Mortality of People Entitled to Pensions and Pension-type Benefits

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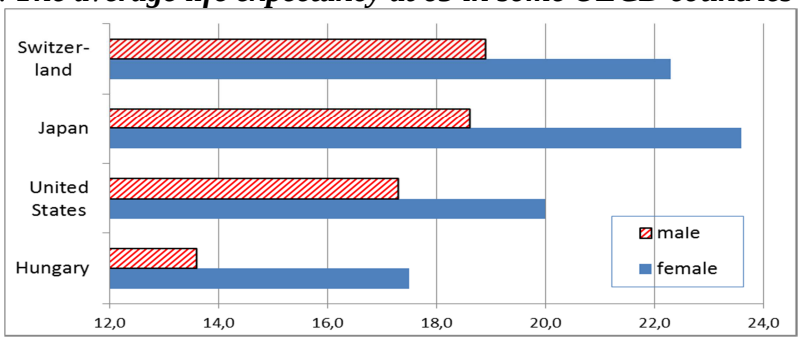
Introduction

Our study tries to get statistical answers to one of the key questions of our life: How long will we live? **How long will we get pension?** A typical research in the field of death and mortality focuses on the differences by gender, marital status, living area or level of education. A lot of studies analyse the causes of death, too. **Our analysis focuses on the mortality of beneficiaries in receipt of pensions or pension-type benefits in Hungary**. It shows the used data (number and mortality rate of pensioners, mortality by age, period spent in the pension system) by accentuated main benefits (old-age and disability pensions). Furthermore, it deals with the statutory retirement age (currently 62 in Hungary). Mortality data, mortality probabilities and average life expectancies for various age groups by sex and type of benefits are presented in this poster. These rates are very different supporting our hypothesis: Life **e**xpectancy of pensioners differs to a large extent from that of the population.

Materials and methods

Figure 1: ***The average life expectancy at 65 in some OECD countries in 2008***



Source: www.oecd.org Authors's calculation from OECD data

Mortality of people entitled to pensions and pension-type benefits in 2008 has been analysed in detail to revise our results first revealed in 2004. The Central Administration of National Pension Insurance (CANPI) database keeps records of 3 million pensioners in the total 10 million Hungarian population. Our table shows the number of Hungarian beneficiaries receiving pensions or pension-type benefits in January 2008 and at midyear 2008. The last column presents the crude death rates of pensioners by type of pension.

Table: ***Crude death figures of pensioners for 2008***

Type of benefit	**No. of pensioners January**	**No. of pensioners Midyear**	**No. of Deaths**	**Crude death rate**
Pensions or pension-type benefits	3 032 286	3 019 911	117 755	0,039
Pensions	2 754 073	2 748 633	111 934	0,041
Old-age pensions	1 710 812	1 717 800	67 362	0,039
Disability pensions above retirement age	361 241	358 455	20 330	0,057
Disability pensions under retirement age *	431 793	427 718	13 565	0,032
Widow(er)s' pensions	135 670	132 028	10 069	0,076
Others	392 770	383 911	6 429	0,017

** Including accident-related disability pensions*
Source: Authors' calculation from CANPI database

Based on the international methodology mortality functions, including probability of death and life expectancy were calculated for different types of pensioners. Life tables containing graduated probability of death and life expectancy are presented for old-age pensioners and disability pensioners.

The method currently applied for structuring complete life tables is the so-called Böckh's formula. For ages 30-75, the Karup-King osculatory interpolation was used for presenting gradulation. For ages 76 and above, a Gompertz-Makeham function is applied.

Results

Relevant information can be gained through the analysis of death data. The average age of death regarding ***all beneficiaries*** was 74.9 years in 2008. Their retirement period lasted 19.3 years. (See Figure 2) Beyond the mean value there are significant differences in results between men and women. Average age of death for men was 71.7 years with 16.5 years retirement period, whereas it was 77.9 years including 22 years for women financed by Pension Insurance Fund. To summarize, women receive pension benefits for 5.5 years longer. Distribution of retirement period is presented for all deceased beneficiaries every two years in Figure 2. There are many peak periods between 17-25 years around the mean value (19.3 years). Many people died immediately after retirement, and it was not rare to spend 39-40 years in pension, either.

Figures of ***old-age pensioners*** show higher rates. The *age of death* for both sexes was 79.2 years in 2008 with 21.5 years retirement period (Figure 3). The average age of death for male old-age pensioners was 77.9 and 80.4 years of age for females.
Focusing on old-age pensioners, we get a completely different picture shown in Figure 3. Heavy tail is not present in this distribution: very short and very long durations are less probable. Highest frequencies are between 15-30 years for those who died in 2008. The 21.5 years of mean duration is significantly higher according to the t-test than the overall mean.

Figure 2: ***Retirement period for all***

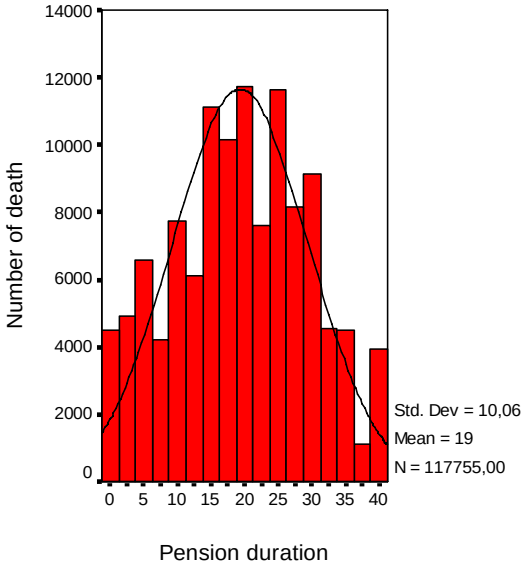
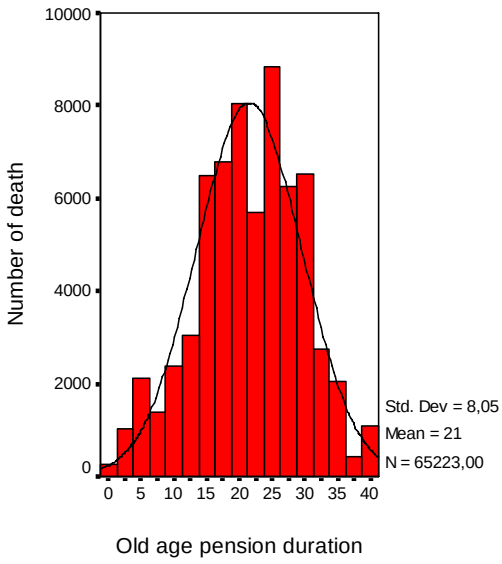


Figure 3: ***Old-age pension period***



To calculate probabilities of death and life expectancies for certain beneficiary groups it is wise to make a comparison for Hungarian population, the total pensioner population, old-age pensioners and disability pensioners. Figure 4 show the four results of the aforementioned

graduated probability of death between ages 30 and 80. Life expectancies in the same grouping are presented in Figure 5. For both indices pensioners and population data provide the same result for people above age 58.
Both figures show significant differences in younger ages. The largest deviation shown in Figure 4, with a further increase in deviation between ages 40 and 50, lies between the population and the disability pensioners when comparing probability of death or life expectancy.
The difference becomes more relevant above 60 when old-age pensioners' data are also available. Old-age pensioners live longer than the total Hungarian population. The advantage of being old-age pensioners comparing to the disability pensioners surpasses other differences both in Figure 4 and Figure 5. To prove this statement it is enough to mention one ratio: probability of death at 60 is 3.6 times higher for a disabled beneficiary than that for an old-age pensioner.

Figure 4: ***Probability of death***

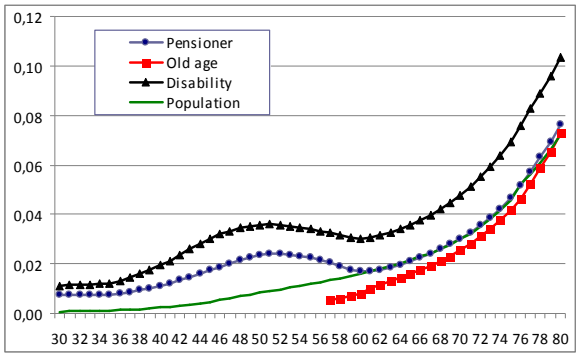
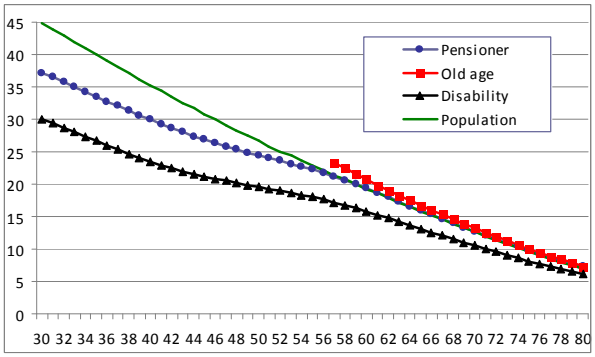


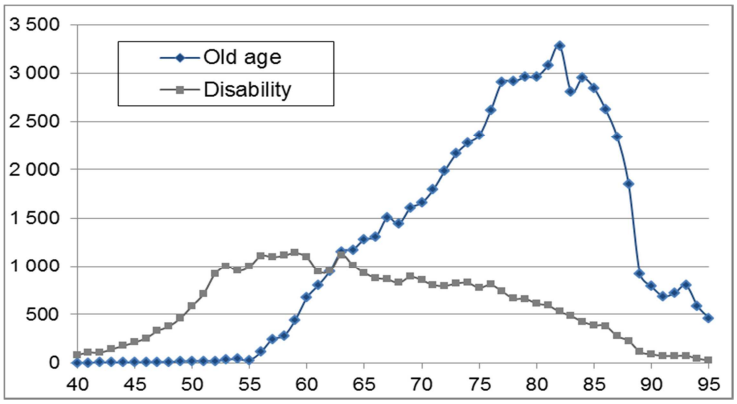
Figure 5: ***Life expectancy***



Conclusions

Analysing life expectancy of pensioners and people receiving pension-type benefits is a crucial question of the study. An increase in the average life expectancy at birth and at retirement age is foreseeable due to an aging of society – in respect of the financing of pension systems –not only in Hungary, but also in other EU Member States and other countries in the world. Mortality is a crucial issue for life insurance companies, as well.

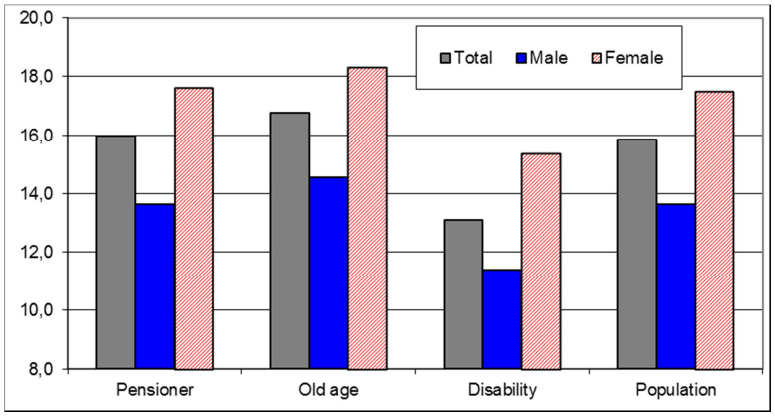
Figure 6: ***Differences between old-age and disability death numbers in 2008***



Comparing death numbers of old-age and disability pensioners according to their age of death are based on the differences presented in Figure 6; whereas retirement period should be analyzed separately for old-age pensioners.

Pensioners dying in 2008 spent 19.3 years in pension on average.
The length of disability pensioners' period receiving pension is 14.6 for males and 19.1 for females. However, there is a huge difference in the pension period regarding those dying above or under retirement age. When considering the distribution of pension period for both sexes, the maximum number of deaths occurs in the first year. This means that a significant number of disability pensioners die within a short time after retirement. **One quarter of males die within the first 6 years after becoming a beneficiary, whereas the same ratio for females is only within the first 9 years.**

The Figure below shows the average ***life expectancy at 65 in Hungary in 2008*** and it demonstrates that old-age pensioners can expect to live another 16 years, whereas disability pensioners another 13.1 years only.



Literature

1. *Benjamin, B. – Haycocks, H. W.* [1970]: Analysis of mortality and other actuarial statistics. Cambridge University Press, London.
2. *Benjamin, B – Pollard, J. H.* [1980]: The analysis of mortality and other actuarial statistics. Heinemann, London.
3. Chiang, L. C.[1968]: *Introduction to Stochastic Processes in Biostatistics*. Wiley. New-York
4. *Yearbook of Demography 2008 (in Hungarian)* KSH, Budapest, 2010

Acknowledgments

We thank Judit Dr.Hollósné Dr. Marosi for her professional support.

Further information

Mária, Hablicsek - Richter [2013]: **Mortality (2008) http://vixra.org/pdf/1402.0127v1.pdf**

Several papers and studies are available in Hungarian:
Mária, Hablicsekné Richter [2012]: *Analysis of death data of people entitled to pensions and pension-type benefits (in Hungarian)*
Mária, Hablicsekné Richter [2013]: *Analysis of mortality of people entitled to pensions and pension-type benefits in 2008 (in Hungarian)*
http://www.onyf.hu/index.php?module=news&fname=onyf_left_menu_statisztika_elemzesek&root=ONYF
*Judit, Hollósné dr. Marosi – **Mária, H. Richter*** [2008]: *Analysis of mortality of people entitled to pensions and pension-type benefits in 2004 (in Hungarian,)* **Statisztikai Szemle(Statistical Journal)**, 2008. IX. 875-898 p.
Erzsébet, Kovács.[2010]: Demography Restricts Pension Reforms, (in Hungarian), Hitelintézeti Szemle(Journal for Credit Institutions), Vol.9., Vol.2., pp.128-149. http://www.bankszovetseg.hu/anyag/feltoltott/HSz2_128_149ig.pdf