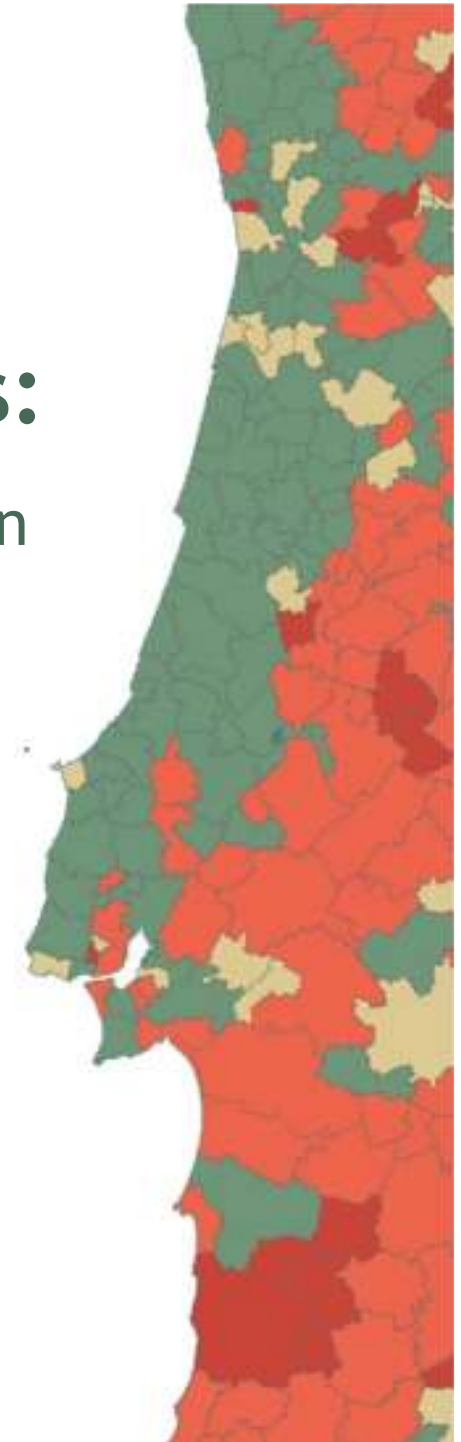


The population health in Portuguese urban municipalities:

identifying key dimensions for priority action in
Lisbon Metropolitan Area

Paula Santana & Ângela Freitas

Centre of Studies on Geography and Spatial Planning (CEGOT)
University of Coimbra, Portugal



AGENDA

1. Determinants of population health and role of local governments

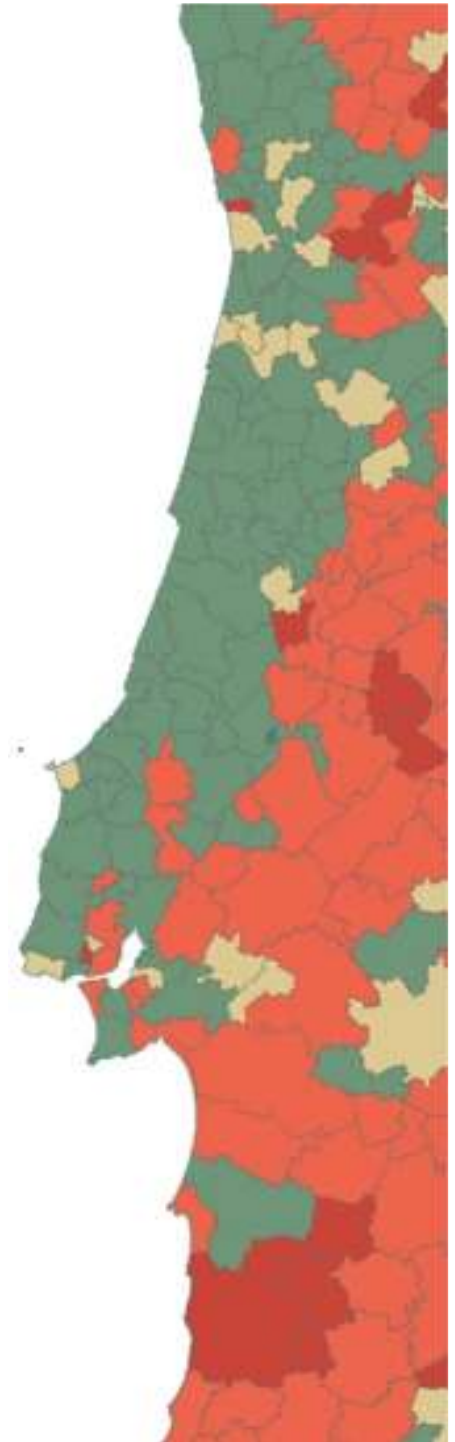
2. The Population Health Index

Índice de Saúde da População (INES)

- Application to Portuguese municipalities
- Application to Lisbon Metropolitan Area
- Key dimensions for priority intervention in Lisbon Metropolitan Area

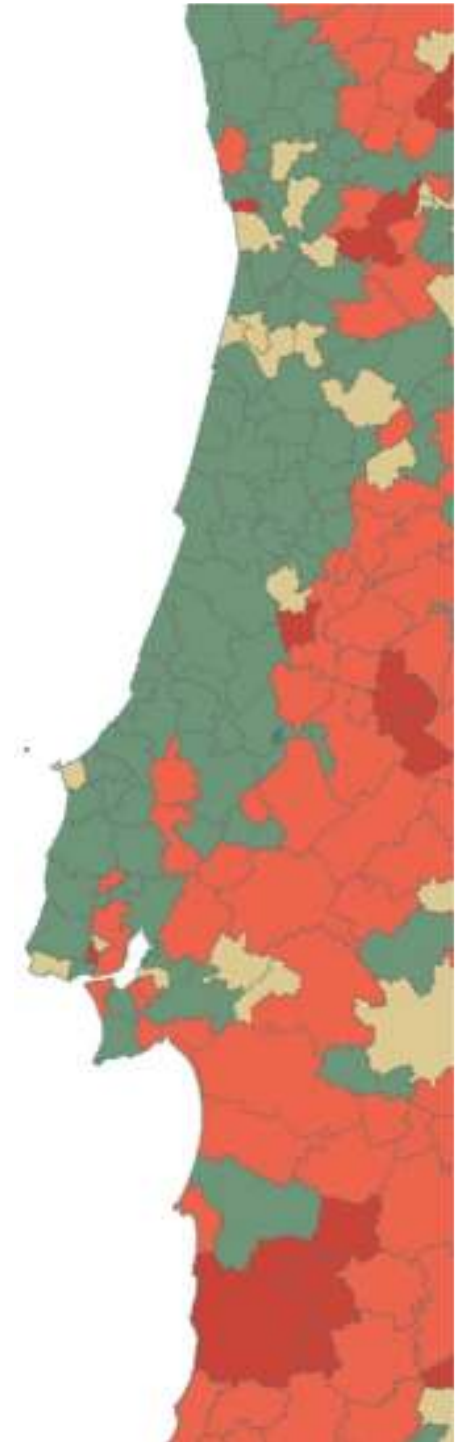
3. WebGIS platform “MunicipalityHealth”

<http://saudemunicipio.uc.pt>



AGENDA

1. Determinants of population health and role of local governments

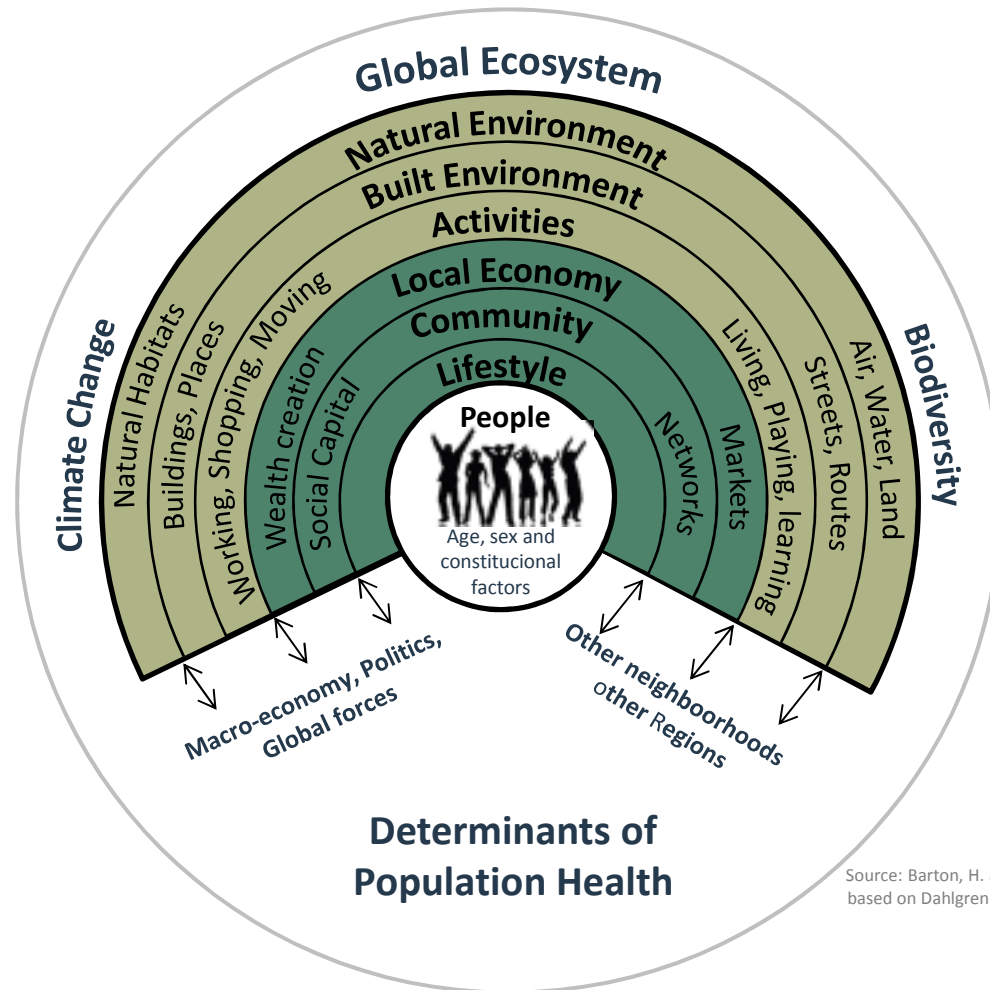


Determinants of population health and role of local governments

How can local government
make a difference?



Where You Live Matters to Your Health



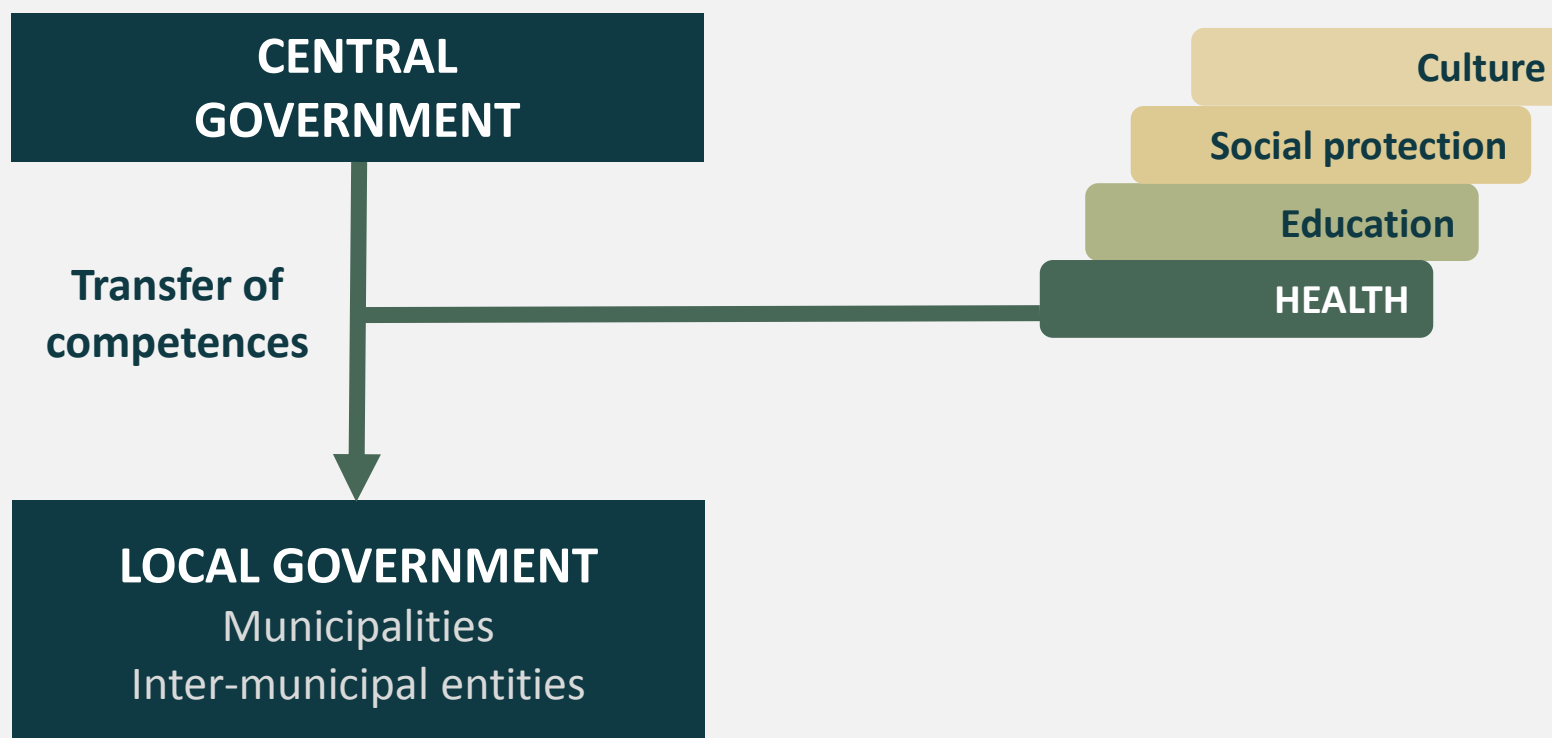
Source: Barton, H. and Grant, M. (2006)
based on Dahlgren & Whitehead (1991)

Determinants of population health

and role of local governments

Decentralization process in Portugal

(Decreto-Lei n.º30/2015 de 12 de fevereiro)

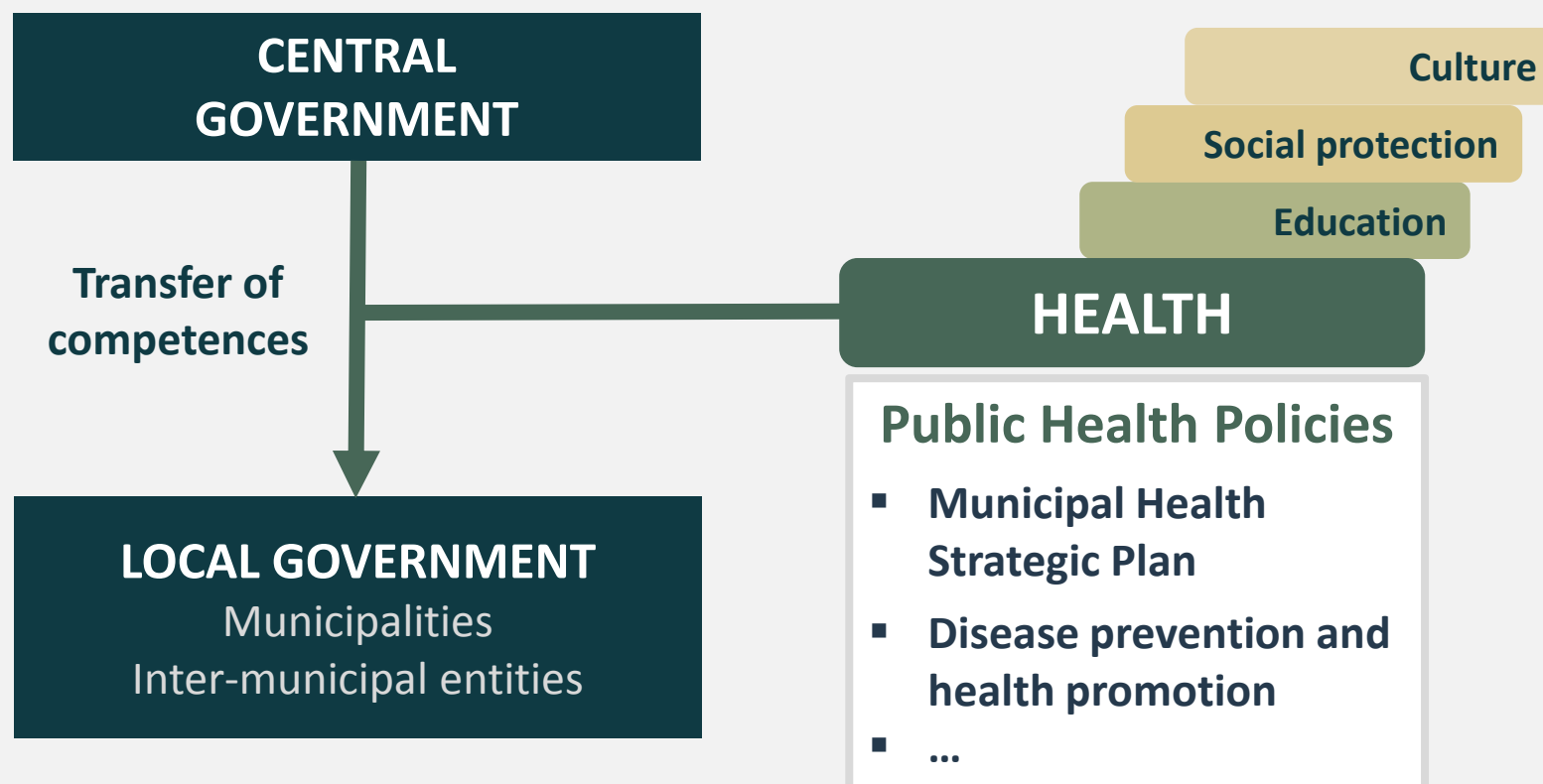


Determinants of population health

and role of local governments

Decentralization process in Portugal

(Decreto-Lei n.º30/2015 de 12 de fevereiro)



Determinants of population health and role of local governments

POPULATION HEALTH EVALUATION at municipal level

Measure the population health in **multiple dimensions** and across time

Evaluate the municipality performance in the different **areas of concern** for population health



Monitor the factors that influence the health of population in a given municipality

Identify the main problems and **priority areas** for intervention in a given municipality

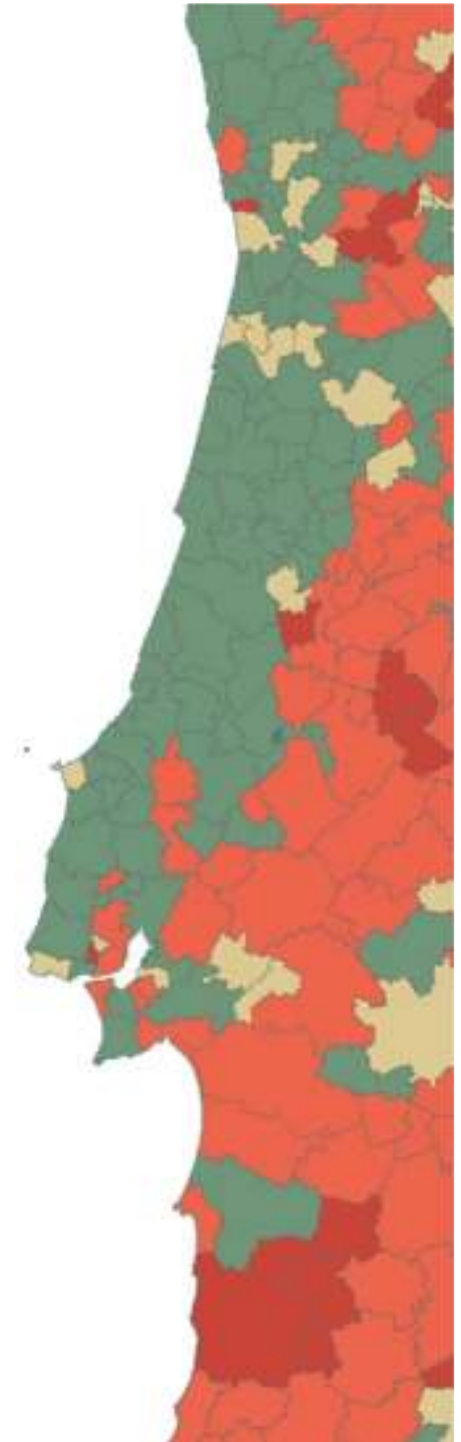
Inform decision-makers and civil society **with evidence** about the population health at municipality level

AGENDA

2. The Population Health Index

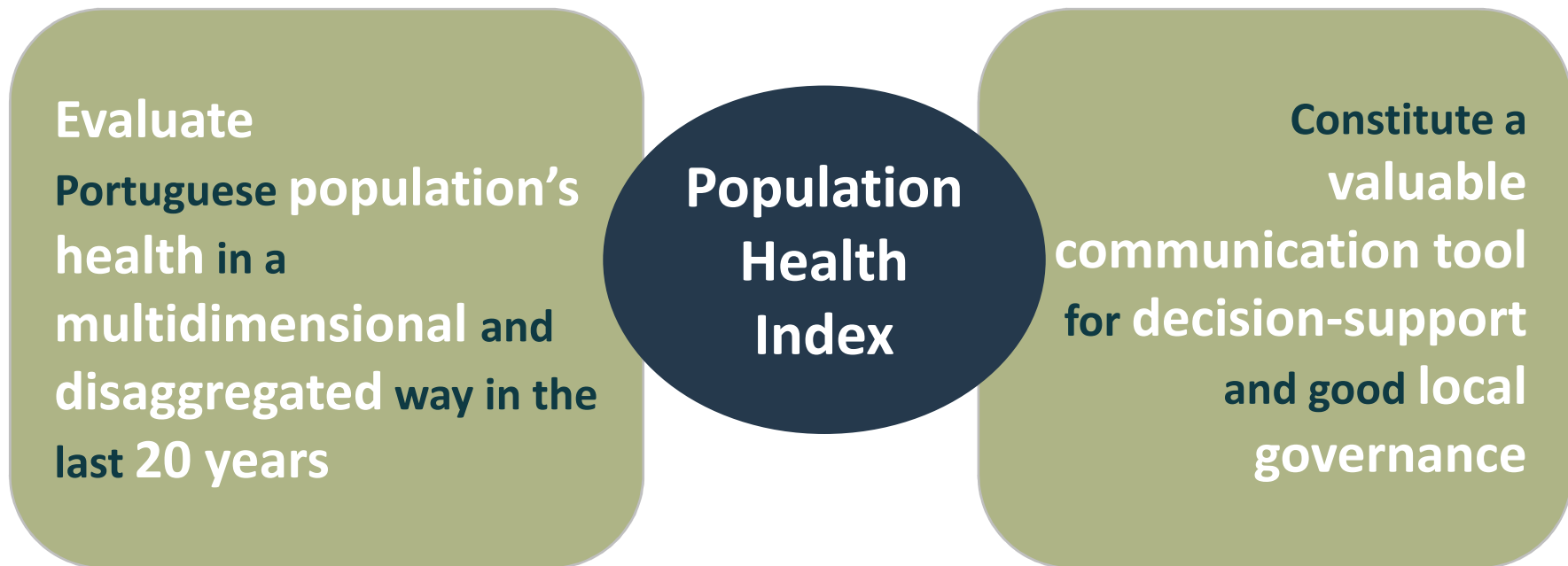
Índice de Saúde da População (INES)

- Application to Portuguese municipalities
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- Key dimensions for priority intervention in Lisbon Metropolitan Area



The Population Health Index

Objectives



Geographical scale: municipality (n=278)

Time period: years of 1991, 2001 e 2011

The Population Health Index

Methodology

Index building process

1. Identification and selection of dimensions and indicators

2. Building multicriteria value model

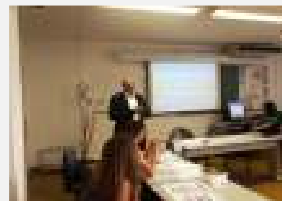
4. Model validation and analysis of index outputs

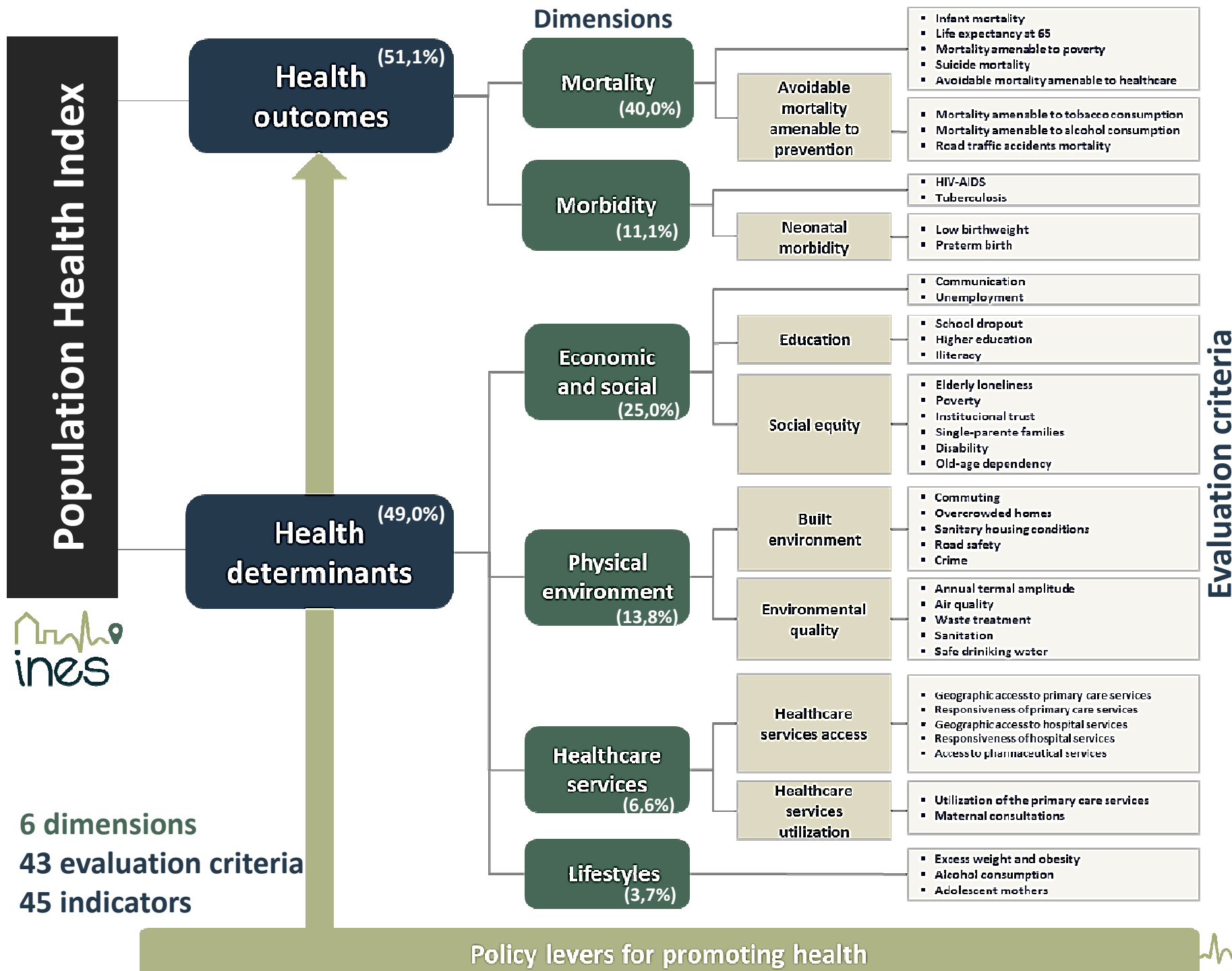
5. WebGIS platform



Socio-technical framework combining:

- **MACBETH MULTICRITERIA APPROACH** (Measuring Attractiveness by a Categorical Based Evaluation Technique) and
- **PARTICIPATORY METHODS**, including a **Modified Delphi Process**, with a multidisciplinary group of experts and stakeholders (n=29) and **Decision Conferencing** with a strategic group (n=6).



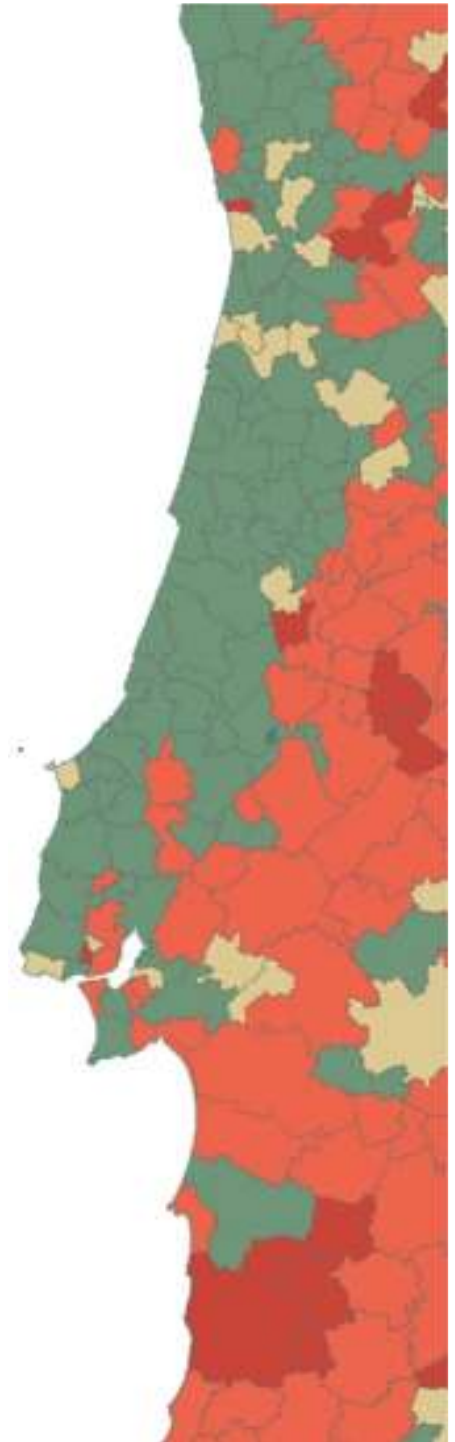


AGENDA

2. The Population Health Index

Índice de Saúde da População (INES)

- Application to Portuguese municipalities
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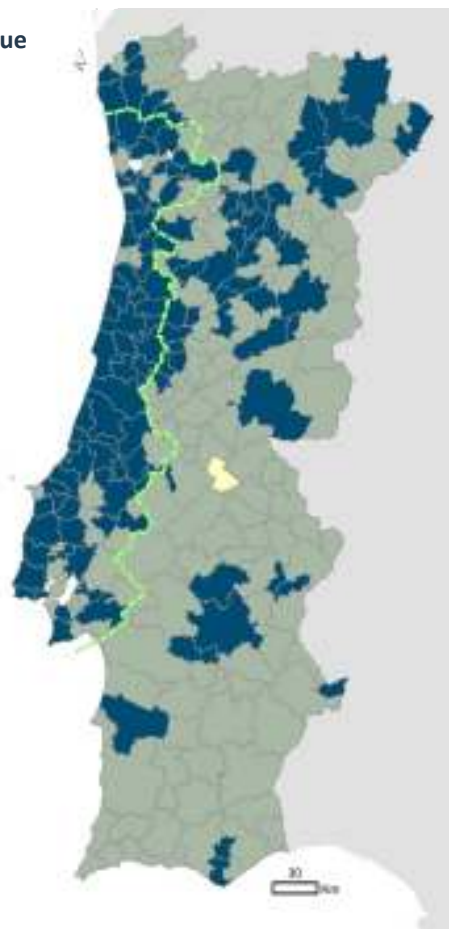
The Population Health Index

Application to Portuguese municipalities

1991-2011

POPULATION HEALTH INDEX

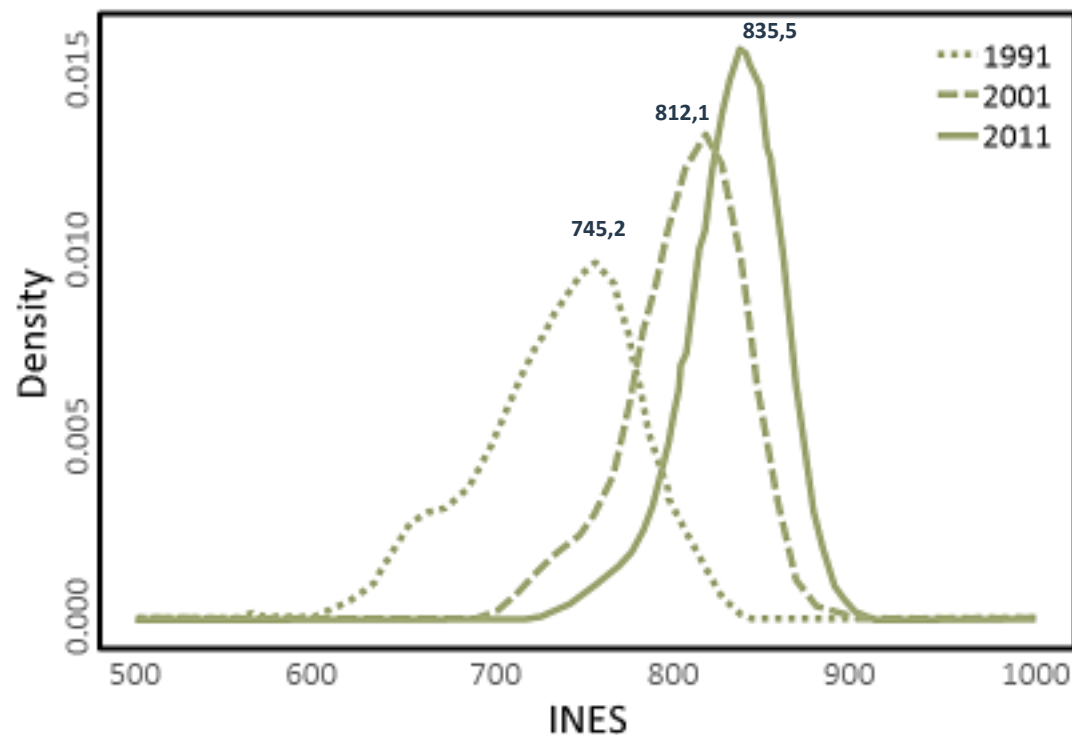
Reference value
2011 (835,5)



> Above the reference value 2011
< Below the reference value 2011

Population
growth between
1991 and 2011

Density function of INES



METHODOLOGICAL NOTE: The Reference value (PT) corresponds to the value of the average of Portuguese municipalities' performances, in a given year.

Municipalities (%)

45,0

53,2

0,7

Positioning 2011

>

<

Variation 1991-2011

Positive

Neutral

ines

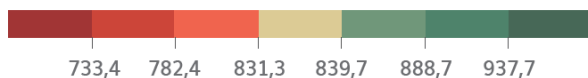
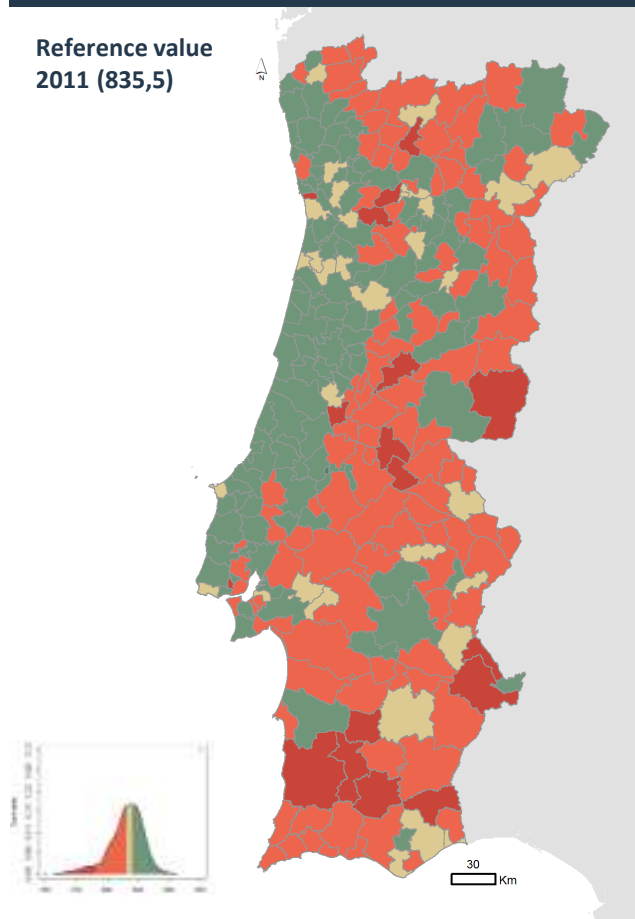
The Population Health Index

Application to Portuguese municipalities

2011

POPULATION HEALTH INDEX

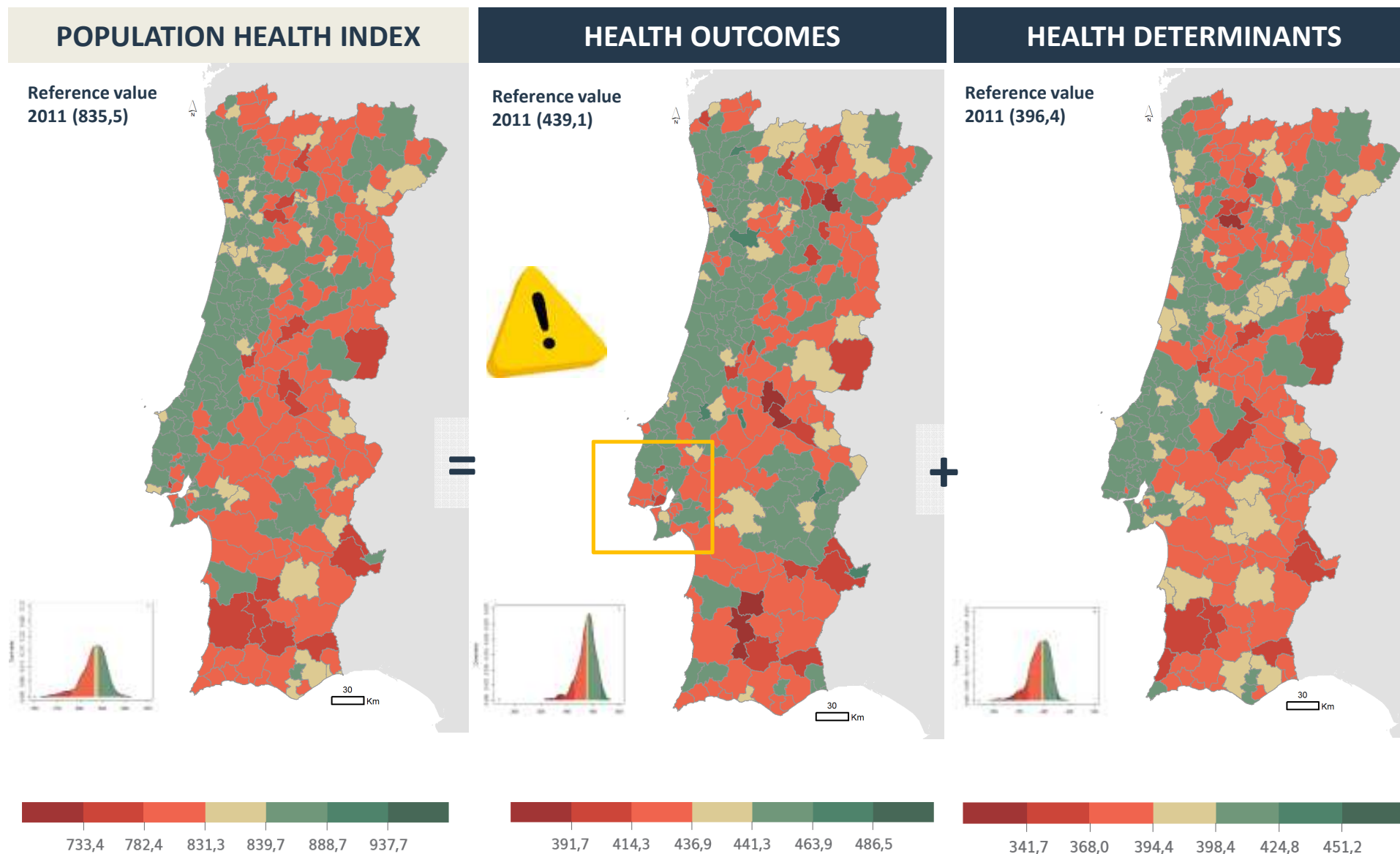
Reference value
2011 (835,5)



The Population Health Index

Application to Portuguese municipalities

2011

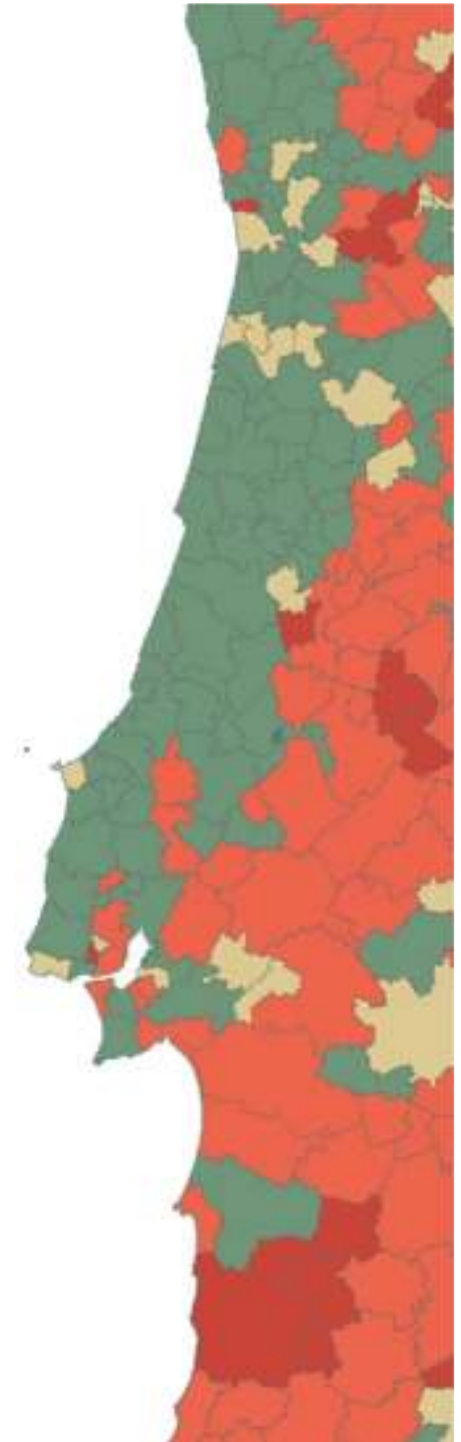


AGENDA

2. The Population Health Index

Índice de Saúde da População (INES)

- Application to Portuguese municipalities
- Application to Lisbon Metropolitan Area
- Key dimensions for priority intervention in Lisbon Metropolitan Area



The Population Health Index

Application to Lisbon Metropolitan Area

- Intermunicipal entity
(Law nº 75/2013, 12 September)
- 18 municipalities
- 11 municipalities integrate the Portuguese Network of Healthy Cities
- 2 827 050 inhabitants (28,2% of PT mainland)
- Lisbon city, capital of Portugal
- Geographical and social inequalities



The Population Health Index

Application to Lisbon Metropolitan Area

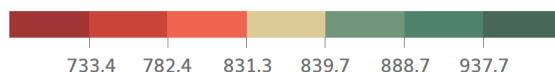
2011

POPULATION HEALTH INDEX



Lisboa

| | |
|----------------------|-------|
| Reference value (PT) | 835,5 |
| Best value | 978,2 |
| Top10% (average) | 937,7 |
| Bottom10% (average) | 775,9 |
| Worst value | 422,2 |



Highest value AML 870,5

Lowest value AML 781,0

| | |
|--------------------------|-------|
| Range (highest - lowest) | 89,6 |
| Variance | 434,7 |

| Rank | Municipality | Value |
|------|---------------------|-------|
| 1 | Mafra | 870,5 |
| 2 | Oeiras | 854,1 |
| 3 | Vila Franca de Xira | 853,9 |
| 4 | Sesimbra | 849,8 |
| 5 | Alcochete | 847,4 |
| 6 | Palmela | 846,8 |
| 7 | Seixal | 845,2 |
| 8 | Odivelas | 840,4 |
| 9 | Sintra | 840,4 |
| 10 | Cascais | 838,2 |
| 11 | Montijo | 832,1 |
| 12 | Loures | 829,1 |
| 13 | Almada | 822,7 |
| 14 | Barreiro | 821,6 |
| 15 | Lisboa | 815,0 |
| 16 | Setúbal | 812,8 |
| 17 | Moita | 803,3 |
| 18 | Amadora | 781,0 |

Reference value (PT)
835,5

METHODOLOGICAL NOTE: The Reference value (PT) corresponds to the value of the average of Portuguese municipalities' performances, in a given year.

The Population Health Index

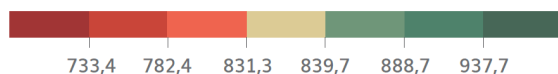
Application to Lisbon Metropolitan Area

2011

POPULATION HEALTH INDEX



| | |
|----------------------|-------|
| Reference value (PT) | 835,5 |
| Best value | 978,2 |
| Top10% (average) | 937,7 |
| Bottom10% (average) | 775,9 |
| Worst value | 422,2 |



Highest value AML 870,5

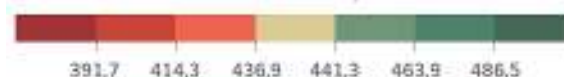
Lowest value AML 781,0

| | |
|--------------------------|-------|
| Range (highest - lowest) | 89,6 |
| Variance | 434,7 |

HEALTH OUTCOMES



| | |
|----------------------|-------|
| Reference value (PT) | 439,1 |
| Best value | 507,7 |
| Top10% (average) | 486,5 |
| Bottom10% (average) | 402,4 |
| Worst value | 238,5 |



Highest value AML 455,0

Lowest value AML 394,2

| | |
|--------------------------|-------|
| Range (highest - lowest) | 60,8 |
| Variance | 205,5 |

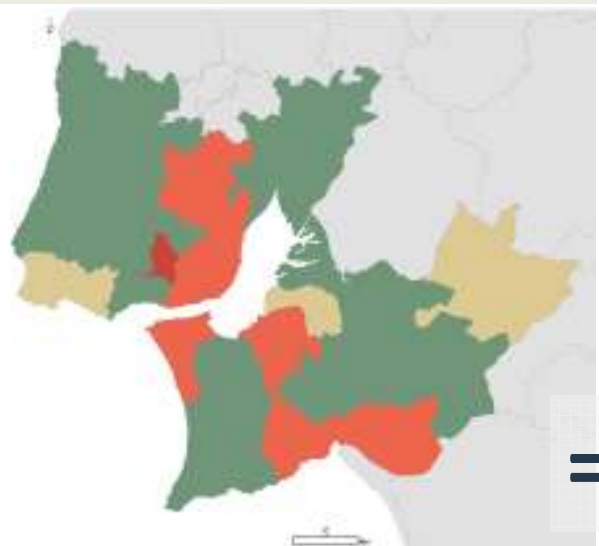
METHODOLOGICAL NOTE: The Reference value (PT) corresponds to the value of the average of Portuguese municipalities' performances, in a given year.

The Population Health Index

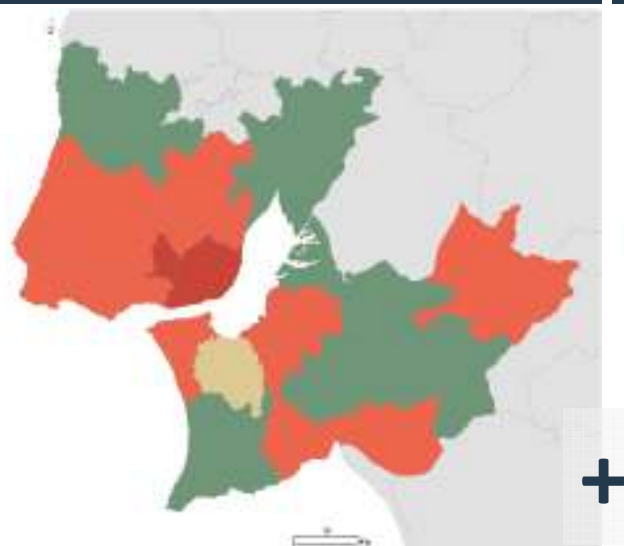
Application to Lisbon Metropolitan Area

2011

POPULATION HEALTH INDEX



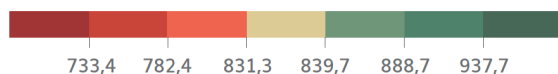
HEALTH OUTCOMES



HEALTH DETERMINANTS



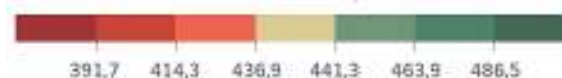
| | | | |
|-----------------------------|--------------|--------------|--------------|
| Reference value (PT) | 835,5 | 439,1 | 396,4 |
| Best value | 978,2 | 507,7 | 470,4 |
| Top10% (average) | 937,7 | 486,5 | 451,2 |
| Bottom10% (average) | 775,9 | 402,4 | 361,7 |
| Worst value | 422,2 | 238,5 | 183,7 |



Highest value AML 870,5

Lowest value AML 781,0

| | |
|--------------------------|-------|
| Range (highest - lowest) | 89,6 |
| Variance | 434,7 |



Highest value AML 455,0

Lowest value AML 394,2

| | |
|--------------------------|-------|
| Range (highest - lowest) | 60,8 |
| Variance | 205,5 |



Highest value AML 418,4

Lowest value AML 384,7

| | |
|--------------------------|------|
| Range (highest - lowest) | 33,8 |
| Variance | 75,7 |

METHODOLOGICAL NOTE: The **Reference value (PT)** corresponds to the value of the average of Portuguese municipalities' performances, in a given year.

The Population Health Index

Application to Lisbon Metropolitan Area

Health Outcomes, 2011

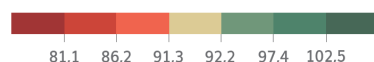
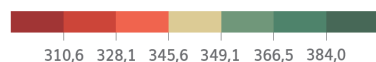
MORTALITY



MORBIDITY



| | | |
|-----------------------------|--------------|-------------|
| Reference value (PT) | 347,3 | 91,8 |
| Best value | 398,4 | 109,3 |
| Top10% (average) | 384,0 | 102,5 |
| Bottom10% (average) | 313,2 | 82,6 |
| Worst value | 195,0 | 43,5 |



Highest value AML 361,1

Lowest value AML 318,4

| | |
|--------------------------|-------|
| Range (highest - lowest) | 42,6 |
| Variance | 135,0 |

Highest value AML 93,9

Lowest value AML 75,7

| | |
|--------------------------|------|
| Range (highest - lowest) | 18,2 |
| Variance | 16,2 |

METHODOLOGICAL NOTE: The **Reference value (PT)** corresponds to the value of the average of Portuguese municipalities' performances, in a given year.

The Population Health Index

Application to Lisbon Metropolitan Area

Health Determinants, 2011

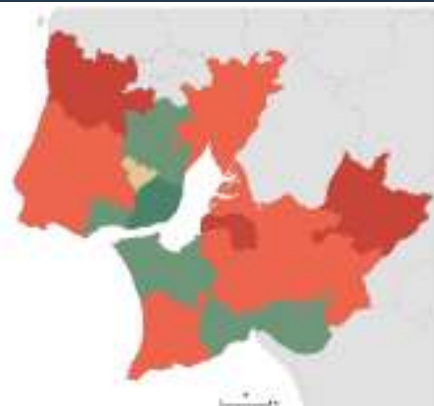
ECONOMIC AND SOCIAL



PHYSICAL ENVIRONMENT



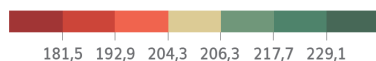
HEALTHCARE SERVICES



LIFESTYLES



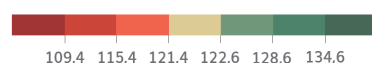
| | | | | |
|-----------------------------|--------------|--------------|-------------|-------------|
| Reference value (PT) | 205,3 | 122,0 | 51,6 | 17,5 |
| Best value | 240,3 | 137,0 | 65,3 | 27,8 |
| Top10% (average) | 229,1 | 134,6 | 62,2 | 25,3 |
| Bottom10% (average) | 179,7 | 102,9 | 45,4 | 8,4 |
| Worst value | 101,0 | 48,0 | 28,5 | 6,2 |



Highest value AML 223,8

Lowest value AML 192,6

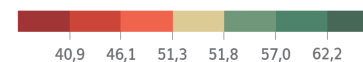
| | |
|--------------------------|------|
| Range (highest - lowest) | 31,2 |
| Variance | 54,4 |



Highest value AML 126,0

Lowest value AML 115,3

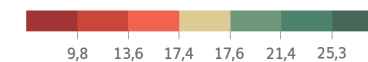
| | |
|--------------------------|------|
| Range (highest - lowest) | 10,6 |
| Variance | 9,7 |



Highest value AML 57,4

Lowest value AML 44,5

| | |
|--------------------------|------|
| Range (highest - lowest) | 12,8 |
| Variance | 9,6 |



Highest value AML 21,5

Lowest value AML 20,6

| | |
|--------------------------|-----|
| Range (highest - lowest) | 1,0 |
| Variance | 0,1 |

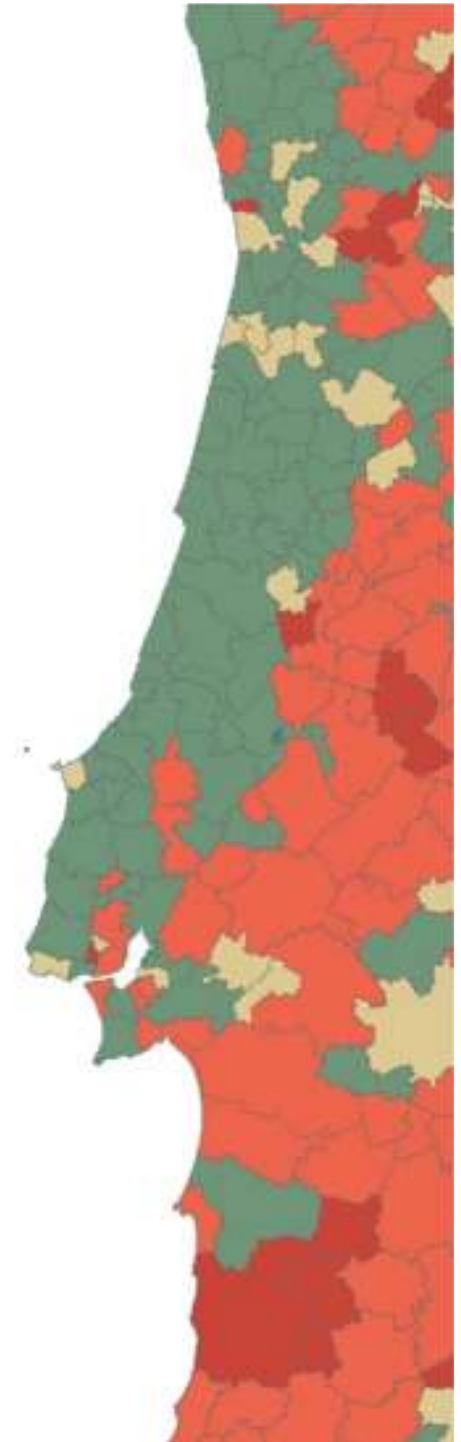
METHODOLOGICAL NOTE: The **Reference value (PT)** corresponds to the value of the average of Portuguese municipalities' performances, in a given year.

AGENDA

2. The Population Health Index

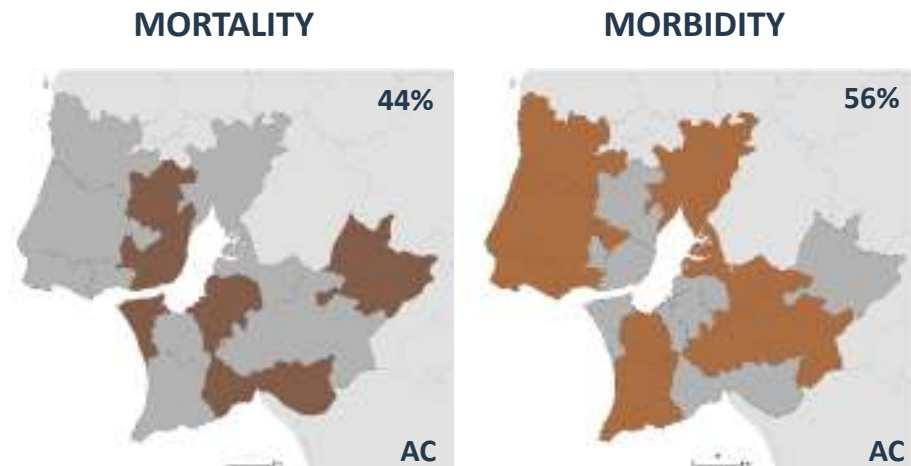
Índice de Saúde da População (INES)

- Application to Portuguese municipalities
- Application to Lisbon Metropolitan Area
- Key dimensions for priority intervention in Lisbon Metropolitan Area



Key dimensions for priority action in Lisbon Metropolitan Area (municipalities)

Health Outcomes, 2011

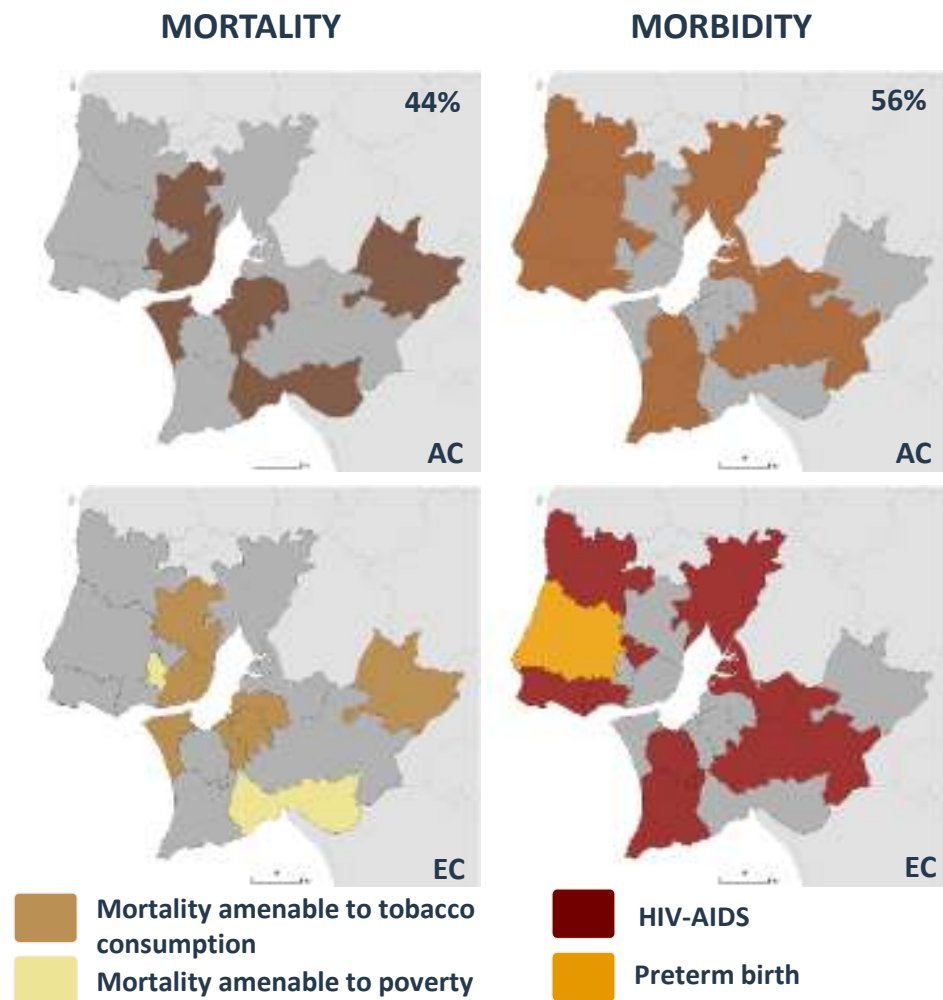


METHODOLOGICAL NOTE: The maps show the **areas of concern (AC)** and **evaluation criteria (EC)** with lowest value in the municipality and highest distance to the reference value (PT)



Key dimensions for priority action in Lisbon Metropolitan Area (municipalities)

Health Outcomes, 2011



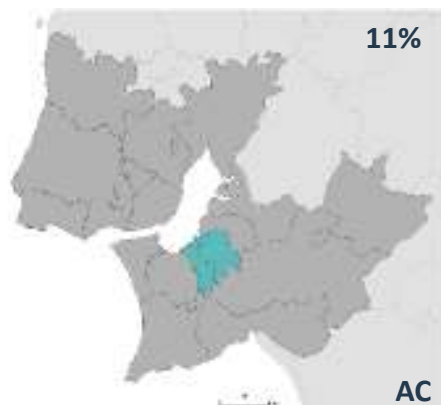
METHODOLOGICAL NOTE: The maps show the areas of concern (AC) and evaluation criteria (EC) with lowest value in the municipality and highest distance to the reference value (PT)



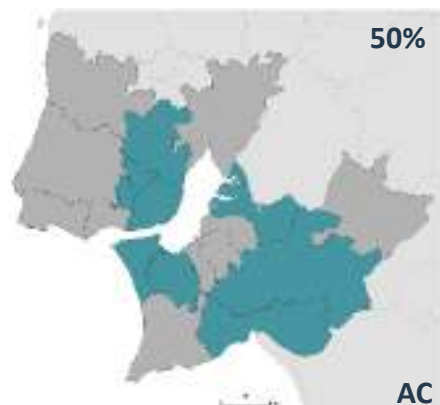
Key dimensions for priority action in Lisbon Metropolitan Area (municipalities)

Health Determinants, 2011

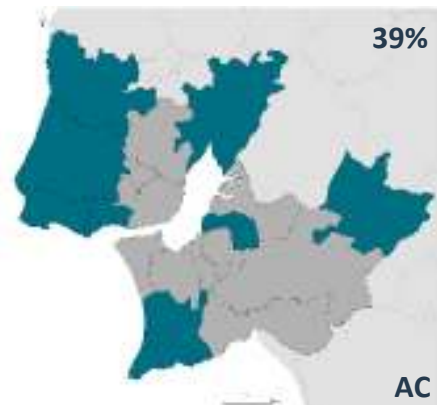
ECONOMIC AND SOCIAL



PHYSICAL ENVIRONMENT



HEALTHCARE SERVICES



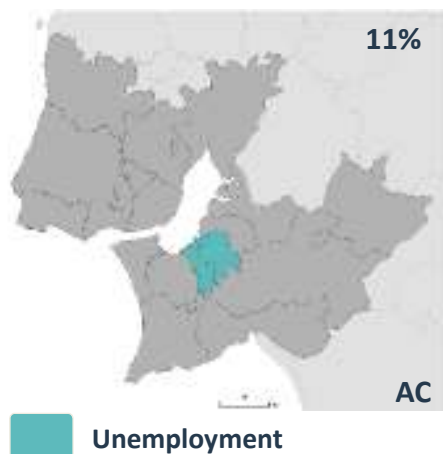
METHODOLOGICAL NOTE: The maps show the **areas of concern (AC)** and **evaluation criteria (EC)** with lowest value in the municipality and highest distance to the reference value (PT)



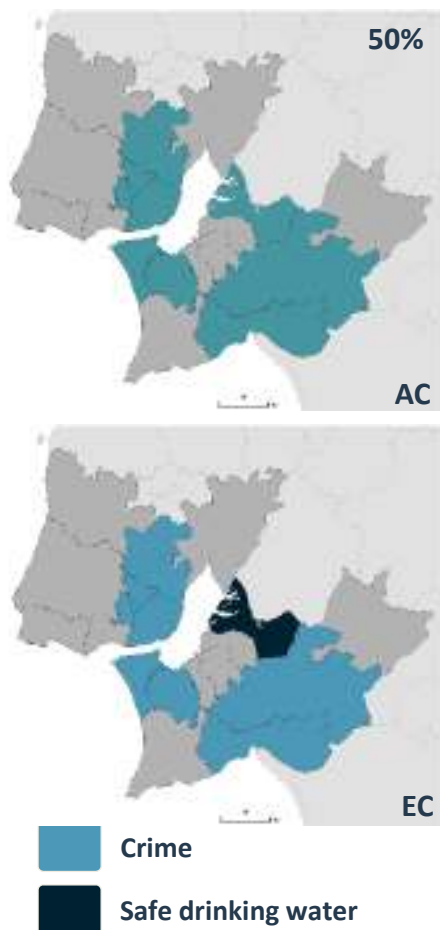
Key dimensions for priority action in Lisbon Metropolitan Area (municipalities)

Health Determinants, 2011

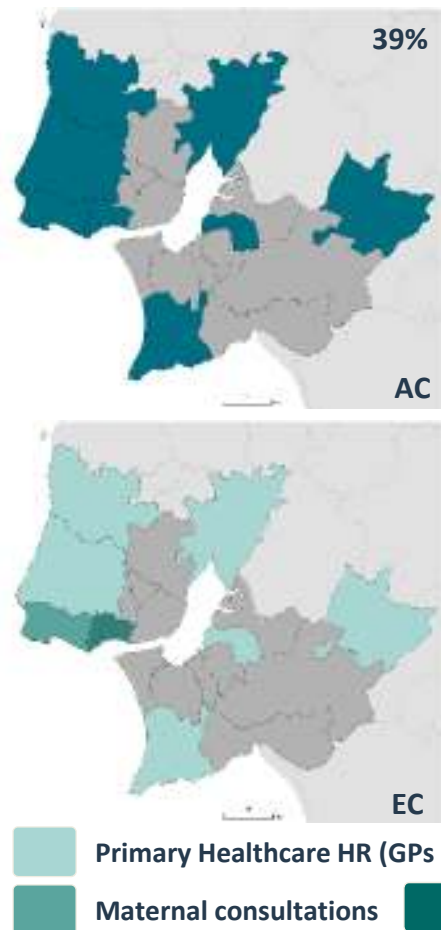
ECONOMIC AND SOCIAL



PHYSICAL ENVIRONMENT



HEALTHCARE SERVICES



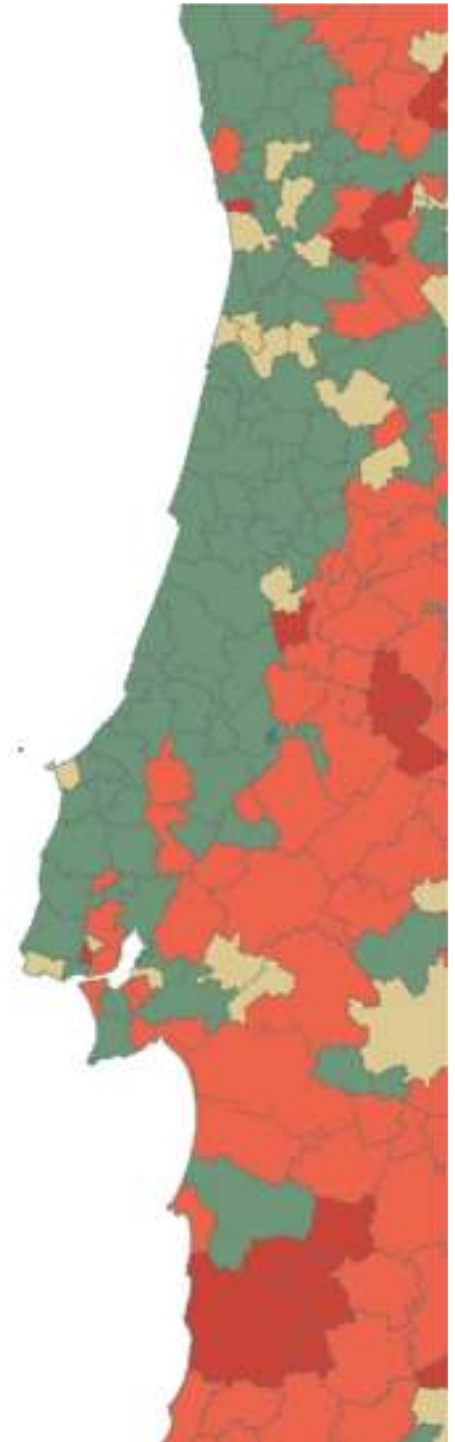
METHODOLOGICAL NOTE: The maps show the **areas of concern (AC)** and **evaluation criteria (EC)** with lowest value in the municipality and highest distance to the reference value (PT)



AGENDA

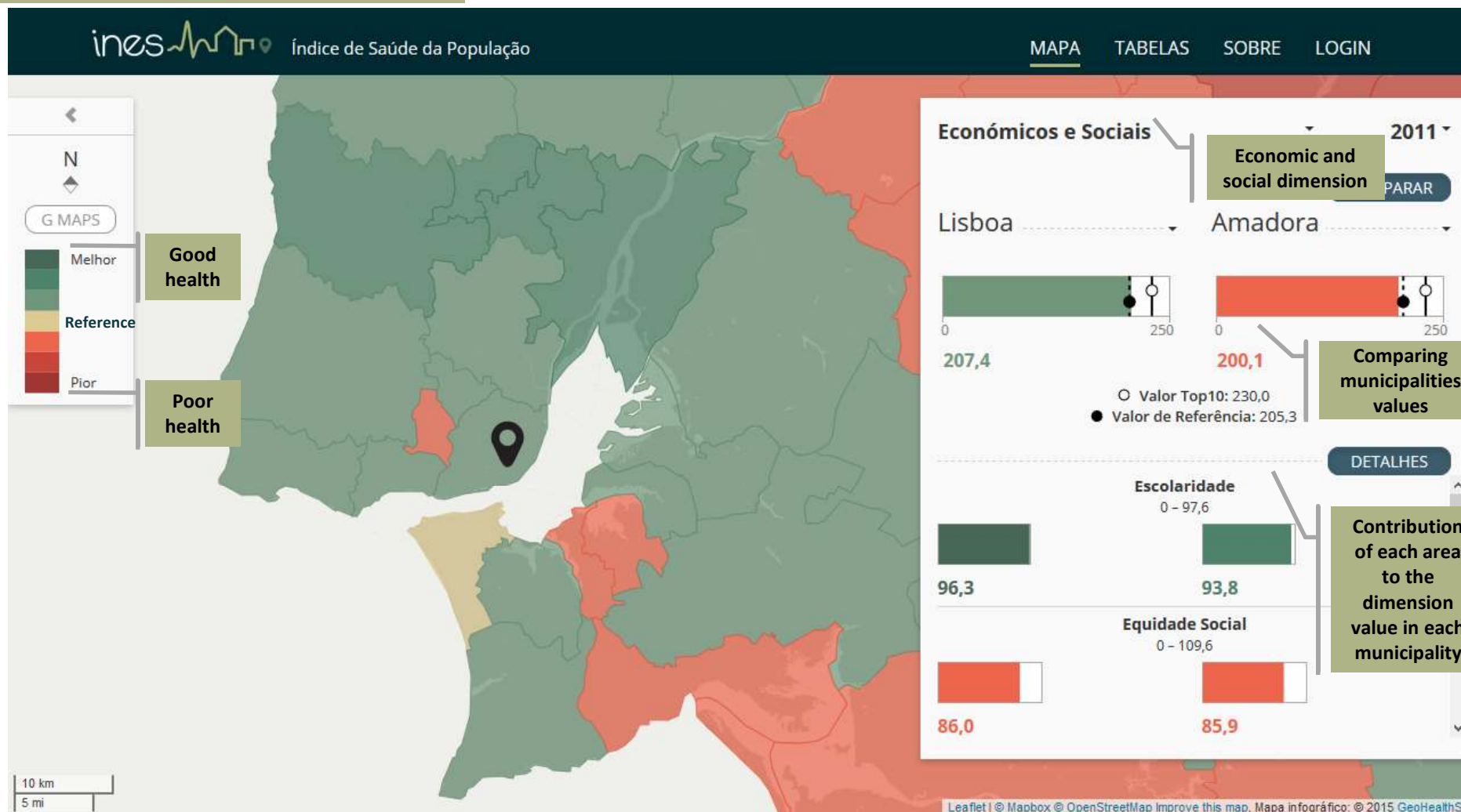
3. WebGIS platform “MunicipalityHealth”

<http://saudemunicipio.uc.pt>



WebGIS platform

MunicipalityHealth



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 Tlf: (+351) 239 851 349 | Email: paulasantana.geohealths@gmail.com | Website: www.uc.pt/fac/gigs/GeoHealthS

Key messages

The main results of the Population Health Index:

- **Provide** an **easy-to-use snapshot of population health profile** of each municipality, in overall terms, in each dimension and in each measure
- **Provide evidence** on the **municipal performance** on health determinants and health outcomes across time
- **Have potential to improve understanding** of the major problems that affect population health, illuminating in **which areas priority intervention is needed**
- It's a **starting point** for future research on **simulating the impact of policies and interventions on population health**

Thank you!



<http://www.uc.pt/fluc/gigs/GeoHealthS>



<http://saudemunicipio.uc.pt/>

ACKNOWLEDGEMENTS

This study was co-funded by the European Fund for Regional Development (FEDER) through the COMPETE - Competitive Factors Operational Program (POFC) and by national funds through the Foundation for Science and Technology (FCT) under the project PTDC/CS-GEO/122566/2010.

The authors would like to thank to Teresa Rodrigues, Carlos Bana e Costa and Mónica Oliveira, from the Centre for Management Studies of Instituto Superior Técnico, Universidade de Lisboa (IST-UL) for the development of multicriteria value model.



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