

Health Outcomes and Costs Related to the In-Hospital Procedures for the Management of Tricuspid Valve Disease in Spain

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Objectives

Tricuspid valve disease (TVD) has been classically considered the forgotten valve¹. In-hospital surgical and transcatheter management of TVD and related burden on the Spanish Healthcare System has not been comprehensively addressed to date. This study evaluates intervention rates, health outcomes, and direct costs associated with TVD.

Methods

All TVD interventions registered from January 2016 to December 2019 in the Spanish Health Service Minimum Data Set (RAE-CMBD²) using ICD10-ES codification were included. Standardized rates ($\times 10^6$) by year and region, the risk profile of patients (age-adjusted Charlson index), outcomes, length of stay (LoS), and DRG-based costs (€, 2019) were calculated. Factors associated with in-hospital death and LoS were analysed using multivariable regression analyses (logistic and negative binomial, respectively) combining statistical (Akaike's criterion) and clinical knowledge for model optimization.

Results

Isolated TVD was conducted in 813 cases with a national rate of 18.75 for the entire period, 1.40% of total structural heart disease (SHD) not considering pulmonary valve procedures. The death rate was 1.34 ($\times 10^6$ inhab.), and the in-hospital mortality was 7.13%. Spain's highest standard use rates are found in Madrid, Extremadura, and Andalusia (Figure 1).

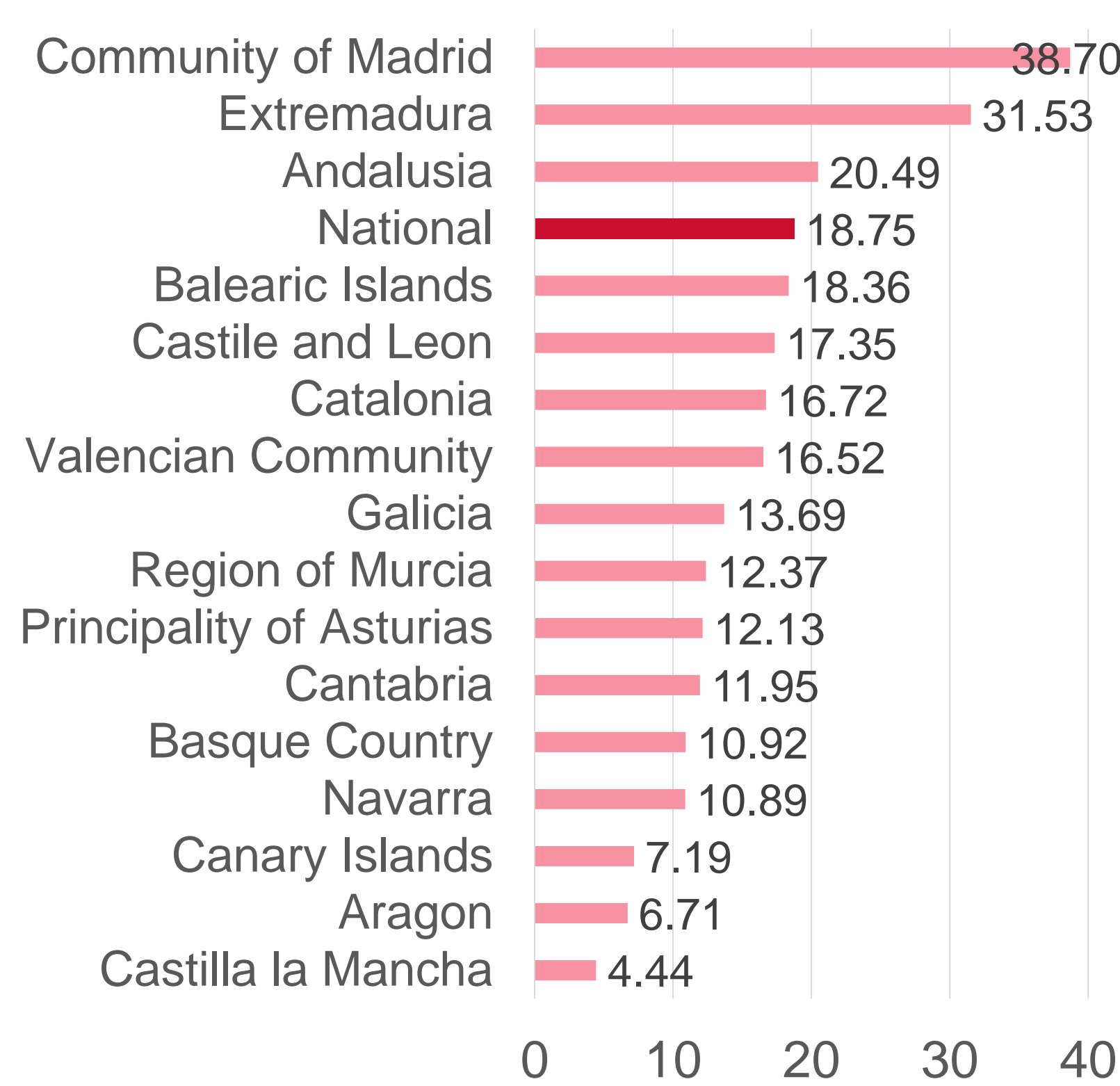


Figure 1. Standardized TVD rate of use by Autonomous communities

The unadjusted LoS for patients who survived was 17.8 (17.4) days, of which 2.9 (7.7) were in the Intensive Care Unit (ICU). For those who died, the unadjusted LoS was 31.3 (27.2) days and 10.3 (17.6) in the ICU. Core variables related to death and LoS ($p < 0.05$) are shown in Figures 2 and 3, respectively.

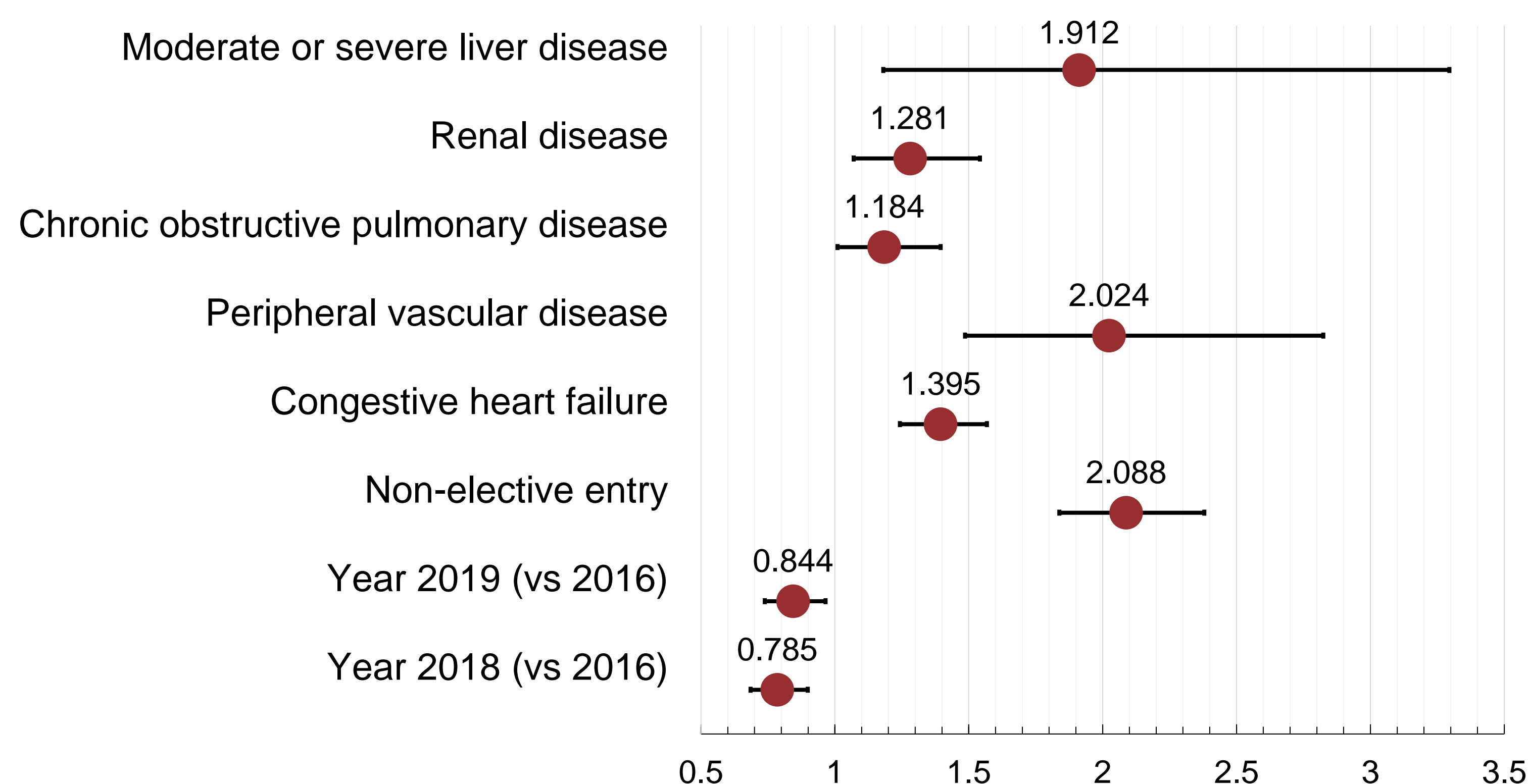


Figure 2. Associated factors (p -value<0.05) with in-hospital mortality (odds ratio)

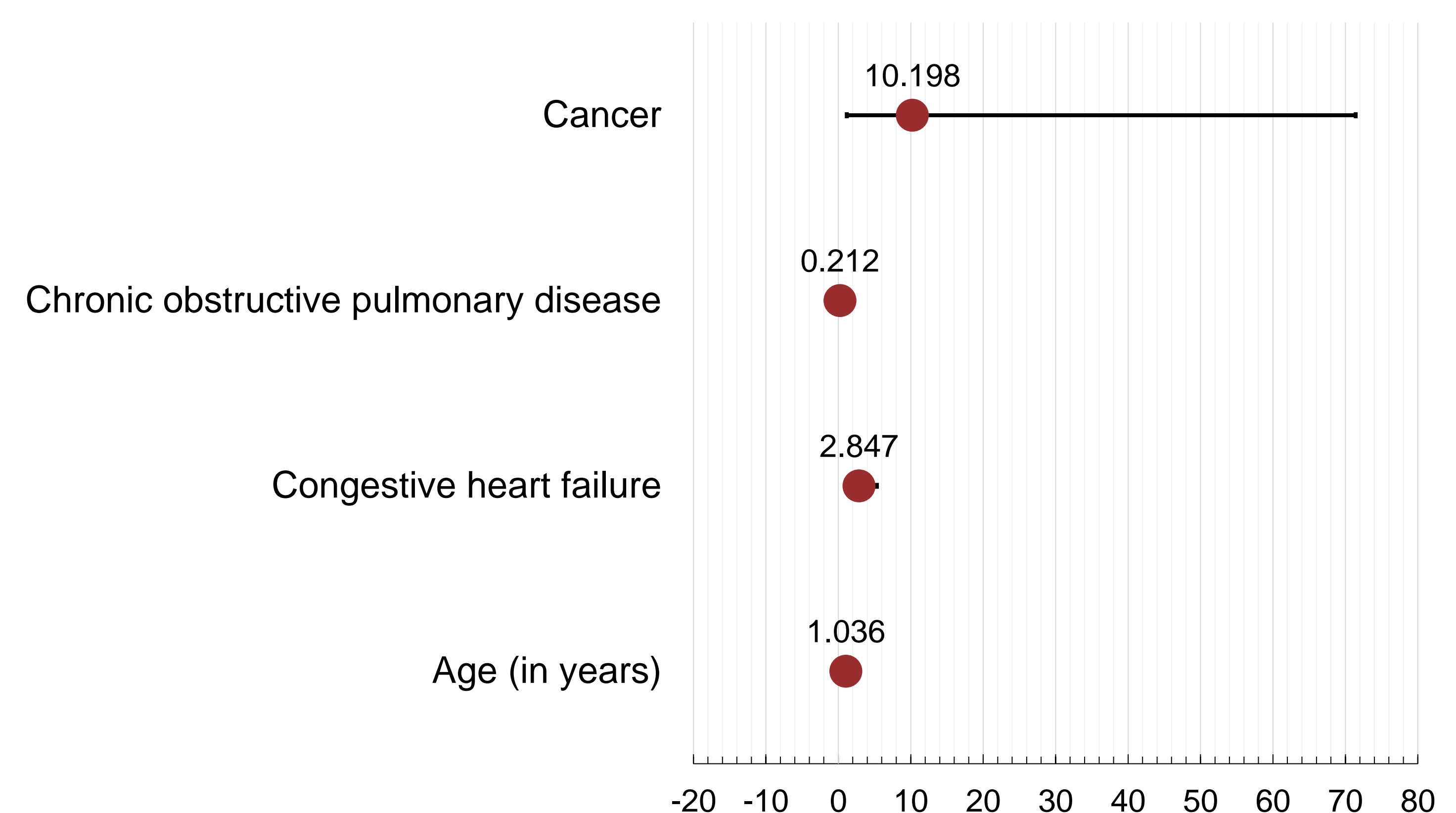


Figure 3. Associated factors (p -value<0.05) with LoS (odds ratio)

Per intervention mean costs increased (p -value=0.003) from 25,212€ (13,157€) in 2016 to 28,362€ (12,573€) in 2019 (Figure 4). This increase is not in line with the general structural heart disease (not considering pulmonary valve procedures) per intervention mean costs decrease (p -value<0.001). The annual mean cost was 5,355,333€.

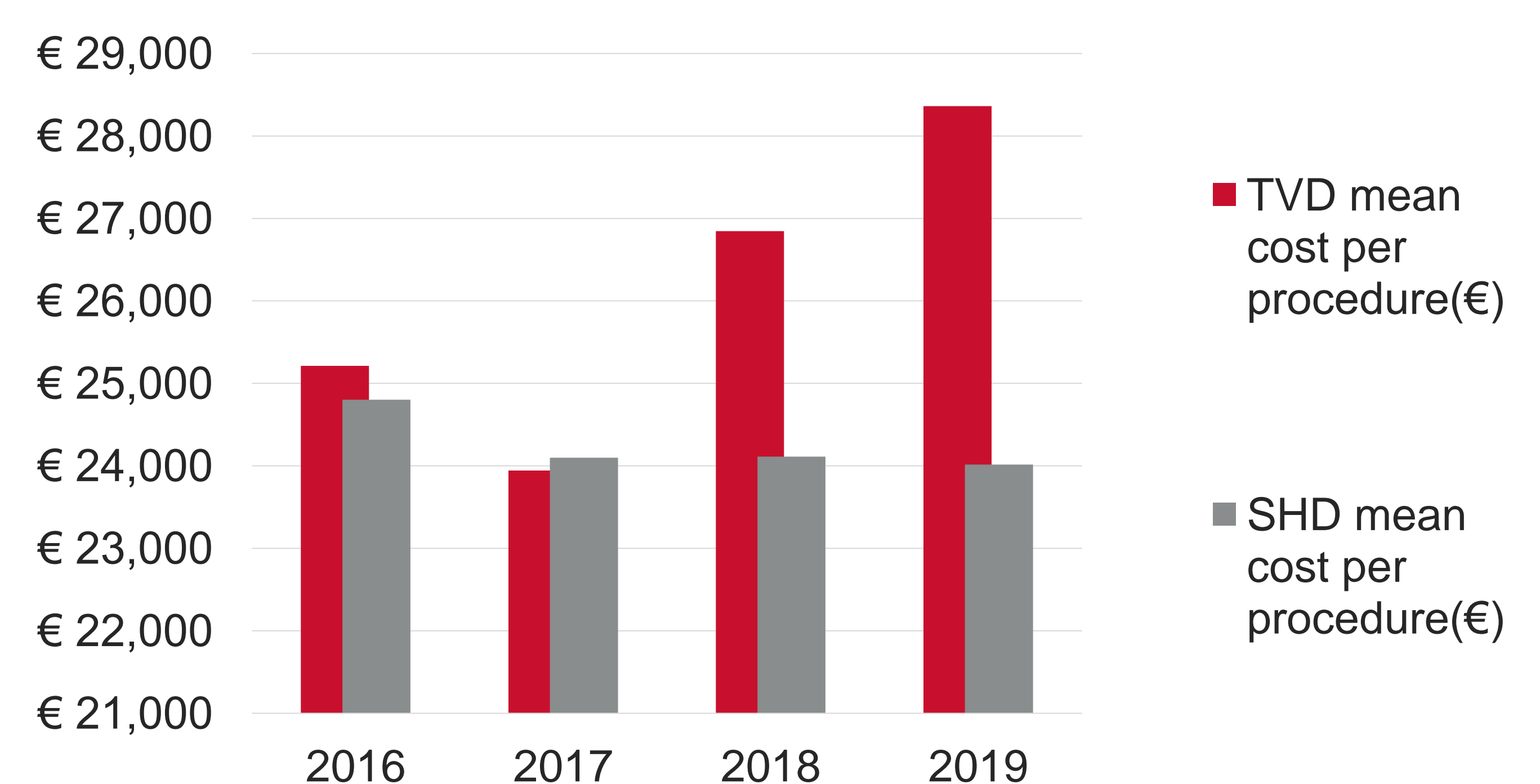


Figure 4. Cost progression by year.

Conclusions

Although the tricuspid has been historically considered the “forgotten” valve, TVD implies an increasing number of high-risk interventions involving considerable health resource utilization and economic burden. However, this burden of illness only captures the part corresponding to the procedures, it does not capture the diagnoses or the follow-up of the patients. This information is very useful to assess the effect of innovations in the management of TVD patients.