

Portuguese childhood Overweight and Obesity and Regional Development

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INTRODUCTION

Across European countries, within regions or population groups the prevalence of overweight and obesity is related to social and economic deprivation. Overweight and obesity are consequences of inequalities in children's socioeconomic status, health, life conditions, and demographic determinants of health (Adamson et al 2007, Atras et al 2004; Branca et al 2007, Johnson et al. 2011).

Socioeconomic inequality factors may be related to obesity by diet and nutrition, healthy food choices and dietary habits and by behaviour lifestyles and physical activity, leisure-time, physical exercise and sedentary behaviour;

The 2009 Portuguese national indicators of economic growth and living conditions showed high regional differences. Regarding the 2009 competitiveness index and per capita purchasing power, the strongest performances were in the metropolitan territories of Lisboa and Porto.

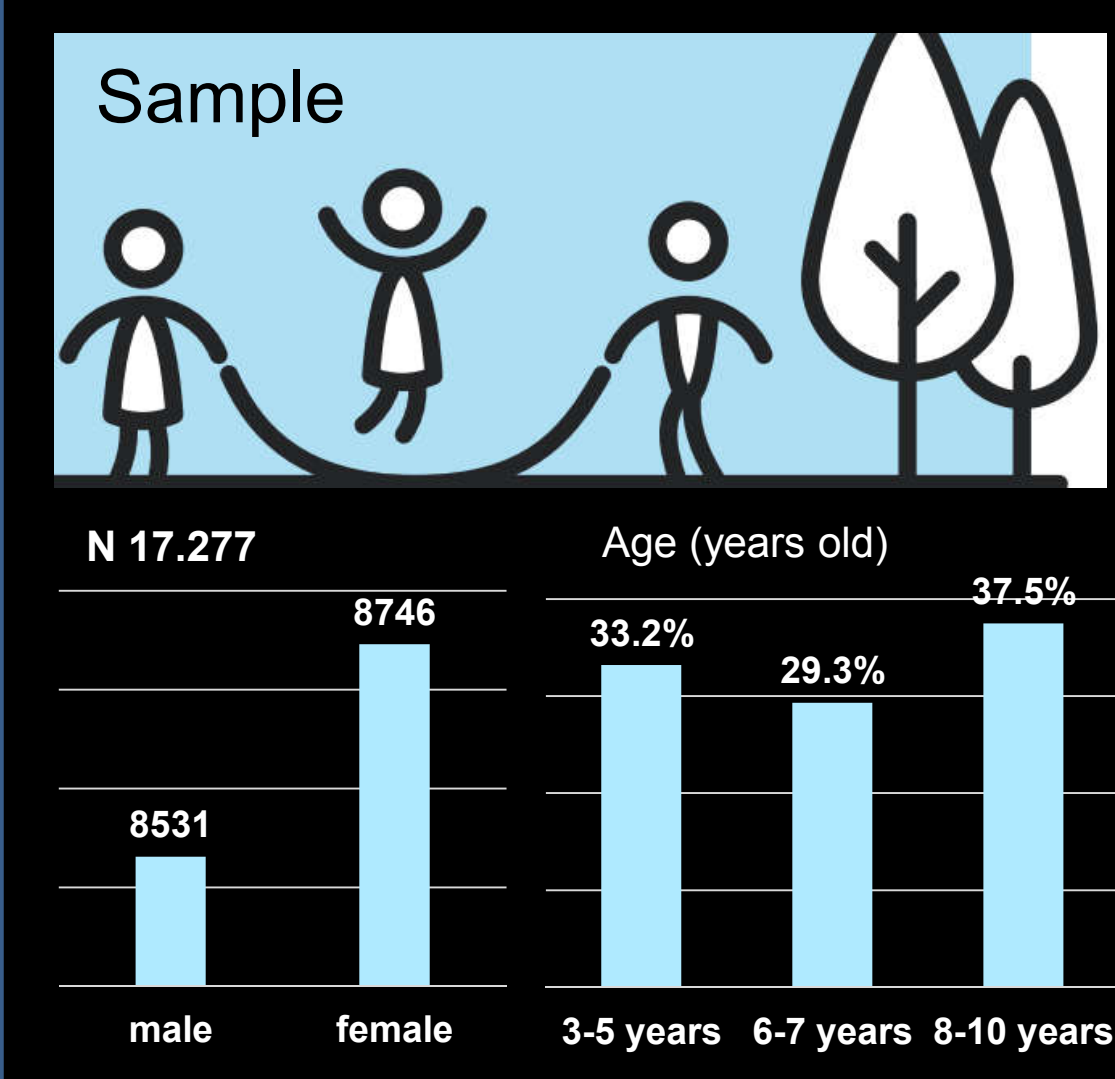
AIMS To evaluate the role of the competitiveness index, cohesion index, environmental quality index and per capita purchasing power indicator on Portuguese regional variations in childhood overweight and obesity.

DESIGN and METHODS

Portuguese Prevalence Study of Obesity in Childhood 2009-2010

A random cross-sectional survey schools from all the Portuguese mainland districts. The protocol was approved by *Direcção Geral de Inovação e Desenvolvimento Curricular (Monitorização de Inquéritos em Meio Escolar, Ministério da Educação)*.

Sample



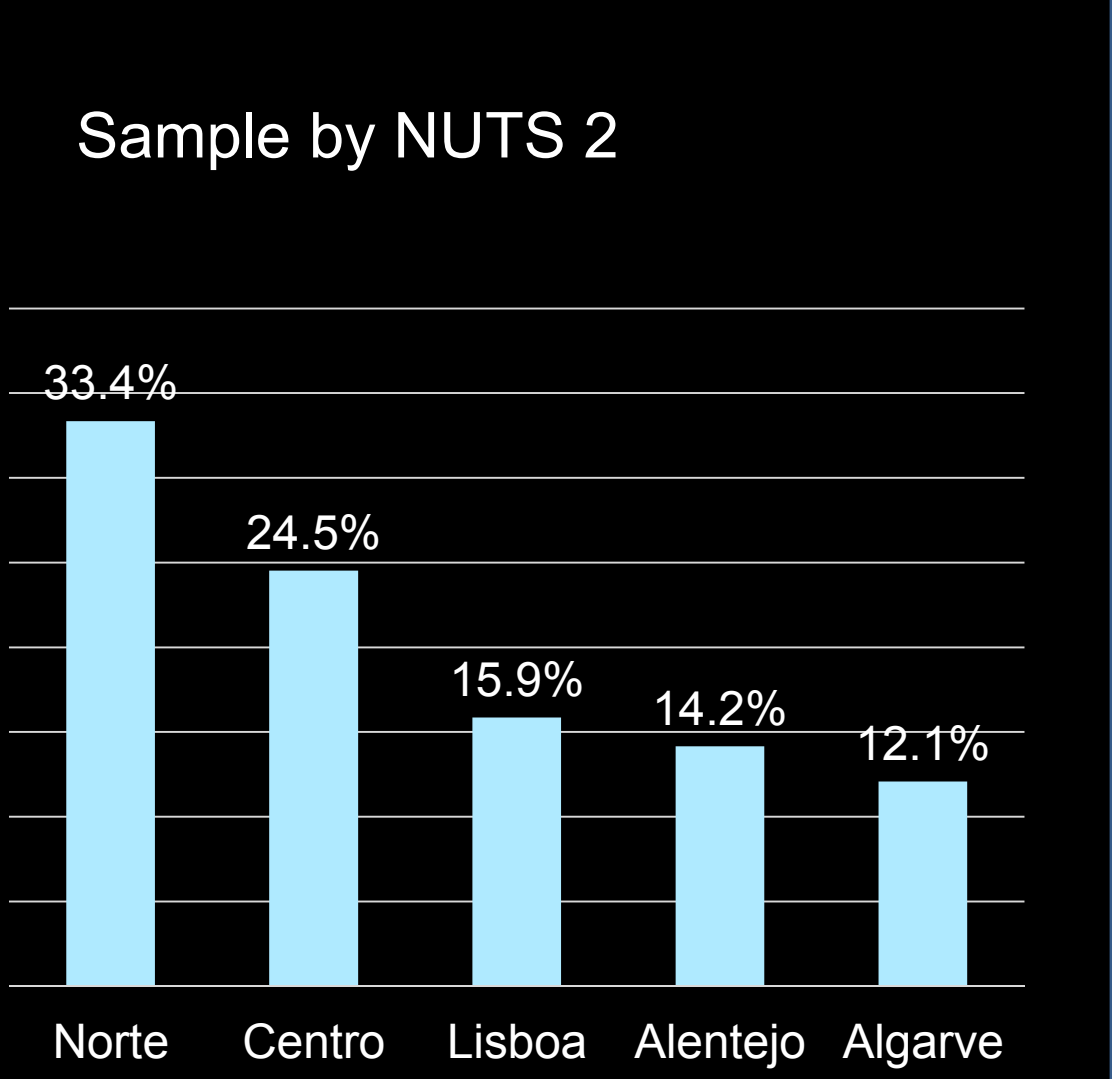
N 17.277

Age (years old)

male 8531 female 8746

3-5 years 33.2% 6-7 years 29.3% 8-10 years 37.5%

Sample by NUTS 2



33.4% Norte 24.5% Centro 15.9% Lisboa 14.2% Alentejo 12.1% Algarve

Overweight Obesity

Three categories:

- non-overweight/
- overweight (without obesity)
- obesity

BMI (Kg/m²)
World Health Organization's percentiles cut-off points.

Regional development

Indicators of Regional Development

- Competitiveness index,
- Cohesion index
- Environmental quality index

Levels 1 (<national average < median)
2 (<national average > median)
3 (> national average < median)
4 (> national average > median)

Competitiveness index

express a region's potential for performance in terms of competitiveness, efficiency, generation of wealth, the ability to compete in international markets, and life level and employment.

Cohesion index

social and economic cohesion, taking into consideration the population's access to quality basic collective equipment and services.

Environmental quality index

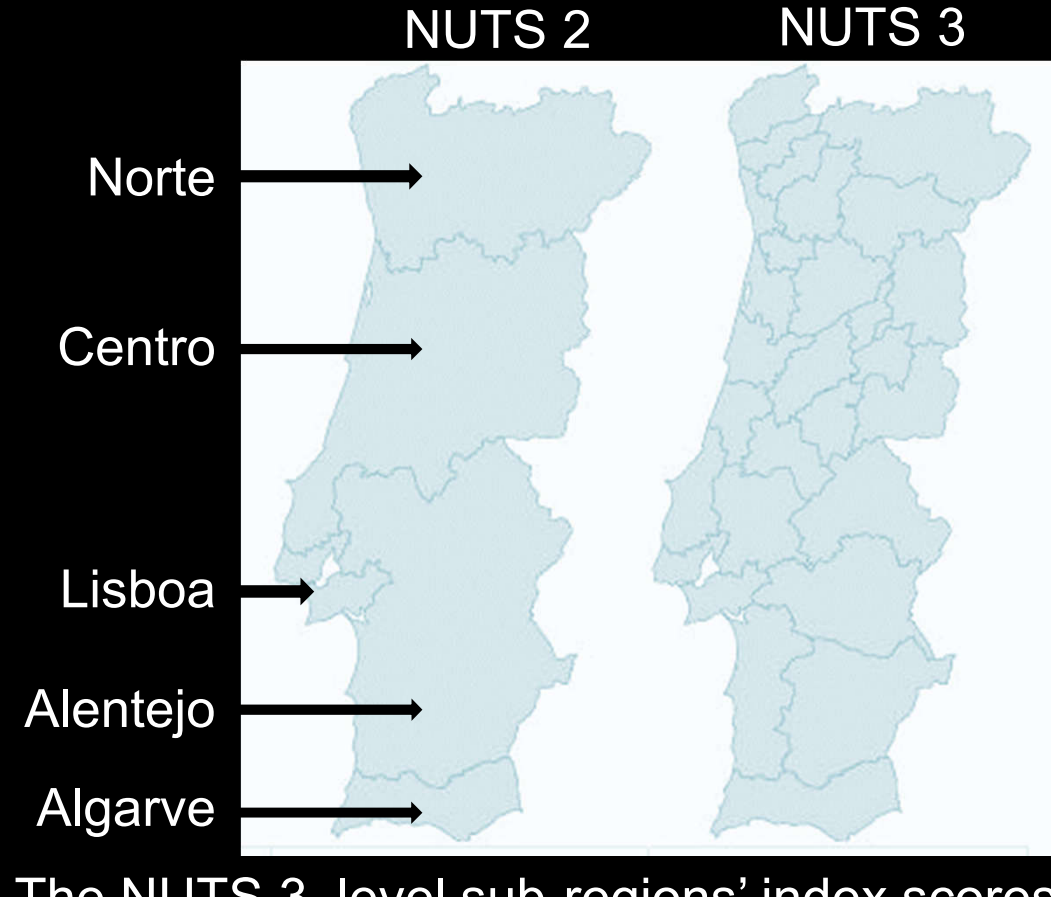
The pressure placed on the environment by economic activity and social behaviour.

Purchasing power

- Per capita purchasing power indicator**
daily purchasing power perspective by using Portugal as a reference

Low (61.2 to < 79.8),
Medium (79.8 to < 95.2)
High (95.2 to 145.3)

NUTS 2 NUTS 3

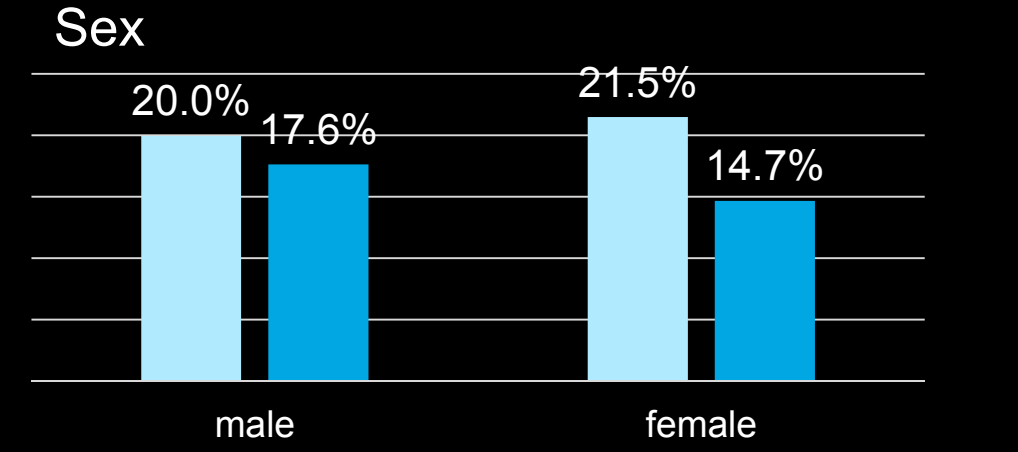


Norte, Centro, Lisboa, Alentejo, Algarve

The NUTS 3 level sub-regions' index scores INE Portugal 2009 by children's place of residence were used.

RESULTS

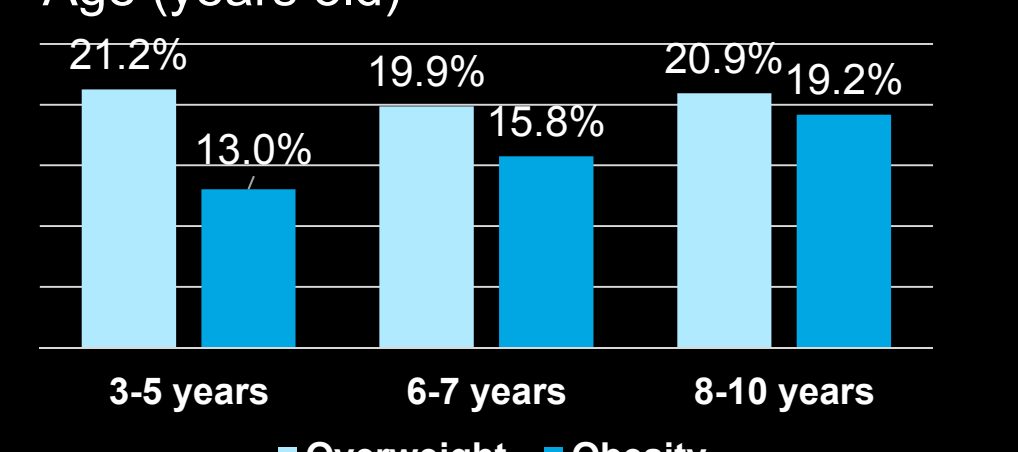
Sex



20.0% 17.6% 21.5% 14.7%

male female

Age (years old)



21.2% 13.0% 19.9% 15.8% 20.9% 19.2%

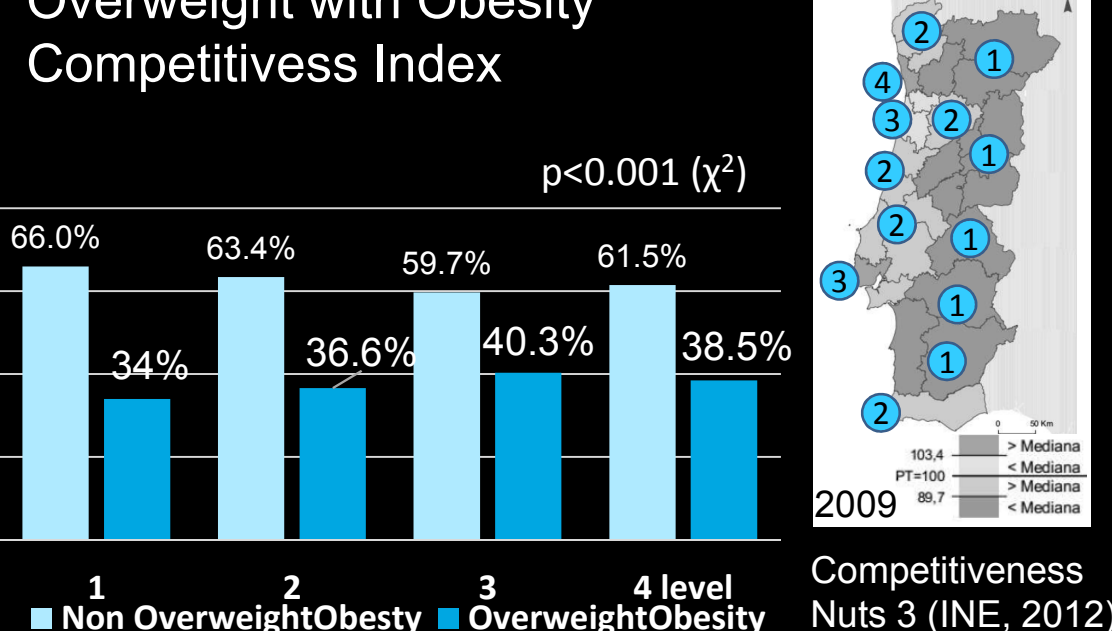
3-5 years 6-7 years 8-10 years

Overweight Obesity

Overweight and obesity by NUTS 2

NUTS 2	Non Overweight Obese	Overweight	Obesity
Norte	22.9%	19.4%	
Centro	22.8%	14.6%	
Lisboa	18.7%	15.0%	
Alentejo	18.0%	14.3%	
Algarve	16.5%	13.9%	

Overweight with Obesity Competitiveness Index

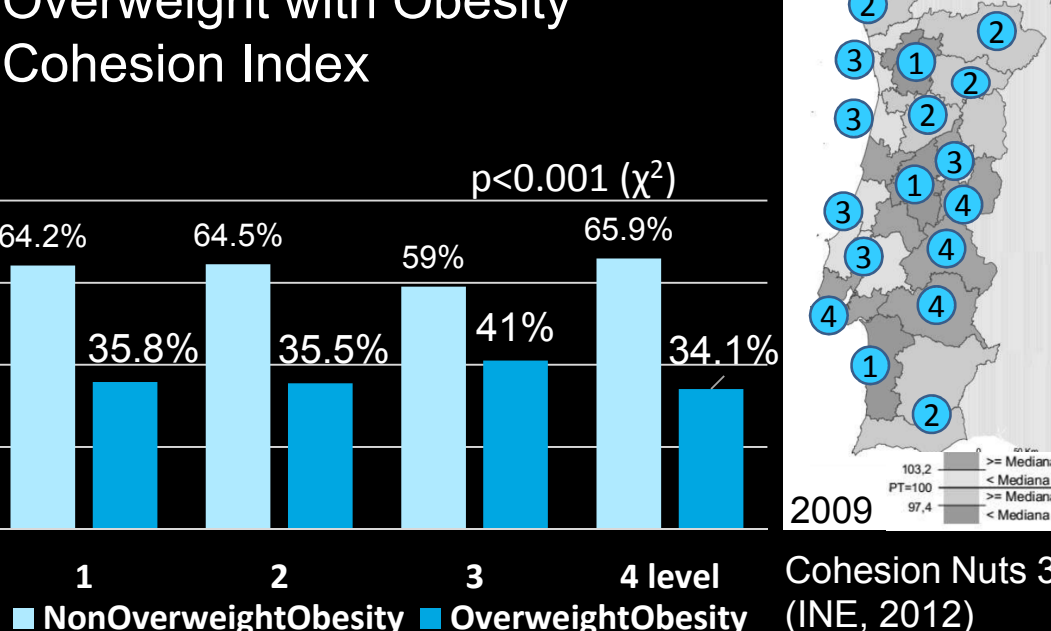


66.0% 63.4% 59.7% 61.5% 34% 36.6% 40.3% 38.5%

p<0.001 (χ²)

Competitiveness Level	B	P wald	Exp(B)	95% C.I.	
				Lower	Upper
1 (ref)					
2	0.115	0.008	1.122	1.031	1.22
3	0.275	<0.001	1.316	1.147	1.51
4	0.198	<0.001	1.219	1.113	1.335

Overweight with Obesity Cohesion Index

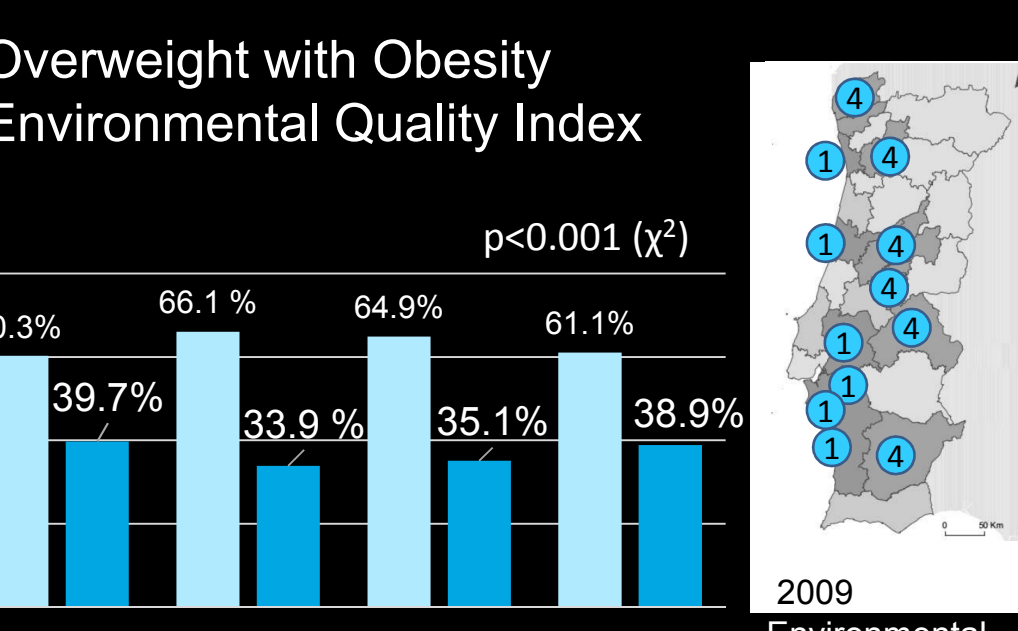


64.2% 64.5% 59% 65.9% 35.8% 35.5% 41% 34.1%

p<0.001 (χ²)

Cohesion Level	B	P wald	Exp(B)	95% C.I.	
				Lower	Upper
1 (ref)					
2	-0.014	0.882	0.986	0.822	1.184
3	0.219	0.017	1.245	1.039	1.492
4	-0.078	0.400	0.925	0.772	1.109

Overweight with Obesity Environmental Quality Index

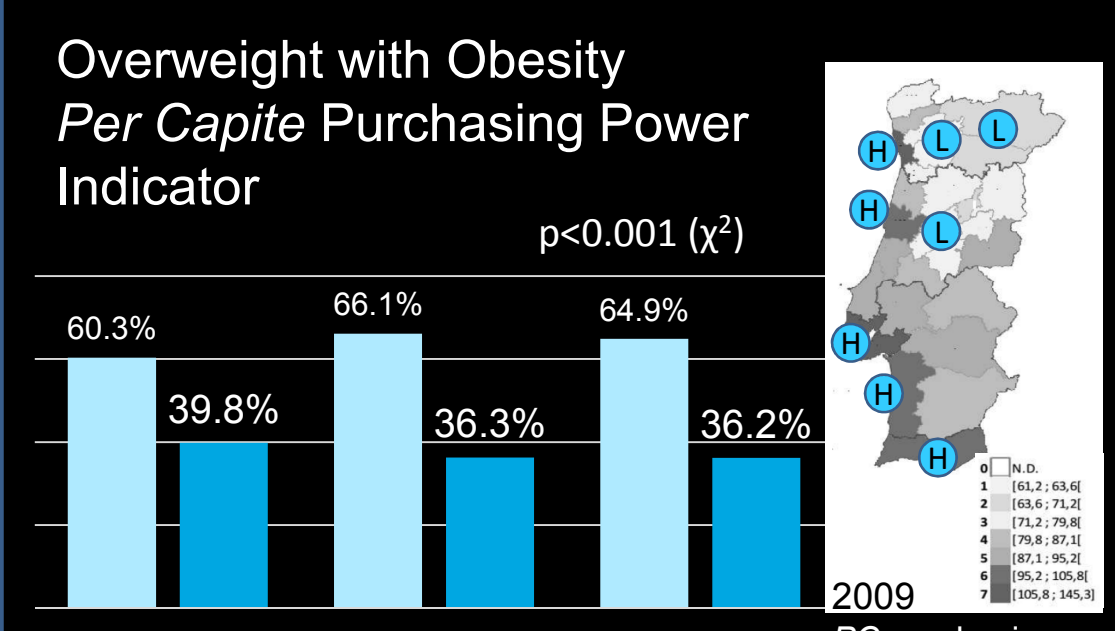


60.3% 66.1% 64.9% 61.1% 39.7% 33.9% 35.1% 38.9%

p<0.001 (χ²)

Environmental Quality Level	B	P wald	Exp(B)	95% C.I.	
				Lower	Upper
1 (ref)					
2	-0.253	<0.001	0.776	0.708	0.85
3	-0.200	<0.001	0.819	0.759	0.883
4	-0.037	0.453	0.964	0.875	1.061

Overweight with Obesity Per Capite Purchasing Power Indicator



60.3% 66.1% 64.9% 61.1% 39.8% 36.3% 36.2%

p<0.001 (χ²)

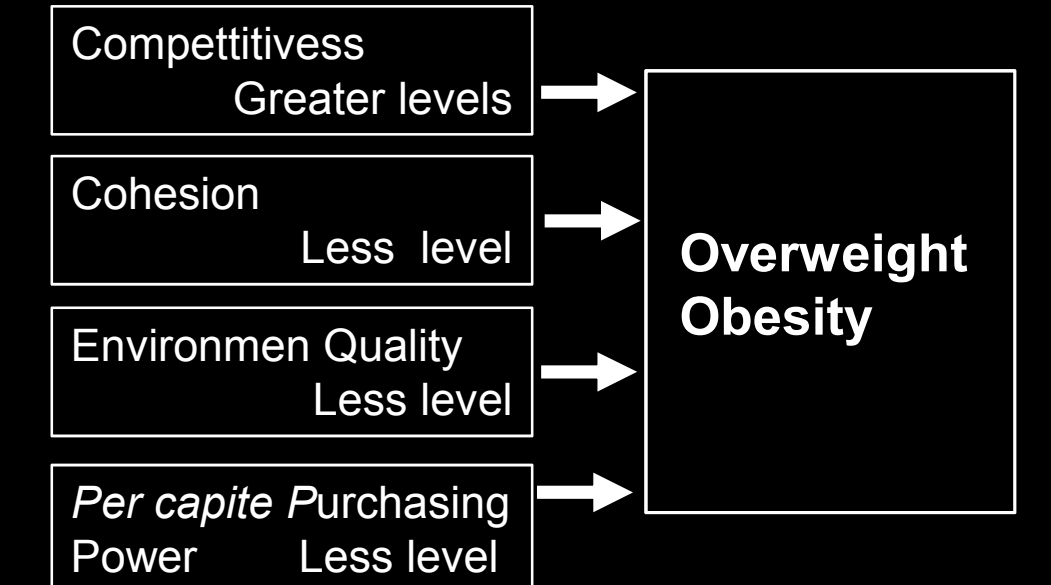
Per Capite Purchasing Power Index	B	P wald	Exp(B)	95% C.I.	
				Lower	Upper
Lower (ref)					
Medium	-0.148	0.002	0.863	0.787	0.946
High	-0.153	<0.001	0.858	0.789	0.933

Overweight/obesity predicted by competitiveness index, cohesion index and environmental quality index, logistic regression analysis, adjusted for children's age and sex

	B	Sig.	Exp(B)
Sex (ref male) female	-0.072	0.024	0.931
Age	0.062	<0.001	1.064
Competitiveness 1 (ref)			
2	0.159	<0.001	1.172
3	0.657	<0.001	1.929
4	0.191	0.001	1.211
Cohesion 1 (ref)			
2	0.102	0.290	1.108
3	0.39	0.705	1.039
4	-0.222	0.021	0.801
Environmental Quality index 1 (ref)			
2	-0.553	<0.001	0.575
3	-0.115	0.022	0.891
4	-0.031	0.576	0.969

Prevalences:
Overweight Obesity: 36.8%;
girls 37.6% - boys 36.2%

The probability of Portuguese children being Overweight/Obese depend on inequality of regional development and per capite purchasing power



Competitiveness Greater levels → Overweight Obesity
Cohesion Less level → Overweight Obesity
Environmental Quality Less level → Overweight Obesity
Per capite Purchasing Power Less level → Overweight Obesity

CONCLUSION

The probability of Portuguese children being overweight or obese depends on inequalities in regional development. Children were more likely to be overweight/obese if they were from territories with greater competitiveness, less lower cohesion, less lower environmental quality and lower per capite purchasing power. **Therefore, the reduction of socioeconomic inequalities is fundamental to supporting healthy childhood growth.**

