Putting People First
A Multidimensional Approach to Health Socioeconomic Determinants

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UN 2030 SUSTAINABLE DEVELOPMENT GOALS
Individual Health Condition Is No Longer Considered Only as A Consequence Of Biological Causes

Social, Environmental, Cultural, Political and Economical Factors

Individual health condition

- Housing quality
- Work conditions
- Access to healthcare and education
- Safety level
- Environmental quality
- Sanitation availability
Portuguese National Health Service – Founded In 1979

Assures Universal Access To Healthcare

Recent Studies indicate: Offered Services ≠ Populations Needs

Gap Worse In Rural and Isolated Areas (aged, poor educated, unemployed Groups dominate)

Portugal Health’s Inequalities Are Dispersed Across The Country

Local Scale approach needed
GOAL

- Evaluate how
  - socioeconomic determinants
  - environmental determinants
- constrain
  - health and wellbeing outcomes

VARIABLES

- comprehensive reading of populations living conditions;
- available in time periods
  - Allow evolution evaluation

APPROACH

- Local level (municipal scale)
  - Conditions differ across the country
    (demographic, education, income, housing, work conditions, culture investment and environmental conditions)

DATA

- 35 variables;
  - INE (Statistics National Institute);
  - PORDATA (Contemporary Portuguese database);
  - APA (Environment Portuguese Agency).
Material and Methods

Standardization

1. \[ I_{i,j} = \frac{v_{i,j}}{p_i} ; \quad i \in [1,278] ; \quad j \in [1,35] \] (by resident population)

2. \[ I_{i,j} = \frac{v_{i,j}}{A_i} ; \quad i \in [1,278] ; \quad j \in [1,35] \] (by geographical area)

Normalization by “Distance to a reference”

3. \[ NI_{i,j} = \frac{I_{i,j}}{AV_{j,p}} ; \quad i \in [1,278] ; \quad j \in [1,35] \] (relative to national average)

SEHVI Formula

4. \[ SEHVI_i = \frac{\sum_{p=1}^{13} NI_{p|i}^+}{13} - \frac{\sum_{n=1}^{22} NI_{n|i}^-}{22} ; \quad i \in [1,278] \] (national ref=0)
Study Area

<table>
<thead>
<tr>
<th>Municipality Typologies (N)</th>
<th>Population density (Inhabitants/km²)</th>
<th>Ageing Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>PU (33)</td>
<td>1344.5</td>
<td>1330.4</td>
</tr>
<tr>
<td>SU (76)</td>
<td>202.2</td>
<td>200.2</td>
</tr>
<tr>
<td>PR (169)</td>
<td>31.7</td>
<td>30.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Municipality Typologies (N)</th>
<th>Area (km²)</th>
<th>Population (inhabitants)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2009</td>
<td>2015</td>
</tr>
<tr>
<td>PU (33)</td>
<td>3478</td>
<td>4676005</td>
</tr>
<tr>
<td></td>
<td>(3.9 %)</td>
<td>(46.5 %)</td>
</tr>
<tr>
<td>SU (76)</td>
<td>15641</td>
<td>3162391</td>
</tr>
<tr>
<td></td>
<td>(17.6 %)</td>
<td>(31.4 %)</td>
</tr>
<tr>
<td>PR (169)</td>
<td>69982</td>
<td>2217205</td>
</tr>
<tr>
<td></td>
<td>(78.5 %)</td>
<td>(22.0 %)</td>
</tr>
</tbody>
</table>

PU – Predominantly urban; SU – Semiurban; PR – Predominantly rural
Health Outcomes

Urban municipalities
- Specialized healthcare services and human resources
- Environmental pollution, urban waste production and energy consumption

Rural municipalities
- Lack of healthcare services in those areas and the distance to them
- Aged groups, less educated and with lower income

Health Determinants

Predominantly urban municipalities
- Are not very distant from the urban centres - have easy access to health services
- Are not at the centre of pollution and intensive traffic

Predominantly rural municipalities
- Poor access to health care services and education and work opportunities
- Less exposure to harmful environmental conditions

Results
Results

- Health determinants variance is more intense in 2009 ($\sigma^2 = 4.030$);
- Health outcomes scores are better in predominantly urban and semiurban areas in 2009 ($F = 18.7; \ p < 0.01$), 2015 ($F = 20.3; \ p < 0.01$) and 2017/2018 ($F = 17.5 \ p < 0.01$);
- Health determinants scores are only significantly different in 2009 (higher in rural areas; $F = 12.7; \ p < 0.01$);
- There were no statistically significantly differences in SEHVI scores across the territory typologies in the three time periods ($p > 0.05$).
Results
Conclusions

Development of a tool to evaluate health vulnerability at a local scale that should take into account communities’ specificities;

SEHVI provides information that could be useful to authorities;

Differences were found between urban and rural municipalities, suggesting inequalities and higher vulnerability in some groups;

SEHVI can be used by local leaders to evaluate health policies results.
Thank You!