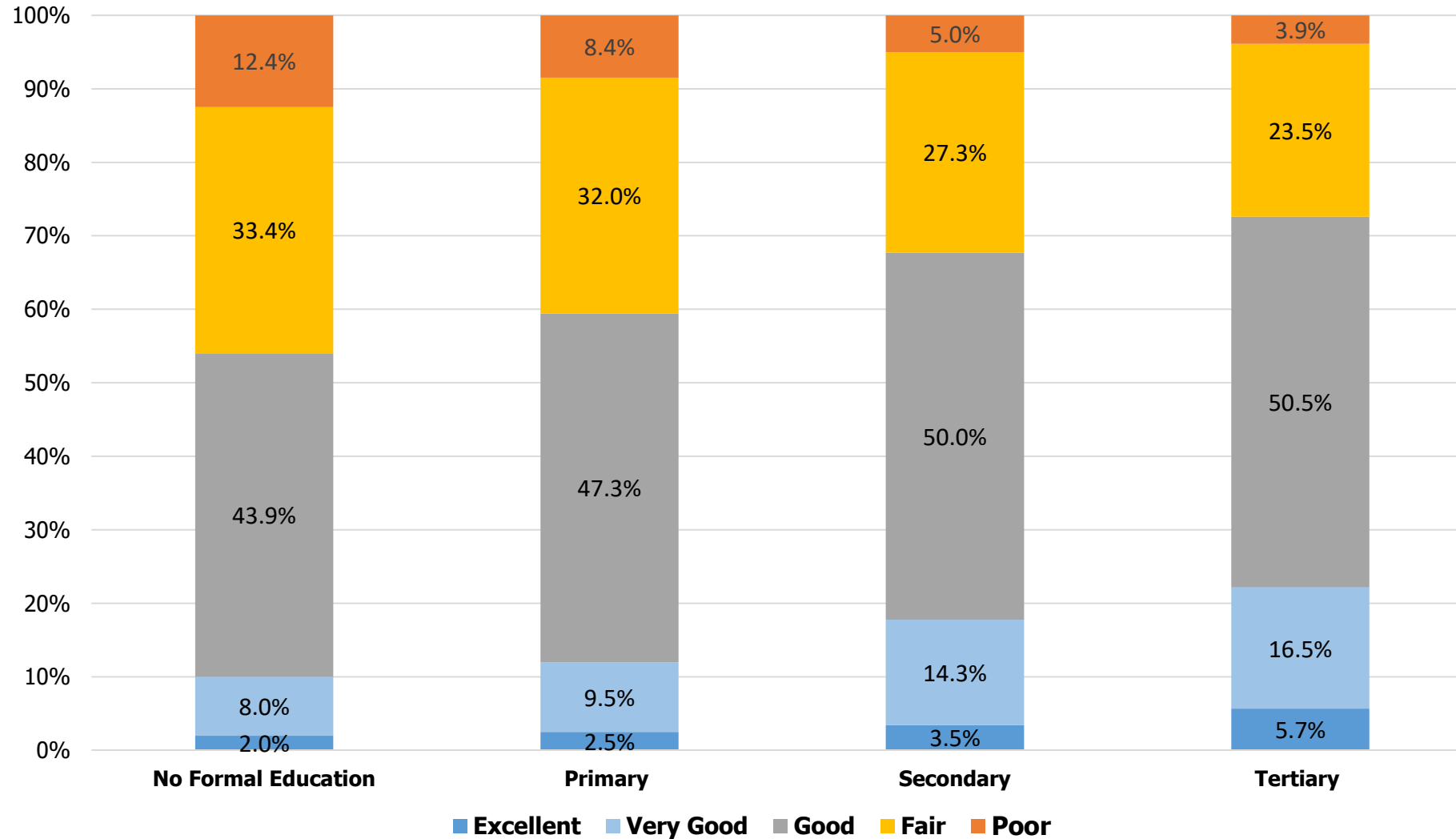
Educational gradient: Worse SRH with lower Education, esp. Primary or less education

Older adults sub-groups at higher risk of worse health....

Those Older

(esp. aged 80 years and above)

- Chronological Age, in of itself, is a major health risk factor.
- Period or Cohort effects.

Females

- Lower engagement in health promoting behaviors.
- Greater risk of disabling health conditions (vs fatal health conditions).
- Social disadvantage.

**Those with
No Formal Education**

- Strong educational gradient in health promoting behaviors.
- Cost, health knowledge/health literacy or opportunities/time to engage in such behaviors.
- Life-course perspective: Cumulative disadvantage in health and health resources.

Health status over time: PHASE-I and THE SIGNS Study-I

PHASE - I

- Panel on Health and Ageing of Singaporean Elderly (PHASE-I) was conducted in 2009.

  ➤ 4990 community dwelling Singaporeans aged ≥ 60 years (including their proxy respondent; n=453) were interviewed.

- Both PHASE – I and THE SIGNS Study – I were designed to collect data using the **same** questions and scales on:

  - Socio-demographics

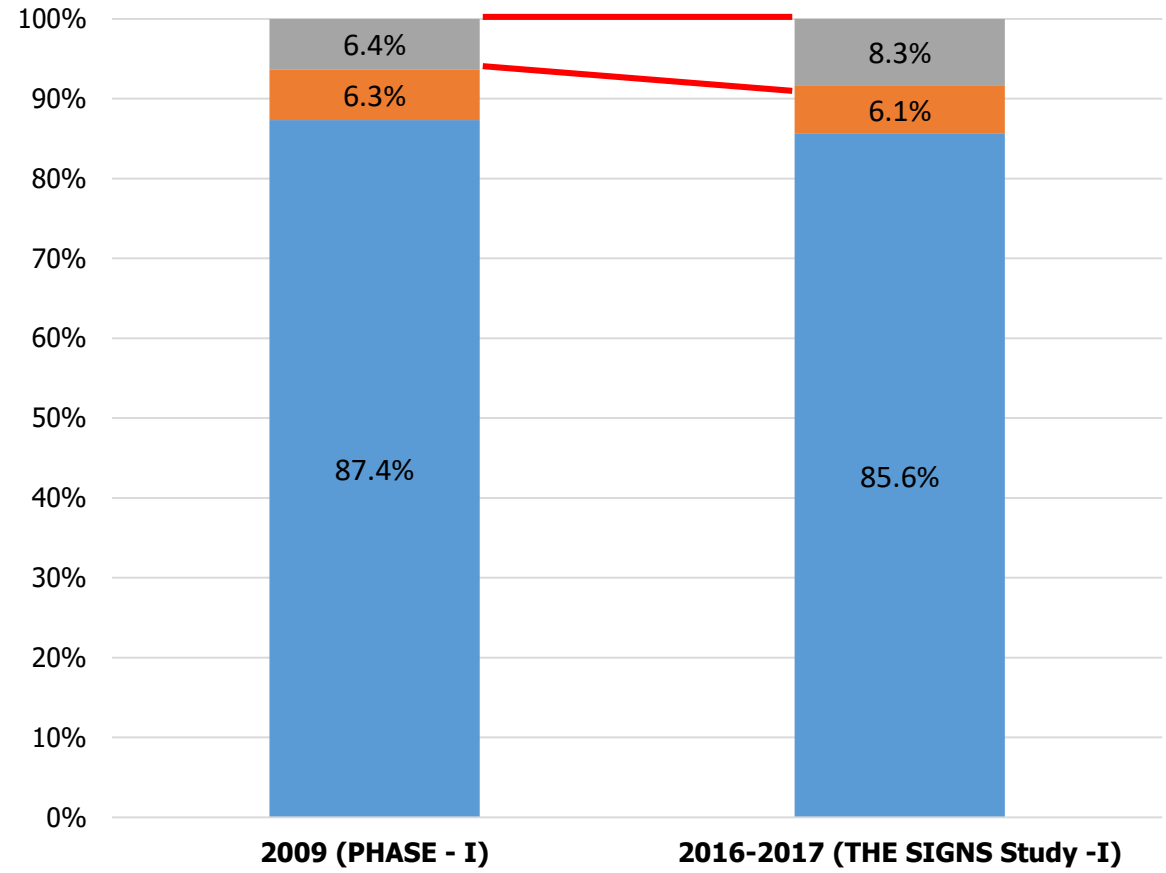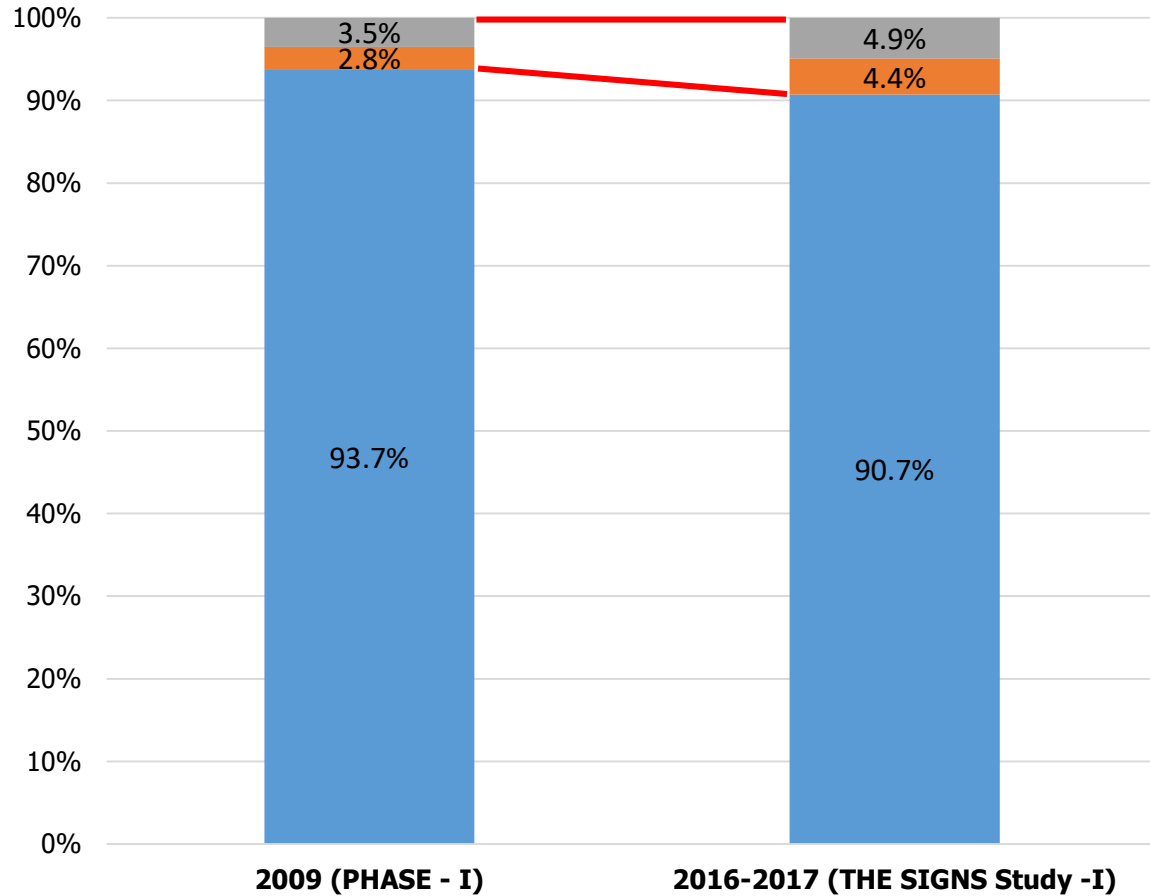 - Socioeconomic status

  - Measures of social engagement

  - Psychological well-being

  - Physical health

Basic Demographics: 2009 and 2016-17

Background Characteristics of Older Singaporeans, weighted %		
	2009 (PHASE-I)	**2016-2017 (THE SIGNS Study-I)**
N	4990	4549
Age, in years		
Mean	69.9	71.0
Age group		
60-69 years	57.3	53.0
70-79 years	29.9	30.7
80 years and older	12.8	16.4
Gender		
Male	45.8	46.7
Female	54.2	53.3
Ethnicity		
Chinese	83.0	82.9
Malay	9.5	9.5
Indian	6.2	6.1
Other	1.4	1.4
Highest Educational Attainment		
No formal education	30.8	27.5
Primary	36.4	30.6
Secondary/Vocational/ITE	23.6	29.2
JC / Poly	5.5	7.7
University and above	3.4	4.9

Prevalence of Functional Limitations: 2009 and 2016-17
(Activities of Daily Living [ADLs] and Instrumental Activities of Daily Living [IADLs])

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ADL Chart:

	2009 (PHASE - I)	2016-2017 (THE SIGNS Study -I)
Limitation in 3 or more activities	3.5%	4.9%
Limitation in 1 or 2 activities	2.8%	4.4%
No Limitation	93.7%	90.7%

IADL Chart:

	2009 (PHASE - I)	2016-2017 (THE SIGNS Study -I)
Limitation in 3 or more activities	6.4%	8.3%
Limitation in 1 or 2 activities	6.3%	6.1%
No Limitation	87.4%	85.6%

Legend:
- No Limitation
- Limitation in 1 or 2 activities
- Limitation in 3 or more activities

INCREASE in the proportion of older Singaporeans with limitations in 1-2 or 3 or more ADLs

INCREASE in the proportion of older Singaporeans with limitations in 3 or more IADLs

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Prevalence of Diabetes (Self-reported): 2009 and 2016-17
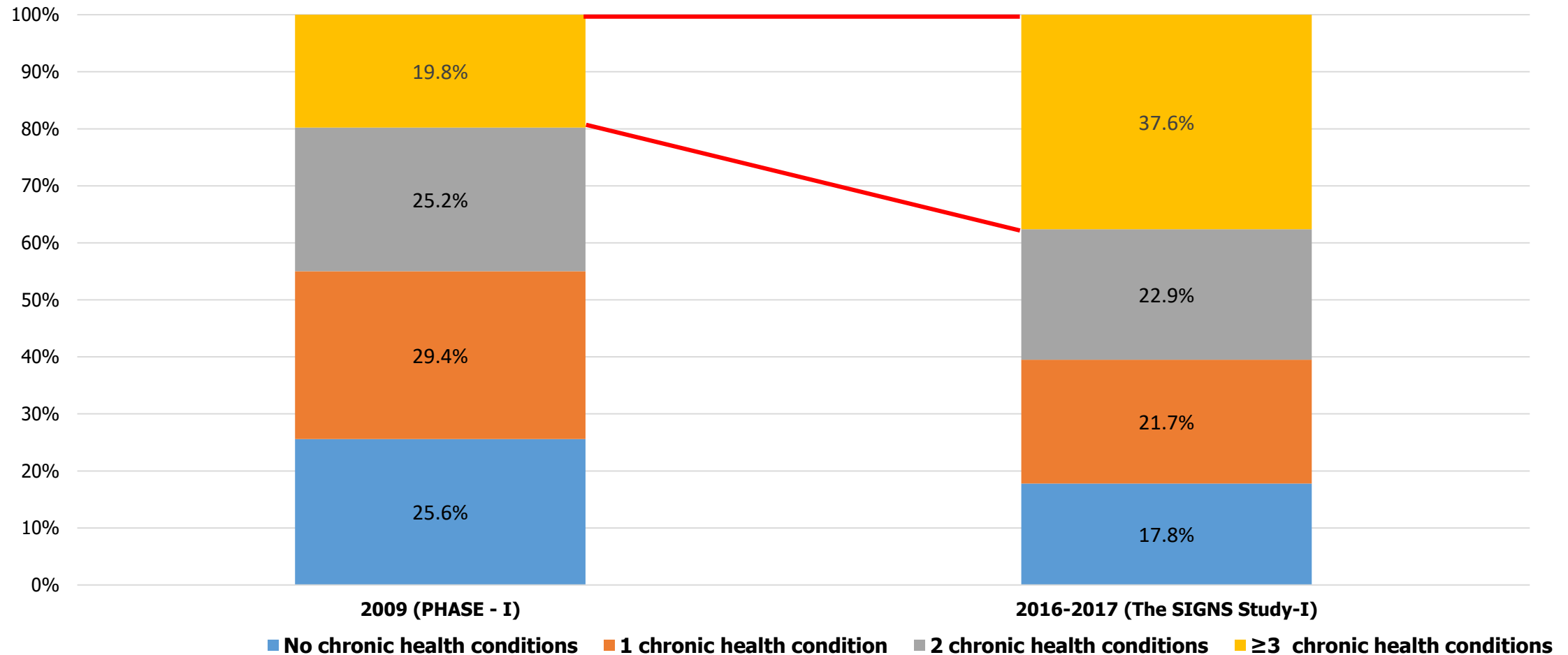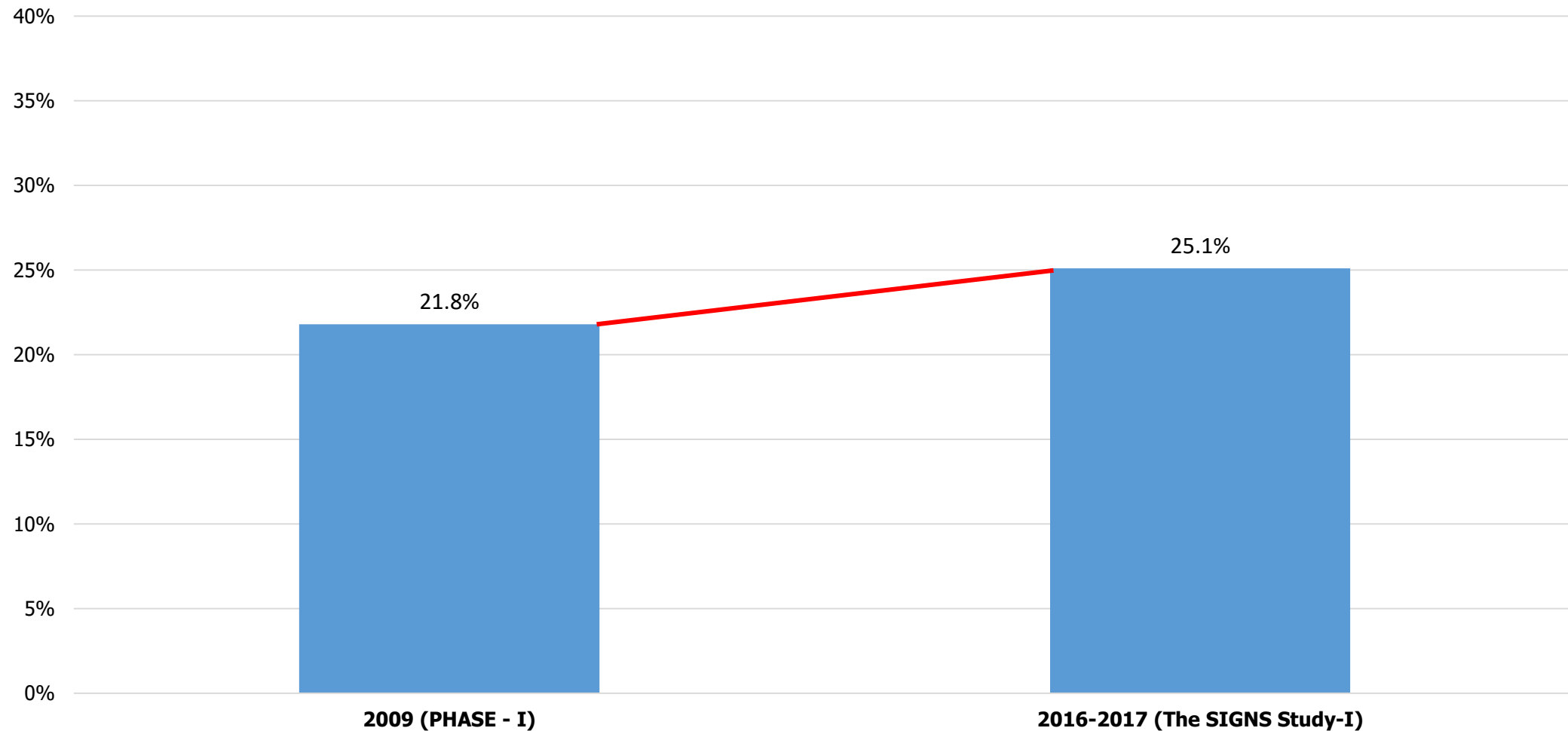
INCREASE in the proportion of older Singaporeans reporting Diabetes
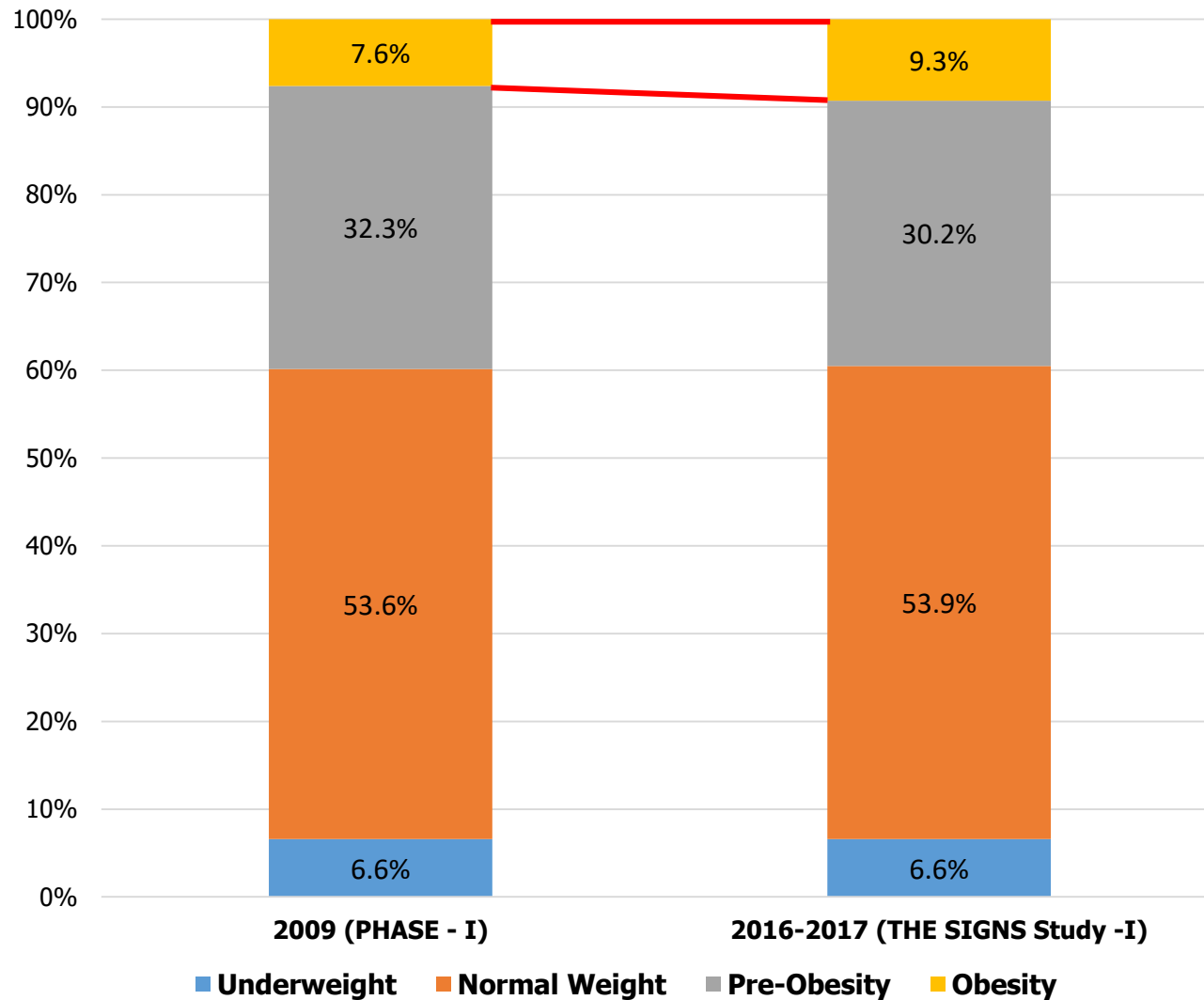
Prevalence of Hypertension (measured) : 2009 and 2016-17
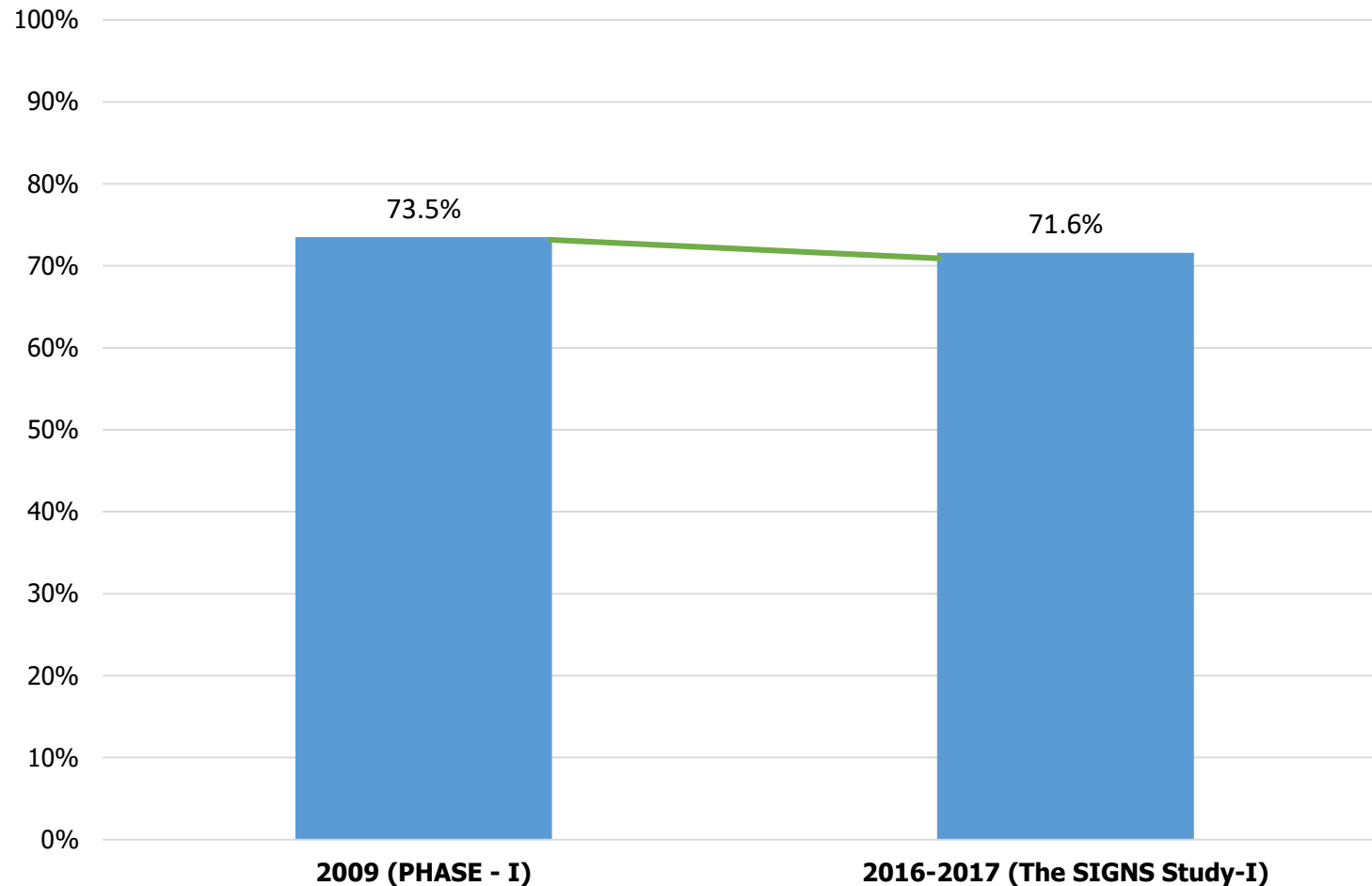
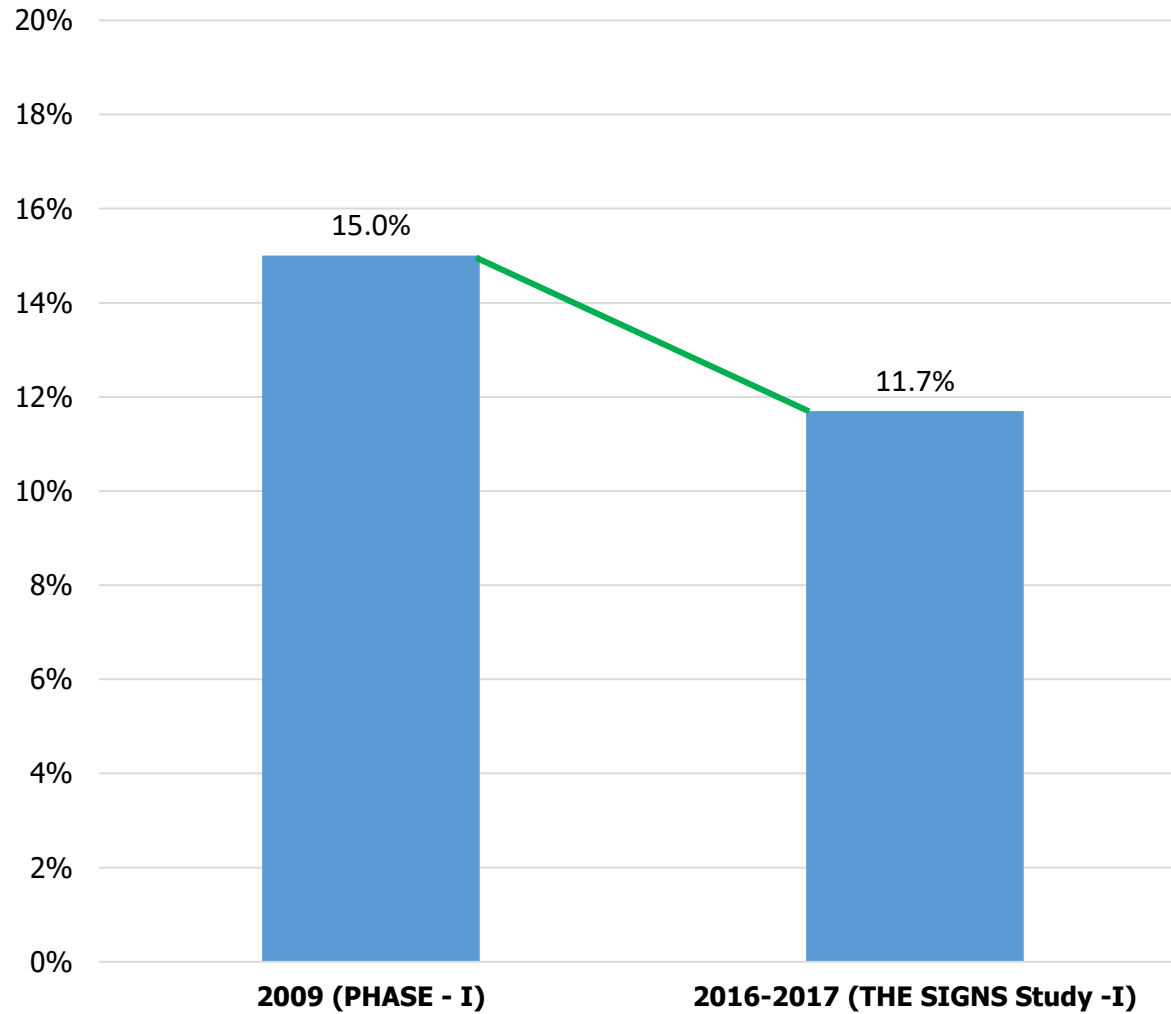**DECREASE in the proportion of older Singaporeans who have Hypertension***

*Systolic blood pressure greater than 140 mm Hg *or* Diastolic blood pressure readings greater than 90 mm Hg *or* currently on antihypertension medication
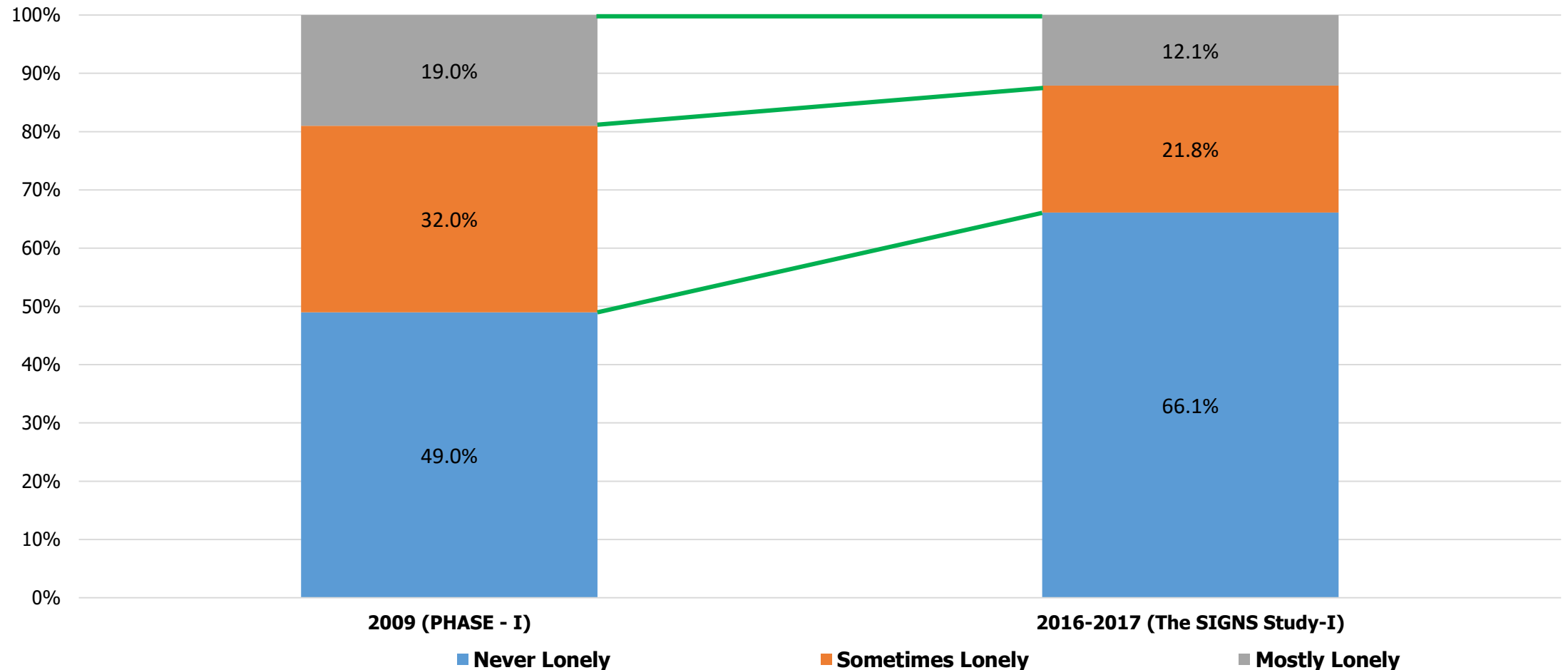
Health status of older Singaporeans over time

- Physical Health: Worsened

  - Caveat: Self-report of chronic health conditions

- Psychological Health: Improved

- Loneliness: Improved

- Strongly highlights the need for continued collection of data on health of older Singaporeans at regular intervals

THANK YOU

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