

# Future projections of population and mortality in Germany until 2030/2050 – and their impact for end-of-life care

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## Background

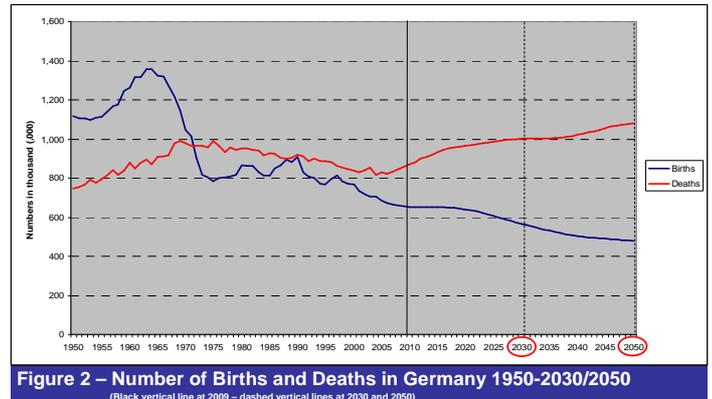
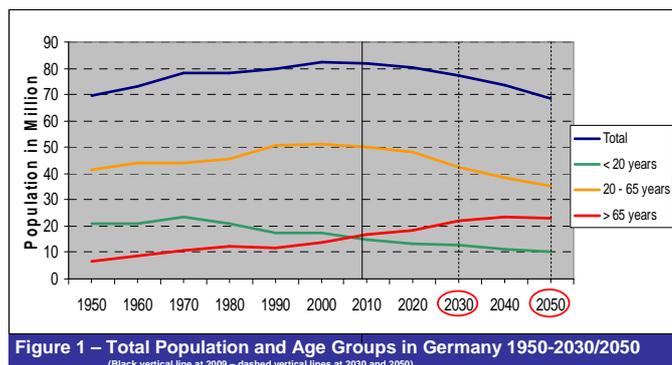
The world population is aging and this applies in particular to developed countries (Mathers 2006). In Germany there is a longstanding debate on how to respond to this development in general but a discussion on the impact of end-of-life care is still missing.

## Aim

To analyse future population and mortality projections in Germany until 2030/2050 and to discuss the impact on end-of-life care.

## Method

Secondary analysis of official national statistics data regarding population, births, deaths, cause of death and place of death. Assumptions for future projections of population, births and deaths are: birth rate 1.4 children/wo-man, life expectancy at birth in 2050 +7.6/6.5years for boys/girls compare to 2007, migration balance +100,000 persons per year. Future scenarios for hospital deaths were modeled using the mean% of hospital deaths in the most recent 10years to estimate future numbers until 2050.



## Results

Our analysis predicted the following developments until 2050 in Germany:

- **Population** is decreasing and aging: -13.5 Million in 2050 compared to present (-16%) (**Figure 1**);
- **Number of deaths** are increasing notably since 2006: about 1,081,000 per year in 2050 (+30%!) (**Figure 2**) – Main reason: baby-boom-generations are growing old;
- **Age when dying**: in 2050, 87.4% of the dying will be 75 years and older (at present: 62.4%) (**Table 1**);
- **Leading cause of death**: chronic heart failure, but COPD as cause of death is increasing rapidly;
- Most common **place of death**: hospital deaths (1995-2005: mean 46.5%, range 44.9-47.6%) – taking this forward, the number of hospital deaths will increase from 395,169 in 2007 to 506,000 in 2050.

## Impact on end-of-life care (eolc) in Germany

- (1) **Expansion of eolc in all sectors of health care system**
  - a) home: eolc at home for all who wish to die at home
  - b) hospital / nursing home: expansion of palliative care services in hospitals and nursing homes
- (2) **Expansion of eolc in education & training**
  - a) general palliative care: all students and general practitioners
  - b) specialist palliative care: expansion of training, services and research
- (3) **Eolc for all with eolc needs**
  - a) non-malignant diseases: CHF, COPD, stroke
  - b) focus on the elderly
- (4) **The upcoming national strategy for high quality and integrative end-of-life care in Germany** (charta) needs to focus on the future

## Conclusion

The number of deaths is already increasing in Germany. In the future, the dying will be older and the population (and potential carers) will decrease.

The future development of eolc will be a key challenge for the German society. There is a need to extend eolc to older patients and those with non-malignant disease. New approaches, training, services and research have to be developed to provide more appropriate care to meet the needs of the dying and their carers.

	Present (Data from 2007)	Future (Data for 2030 / 2050)
Population	82.2 Million	77.2 / 68.7 Million
Number of deaths/year	827,155	1,001,000 / 1,081,000
Death rate (deaths per 1,000 population)	10.1	13.0 / 15.7
Deaths > 75 years	62.4%	76.1 / 87.4%
Leading cause of death	Non-malignant diseases (65%) <sup>1</sup>	Non-malignant diseases
Leading cause of death, malignant	1. Lung cancer (5%) 2. Colon cancer (2%) 3. Breast cancer (2%)	No data available for Germany (Europe/Central Asia 2030- <sup>2</sup> Leading cause of death: Lung cancer)
Leading cause of death, non-malignant	1. Chronic heart failure (CHF, 17%) 2. Stroke (8%) 3. COPD (3%)	No data available for Germany (Europe/Central Asia 2030- <sup>2</sup> Leading cause of death: CHF) <sup>3</sup>
Age of patient in care of palliative services (mean)	67.7 years	?
Place of death	47.8% hospital deaths (395,169) (no other representative data for place of death except hospital deaths are available for Germany)	?

Table 1 – Situation in Germany at Present (2007) and in Future (2030/2050)

When no other reference is mentioned: Federal Statistic Office Germany, 2009; <sup>1</sup>Percentage of all causes, both genders; <sup>2</sup>Mathers (WHO, 2006) (2); <sup>3</sup>COPD is assumed to be the most increasing cause of death in patients older than 70 years (1-6%); <sup>4</sup>ICPE: data 2007 – www.who-class.de

## Literature

- (1) Federal Statistik Office Germany (Statistisches Bundesamt), www.destatis.de, 2009
- (2) Gomes B, Higginson IJ. Where people die (1974-2030): past trends, future projections and implications for care. Palliative Medicine 2006;22(1):33-41
- (3) Mathers CD, Loncar D (2006). Projections of global mortality and burden of disease from 2002 to 2030. PLoS Med 3(11):e442.doi:10.1371/journal.pmed.0030442

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