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DEMOGRAPHIC VULNERABILITIES IN TECUCI PLAIN

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Abstract: The study focuses on analyzing and mapping 8 indicators considered to best reflect the demographic vulnerability in Tecuci Plain in the year 2010 and proposes a model of aggregation which finally allows us to distinguish three major types of demographic vulnerability (low, medium and high). Mapping the final values also shows significant disparities in the territorial administrative units that broadly overlap the plain, the most vulnerable being Tecuci city and the peripheral communes, towards Vrancea and Vaslui Counties.

Key words: aggregate analysis, maximum global utility method, demographic vulnerabilities, gipsy communities, Tecuci Plain

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INTRODUCTION

The concept of *„vulnerability"* is currently highly analyzed at national and especially international level, being extrapolated in various fields of scientific research. The definition given both in the Explanatory Dictionary of Romanian Language (DEX) and also in international dictionaries (Business Dictionary) reveals that *„vulnerability"* is the degree to which people, property, resources, systems, and cultural, economic, environmental, and social activity is susceptible to harm, degradation, or destruction on being exposed to a hostile agent or factor. [1]

O.N.U. defines *„vulnerability"* as the degree of potential losses resulting from a phenomenon (group of phenomena) likely to produce material damage, bodily harm, failure, representing one of two basic components of the risk faced by a given community. Ioan Ianoş states that vulnerability reflects the degree of potential instability of certain structures or the degree of the internal reception of external events or internal accidents (Ianoş, 2000, p. 75). In human communities, demographic risk arises as a direct result of human vulnerability degree (figure 1), the most dangerous consequences of this being: acceleration of migration, poverty and social disintegration, inefficient operation of state institutions (education, health, administration, public order) (Surd et al., 2007, p. 47).

Bordered by Siret Inferior Plain and the Siret valley on West (on the alignment of the villages Tudor Vladimirescu, Fundenii Noi, Movileni, Cosmeşti), Tutova hills on North-West (on the alignment of the villages Mălureni, Sirbi, Gara Berheci, Criveşti), Covurlui Hills and Covurlui Plain on East (on the alignment of the villages Sălceni, Pochidia, Cârlomăneşti, Corod and Valea Marului followed by Gerului valley to the confluence with Siret river near Vames village) (Obreja, 1965, p. 5).

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[1] *http://www.businessdictionary.com/definition/vulnerability.html*

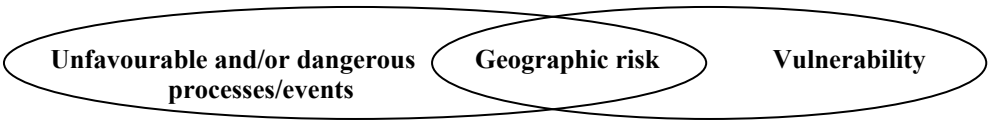

Figure 1. The Components of Geographic Risk
(Source: Surd et al., 2007)

Tecuci plain summarizes nowadays 52 villages, grouped in 22 communes and Tecuci city. Although the geographical position of the plain was always a favourable one, most rural settlements being placed in higher population categories, the last two decades, marked by political and economic changes, have affected continuously the demographic behaviour of the population of the region. The purpose of this study is to perform an analysis of the indicators considered to best reflect the demographic vulnerability, using the latest available data (year 2010) at the commune level and to present a final picture of vulnerability coefficients, identifying in the same time the regional disparities.

METHODOLOGICAL ASPECTS

The first objective was to identify the most representative indicators that highlight the demographic vulnerability, considered as follows: the feminization index, the feminization index for 15 - 64 years age group, the feminization index for over 65 years age group, the proportion of young population, the aging index, the demographic dependency ratio, the natural balance and the migration balance.

The second objective, after establishing and mapping the value classes for each indicator, was the quantification of the demographic vulnerability, aggregating all values through maximum global utility method (Baron & Biji, 1996, p. 241). Thus, in each administrative-territorial unit, for each vulnerability indicator I calculated, in a first phase, a partial utility, using the following formulas:

- for the indicators that express a more favourable situation (decreasing vulnerability) as they have higher values we used the formula:

$$\mathbf{1.}\ u_{ij}=(u_{ij}-u_j^{min})/(u_j^{max}-u_j^{min})$$

- for the indicators that express a more favourable situation (decreasing vulnerability) as they have lower values, the partial utility rank was calculated using the formula:

$$\mathbf{2.}\ u_{ij}=(u_j^{max}-u_{ij})/(u_j^{max}-u_j^{min})$$

u_{ij} = the level of the indicator j in the administrative-territorial unit i
u_j^{min} = the level of the indicator j in the administrative-territorial unit with the minimum value
u_j^{max} = the level of the indicator j in the administrative-territorial unit with the maximum value

In the second step I calculated the average utility as:

$$\mathbf{3.}\ \bar{u}_i=\sum_{j=1}^{m} u_{ij}/m$$

$\bar{u}_i$ = the average utility in the administrative-territorial unit i
$\sum_{j=1}^{m} u_{ij}$ = the sum of the partial utilities in the administrative-territorial unit i
m= the number of the parameters included in the analysis

The values obtained allowed the final classification of the administrative-territorial units in three major types of demographic vulnerability (low, medium, high).

THE FEMINIZATION INDEX, THE FEMINIZATION INDEX FOR 15-64 YEARS AND OVER 65 YEARS AGE GROUP

Expressing the number of women per 100 men (Erdeli et al., 1999, p. 262), this index shows a high vulnerability of rural settlements when its values are above 100% due to the fact that both primary and secondary economic sectors specific jobs require mostly male workforce and also in case of a natural disaster, physical constitution of the women being a real disadvantage (Sorocovschi, 2010, p. 76).

In 2010, the region average was 100.5%, 7 of the 23 administrative units (30.4%) having a feminization index over 100%. The maximum value was recorded by Tecuci city (108.8%) and the minimum by Movileni (92.9%).

To emphasise more the feminization occurrence we calculated the feminization index for the adult and elderly population (figure 2).

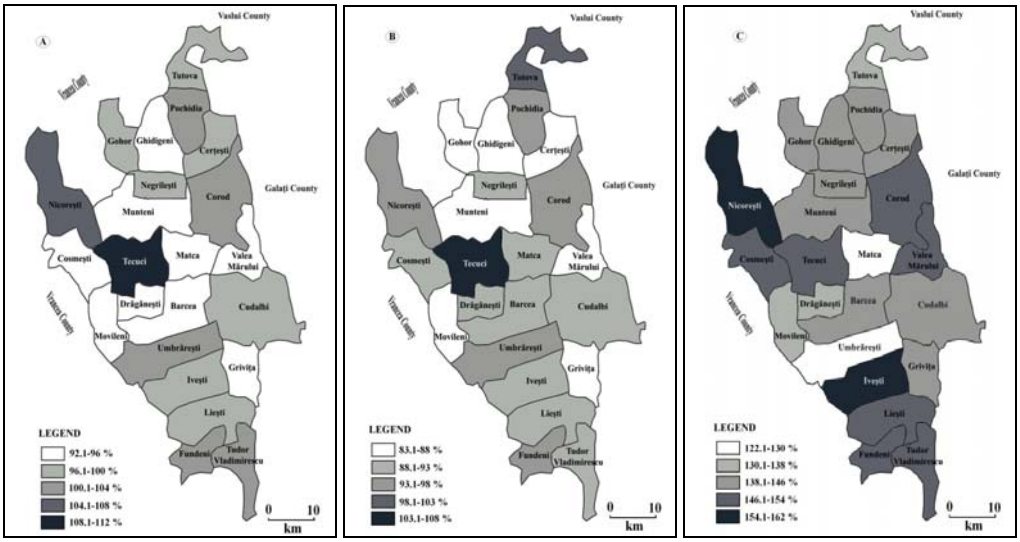

Figure 2. The Feminization Index (A), The Feminization Index for 15 - 64 years (B) and Over 65 Years Age Group (C) in 2010
(Data source: calculated by DJSG, 2011 and *Tempo-Online*, *www.insse.ro*)

If the feminization index for adult population showed that only Tecuci city recorded a value over 100%, the minimum one being recorded by Valea Marului (83.3%), the index for the elderly population, as we expected, reflected an increased feminization between a minimum of 122.4% (Matca) and a maximum of 159.3% (Nicoresti).

THE PROPORTION OF YOUNG POPULATION

The percentage of young people in total population is also an extremely important indicator which shows the demographic potential of the region on medium and long-term (Rotariu, 2009, p. 19).

The descending values of birth and fertility rates recorded after 1990, lower nuptiality rate and increasing divorce rate, caused a sharp decrease of this indicator in many villages of the region. High percentages are recorded by the villages in the Barlad valley holding high roma communities known for their high fertility rate and stability of couples.

Thus, in 2010 the lowest values were recorded by peripheral communes (Corod - 12.4%, Cudalbi - 14.8%, Cosmeşti - 15%, Tudor Vladimirescu - 15.1%), at the opposite being Ghidigeni (24.7%), Munteni (20.4%), Iveşti (19.6%), Matca (19.3%), Barcea (19.1%) (figure 3).

THE DEMOGRAPHIC DEPENDENCY RATIO

This indicator reflects the pressure exercised by the young and elders on working age population (Erdeli & Dumitrache, 2004, p. 168), the size of the three age groups being directly influenced by the natural and migratory movement of the population.

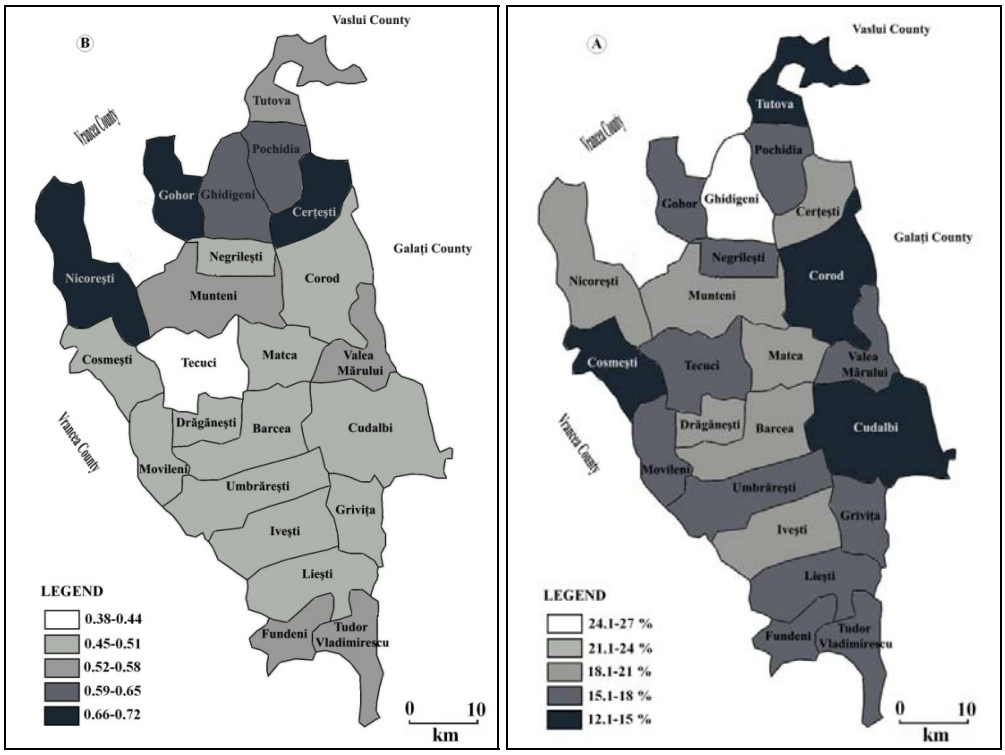

Figure 3. The Proportion of Young Population (A), The Demographic Dependency Ratio (B) in 2010
(Data source: calculated by DJSG, 2011 and *Tempo-Online*, *www.insse.ro*)

Higher levels of this indicator are a consequence of demographic aging and also of migration which affected predominantly male workforce in the region after 1990.

In 2010 the largest coefficients are recorded by Nicoresti (0.68), Cerţeşti and Gohor (0.66), the smallest being recorded by Tecuci city (0.38), Drăgăneşti and Negrileşti with a coefficient of 0.45. Most of the communes (52.1%) fall within the range 0.45 - 0.5 (figure 3).

THE AGING INDEX

Calculated as the ratio between the elderly population (65 years and over) and young population - from 0 to 14 years- (Ungureanu & Muntele, 2006, p. 217) and expressed as a percentage, this indicator, whose values exceed 100% in 11 communes (47.8%), highlights the growing of the aging population in villages with low birth rates. Values above 100% are achieved by most of the communes in the East and North-West (Corod - 150.9%, Gohor - 150.4%, Tudor Vladimirescu - 136%, Cudalbi - 129.6%).

The consequences of demographic aging consist in changing the population age structure. Also, the economic activity, demand for food, medication, jobs, housing etc. are elements that are sensitive to the variables of age. The demographic implications consist on the effects on female fertility, on the mortality rate closely related to the increasing number and proportion of elderly population.

From the economic point of view the effect is felt by the active population, whose average age has increased significantly, the decrease of the pension fund and high number of pensioners raising in the present the retirement age.

Low values of the aging index are recorded by the communes in the Barlad valley holding, as we mentioned above, high roma communities (Ghidigeni - 49.7%, Matca - 64.8%, Iveşti - 69.7%, Drăgăneşti - 69.9%) (figure 4).

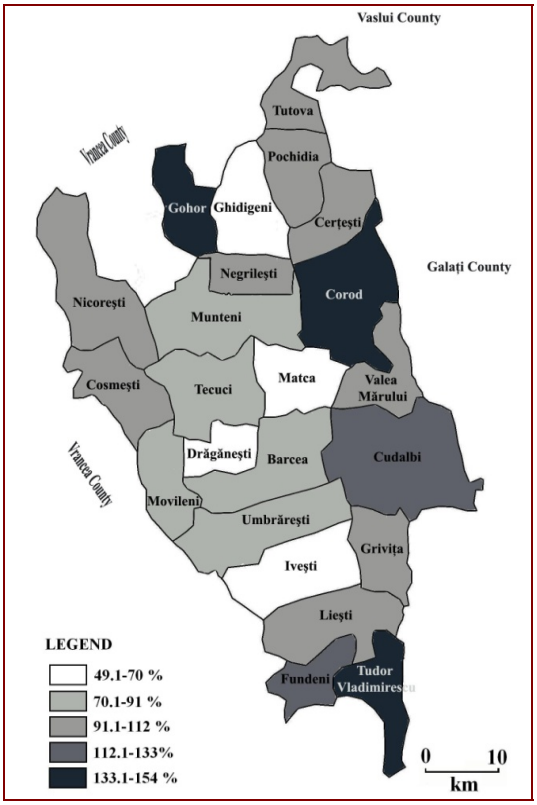

Figure 4. The Aging Index in 2010
(Data source: calculated by DJSG, 2011 and *Tempo-Online*, *www.insse.ro*)

THE NATURAL BALANCE AND THE MIGRATION BALANCE

Population dynamics in Tecuci plain is best reflected by natural and migration balance. The analysis of the distribution map of the natural balance in Tecuci plain shows the deficit recorded in 2010 by 20 communes (86.9%), the maximum value being reached by Gohor (-13.3‰). Also other 9 communes (Certești, Fundeni, Valea Mărului, Cudalbi, Nicorești, Tudor Vladimirescu and so on) have values between -5 and -10‰, a direct consequence of the decrease in birth rate after the communist period. The only administrative-territorial units which registered a natural increase were Tecuci city (0.8‰), Matca (1.2‰) and Ghidigeni (3.7‰) where the general birth rate exceeded 10‰, consequence of the large share of the roma population.

The values of migration balance highlight the migration deficit recorded by 14 administrative units, the minimum being reached by Tecuci city (-309 persons). The 9 communes which recorded a positive migration balance between +6 people (Certești) and +60 (Tudor Vladimirescu) confirms the return of the population due to economic crisis in Western Europe and also the internal urban-rural migration accentuated in recent years due to poor financial situation of many families (figure 5).

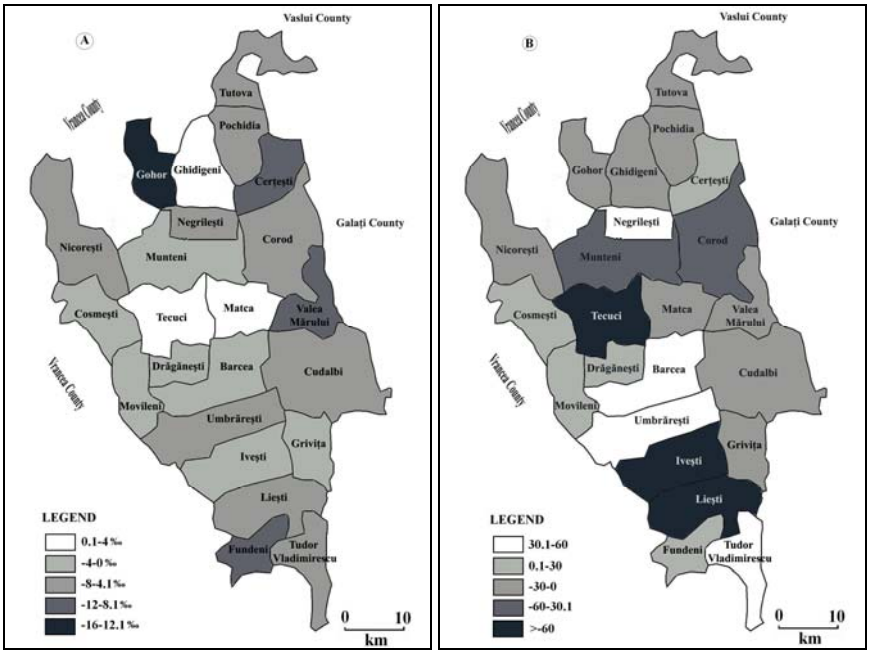

Figure 5. The Natural Balance (A), The Migration Balance (B) in 2010
(Data source: calculated by DJSG, 2011 and *Tempo-Online*, *www.insse.ro*)

DEMOGRAPHIC VULNERABILITIES

According to the methodology presented, we aggregated all specific values of the analyzed indicators by calculating the final coefficients which reflect the demographic vulnerability for each administrative-territorial unit.

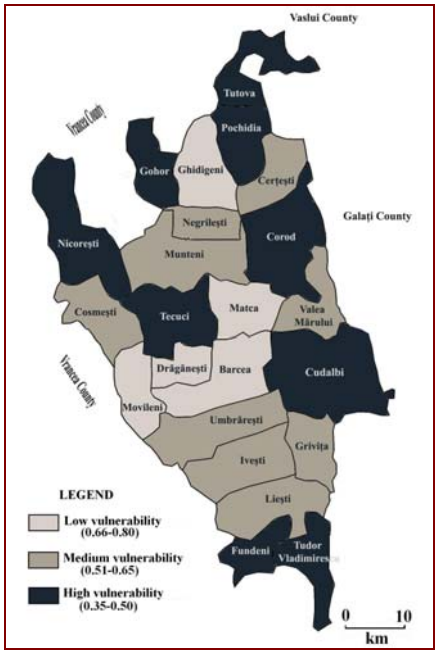

Figure 6. Demographic vulnerabilities in 2010

The obtained values, maximum and minimum, allowed us the classification of the administrative-territorial units in 3 major types of demographic vulnerability (low, medium, high) that were finally mapped. The conclusions are:

- the higher demographic vulnerability is registered by Nicoresti commune, whose coefficient is 0.35;
- Matca commune is the least vulnerable, its coefficient being 0.78;
- 9 administrative units (39.1%) have high demographic vulnerability (Nicoreşti, Tecuci, Gohor, Corod, Fundeni, Tudor Vladimirescu, Pochidia, Tutova, Cudalbi), occupying peripheral positions on the border with Vrancea and Vaslui counties.
- medium demographic vulnerability is also recorded by 9 communes (Lieşti, Cerţeşti, Valea Mărului, Cosmeşti, Iveşti, Negrileşti, Griviţa, Umbrăreşti, Munteni);
- the lowest demographic vulnerabilities were recorded by 5 communes -21.7% (Barcea, Movileni, Drăgăneşti, Gidigeni, Matca) (figure 6).

CONCLUSIONS

Located at the contact of the Romanian Plain and the Moldavian Plateau, at the crossroads of ancient trade routes that linked Moldavia, Muntenia and Dobrogea and near the confluence of the three major rivers of Moldova, the area of Tecuci plain has always been a favourable environment for human settlements development, the clearest evidence being the current population size of most villages (in 2002 - 21 villages were large and very large).

However, political and economic changes in post-communist period inevitably affected the region's population, the major demographic risks faced by Tecuci plain, on medium and long term, being the feminisation of the population, and the accelerated demographic aging. In this context, knowledge and awareness of the demographic vulnerability at local and regional levels should be a priority for local and especially national authorities whose demographic and economic policies must be in line with the current trends, neglected in recent years due to the economic crisis. We look forward to the results of the general census in 2011, in order to have a much clear image, at village level, on the demographic evolution of the region in the last decade, serving also for further analysis.

Acknowledgment

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