

# Hip fracture in elderly in Portugal incidence from 2004 to 2010

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## Introduction

Hip fractures account for the majority of fracture-related health care expenditure and mortality requiring hospital facilities and being an important cause of decreased health state [1–4]. In Portugal, during 2006, Direção Geral da Saúde (DGS) estimated that 52 million Euros were spent in hospitals direct costs related with hip fractures, with a medium cost of 4,100 Euros per hospitalization [5]. Previous studies found a remarkable variation in the risk of hip fracture worldwide (>10-fold differences between countries) [6–9]. Lowest and highest annual age-standardized incidences (AI) are shown in Table 1. Within countries, men AI of hip fracture is about half of the women AI.

Table 1 – Annual age-standardized incidences in low and high incidence countries

Country	Annual age-standardized incidences	Classification
Nigeria	2/100,000	Lowest rates
South Africa	20/100,000	
Tunisia	58/100,000	
Ecuador	73/100,000	
Austria	501/100,000	Highest rates
Sweden	539/100,000	
Norway	563/100,000	
Denmark	574/100,000	

In the case of age- and sex-standardized rates there appears to be a crescent of high-risk countries beginning in Northern Europe (Iceland, Ireland, Norway and Sweden) that runs through middle Europe (Denmark Belgium, Germany, Switzerland and Austria) and then extends south-eastwards through eastern Europe (Hungary, Czech Republic and Slovakia) and beyond (Oman and Iran). Studies in (Japan, China, Turkey, Mexico and Hispanic Americans from California) have reported increases in hip fracture incidence through the second half of the last century, in contrast, but the mortality hazard has continued to decrease in most regions of the world [10, 12].

## Aims

1. Estimate the annual incidence of Hip fractures in Portugal;
2. Describe the evolution between 2004 and 2010 in Portugal.

## Methods

Administração Central dos Sistemas de Saúde (ACSS) information from Health Units Discharges Database (GDH, 2004-2010), coded 8200 to 8201 (Classification of Diseases 9th Revision Clinical Modification) as main cause of hospitalizations were used. Stratified incidence rates (for gender and age) and respective 95% confidence intervals (CI) for hip fracture hospitalization were estimated using official data (from Statistics Portugal) as the number of people at risk of being hospitalized by a hip fracture. For the confidence intervals estimation a Poisson distribution was assumed. Data was analyzed with SPSS version 17 and R version 2.15.0.

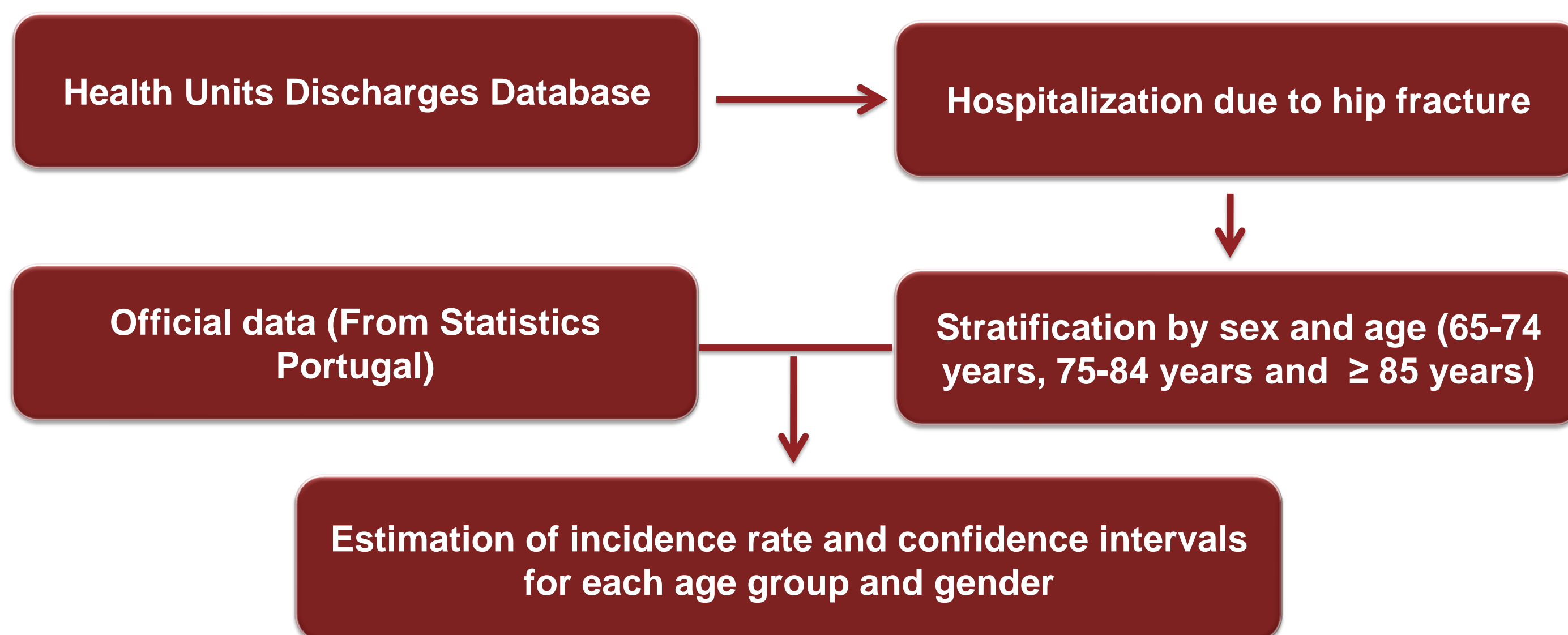


Figure 1 – Data selection and incidence estimation

## Results

GDH database included information from about 80 health units. Hospitalizations due to hip fracture represent 0.19 to 0.30% of the total number of hospitalizations. Figure 2 and 3 resume data from the estimated incidence rates and CI for each age group, gender and year. Incidence for men aged 65-74 ranged from 0.29 (95%CI: 0.25-0.35) (2010) to 0.37 (95%CI: 0.31-0.43) (2007), for men aged 75-84 ranged from 1.10 (95%CI: 0.98-1.23) (2010) to 1.46 (95%CI: 1.32-1.61) (2009) and older men have an estimate incidence from 4.07 (95%CI: 3.56-4.62) (2007) to 4.84 (95%CI: 4.24-5.49) (2004). Incidence for women aged 65-74 ranged from 0.65 (95%CI: 0.59-0.73) (2010) to 0.91 (95%CI: 0.83-0.99) (2004), women aged 75-84 ranged from 2.58 (95%CI: 2.43-2.74) (2010) to 3.19 (95%CI: 3.01-3.37) (2005) and older women have an estimate incidence from 6.98 (95%CI: 6.54-7.44) (2010) to 8.12 (95%CI: 7.64-8.63) (2009).

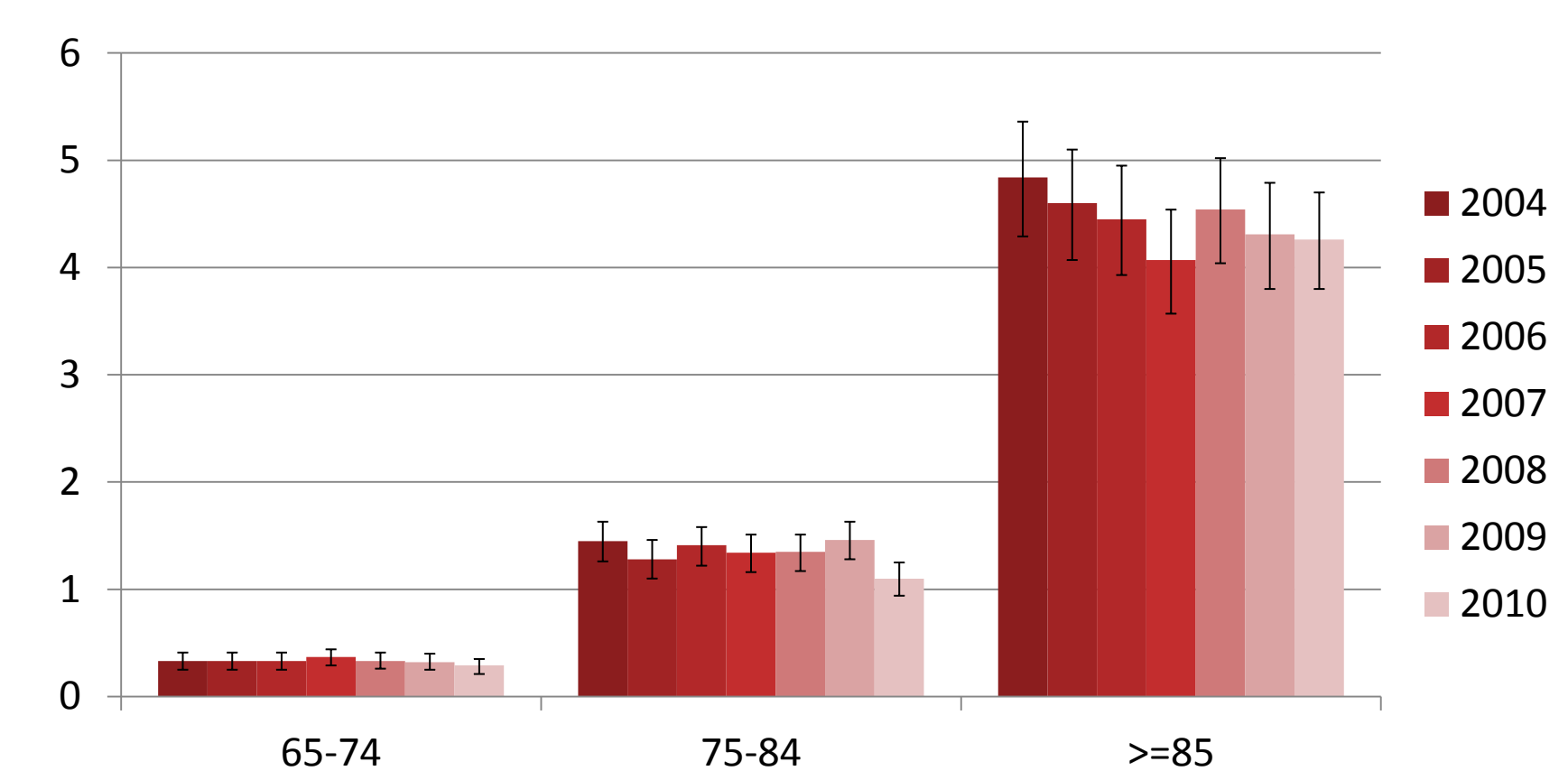


Figure 2 – Incidence rates and confidence intervals for men hospitalized by hip fracture from 2004 to 2010

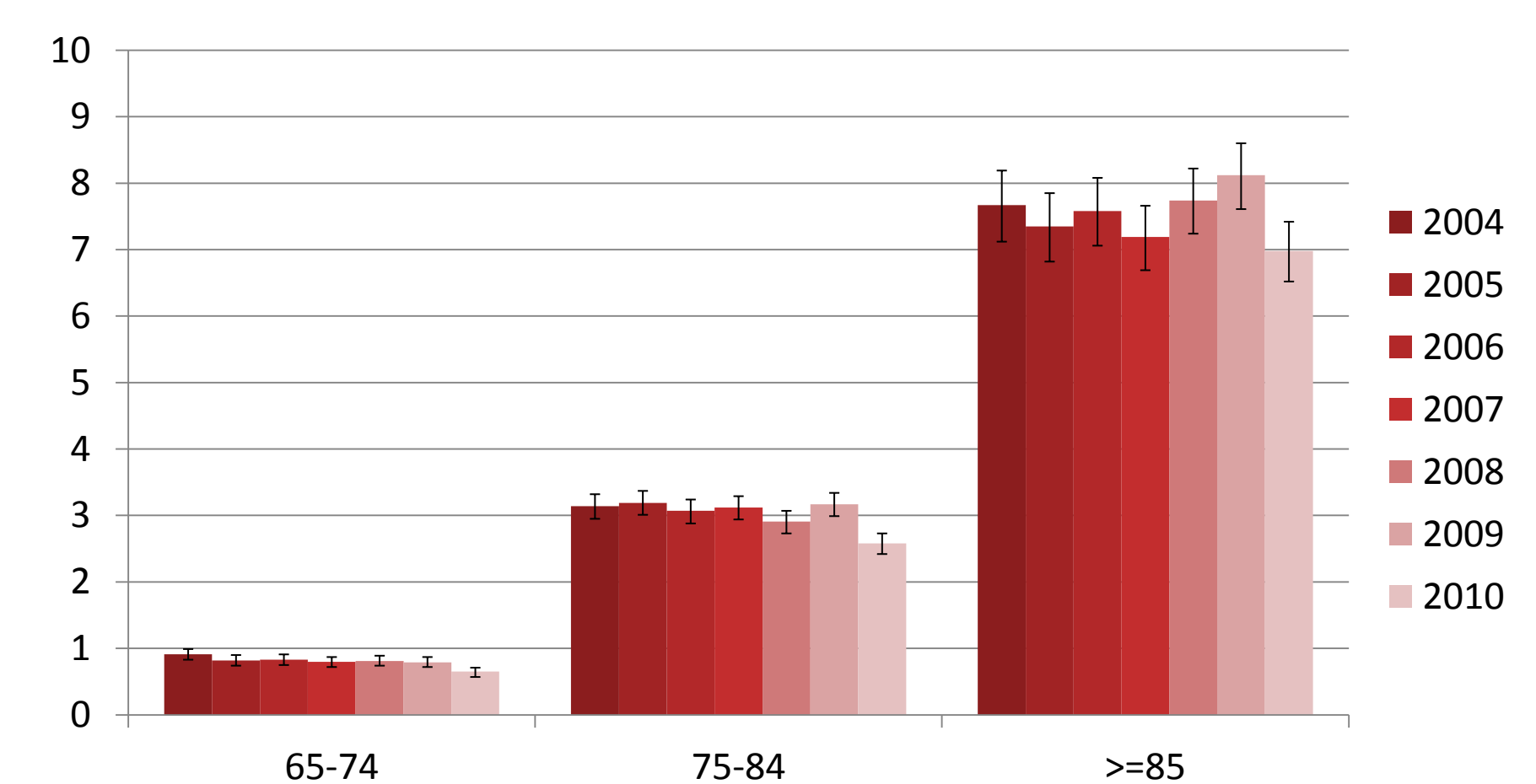


Figure 3 – Incidence rates and confidence intervals for women hospitalized by hip fracture from 2004 to 2010

## Discussion

The results obtained can be analyzed at three levels:

- **Differences between gender** - incidence rates for hip fractures are more than twice for women for the groups aged 75-84 years and ≥ 85 years, being similar for the group aged 64-75 years.
- **Differences between age groups** - for both genders incidence rates increasing as people go older, with the group aged ≥ 85 years being the most affected.
- **Incidence rates evolution across time** - across the years and for each age group and gender estimates are very similar.

This study has some limitations. Database used doesn't include the national hospitals, namely the private. However majority of national hospitalizations take place in public hospitals. Also only the hospitalizations for which the codes referred were used as the main cause of hospitalization were considered. This can lead to a underestimation of the true hip fracture incidence.

## Conclusion

Our results suggest that hip fracture incidence has remained stable in the last years. Being an important cause of the fractures, falls, specially in the elderly, should be prevented in order to inverse the observed trend.

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