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**FMUP** FACULDADE DE MEDICINA  
UNIVERSIDADE DO PORTO

# *The Economic Impact of Chronic Pain in Portugal*



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ORIGINAL PAPER

## The economic impact of chronic pain: a nationwide population-based cost-of-illness study in Portugal

Luís Filipe Azevedo · Altamiro Costa-Pereira ·  
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# Aims & Methods

- **Aims**
  - To assess the **epidemiology and impact of chronic pain (CP) in the Portuguese adult population, to estimate the total (direct and indirect) annual costs of CP and to assess their determinants.**
- **Participants and Methods**
  - This was a **cost-of-illness study, with a societal perspective, using a bottom-up approach for cost estimation** and based on a representative subsample of chronic pain (CP) subjects, selected from a larger cross-sectional nationwide epidemiological study in a representative sample of the Portuguese adult population (n=5094), aiming to assess CP epidemiology and impact.
  - **Subjects reporting recurrent or continuous CP were invited to participate in a second phase of the study (n = 562) and responded to additional questions focused on the use of health services and economic impact of CP.**
  - **Direct healthcare costs** included pain medicines, non-pharmacologic pain treatments, consultations with healthcare professionals and medical tests. Unit costs were obtained using local and national statistics, hospital management and accounting reports, national costs lists of diagnosis-related groups and the national drug formulary. All costs were standardized to 2010 prices in Euros (€).
  - **Indirect costs associated to productivity losses** due to work absenteeism, early retirement and job loss were calculated based on the human capital method.
  - Because **cost variables had very skewed distributions, 95% confidence intervals for the means were calculated using bootstrap methods.** Furthermore, the determinants of total annualized CP costs were assessed using generalized linear models, with a **mixed Poisson-gamma model (Tweedie distribution), in order to take into account the skewed distribution of costs, overdispersion and the non-zero probability of zero values.**



# Results

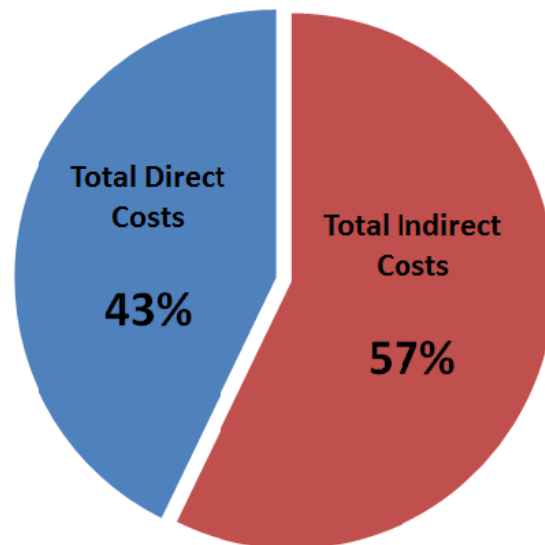
## Annualised costs

€1,977.04 million [95 %CI (1,823.08–2,190.63)] direct costs

€2,645.90 million [95 % CI (2,007.95–3,347.41)] indirect costs

€4,611.69 million [95 % CI (3,930.20–5,362.71)] total costs

These estimates correspond to 1.16, 1.55, and **2.71 % of the Portuguese annual GDP in 2010**, respectively.



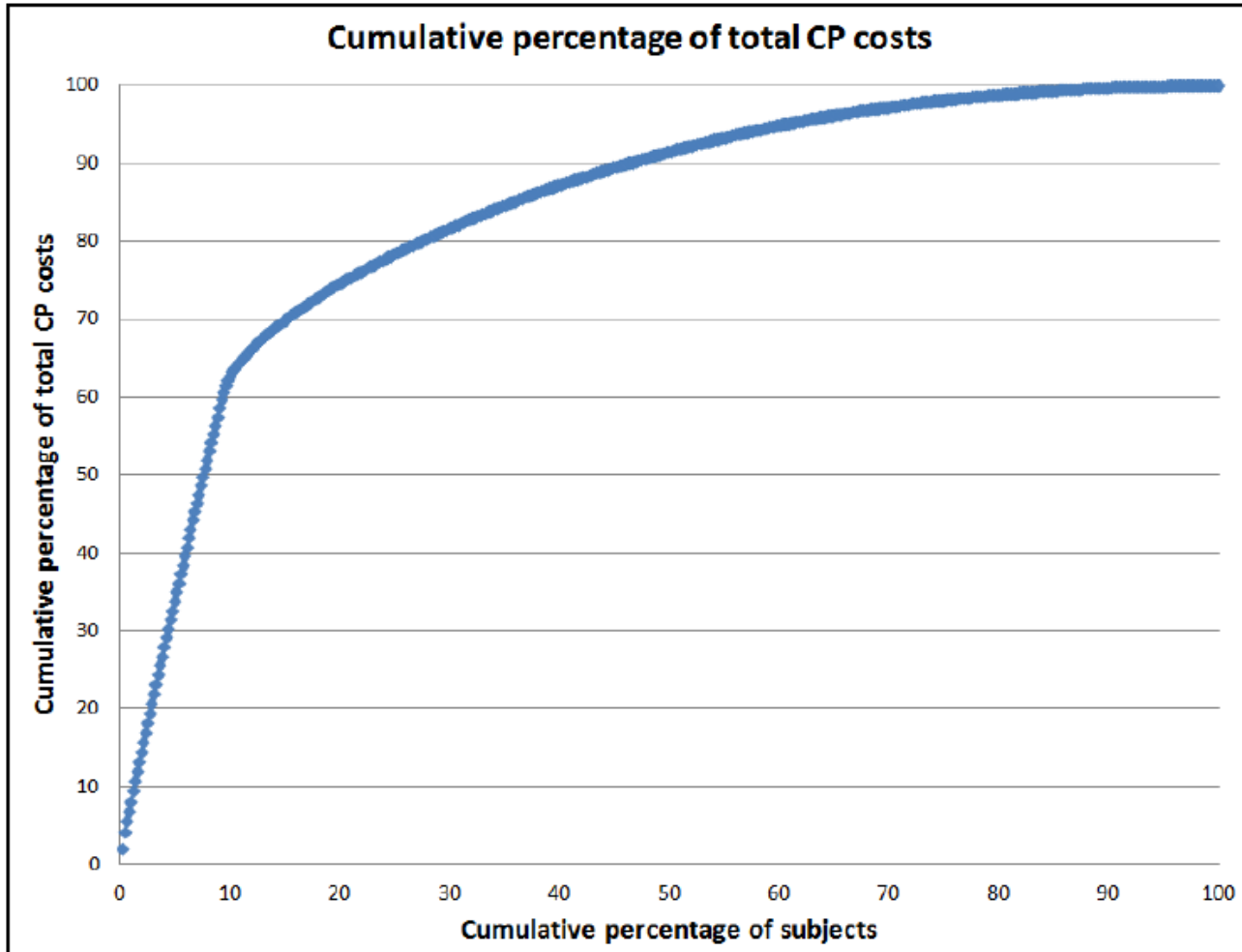
# Annualized Direct, Indirect and Total CP Costs for Portugal (in Million Euros €)

● Males - Direct Costs

● Females - Direct Costs

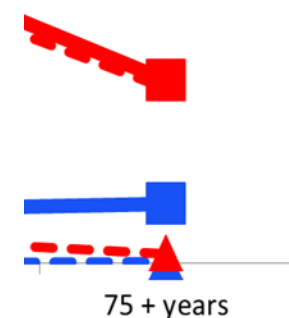
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18 - 24 \

75 + years





# Conclusions



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