



FOOD AND NUTRITION RESEARCH INSTITUTE

DEPARTMENT OF SCIENCE AND TECHNOLOGY

# BURDEN OF SELECTED RISK FACTORS TO NON COMMUNICABLE DISEASES (NCDs) AMONG FILIPINO ADULTS







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#### PRESENTATION OUTLINE

Burden of Noncommunicable Diseases (NCDs)

Global

Western Pacific Region

**Philippines** 

- Overview of the 2013 8th National Nutrition Survey (NNS)
- Burden of selected risk factors of NCDs based on results of the 8<sup>th</sup> NNS

Obesity (Body Mass Index, Waist Circumference and Waist-Hip Ratio)

Hypertension

High fasting blood glucose

Dyslipidemia

**Smoking Status** 

**Alcohol Consumption Status** 

Physical Inactivity

Philippine baseline data for the WHO Global NCD Targets of 2025



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#### **GLOBAL BURDEN of NCDs**

more than 36 million people

are killed each year by NCDs

7 29 million deaths

or nearly **80**% of NCD deaths occur in low- and middle-income countries.

More than nine million of all deaths

is considered "premature" deaths that occur before the age of 60; 90% of these deaths occurred in low- and middle-income countries.







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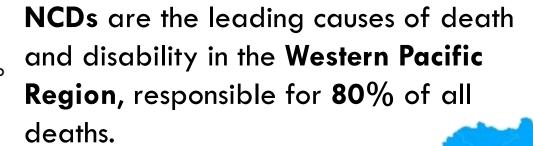
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## BURDEN of NCDs in the WESTERN PACIFIC REGION (WPRO)

Singapore
New Zealand
Brunei
Darussalam
Cook Islands
Malaysia
Tonga
China
Viet Nam
Solomon Islands

Japan Australia



#### **Philippines**

Micronesia,
the Federated States of
Vanuatu
Samoa
Palau
Niue
Kiribati
Papua New Guinea
Lao People's
Democratic Republic, the
Mongolia
Fiji
Cambodia
Tuvalu

Marshall Islands, the

Nauru

Globally, NCD deaths are projected to increase from 36 million in 2010 to 44 million 2020. In the Western Pacific Region, the projected increase is from 10.2 million to 12.3 million.

Noncommunicable diseases in the Western Pacific Region: A Profile WHO, Western Pacific Region, 2012



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#### **BURDEN of NCDs in the PHILIPPINES**



More than half (67%)

of total deaths in the country in 2012 were caused by NCDs.

Diseases of the heart and vascular system made up **one-third** (33.0%) of all deaths (WHO-NCD Country Profiles, 2014)



Other NCDs in the top list include cancer, chronic obstructive pulmonary diseases (COPD) and diabetes mellitus.



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# An Overview of the 8<sup>th</sup> NATIONAL NUTRITION SURVEY (NNS), 2013

#### **LEGAL BASIS**

#### EO 128 Section 22

The FNRI is mandated to undertake research that defines the citizenry's nutritional status, with reference in particular to malnutrition, its causes and effects, and identify alternative solutions for them;

#### **EO 352**

The national nutrition survey is a designated statistical activity that will generate critical data for decision-making of the government and the private sector



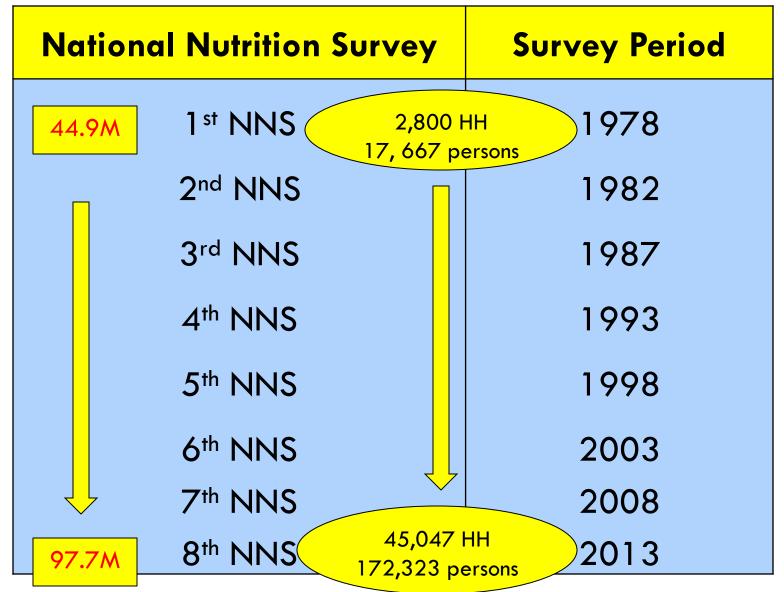


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#### HISTORICAL BACKGROUND





#### **GENERAL OBJECTIVE**



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#### **NNS SAMPLING DESIGN**

4 replicates from the NSO Master Sample which utilized 100% of the 2009 Labor Force Survey (LFS) Households

National Statistics Office (NSO) Master Sample (PSA)

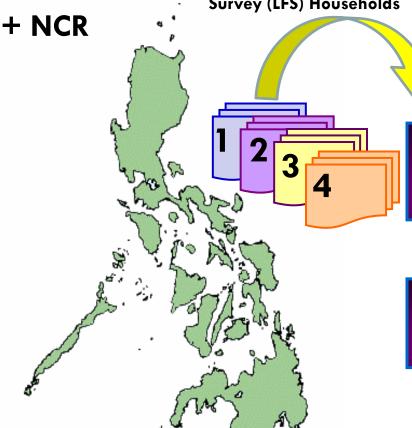
Multi-Stage Stratified Sampling Design

1st Stage - Primary Sampling Unit
One barangay or contiguous
barangays with at least 500 HHs

2<sup>nd</sup> Stage – Enumeration Area
Contiguous area in a barangay
with 150-200 HHs



3<sup>rd</sup> Stage – Households



17 Regions/

80 Provinces





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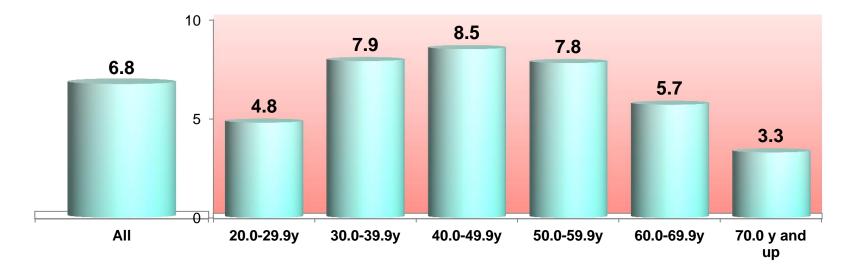
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# RISK FACTORS of NCDs based on results of the 2013 National Nutrition Survey



## Prevalence of obesity among adults 20 years and over by age group using WHO BMI Classification: Philippines, 2013

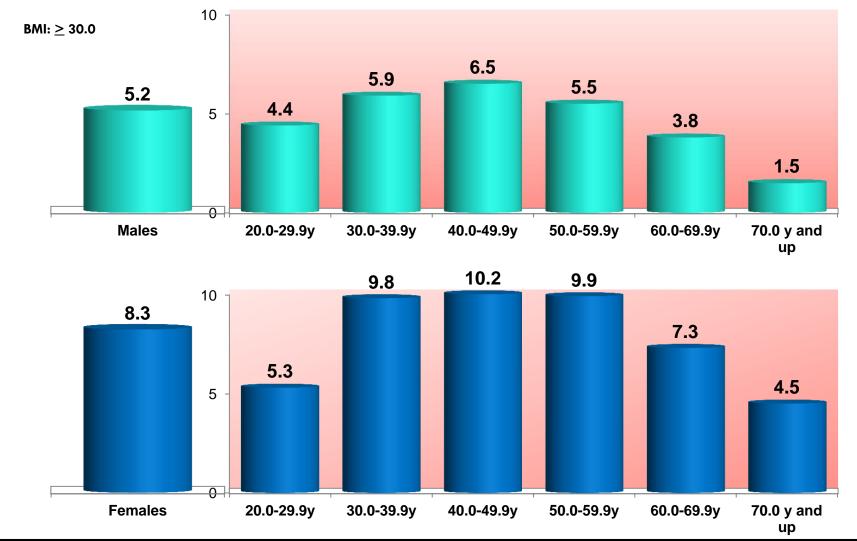
BMI: > 30.0







# Prevalence of obesity among adults 20 years and over by age group and sex using WHO BMI Classification: Philippines, 2013







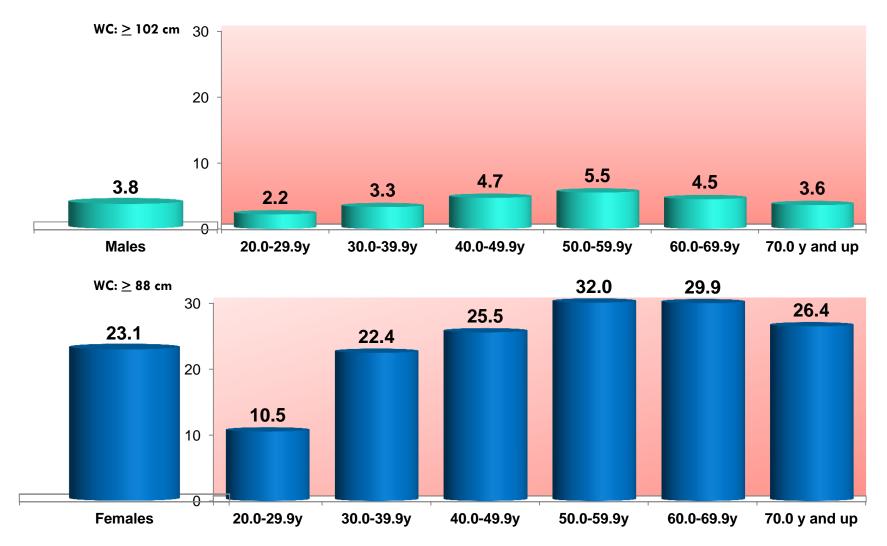
## Prevalence and 95% CI of obesity among adults 20 years and over by region, Philippines: 2013

REGION	LOWER LIMIT	UPPER LIMIT	PREVALENCE
PHILIPPINES	6.6	7.1	6.8
Ilocos Region	3.8	5.0	4.4
Cagayan Valley	3.4	4.9	4.1
CAR	6.5	8.5	7.5
Central Luzon	6.4	7.8	7.1
NCR	9.2	11.0	10
CALABARZON	6.9	8.2	7.5
MIMAROPA	3.8	5.8	4.8
Bicol	4.4	6.0	5.2
Western Visayas	3.4	4.7	4.0
Central Visayas	6.0	7.5	6.8
Eastern Visayas	6.0	8.0	7.0
Zamboanga Peninsula	5.1	6.9	6.0
Northern Mindanao	7.6	9.7	8.7
Davao Region	6.4	8.5	7.4
SOCCSKSARGEN	4.3	6.2	5.3
CARAGA	6.3	8.2	7.3
ARMM	3.2	5.3	4.3





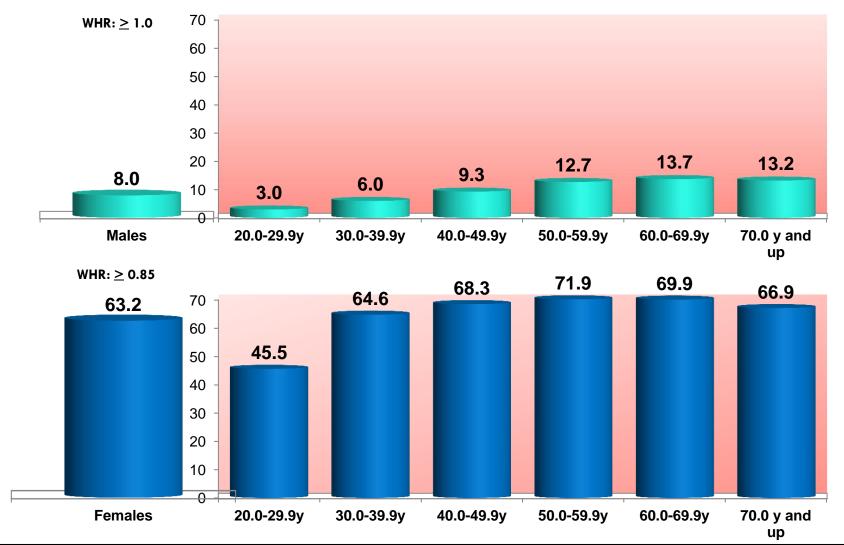
# Prevalence of android obesity based on high WC among adults 20 years and over by sex and age group: Philippines, 2013







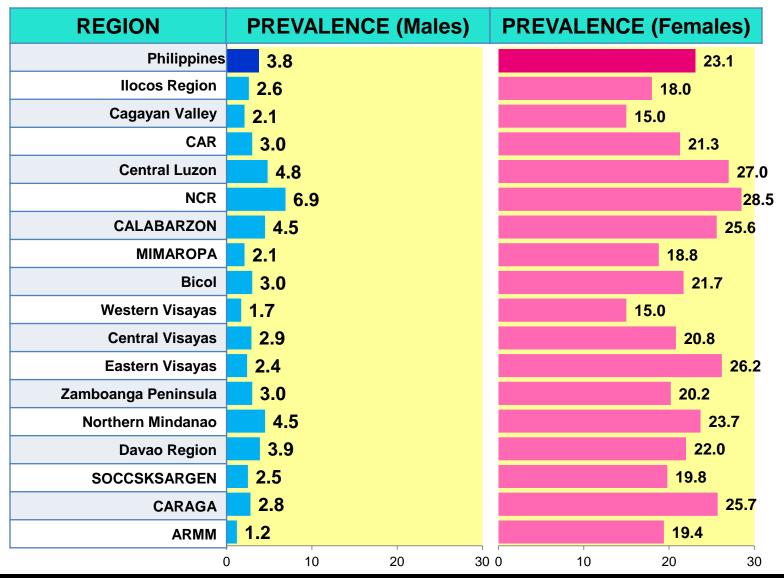
# Prevalence of android obesity based on high WHR among adults 20 years and over by sex and age group: Philippines, 2013







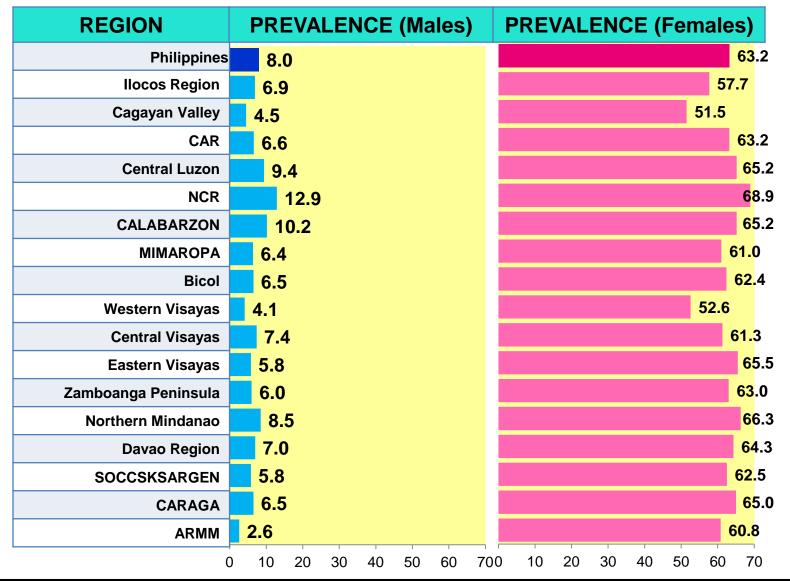
### Prevalence of android obesity among adults 20 years and over based on high WC by region: Philippines, 2013







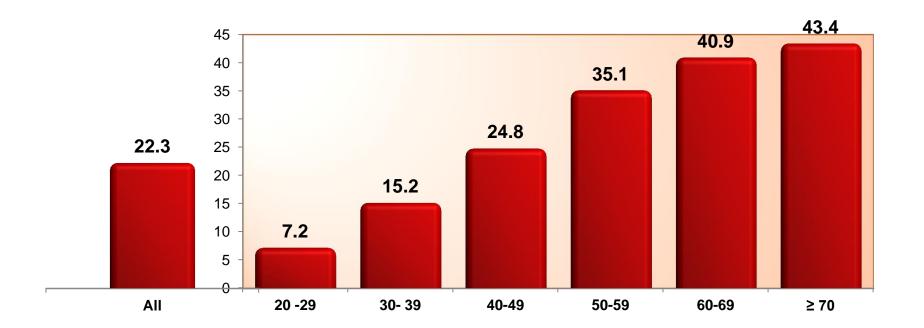
### Prevalence of android obesity among adults 20 years and over based on high WHR by region: Philippines, 2013







# Prevalence of hypertension\* among adults 20 years and over based on a single blood pressure measurement visit by age: Philippines, 2013



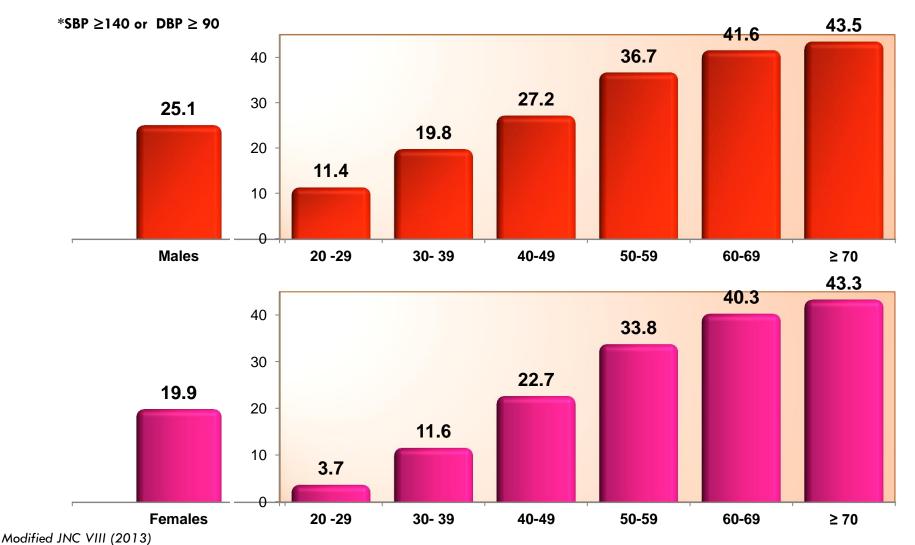


JNC VII





Prevalence of hypertension\* among adults 20 years and over based on a single blood pressure measurement visit, by sex and age group: Philippines, 2013







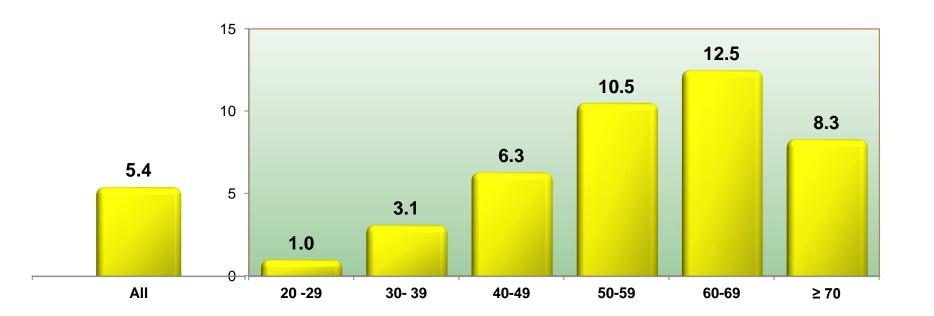
## Prevalence and 95% CI of hypertension among adults 20 years and over by region, Philippines: 2013

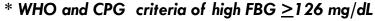
REGION	LOWER LIMIT	UPPER LIMIT	PREVALENCE					
PHILIPPINES	21.8	22.7	22.3					
Ilocos Region	24.0	27.5	25.8					
Cagayan Valley	22.5	25.9	24.2					
CAR	24.1	29.4	26.7					
Central Luzon	22.5	25.8	24.2					
NCR	20.5	23.0	21.7					
CALABARZON	20.1	22.9	21.5					
MIMAROPA	20.3	23.6	22.0					
Bicol	21.9	25.3	23.6					
Western Visayas	19.2	22.5	20.9					
Central Visayas	20.0	22.8	21.4					
Eastern Visayas	21.6	25.0	23.3					
Zamboanga Peninsula	17.7	21.1	19.4					
Northern Mindanao	19.2	22.8	21.0					
Davao Region	18.8	22.0	20.4					
SOCCSKSARGEN	19.5	22.6	21.1					
CARAGA	21.0	24.4	22.7					
ARMM	16.3	20.9	18.6					





## Prevalence of diabetes\* among adults 20 years and over by age: Philippines, 2013

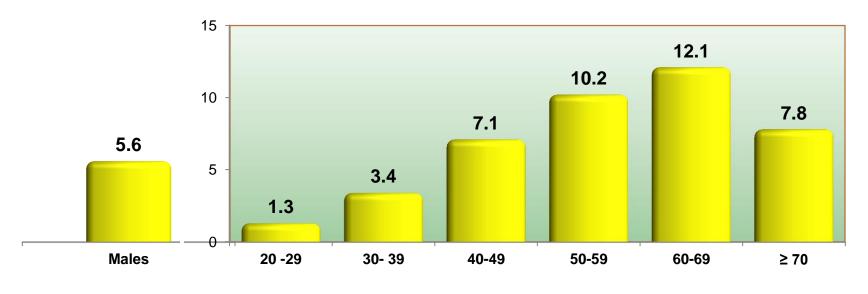


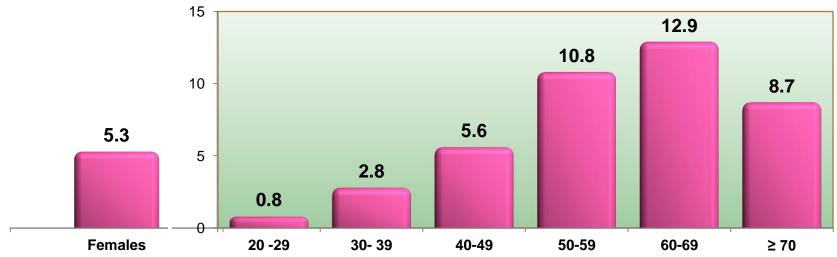


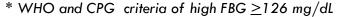




## Prevalence of diabetes\* among adults 20 years and over by age and sex: Philippines, 2013











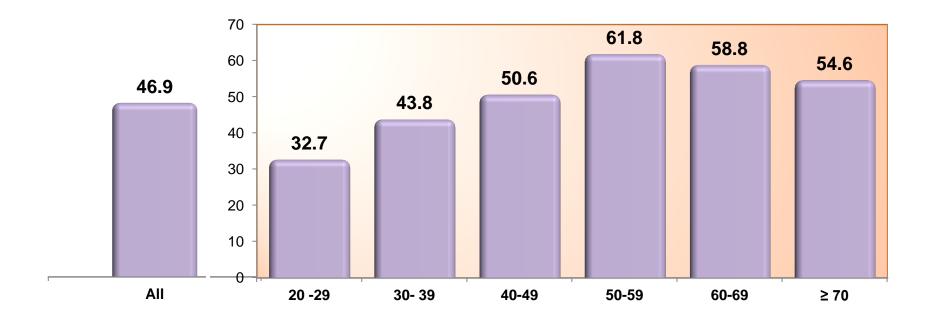
## Prevalence and 95% CI of diabetes among adults 20 years and over by region: Philippines, 2013

REGION	LOWER LIMIT	UPPER LIMIT	PREVALENCE						
PHILIPPINES	5.1	5.8	5.4						
llocos Region	2.9	5.5	4.2						
Cagayan Valley	3.8	6.1	5.0						
CAR	3.0	5.6	4.3						
Central Luzon	5.3	8.8	7.0						
NCR	5.1	7.2	6.2						
CALABARZON	5.4	7.7	6.5						
MIMAROPA	3.5	7.6	5.6						
Bicol	2.8	5.9	4.4						
Western Visayas	3.8	5.8	4.8						
Central Visayas	3.4	6.1	4.8						
Eastern Visayas	3.8	6.5	5.1						
Zamboanga Peninsula	2.5	6.0	4.3						
Northern Mindanao	2.4	4.5	3.5						
Davao Region	4.2	7.0	5.6						
SOCCSKSARGEN	3.3	6.0	4.6						
CARAGA	3.8	7.1	5.4						
ARMM	2.0	6.1	4.0						
		-	0 2 4 6 8						





## Prevalence of borderline to high total cholesterol level\* among adults 20 years and over by age: Philippines, 2013

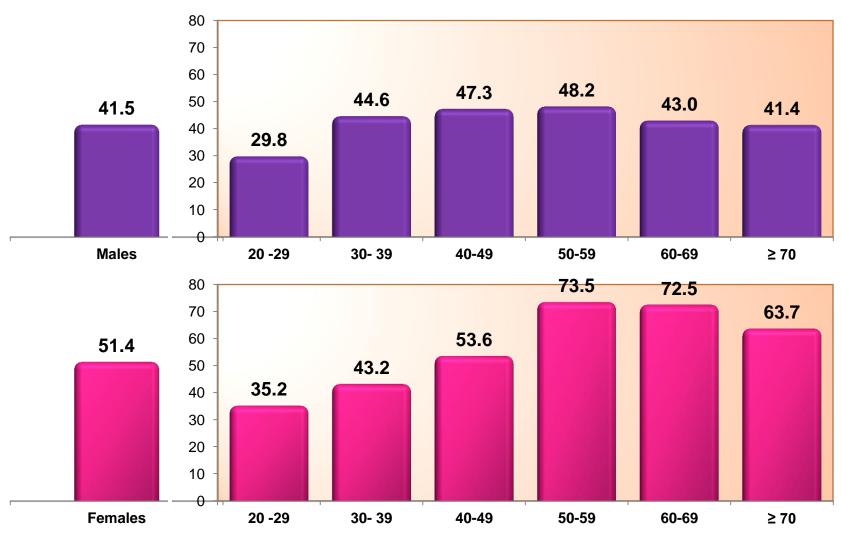


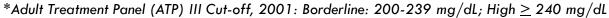
\*Adult Treatment Panel (ATP) III Cut-off, 2001: Borderline: 200-239 mg/dL; High ≥ 240 mg/dL





## Prevalence of borderline to high total cholesterol level\* among adults 20 years and over by sex and age group: Philippines, 2013









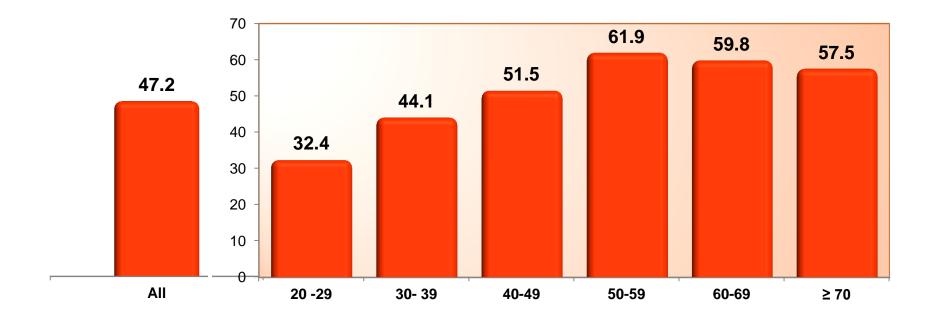
## Prevalence and 95% CI of borderline to high total cholesterol level among adults 20 years and over by region, Philippines: 2013

REGION	LOWER LIMIT	UPPER LIMIT	PREVALENCE
PHILIPPINES	45.7	48.0	46.9
llocos Region	38.6	48.1	43.4
Cagayan Valley	41.9	50.0	45.9
CAR	47.2	59.3	53
Central Luzon	47.0	55.4	51.3
NCR	49.7	57.5	53
CALABARZON	43.2	49.2	46.1
MIMAROPA	25.2	33.3	29.3
Bicol	52.0	62.1	57
Western Visayas	41.5	49.1	45.3
Central Visayas	38.0	45.0	41.5
Eastern Visayas	38.1	46.6	42.3
Zamboanga Peninsula	35.5	44.9	40.2
Northern Mindanao	35.9	44.8	40.4
Davao Region	41.8	50.1	45.9
SOCCSKSARGEN	45.7	54.6	50.2
CARAGA	42.5	49.9	46.2
ARMM	39.1	44.2	41.7





## Prevalence of borderline to high LDL cholesterol level\* among adults 20 years and over by age: Philippines, 2013

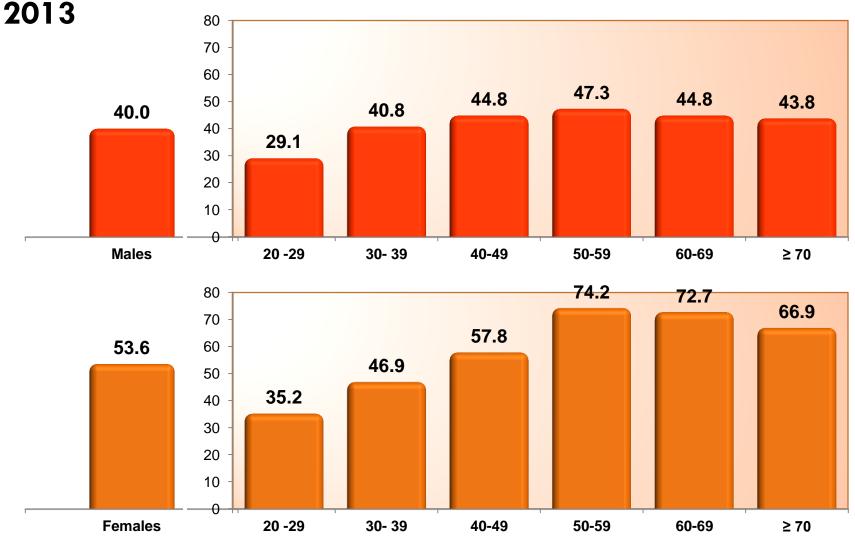


\*Adult Treatment Panel (ATP) III Cut-off, 2001: Borderline: 130-159 mg/dL; High  $\geq$  160 mg/dL





Prevalence of borderline to high LDL cholesterol level\* among adults 20 years and over by sex and age group: Philippines,



\*Adult Treatment Panel (ATP) III Cut-off, 2001: Borderline: 130-159 mg/dL; High  $\geq$  160 mg/dL





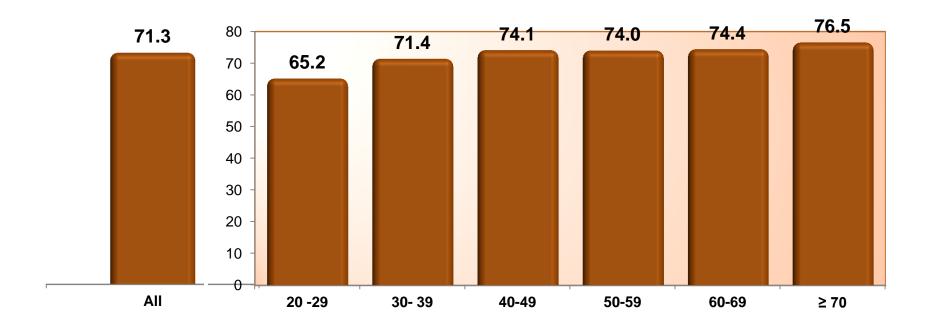
### Prevalence and 95% CI of borderline to high LDL cholesterol level among adults 20 years and over by region, Philippines: 2013

REGION	LOWER LIMIT	UPPER LIMIT	PREVALENCE							
PHILIPPINES	46.2	48.3	47.2							
Ilocos Region	36.7	45.7		41.2						
Cagayan Valley	43.3	49.8					46	.6		
CAR	48.6	59.9						54.3	3	
Central Luzon	45.7	53.5					4	9.7		
NCR	44.9	52.5					48	3.8		
CALABARZON	46.6	50.9					48	3.7		
MIMAROPA	34.6	42.9		38.7						
Bicol	55.4	64.0						5	9.6	
Western Visayas	40.3	48.2		44.2						
Central Visayas	40.1	47.4	43.8							
Eastern Visayas	40.9	50.8	45.9							
Zamboanga Peninsula	36.4	45.2		40.7						
Northern Mindanao	39.1	49.7	44.4							
Davao Region	41.9	47.9					44.	9		
SOCCSKSARGEN	50.0	58.7						54.4	4	
CARAGA	41.1	48.1					44.	6		
ARMM	42.9	49.5					46.	2		
			0 10	20	30	40	50	60	70	





## Prevalence of low HDL cholesterol level\* among adults 20 years and over by age: Philippines, 2013

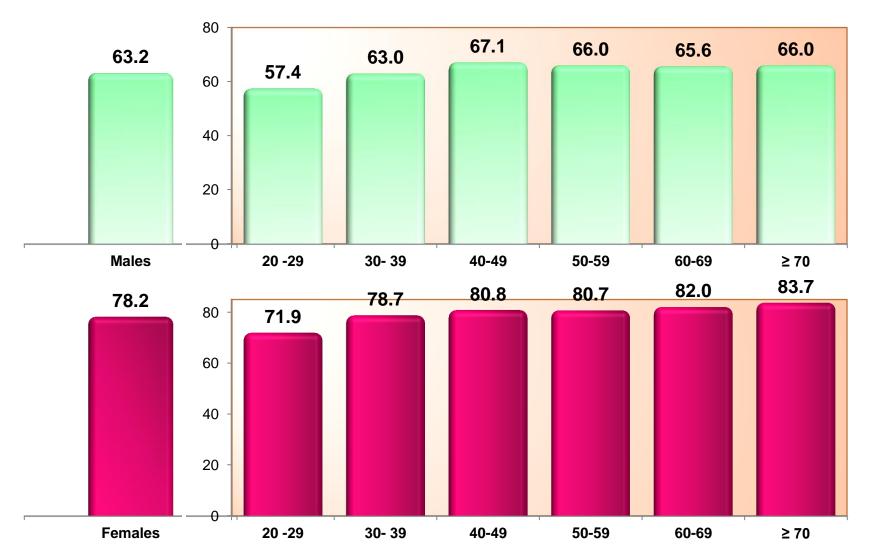


\*Adult Treatment Panel (ATP) III Cut-off, 2001: Males: Low < 40 mg/dL; Females: Low < 50 mg/dL





## Prevalence of low HDL cholesterol level\* among adults 20 years and over by sex and age group: Philippines, 2013



\*Adult Treatment Panel (ATP) III Cut-off, 2001: Males: Low < 40 mg/dL; Females: Low < 50 mg/dL





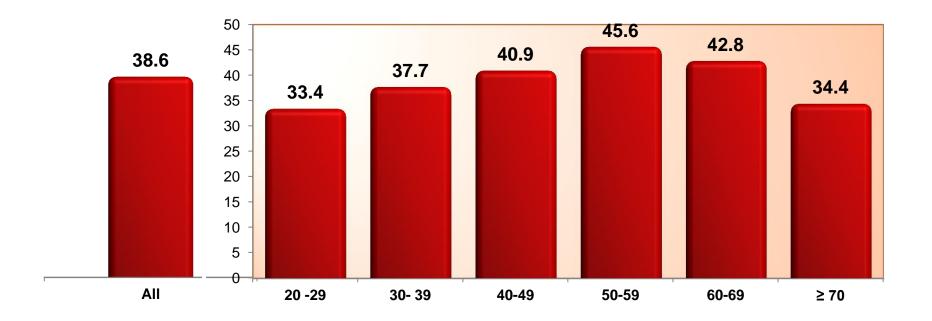
## Prevalence and 95% CI of low HDL level among adults 20 years and over by region, Philippines: 2013

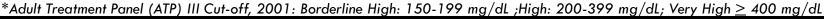
REGION	LOWER LIMIT	UPPER LIMIT	PREVALENCE
PHILIPPINES	70.2	72.3	71.3
Ilocos Region	64.0	72.3	68.1
Cagayan Valley	65.2	74.8	70.0
CAR	81.4	87.5	<mark>84</mark> .4
Central Luzon	66.4	72.6	69.5
NCR	55.3	60.8	58.1
CALABARZON	68.8	73.6	71.2
MIMAROPA	75.6	81.7	<mark>78.</mark> 7
Bicol	62.9	71.0	66.9
Western Visayas	67.9	73.8	70.9
Central Visayas	67.4	74.5	71.0
Eastern Visayas	68.3	82.0	<b>75.2</b>
Zamboanga Peninsula	72.8	81.8	<mark>77.</mark> 3
Northern Mindanao	80.2	87.5	<mark>83</mark> .8
Davao Region	70.6	76.4	73.5
SOCCSKSARGEN	82.6	90.6	<mark>8</mark> 6.6
CARAGA	75.3	82.1	<b>78.</b> 7
ARMM	71.0	83.7	<b>77.</b> 3
			0 10 20 30 40 50 60 70 80 90





## Prevalence of borderline to very high triglyceride level\* among adults 20 years and over by age: Philippines, 2013

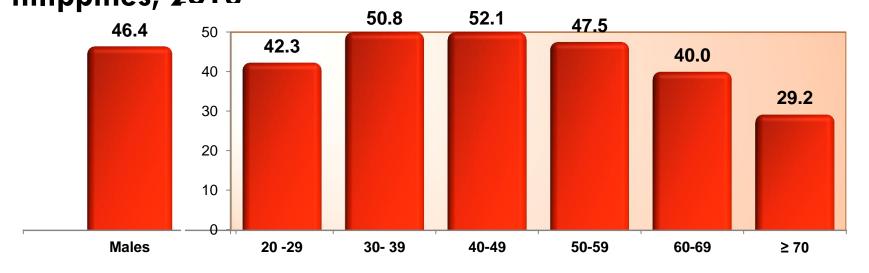


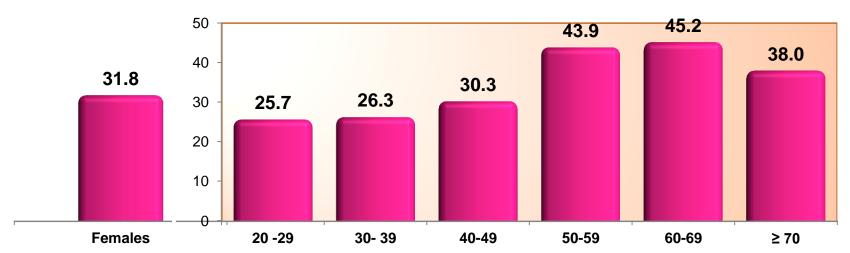






Prevalence of borderline to very high triglyceride level\* among adults 20 years and over by sex and age group: Philippines, 2013





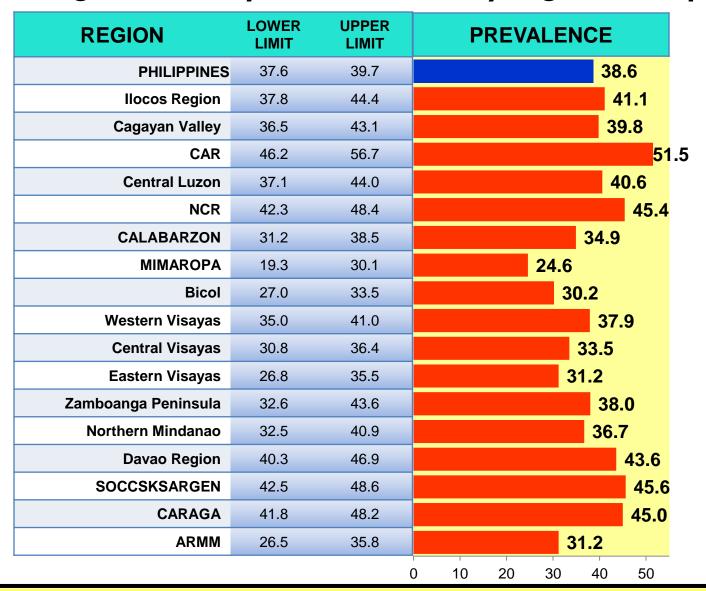
\*Adult Treatment Panel (ATP) III Cut-off, 2001: Borderline High: 150-199 mg/dL ;High: 200-399 mg/dL; Very High ≥ 400 mg/dL





## Prevalence and 95% CI of borderline to very high triglyceride level among adults 20 years and over by region, Philippines:

2013











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#### OPERATIONAL DEFINITION

#### **SMOKING**

#### **CURRENT SMOKERS**

- those who smoked during the survey either on a "daily" (at least one cigarette a day) or on a regular/occasional basis; those who do not smoke daily but who smoke at least weekly or those who smoke less often than weekly.

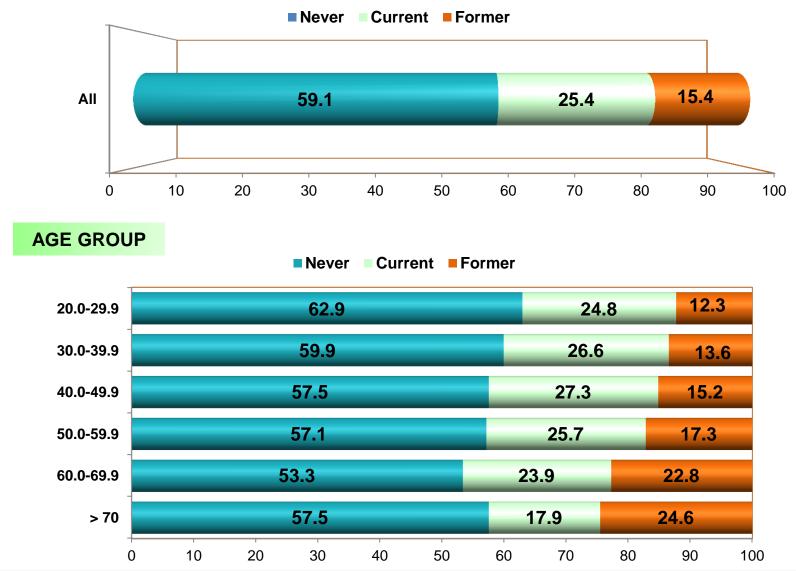
#### FORMER SMOKERS

- those who have ever smoked in the past year prior to survey whether on a daily basis or an aggregate lifetime consumption of at least 100 cigarettes but not daily, and are no longer smoking at the time of the survey

#### **NEVER SMOKERS**

- those individuals who have never smoked at all

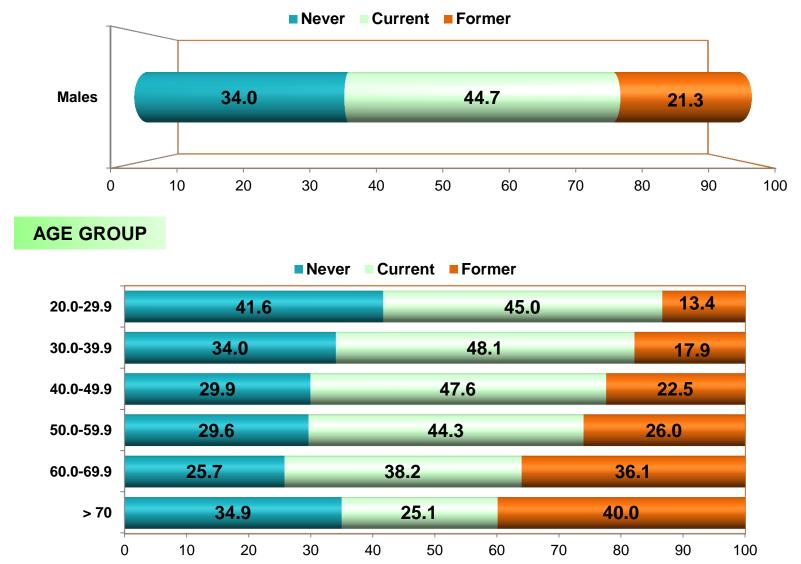
## Distribution of adults 20 years old and over by smoking status and age group: Philippines, 2013







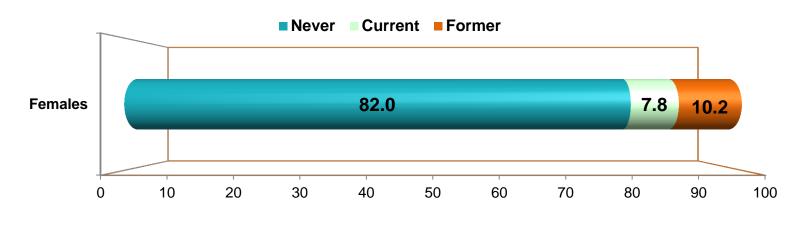
# Distribution of male adults 20 years old and over by smoking status and age group: Philippines, 2013

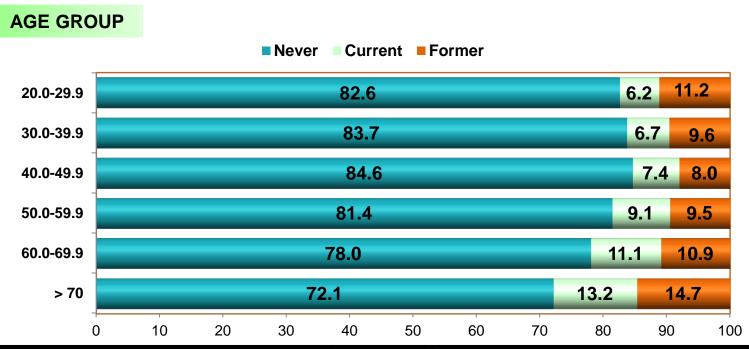






## Distribution of female adults 20 years old and over by smoking status and age group: Philippines, 2013









## Prevalence and 95% CI of adult current smokers: Philippines, 2013

REGIONS	LL	UL	PREVALENCE
PHILIPPINES	24.5	26.3	25.4
NCR	20.4	26.1	23.3
llocos	24.5	28.5	26.5
Cagayan Valley	21.5	28.6	25.1
CAR	14.3	23.7	19.0
Central Luzon	28.1	34.1	31.1
CALABARZON	23.1	27.9	25.5
MIMAROPA	21.7	29.3	25.5
Bicol	23.2	28.6	25.9
Western Visayas	23.3	29.3	26.3
Central Visayas	16.9	22.1	19.5
Eastern Visayas	19.2	26.6	22.9
Zamboanga Peninsula	26.8	35.8	31.3
Northern Mindanao	20.9	26.0	23.5
Davao	20.1	26.3	23.2
SOCCSKSARGEN	24.3	32.1	28.2
ARMM	23.4	32.5	28.0
CARAGA	24.3	32.5	28.4
			0 10 20 30









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### OPERATIONAL DEFINITION

### **ALCOHOL CONSUMPTION**

#### LIFETIME ABSTAINERS

people who have never consumed alcohol

#### **FORMER DRINKERS**

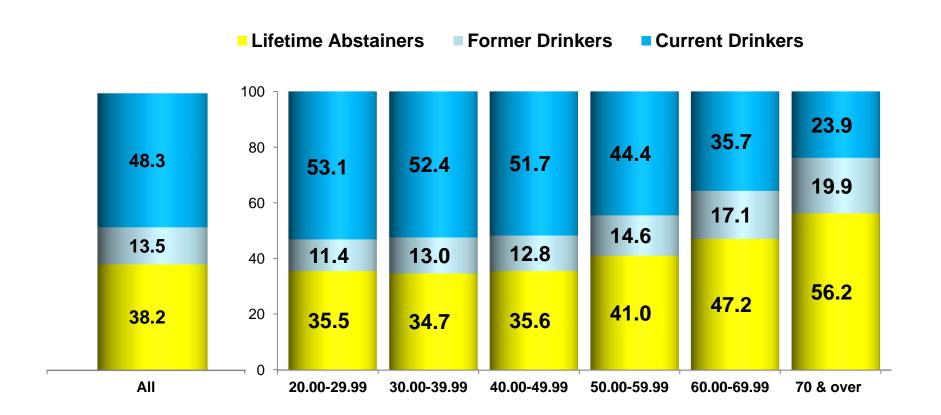
people who have previously consumed alcohol but who have not done so in the previous 12-month period

#### **CURRENT DRINKERS**

people who were currently consuming alcohol during the survey period

Reference: World Health Organization: Global Status Report on Alcohol and Health 2014

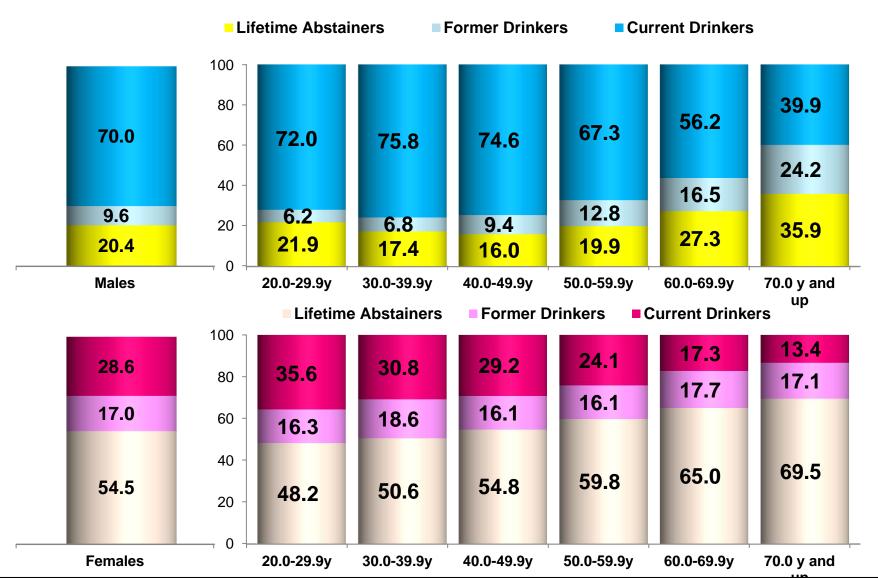
## Distribution of adults 20.0 years old and over by alcohol consumption status and age group: Philippines, 2013







# Distribution of adults 20.0 years old and over by alcohol consumption status, sex and age group: Philippines, 2013







## Prevalence and 95% CI of adult current drinkers: Philippines, 2013

REGIONS	LL	UL		PREVALENCE		
PHILIPPINES	47.1	49.5				48.3
NCR	47.5	55.7		51.6		
llocos	42.1	47.9		45.0		
Cagayan Valley	41.2	49.5		45.3		
CAR	42.0	53.3				47.7
Central Luzon	48.3	53.4				50.8
CALABARZON	50.1	55.3				52.7
MIMAROPA	47.5	56.1				51.8
Bicol	49.5	59.5		54.5		
Western Visayas	39.2	46.1			42.	.6
Central Visayas	32.0	44.0			38.0	
Eastern Visayas	64.0	74.6				69
Zamboanga Peninsula	40.4	52.1			4	16.3
Northern Mindanao	39.9	49.8			4	4.8
Davao	44.0	54.5				49.3
SOCCSKSARGEN	33.9	44.5			39.2	
ARMM	11.3	23.7		17.7		
CARAGA	47.3	58.3				52.8
			0	20	40	60







### OPERATIONAL DEFINITION

### **BINGE DRINKING**

### **BINGE DRINKING**

drinking of 5 or more standard drinks in a row for men

drinking of 4 or more standard drinks in a row for women



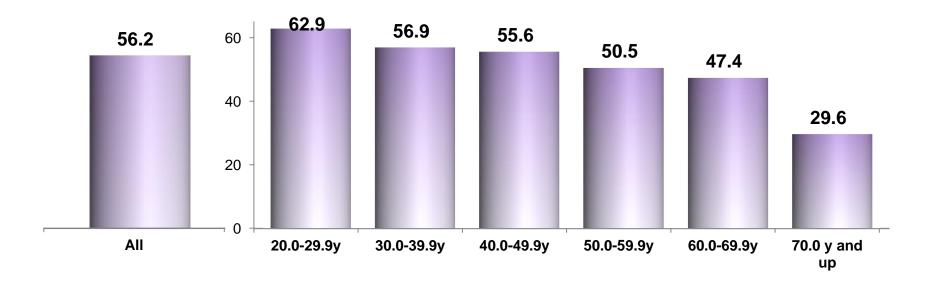
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Reference: World Health Organization STEPS Surveillance

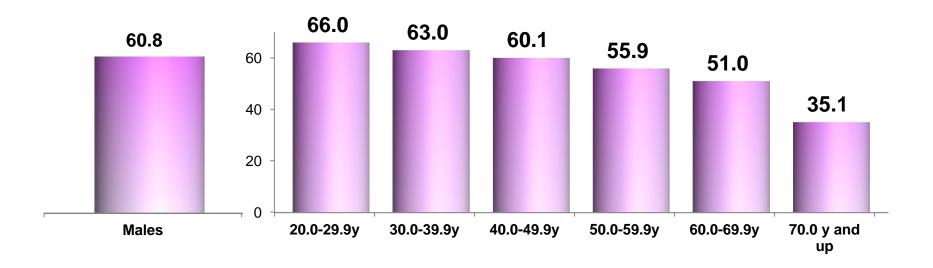
## Proportion of binge drinkers, 20.0 years old and over by age: Philippines, 2013

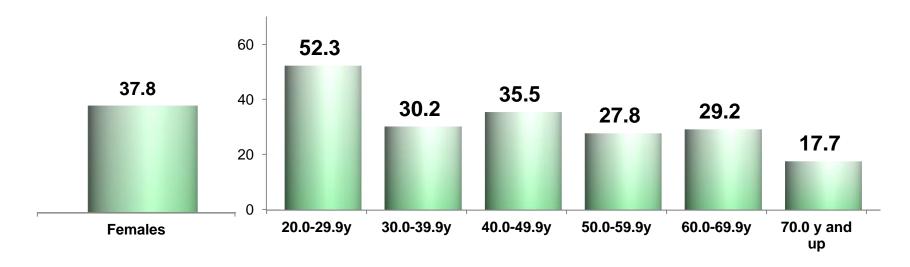






### Proportion of binge drinkers, 20.0 years old and over by sex and age: Philippines, 2013

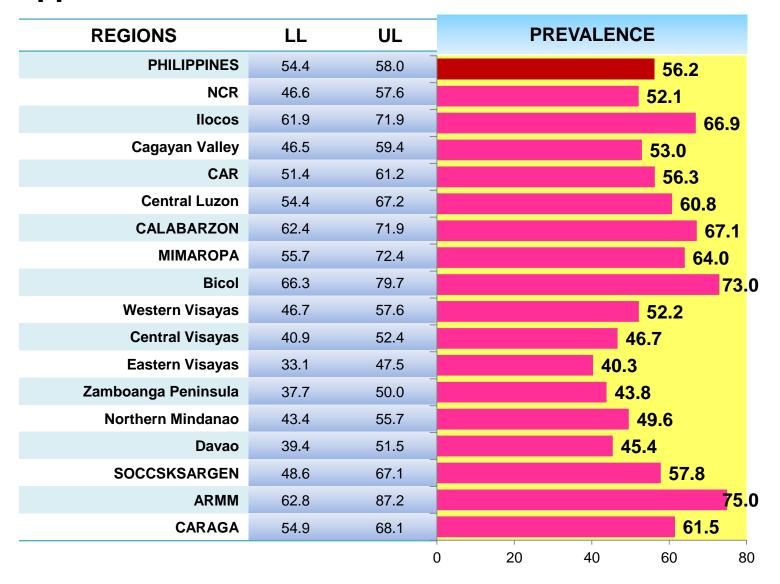








# Proportion and 95% CI of adult current binge drinkers: Philippines, 2013









### OPERATIONAL DEFINITION

### PHYSICAL ACTIVITY

### Insufficiently Physically Active

A person not meeting any of the following criteria is considered being physically inactive or insufficiently physically active and therefore at risk of chronic disease:

- 3 or more days of vigorous-intensity activity of at least 20 minutes per day; OR
- 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day



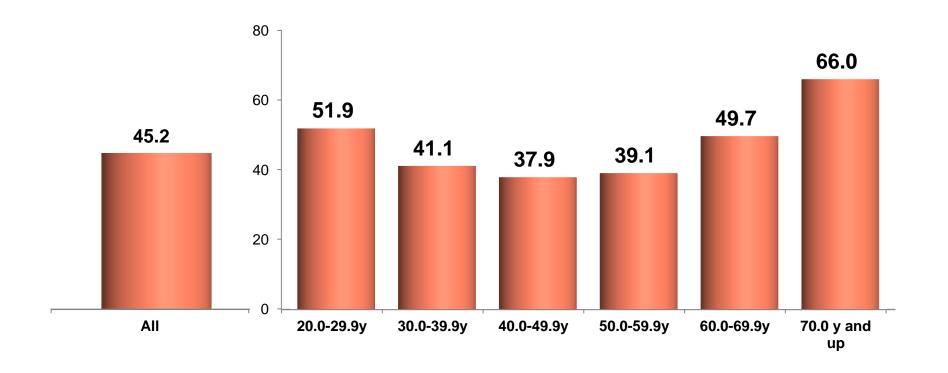
FOOD AND NUTRITION RESEARCH INSTITUTE

DEPARTMENT OF SCIENCE AND TECHNOLOGY



Reference: World Health Organization STEPS Surveillance

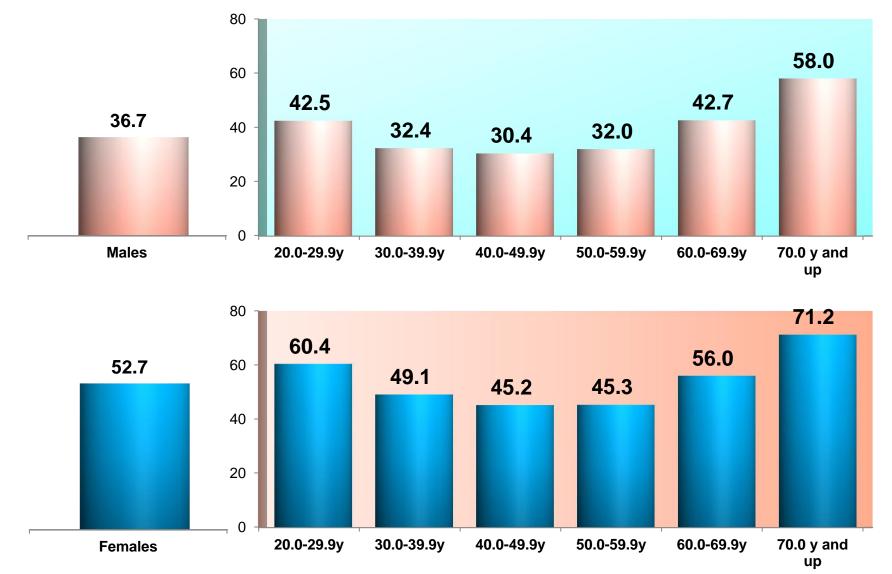
## Proportion of insufficiently physically active adults 20.0 years old and over by age group: Philippines, 2013







## Proportion of insufficiently physically active adults 20.0 years old and over, sex and age group: Philippines, 2013







# Proportion and 95% CI of insufficiently physically active adults by region, Philippines: 2013

REGION	LOWER LIMIT	UPPER LIMIT	PREVALENCE		
PHILIPPINES	43.5	46.8	45.2		
llocos Region	38.7	48.5	43.6		
Cagayan Valley	40.7	54.3	47.5		
CAR	33.1	50.8	41.9		
Central Luzon	34.7	46.6	40.6		
NCR	44.5	53.7	49.1		
CALABARZON	50.3	58.0	54.1		
MIMAROPA	34.2	49.6	41.9		
Bicol	38.2	56.4	47.3		
Western Visayas	41.3	54.5	47.9		
Central Visayas	48.2	62.0	55.1		
Eastern Visayas	33.8	46.1	39.9		
Zamboanga Peninsula	28.1	38.0	33.0		
Northern Mindanao	34.4	44.9	39.6		
Davao Region	25.8	41.7	33.8		
SOCCSKSARGEN	17.9	29.6	23.8		
CARAGA	40.3	53.0	46.6		
ARMM	37.9	55.9	46.9		
			0 10 20 30 40 50 60 70		





### Proportion of current alcohol drinkers among adults 20 years and over by sex: Philippines, 2008

