

## BIT's 2<sup>nd</sup> Annual International Congress of Cardiology, Shanghai, China

# Focus on the epidemiology of metabolic syndrome in Luxembourg

## Data from **ORISCAV-LUX** study

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# Grand-Duchy of Luxembourg

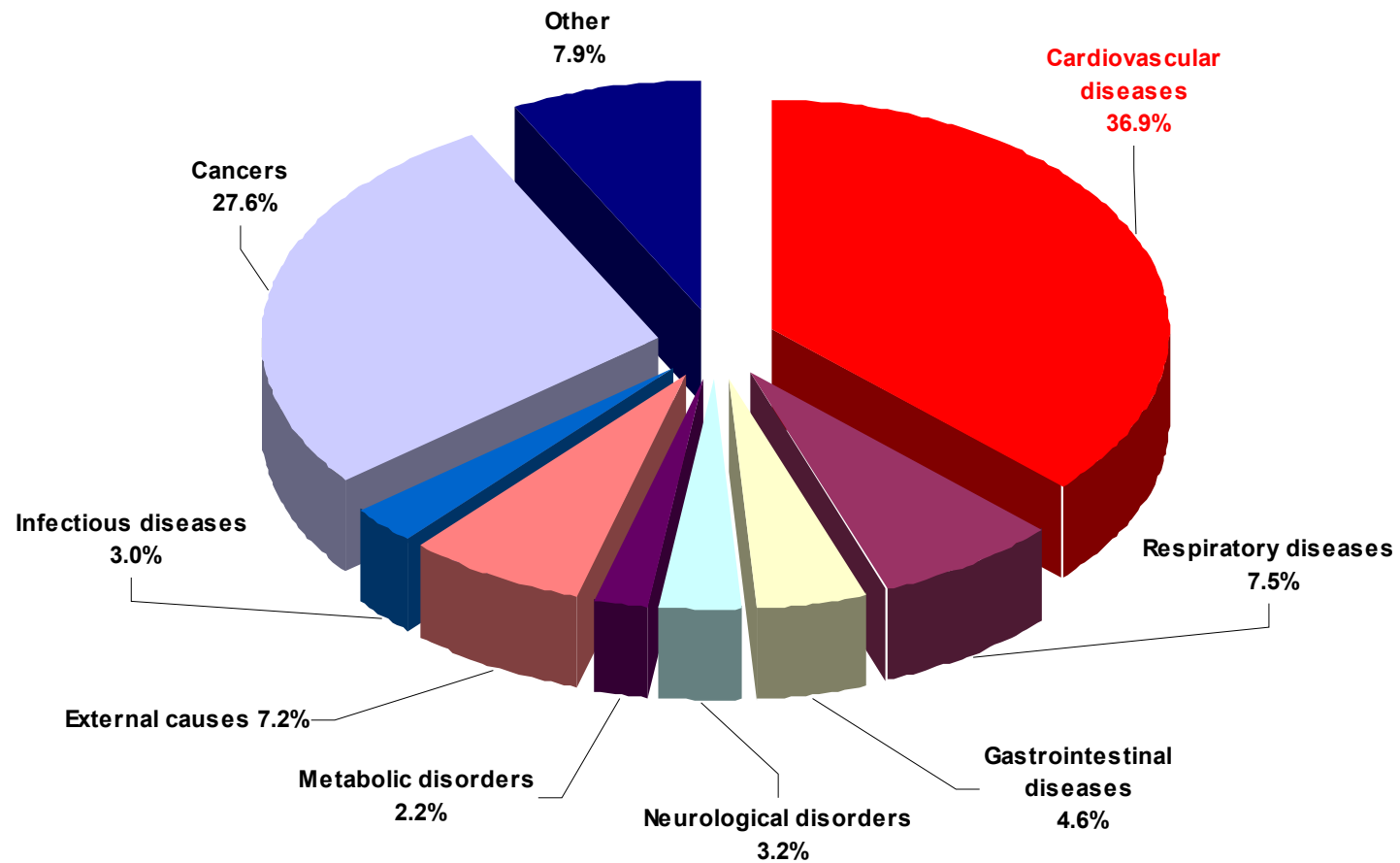


2586 km<sup>2</sup>  
493,500 inhabitants

Luxembourgers **56.3%**  
Foreigners **43.7%**

**94.2% Europid**

# Causes of mortality in Luxembourg (2007)

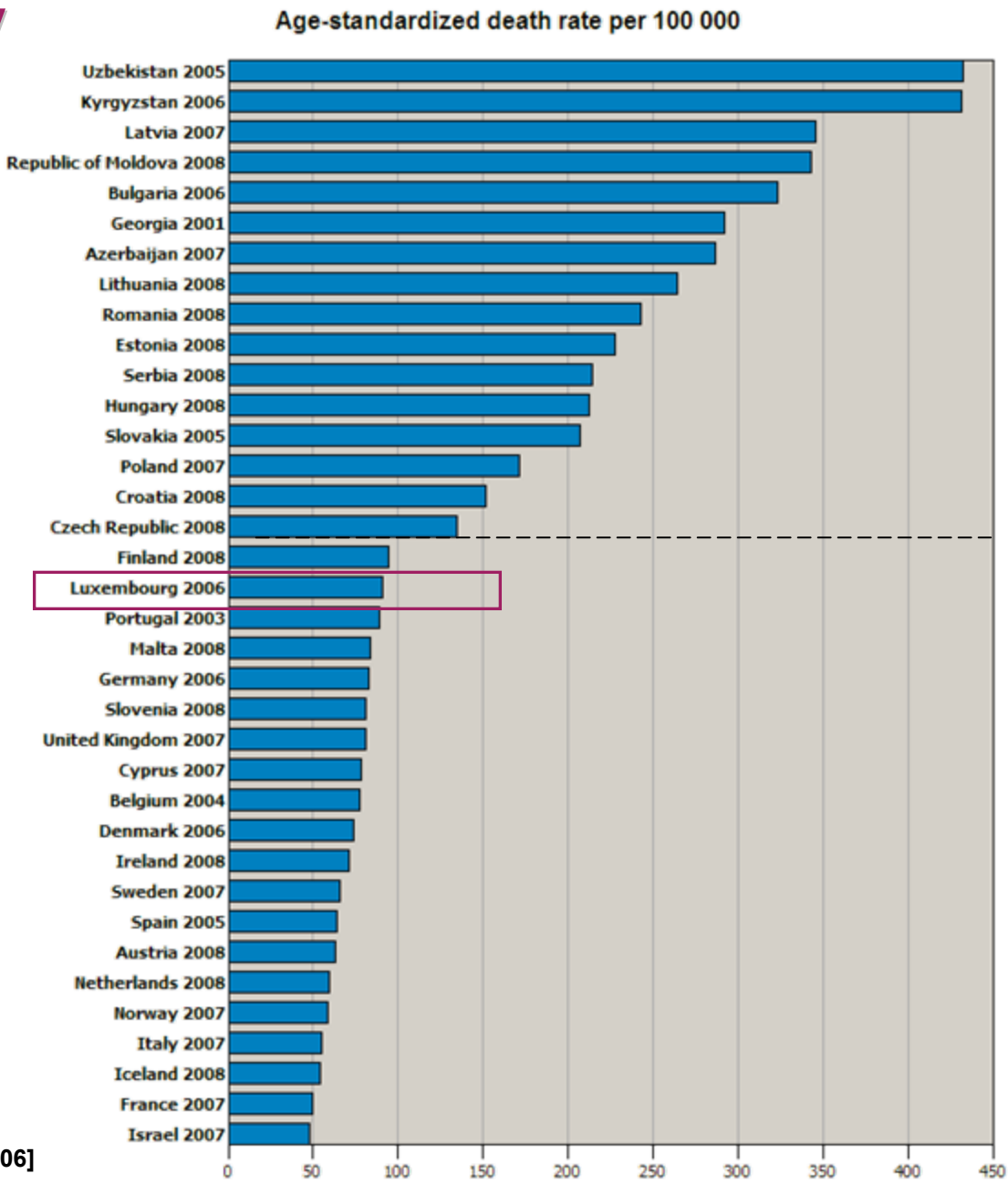


Directorate-General of Health, Luxembourg, 2007

# Cardiovascular mortality in Europe

20-69 years

*Highest mortality among  
the Western countries*



European detailed mortality database (DMDB).  
Copenhagen, WHO Regional Office for Europe, [2006]

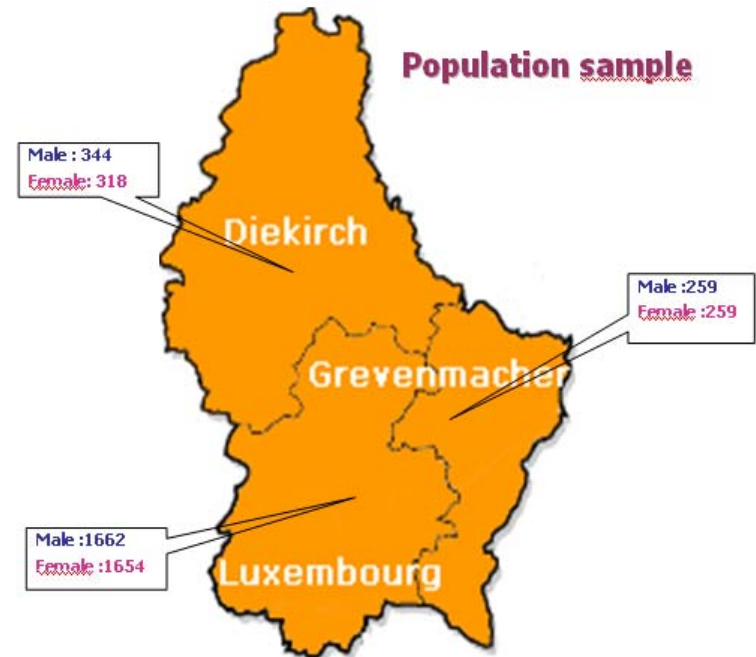
- Estimate the prevalence of **major potentially modifiable cardiovascular risk factors** and follow-up their trends among the population
- Estimate the prevalence of **metabolic syndrome** (Cluster of several cardiovascular risk factors) and follow-up its trend among the population
- Characterize and identify the “**group at risk**” of population
- Determine the most appropriate intervention of prevention  
« **Evidence-based interventions** »



# ORISCAV-LUX study

*Observation of Cardiovascular Risk Factors in Luxembourg*

- ☛ **Cross-sectional** study to observe the cardiovascular risk factors among adults residing in Luxembourg
- ☛ Based on **representative random** sample stratified for age, gender and district\*
- ☛ Carried out between **November 2007 and January 2009**
- ☛ 1432 participants, 18-69 years (1349 Europid; 94.2%)



# Method of data collection

Mailing  
(invitation/information)  
with coupon-answer



Phone contact



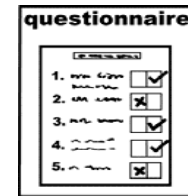
Appointement



In an investigation centre



1<sup>st</sup> step



2<sup>nd</sup> step



Waist and hip circumferences



Weight



Height



Blood pressure

3<sup>rd</sup> step



Hair sample



Urine



Blood



### Obesity

BMI  $\geq$  30 kg/m<sup>2</sup>



### Hypertension

SBP  $\geq$  140 mmHg  
DBP  $\geq$  90 mmHg  
Anti-hypertensive medications

### Diabetes

FPG  $\geq$  126 mg/dl  
Anti-diabetic medications

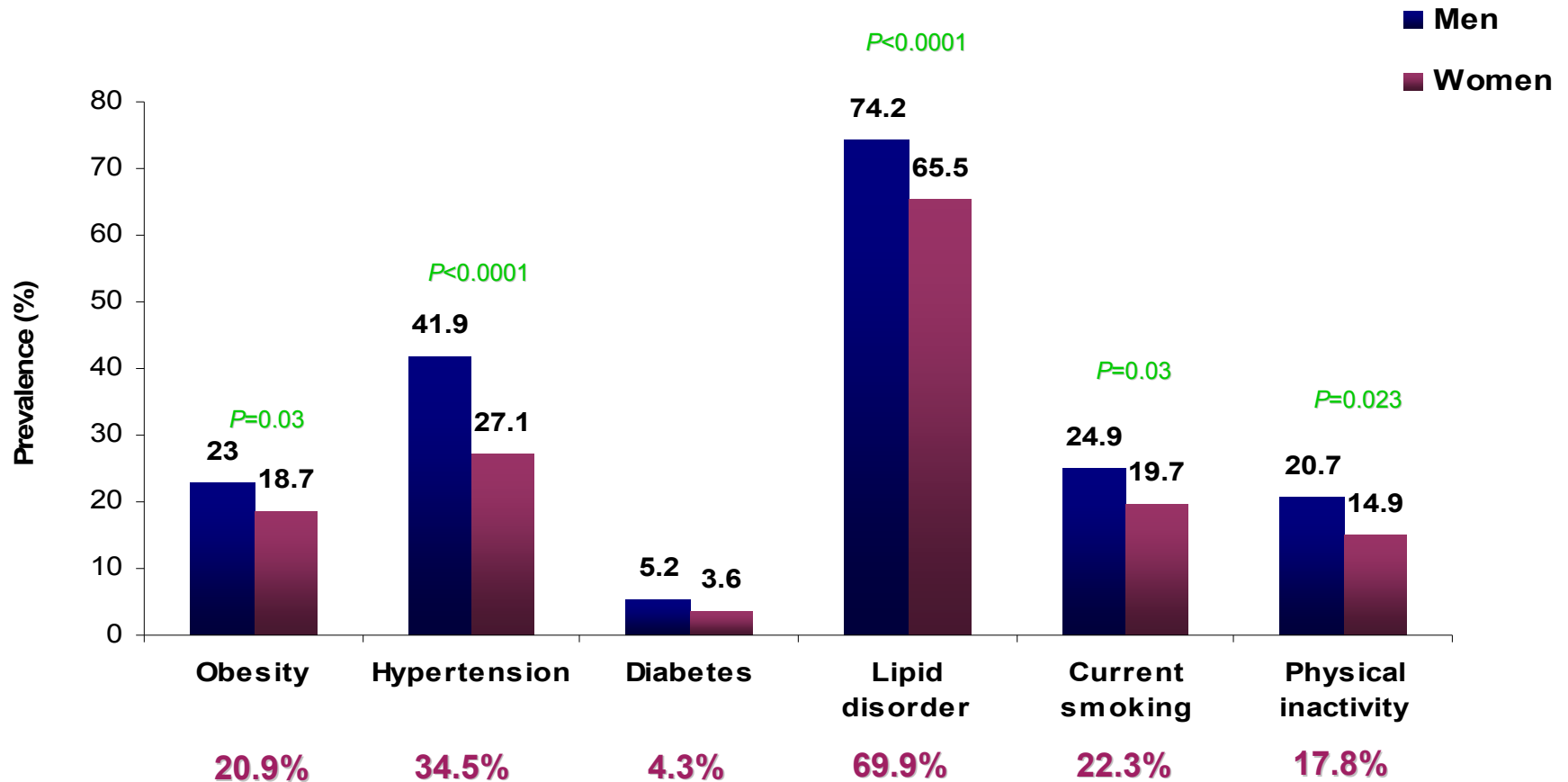
### Lipid disorder

At least one of the following anomalies  
TC  $\geq$  190 mg/dl,  
TG  $\geq$  150 mg/dl,  
LDL-C  $\geq$  115 mg/dl,  
HDL-C  $<$  40 mg/dl   $<$  46 mg/dl   
Hypo-lipid medications

### Current smoking

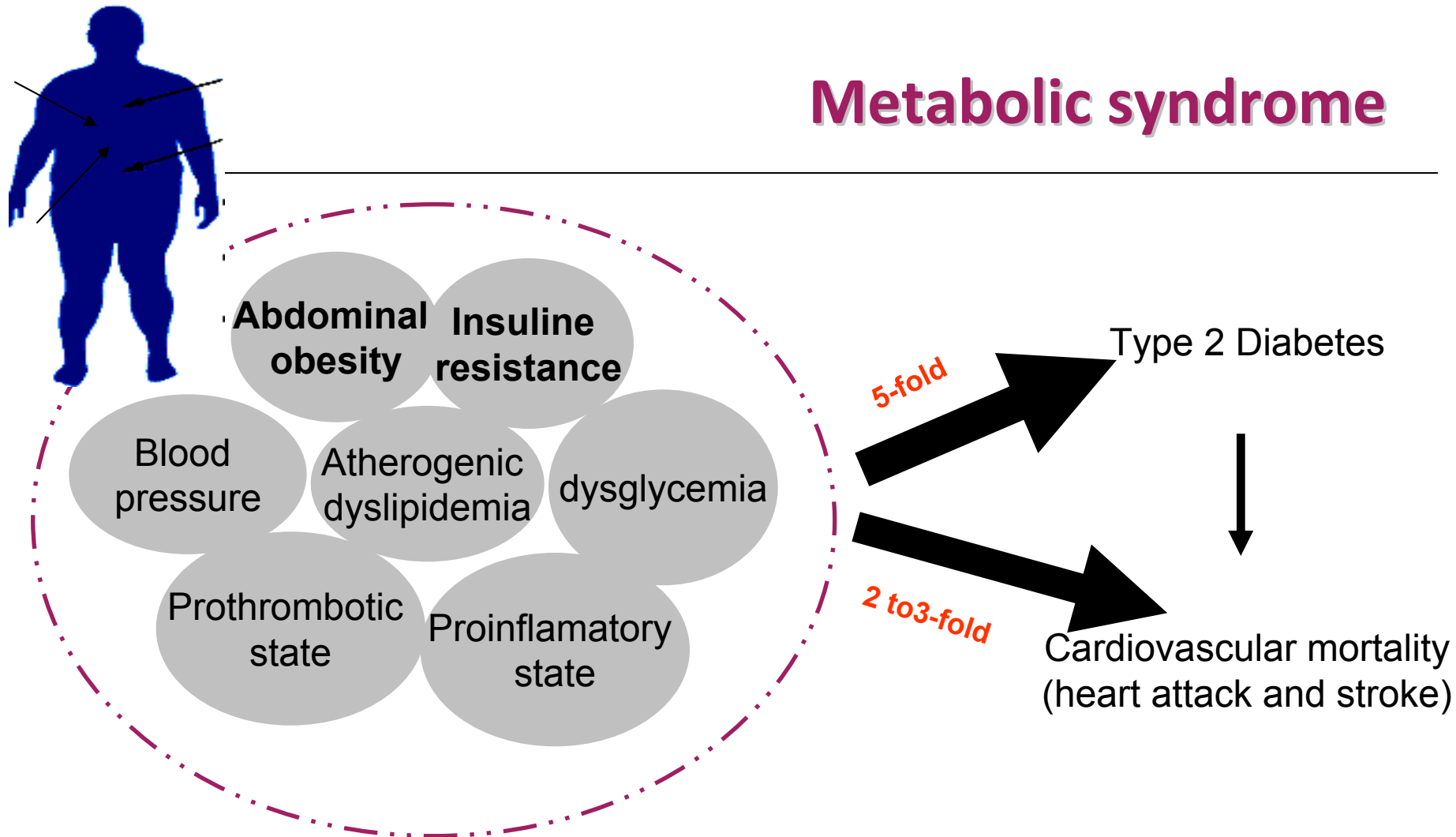
At least 1 cigarette/day

# Prevalence of cardiovascular risk factors





Alkerwi et al, 2010, BMC Public Health 2010, 10:468



# Metabolic syndrome



*This multiplex cardio-metabolic disorder clusters together in the same individual more often than might be expected by chance*

### 3 or more of the following criteria

↑ WC  ≥ 102 cm  ≥ 88 cm

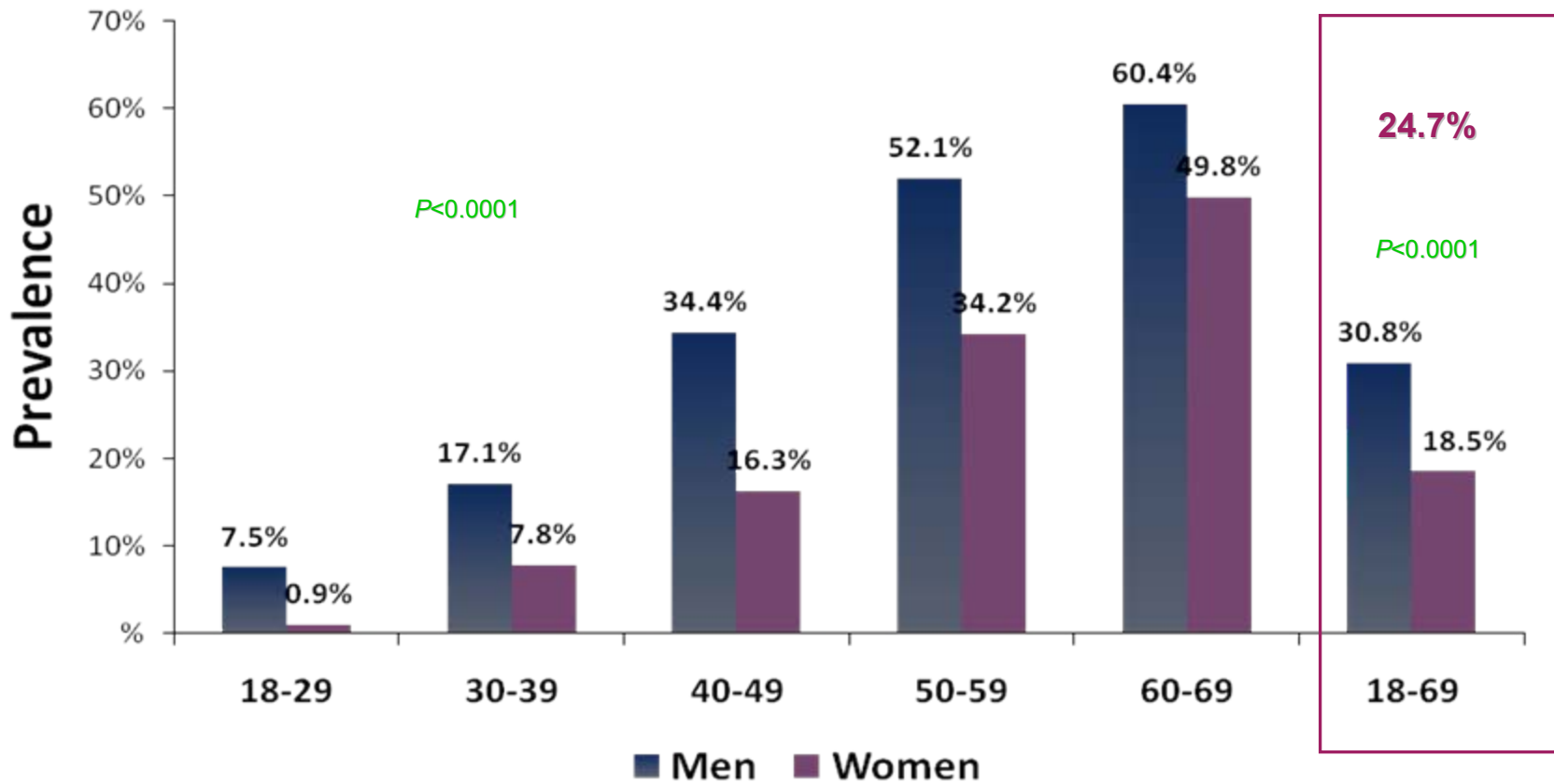
↓ HDL  < 40 mg/dl  < 50 mg/dl  
or traitement

↑ TG ≥ 150 mg/dl or traitement

↑ SBP ≥ 130 mmHg or traitement  
↑ DBP ≥ 85 mmHg

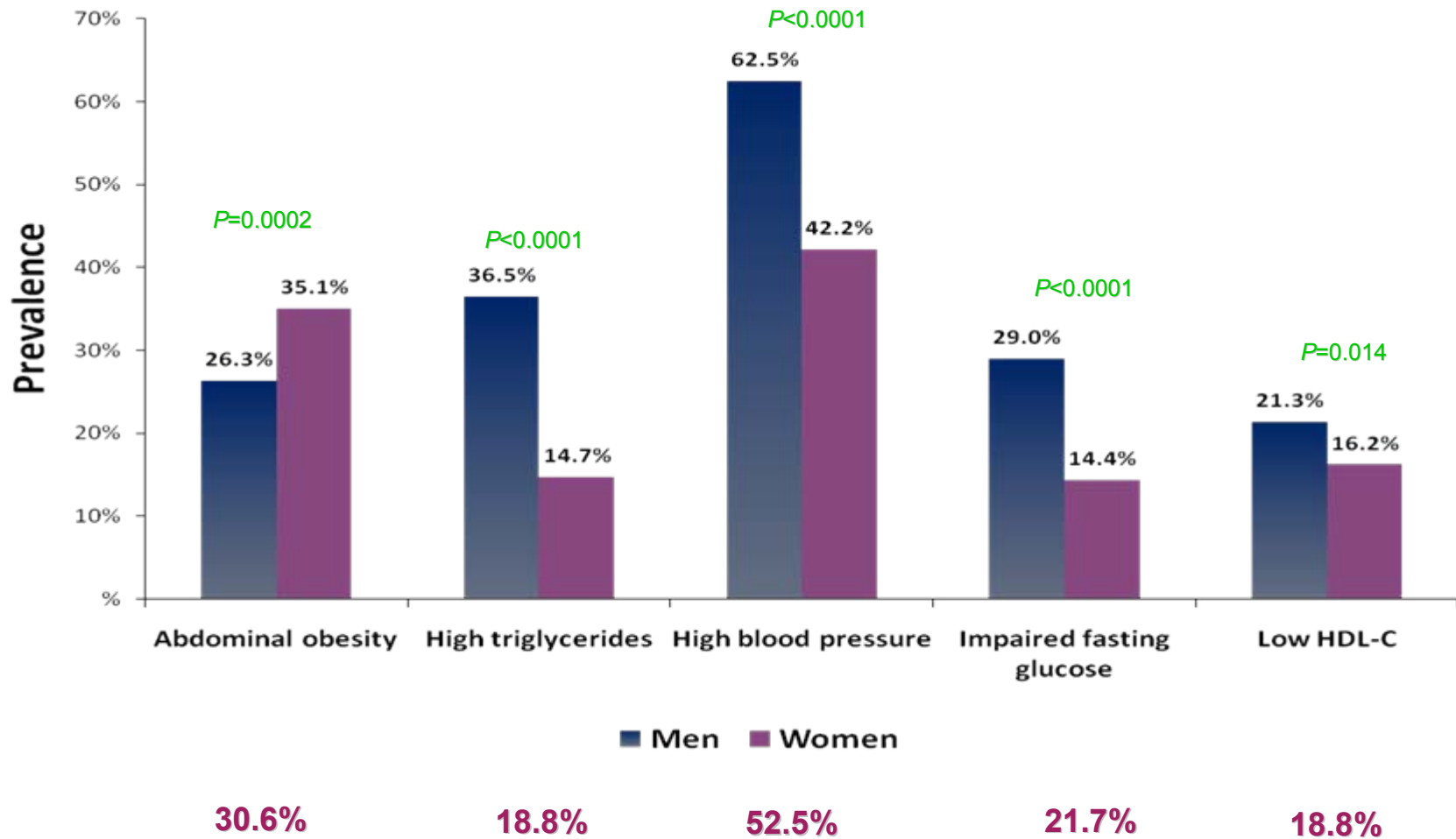
↑ FPG ≥ 100mg/dl or diagnosed diabetes

# Prevalence of metabolic syndrome by age and gender



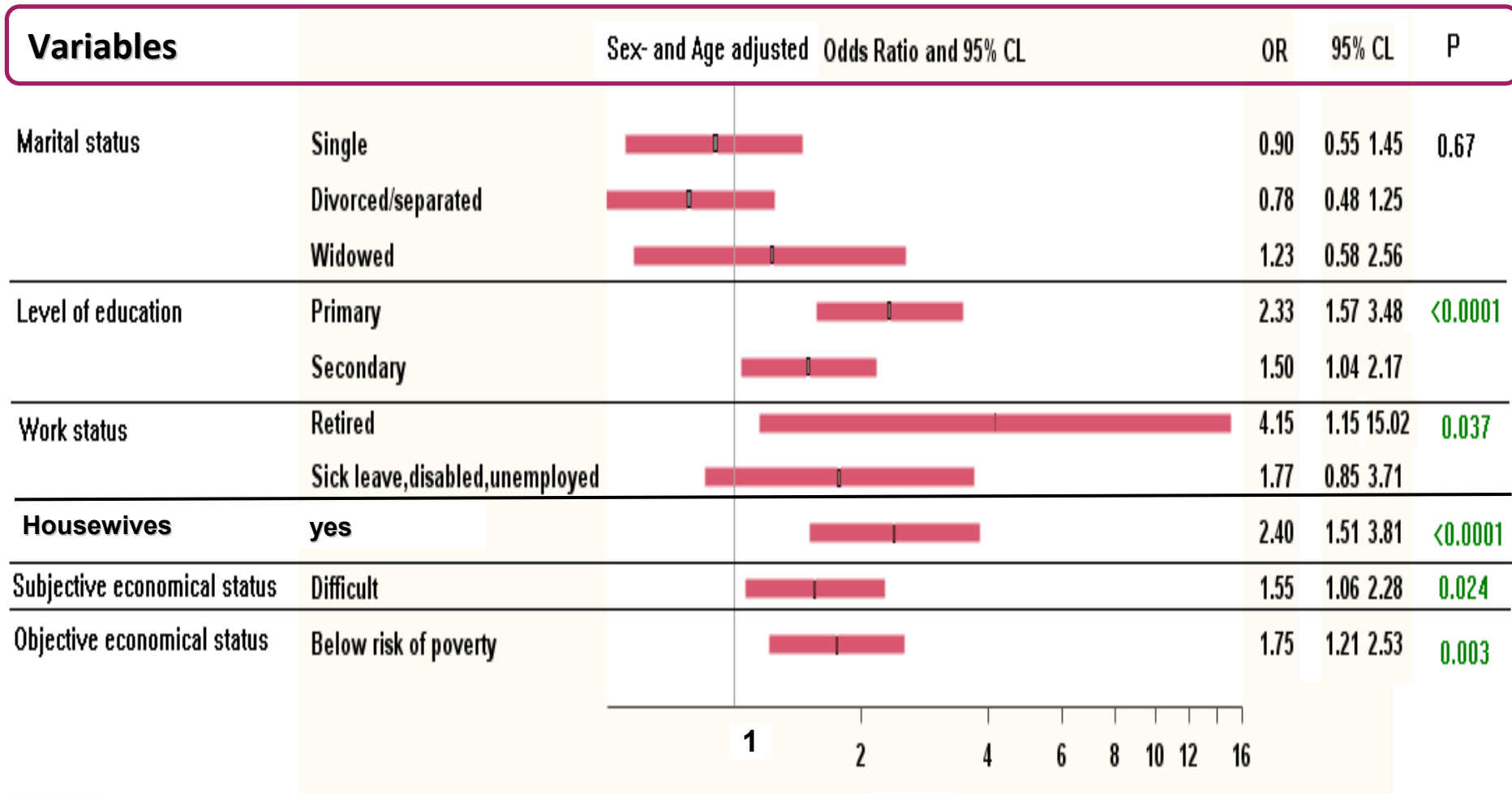


# Prevalence of metabolic syndrome components



# Metabolic syndrome – Logistic regression

## Socio-economic factors

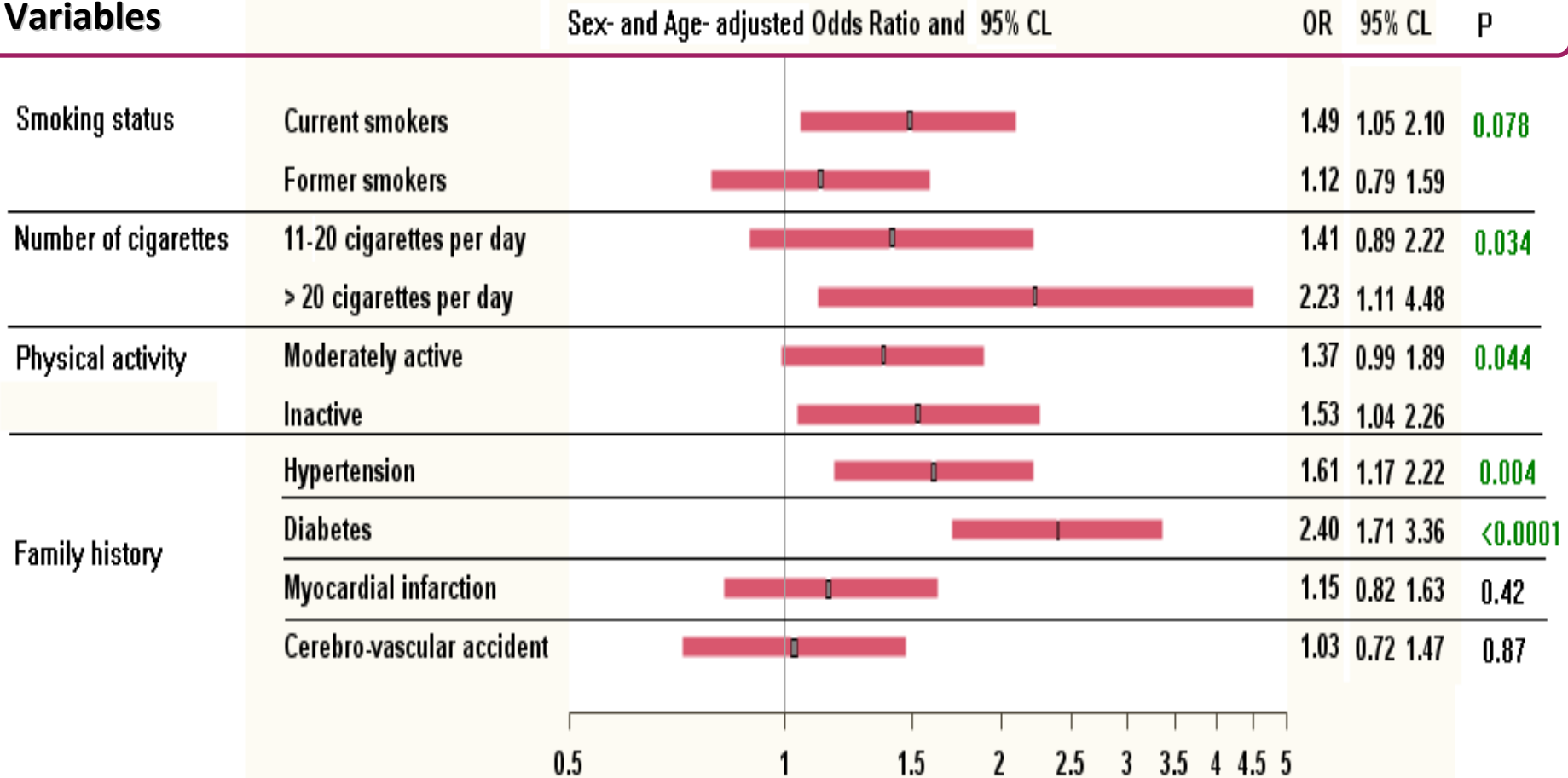


Reference category: married, university level of education, employed, working women, easy subjective economical status, above risk of poverty threshold

# Metabolic syndrome – Logistic regression

## Lifestyle factors / family history

### Variables
















Reference category: non-smokers, less than 10 cigarettes/day, physically active, no family history of (hypertension, diabetes, myocardial infarction, CVA)

# Metabolic syndrome – Logistic regression

## Dietary factors

### Variables

		Sex- and Age adjusted Odds Ratio and 95% CL	OR	95% CL	P
Total fat, % E	<25 or >30		0.80	0.51 1.28	0.35
Saturated fat, % E	≥10		0.59	0.39 0.91	0.016
Poly unsaturated fat, % E	<6 or >10		1.17	0.87 1.56	0.30
Mono unsaturated fat, % E	<10 or >14		1.03	0.73 1.45	0.86
ω6/ω3 ratio	<4.5 or >5.5		4.91	0.82 29.45	0.08
Cholesterol, mg/day	>300		1.10	0.81 1.49	0.53
Total carbohydrates, % E	<55 or >65		1.38	0.73 2.61	0.32
Free sugar, % E	≥10		0.60	0.39 0.91	0.016
Total protein, % E	<10 or >15		1.56	1.14 2.15	0.006
Sodium, g/day	<6 or >8		1.25	0.88 1.78	0.22
Fruits and vegetables, g/day	<400		0.96	0.70 1.31	0.80
Total fibres, g/day	<25		1.02	0.76 1.37	0.90
Soluble fibres, g/day	<10		0.89	0.45 1.76	0.74

Reference categories are those who respect the WHO recommendations, 2003



- ✓ The MS is an important **health problem** for the population residing in Luxembourg.
- ✓ The prevalence rates increased remarkably with **age in both genders**.
- ✓ The MS demonstrated significant **gender-specific differences**.
- ✓ **Low education level, physical inactivity, inadequate protein diet and family history of diabetes and hypertension** were the most important determinants of the MS among the population residing in Luxembourg.
- ✓ Need to implement a **population-based multiple-facet intervention** tailored for groups at risk.
- ✓ **Lifestyle-oriented intervention** would be the promising approach for the primary prevention of MS.

Thanks for your attention

