Population ageing in Portugal: a review and appraisal linking approaches

Authors:

Maria Cristina Sousa Gomes, Departamento de Ciências Sociais Jurídicas e Políticas - Universidade de Aveiro

mcgomes@ua.pt

Maria João Guardado Moreira, Escola Superior de Educação - Instituto Politécnico de Castelo Branco/CEPESE

mjgmoreira@ipcb.pt

Alda B. Azevedo, Centre d'Estudis Demogràfics, Universitat Autònoma de Barcelona
aldazevedo@gmail.com

Maria Isabel Baptista, ISCTE - Instituto Universitário de Lisboa

isabel.r.baptista@gmail.com

Background

Population ageing is a dominant feature of recent demographic developments in the Portuguese society. Although this feature is being transversal to all developed countries, in Portugal this process started belatedly but established quickly and intensely. This path turns Portugal, globally, in one of the most aged countries.

However, the trajectory and the consolidation of the ageing process were not linear when analysed the regional patterns. It is in the peripheral Portuguese regions that we find the highest ageing indexes so it is important to understand the transformation of patterns and territorial configurations of this process, as well the processes that underlined those changes.

This ageing process, as we know it in the present, had several stages that can only be intelligible when we descend to a thinner regional level of disaggregation. The acknowledgement of these differentiated regional developments in a long-term perspective (1950-2011) allows us to date the stages of ageing regional structures and to realize the multiple realities resulting from the dichotomy coastal / urban.

Thus, from the perspective of review and analysis, we are interested in finding homogeneous regions that share aged structures trends, expressing the stages of the ageing process. Additionally, since life expectancy changes over time, it is important to consider the new measures of ageing that complement the conventional indicators.

Therefore, this papers aims to undertake a review and appraisal of the ageing process between 1950 and 2011 in Portugal. On the one hand, a clusters analysis give an overview of the ageing patterns alongside with the path this process took in Portugal. On the other hand this previous analysis is complemented with an reinterpretation of the ageing process given by the indicators proposed by Sanderson & Scherbov.

Data and methods

The clusters resulted from a principal component analysis carried out intending data simplification, the remotion of the collinearity and outliers. Starting from the data of the resident population for municipalities by five-year age groups, the homogeneous groups were formed making use of the hierarchical Ward method.

To develop this exploratory exercise, we started with the census data, which gave us the distribution of Portuguese population, by municipality, gender and by five-year age groups. A final open group gathers the 75 year and over.

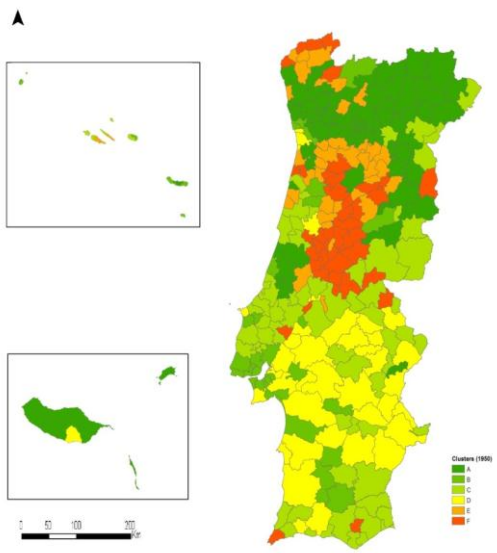
To ensure comparative purposes over the census, the clusters are named with the same letters, although the intensity varies, where: A refers to the youngest cluster; G to the more aged on the top; D is the cluster with higher proportion of population in working ages. With intermediate values arise clusters B and C, which are the ones with the young and youngest structure, in transition paths although with signs of decrease, and E and F, which present already aged structures being F the more aged.

The importance of identifying these groups that reflect gradual changes is precisely lined with the stages of the ageing process since occurred at different times among the different regions.

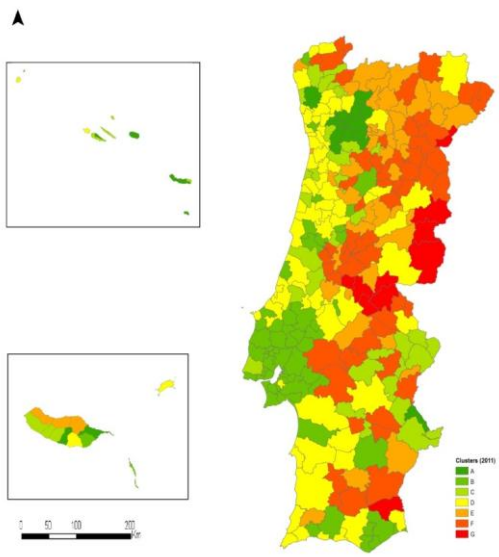
To obtain a renewed perspective of Portuguese population ageing, the indicators suggested by Sanderson & Scherbov (2005, 2007, 2008) were applied at national level. Making use of the complete life tables from Human Mortality Database, the calculations were done for all years in the period 1950-2009. For present purposes, the focus is placed in the population census years (1950, 1960, 1970, 1981, 1991, 2001) and the last available year in the data source (2009).

Results

Cartogram nº 1 *Clusters* 1950



Cartogram nº 2 *Clusters* 2011



In this summary, although the cartograms report only the first and final year census, the analysis of the complete time series allows the understanding the ageing process, its significance and variations, in the regional space, as well as its influence in national territory.

In the second stage of this study, it was intended to complement the overview of the demographic changes in the structure of the Portuguese population with the refreshed perspective of the population ageing process given by Sanderson & Scherbov (2005, 2007, 2008). The authors emphasize that in order to better understand life expectancy progresses two ages should be considered: the chronological age (number of years lived) and the prospective age (number of years that one can expect to live). Consequently the three indicators commonly used in the study of population ageing - median age of the population, proportion of elderly and old-age dependency ratio - can be complemented by their analogues taking into account the threshold of 15 years of remaining life expectancy (Sanderson & Scherbov, 2008).

In 1950, Portuguese could still expect to live 15 years at the age of 62.85 years (60.60 for males and 64.26 years for females). In 2009, Portuguese males could still expect to live 15 years at the age of 67.73 years and Portuguese women at the age of 71.41 years. The sex difference is, in 2009, of 3.68 years, almost equal to the one observed in 1950, 3.65 years.

Comparing the median age of the Portuguese population with the prospective median age, using 2009 as the reference year, it is observed that despite the increase of 15.50 years for both sexes reported by the conventional measure, the increase in the prospective median age as well below, 4.56 years (Table 1). Furthermore, although the constant increase of the median age, the prospective median age fell from 1950 to 1960 for both sexes and from 1970 to 1981 for females.

Table 1 Prospective median age (PMA) and Median age (MA), Portugal 1950-2009

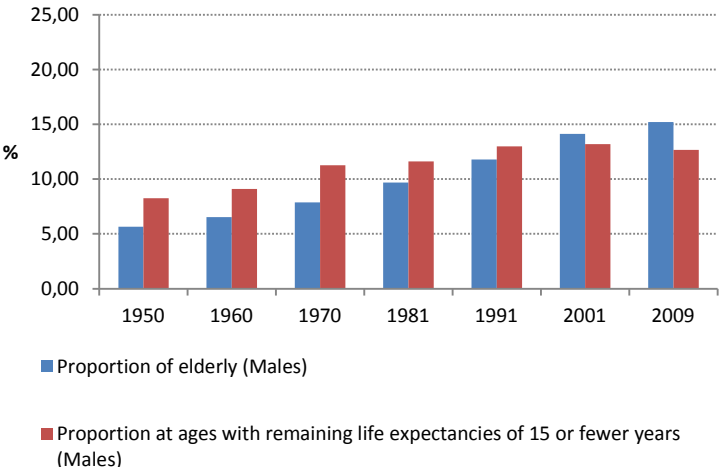
Year	PMA (Both sexes)	PMA (Males)	PMA (Females)	MA (Both sexes)	MA (Males)	MA (Females)
1950	35.86	34.19	37.52	25.92	24.50	27.35
1960	35.28	33.64	37.02	27.80	26.50	29.10
1970	36.39	34.44	38.18	29.50	27.64	31.08
1981	36.11	34.49	37.74	30.75	28.93	32.55
1991	38.33	36.83	39.82	34.43	32.73	36.09
2001	39.69	38.31	41.07	37.94	36.38	39.46
2009	40.42	38.80	42.03	40.42	38.80	42.03

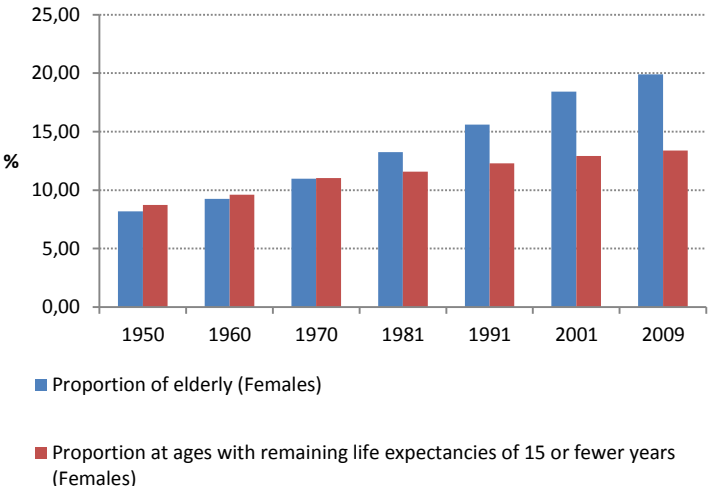
Source: Own calculation using the complete life tables (period), Human Mortality Database (Portugal, 1950-2009)

The proportion of elderly rose from 6.97%, in 1950, to 17.64%, in 2009 (both sexes). Nevertheless, with the renewed perspective, the proportion at ages with remaining life expectancies of 15 or fewer years present an increase from 8.38% to 12.79%. Moreover, while until 1981, the 65 years lived overestimates the definition of the elderly, from 1991 onwards there is an underestimation.

By sex can be added that this inversion occurred much earlier for females, in the 1970s, and only during the 1990s, for males (Figure 3). It is also noticeable that until the 1970s the indicators for females are almost equivalent and that the separation occurs when the increase in female life expectancy gains a new impetus. In men the proportion at ages with remaining life expectancies of 15 or fewer years is relatively stable at the 13% since 1991.

Figure 3 Proportion of elderly and proportion at ages with remaining life expectancies of 15 or fewer years (%), by sex, Portugal, 1950-2009



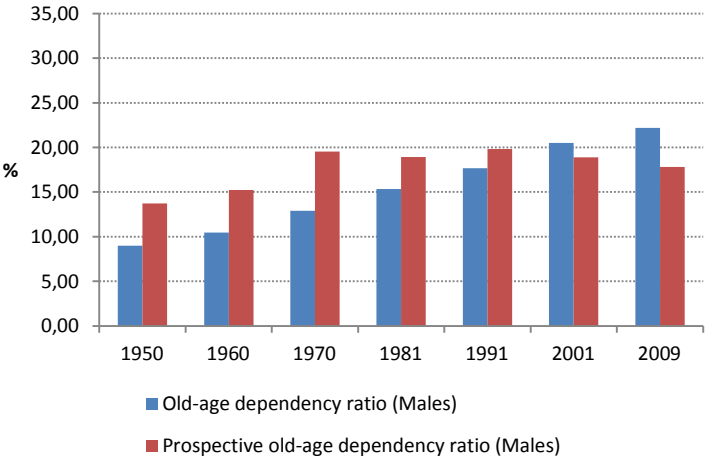


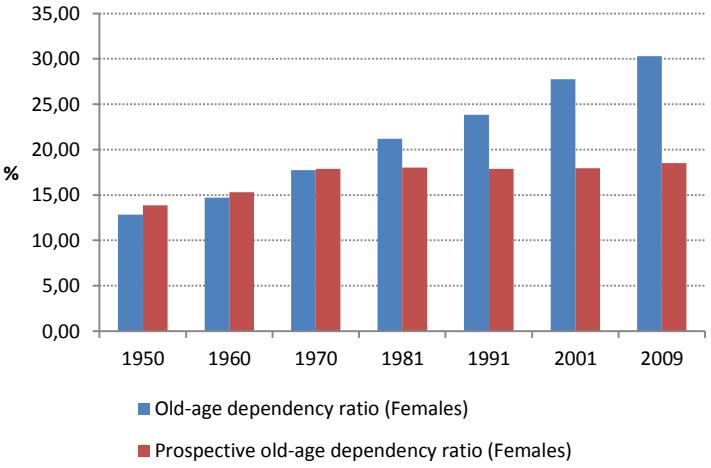
Source: Own calculation using the complete life tables (period), Human Mortality Database (Portugal, 1950-2009)

Regarding the old-age dependency ratio, the results emphasize the need to reorganize the traditional life cycles, especially the cycle of work around the current demographic structure of the Portuguese population. The conventional measure, in 2009, is 26.29%, which is 15.28% higher than in 1950, when this ratio was 11.01%. However, if we assume 15 or fewer years of remaining life, this figure changes from 13.55%, in 1950, to 17.18%, in 2009.

By sex, contrarily to the growth trend of the conventional old-age dependency ratio, the prospective old-age dependency ratio illustrates that the index remains relatively stable since 1970 (Figure 4).

Figure 4 Old-age dependency ratio e prospective old-age dependency ratio (%), by sex, Portugal, 1950-2009





Source: Own calculation using the complete life tables (period), Human Mortality Database (Portugal, 1950-2009)

In summary, the changes in the structure of the Portuguese population between 1950 and 2011 impose new social, political and economic challenges. In this review and appraisal the measures traditionally used in the study of population ageing are refreshed with new indicators on the

duration of life providing a complementary perspective to a debate that should be focused in the reorganization of the life cycle.

Conclusion

Considering the evolution of the ageing process in Portugal it is possible to distinguish three main stages. The first one, dating from the 1950s until the 1970s corresponds to the emergency of the ageing process. Portugal has lost a significant part of the population at working age, seduced by the job opportunities offered by wealthier European countries. This is the time of the great emigration wave which marks the start of this process. The second stage, during the 1980s, is characterized as being a transition period. The continued decline in fertility disrupts the balance of the natural dynamics, inevitably narrowing the base of the age pyramid while the increase in the life expectancy contributes to the enlargement of the pyramid at the top. The third stage comprises the consolidation of the ageing process, which means an increase in the proportion of older people in relation to the working age population and the younger people.

Ageing takes on new contours in the socio-economic Portuguese context. On the one hand, ageing is a well-established reality in the Portuguese society/population; on the other hand it faces simultaneously a slowdown in the natural dynamic, and an increase in the emigration. Thus it becomes even more important to understand the interaction between the political, social and economic development and demographic change that outlines the challenges for the near future.

References

Légaré, Jacques. (2004) Conséquences économiques sociales et culturelles du vieillissement de la population. In Demographie: analyse et syntèse, vol. VI, «Population et société». Paris: INED.

Lutz, Wolfgang, Sanderson, Warren C., Scherbov .(2004). The End of World Population Growth in the 21st Century: New Challenges for Human Capital Formation & Sustainable Development Taylor & Francis.

Sanderson, W. e Scherbov. S. (2005). Average remaining lifetimes can increase as human populations age. *Nature*, 435 (7043), 811-813.

Sanderson, W. e Scherbov. S. (2007). A New Perspective on Population Ageing. *Demographic Research,* 16 (2), 27-58.

Sanderson, W. e Scherbov. S. (2008). Rethinking Age and Ageing. Population Bulletin, Vol. 63, Nº.4. Population Reference Bureau.