

Population ageing and sustainability in South Tyrol: measuring the economic implications of an ageing society

Giulia Cavrini, Elisa Cisotto, Alex Weissensteiner

1. Introduction and Background

During the twentieth century, South Tyrol has experienced a rapid and intense decline in fertility jointly with impressive achievements in extending survival, especially at older ages. Consistently low birth rates and high life expectancy have contributed to a faster ageing process of the resident population, a trend that is projected to continue until at least the middle of the twenty-first century (Christensen et al., 2009.). The implications of population ageing are pervasive and complex, and often regarded as a major cause of increased pressure on healthcare and social security systems. However, the ageing process impacts almost all spheres of society, including economy, housing, family structures and intergenerational ties (WHO, 2015; UN, 2014).

Largely, meeting the challenge of population ageing requires a better understanding of frailty and disability, and appropriate strategies to ensure the resilience of the health and social care system and long-term care spending without destabilising public finances or over-burdening the economy. Countries will face a demanding task to provide care for a heterogeneous population of older adults, finding the true balance between offering the proper social protection to people with care needs and assuring that this protection is fiscally sustainable (OECD, 2017). The long-term horizon sometimes makes it difficult to derive the necessary actions from it, but also to make the political alternatives visible. In many cases, key facts become clearer when they are broken down into a manageable geographical reality. For this reason, this paper deals with the situation of the Autonomous Province of Bozen-Bolzano. Due to the autonomy of this province within Italy, there is an implemented care system, which is well documented, but not so specific as to be considered a case study whose results can be generalised.

Within this context, we explicitly aim to assess the impact of current and future population dynamics on the sustainability of the economic, health and social system of the Province of Bozen-Bolzano. Thus, the current paper is designed to reach the following research objectives:

- (a) measure the current needs for social care in South Tyrol,
- (b) identify the local trajectories of health status, disaggregated by age, sex and severity of illness,
- (c) forecast the health care needs and the healthcare system's financial sustainability.

2. Data and method

Calculations are based on the population data structure by age and sex from 2009 to 2050, provided by the Italian National Statistical Institute (ISTAT). Individual health care data for administrative and billing purposes is from the Autonomous Province of Bozen-Bolzano (Department of Family, Social Affairs and Community), and used to study health care delivery, benefits, harms, and costs from 2009 to 2019 in the case of home-based care recipients, and from 2009 to 2013 for residential care receivers.

Health care local data contains all the monthly payments made by the Autonomous Province of Bozen-Bolzano for everyone receiving care allowance. For each allowance recipient, basic

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demographic and health status information is available, such as sex, date of birth, date of death, citizenship, entitlement to an attendance allowance, native language, and area of residence. Besides, based on this data, we calculate on an annual basis: the health care level of classification, whether the provision of care is home-based or institutionalized, and the total amount received by each assisted person per year and the number of payments. The health care level of classification categorises the severity of the health condition for which the person receives the care allowance. They are legally defined care levels in South Tyrol, whereby level 1 provides for a care requirement of 60-120 hours, level two of 120-180 hours, level 3 180- 240 hours and level 4 more than 240 hours care requirement per month. Each level matches a precise rate for the given allowance.

According to the following formula, we calculate the annual population prevalence (E_t) of people (P) in need of assistance by care level (l) (1 to 4, where 4 means worst health conditions), care typology (c) (home-based or residential care), sex (s) and age (x):

$$E_{tsx}^{cl} = \frac{P_{tsx}^{cl}}{P_{tsx}}$$

Thus, the forecast estimate of the number of people in need of care results from the prevalence (E_t) (assumed to be constant over time) multiplied by the ISTAT forecast of the population, separated by sex and age, of the corresponding year. To obtain accurate and latest estimates, we use three-years average prevalence estimates from 2017 to 2019 to forecast home care recipients from 2020 ongoing, and two-years average prevalence estimates from 2012 to 2013 to forecast residential care receivers. The research, therefore, assumes that the shares of the dependent population that receive either formal care at home or institutional care are kept constant over the projection period. Therefore, this is a pure demographic scenario, as the only relevant variable is demography, through the projected population changes.

The ISTAT population forecasts are based on a set of assumptions with respect to fertility, mortality, interregional and international residence movements. The methodological approach is semi-probabilistic. The fundamental characteristic of probabilistic forecasting is to consider the uncertainty associated with predicted values, determining the confidence intervals of the demographic variables, and allowing the user to independently choose the degree of confidence to be assigned to the results. For the purposes of this paper, we rely on the variant generally identified as the most probable, typically identified as the ‘median scenario’, with a 95% confidence interval.

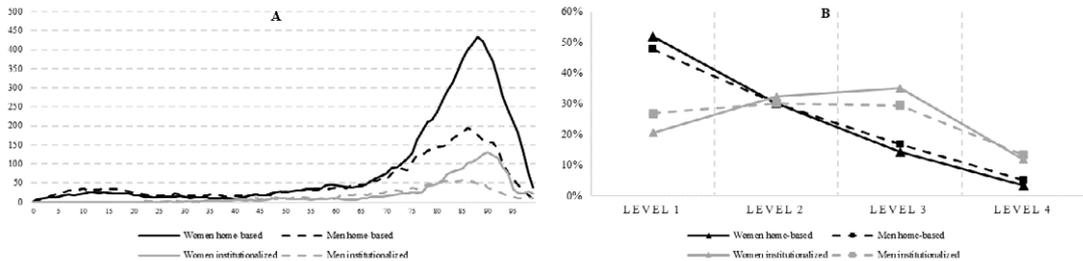
3. Preliminary results and discussion

Figure 1 shows the distribution of home-based assisted persons for 2017-2019 and the average number of residential assisted persons for 2012-2013. Overall, the probability of a need for care at an advanced age (65+) rises sharply compared to younger ages (Figure 1, panel A). On average, between 2017 and 2019, more than 66% of home care services were provided to over-80s and almost 85% to over-65s. Similarly, between 2012 and 2013 (the latest available data), more than 77% of facility-based services were provided to the over-80s and 90% to over-65s. Due to their higher life expectancy, women are particularly affected, so that the number of assisted women exceeds that of men, especially in old age.

Besides, the distribution by severity level of the health condition for which the allowance is received is relatively independent of age (Figure 1, panel B). Overall, greater prevalence occurs at lower levels of health condition severity (levels 1 and 2 over a four points-scale of severity). Regarding those in care at home, about 50% of those affected are in the first level of assistance, 30%, 15% and

4% in levels 2 to 4. Therefore, most home care recipients are therefore in the least severe, and least economically costly, levels of care. Differently, in the residential care structures, we find more patients in the most severe levels of assistance, ranging from 2 (31%) to 3 (32%), and 4 (13%).

Figure 1. Average number of home-based and residential benefits by age and sex (panel A), and share by assistance level (% - panel B).

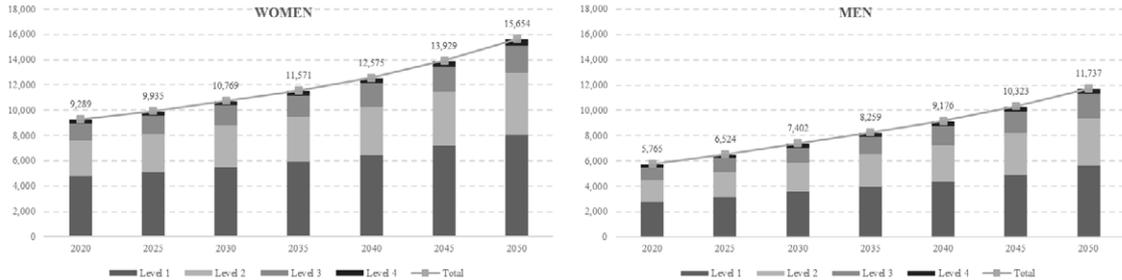


Source: Own elaborations on administrative data from the Autonomous Province of Bozen-Bolzano

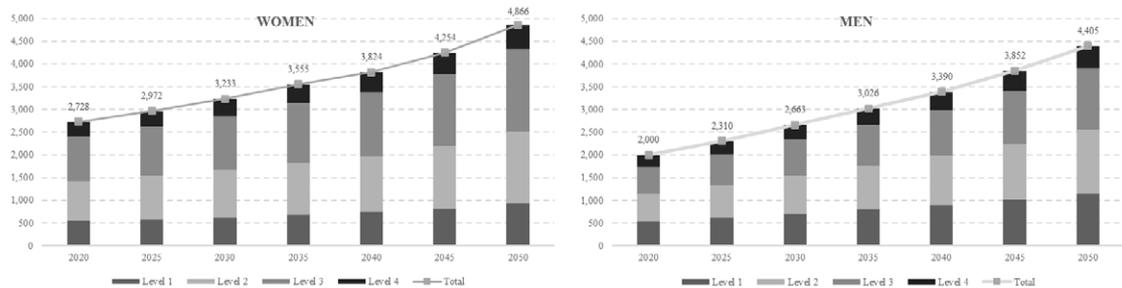
By combining the information on demographic dynamics and the care benefits prevalence by age, the weight of the home and residential assisted individuals over the next few years was estimated. Figure 2 shows how the number of home-assisted persons will grow between 2020 and 2050 by more than 68% for women and 104% for men. The same trend is expected for residential services, but with a much stronger growth of over 78% in the next 30 years for women and up to 120% for men.

Figure 2. Home care and residential benefits by level (South Tyrol 2020-2050)

A – Home care benefits



B – Residential benefits



Source: Own elaborations on administrative data from the Autonomous Province of Bozen-Bolzano

Our extrapolation is based on the main restrictive assumption that the population's health status will continue to correspond to that of the reference years in the future. Hence, the distribution of home care recipients and residential care receivers will remain unchanged. Nevertheless, concerning the economic impact of our preliminary results, two major drivers must be considered. First, the demographic drivers, for which the combined effect of longevity improvement and the shape of care expenditure by age will result in a projected increase in public expenditure from 2020 to 2050. However, survival at older ages may not necessarily result in an increase in the population prevalence of chronic diseases. Otherwise, it could translate into improved survival with additional years in good health, so that the future economic burden of longevity could be contained by such healthy ageing process and decreasing dependency levels. Informal and formal care is the second key driver to be considered in terms of future economic consequences of population ageing. Indeed, most care in Italy and South Tyrol is informal, provided by family and social networks. However, current changes in family structures, such as declining family size and rising female labour force participation, could lead to a decline in the availability of informal caregivers and to an increase in the need for formal aid care. These social changes, together with public spending policy and political actions on health care, can change considerably the impact of population ageing on future public expenditure, which can even become more relevant than the demographic change itself.

References

- Christensen, K., G. Doblhammer, R. Rau and J.W. Vaupel (2009). Ageing populations: the challenges ahead, *The Lancet*, vol. 374, No. 9696, pp. 1196-1208.
- Cylus, J., Figueras, J., Normand, C. (2019). Will Population ageing spell the end of the Welfare State? A review of evidence and policy options. EU2019.FI. World Health Organisation. www.weforum.org.
- OECD (2017), *Health at a Glance 2017: OECD Indicators*, OECD Publishing, Paris.
- UN (2014). Population ageing and sustainable development. *Population Facts*, 4(Rev.1), pp. 1-4.
- WHO (2015). World report on ageing and health. World Health Organization. <https://apps.who.int/iris/handle/10665/186463>.