

# Clinical and Economic Impact of Influenza Vaccination in Catalonia (2024–2026)



Datos, evidencia, decisiones: generando valor para la gestión y las políticas sanitarias

Sevilla, 17 al 19 de junio de 2026



#JornadasAES



Generalitat de Catalunya

# Clinical and Economic Impact of Influenza Vaccination

## Clinical and economic evaluation

This study integrates real-world data to assess the clinical and economic impact of influenza vaccination in Catalonia.

## Reduction in healthcare events

Influenza vaccination is associated with a significant reduction in influenza-related healthcare events.

## Economic savings and sustainability

Influenza vaccination contributes to the sustainability of the healthcare system through direct healthcare savings.

## Evidence-based decision-making

The study provides useful evidence for clinicians and healthcare managers to support data-driven decision-making.


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# Study Overview

## **Comprehensive study approach**

The study combines clinical and economic variables to evaluate influenza vaccination using real-world population data stratified by age group.

## **Key health indicators**

Emergency department visits, hospitalizations, and intensive care admissions are compared between vaccinated and unvaccinated populations to assess healthcare impact.

## **Economic analysis and savings**

The study estimates healthcare savings resulting from the reduction in clinical events in order to assess the public health return on investment.

## **Relevance and application**

The analysis provides clinically relevant evidence and planning insights aligned with the AES 2026 theme of data- and evidence-informed decision-making.

# Current Healthcare Context

## Pressure on healthcare resources

Population ageing and chronic disease increase demand for healthcare resources.

## Impact of influenza

Influenza leads to consultations, hospitalizations, and ICU stays, with a particularly high burden among vulnerable groups.

## Preventive role of influenza vaccination

Influenza vaccination is a key preventive strategy to reduce both the healthcare and the economic burden of disease.

## Data-driven decision-making

The availability of population-level data enables more precise analyses to improve planning and resource allocation.

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# Study Objectives

## **Assessment of clinical impact**

Vaccinated and unvaccinated populations are compared to analyse emergency department use, hospitalization, and ICU admission by age group for two seasons: 2024-2025 and 2025-2026.

## **Statistical estimation of effect**

A composite event (emergency department visit, hospitalization, or ICU admission) is defined to estimate the overall effect of vaccination, and the Odds Ratio is used to quantify the protective effect of influenza vaccination.

## **Healthcare savings by age group**

Savings derived from the reduction in clinical events are quantified across population groups.

## **Implications for public policy**

The aim is to provide evidence to support public health decision-making in settings with constrained resources.

# Methodological Design

## **Statistical evaluation**

For each season Odds Ratios were calculated to compare healthcare utilization between vaccinated and unvaccinated individuals and were weighted by vaccination coverage within each age group.

## **Health economic analysis**

Updated unit costs for emergency department visits, hospitalization, and ICU admission based on CatSalut and RECH tariffs were applied to estimate direct healthcare savings.

## **Final impact (PF and savings)**

The population prevented fraction is calculated as:

$$PF = (C \cdot (1 - OR)) / (1 - C + C \cdot OR)$$

## **Economic savings are approximated as:**

$$\text{Savings} \sim PF \cdot \text{Incidence} \cdot \text{Population} \cdot \text{Cost}$$



# Main Clinical Results

## **Reduction in healthcare resource use**

Influenza vaccination reduces the use of emergency department visits, hospitalization, and ICU admission across all age groups analysed.

## **Protection in vulnerable groups**

Children aged 0–4 years and adults older than 80 years show the greatest reduction in complications after vaccination.

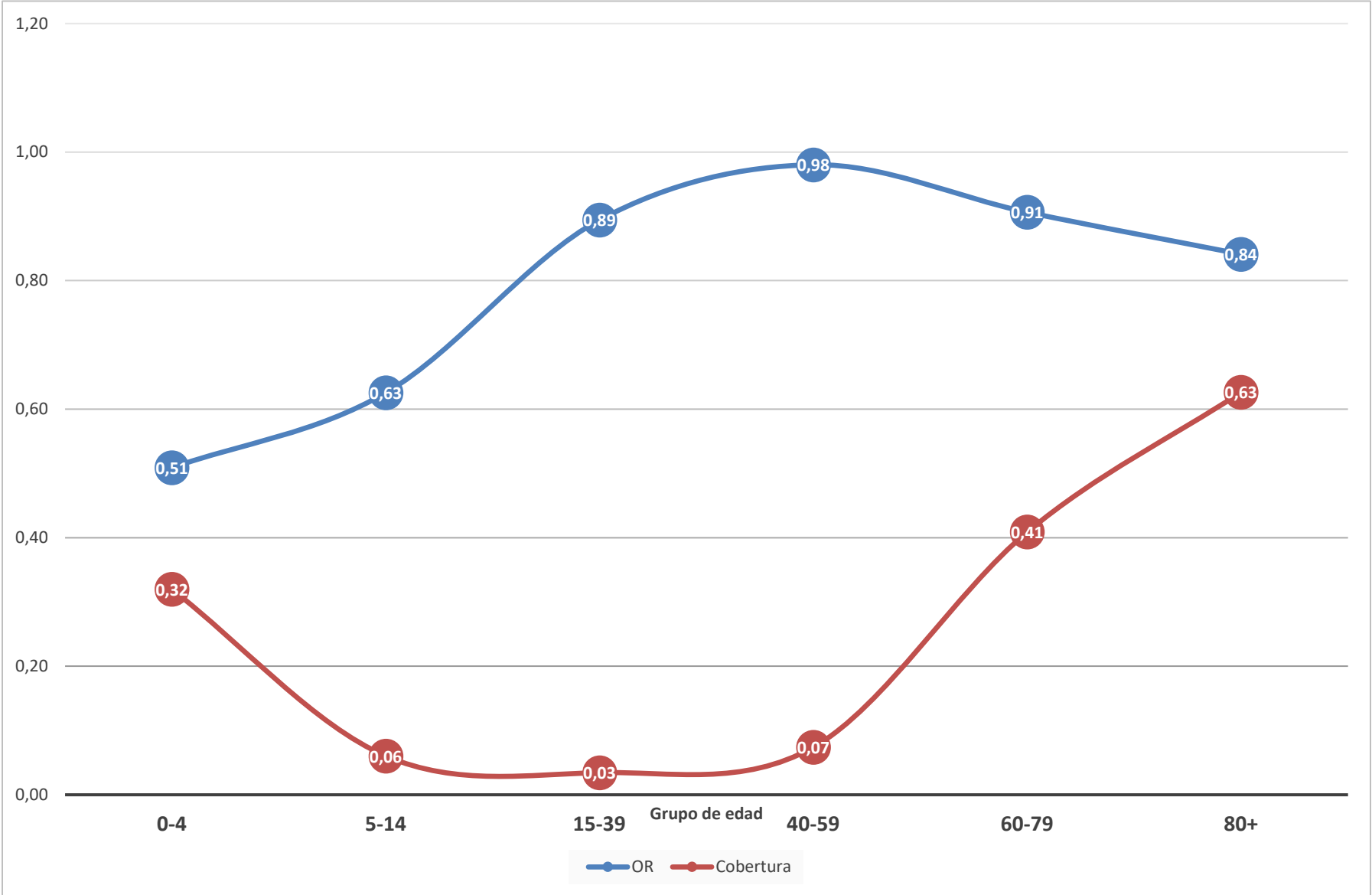
## **Economic implications**

A lower healthcare burden translates into substantial economic benefits for the health system.

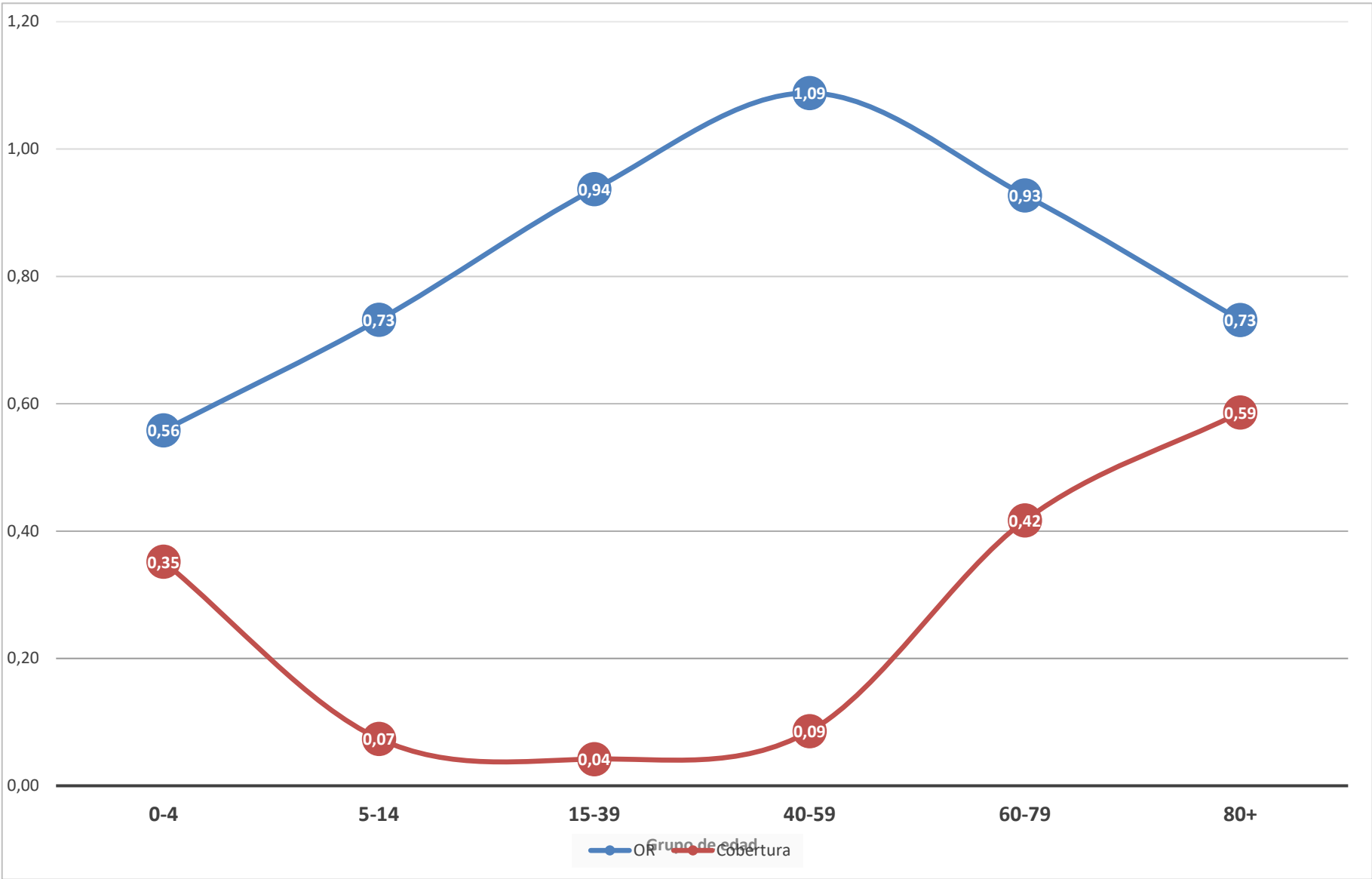
## **Study validity and consistency**

The study shows a consistent reduction in most age groups, together with alignment with the scientific literature, increases confidence in the findings.

# OR of Healthcare Utilization and Coverage by Age Group (2024-2025)



# OR of Healthcare Utilization and Coverage by Age Group (2025-2026)



# Economic Impact of Vaccination

## **Direct healthcare savings**

The study estimates direct healthcare savings of approximately €4.0 million during the 2024-2025 season and 6,5M€ during the 2025-2026 season.

## **Age-related concentration of hospital savings**

The largest economic benefits are concentrated among adults aged 80 years and older because of their higher healthcare utilization.

## **Impact on sustainability**

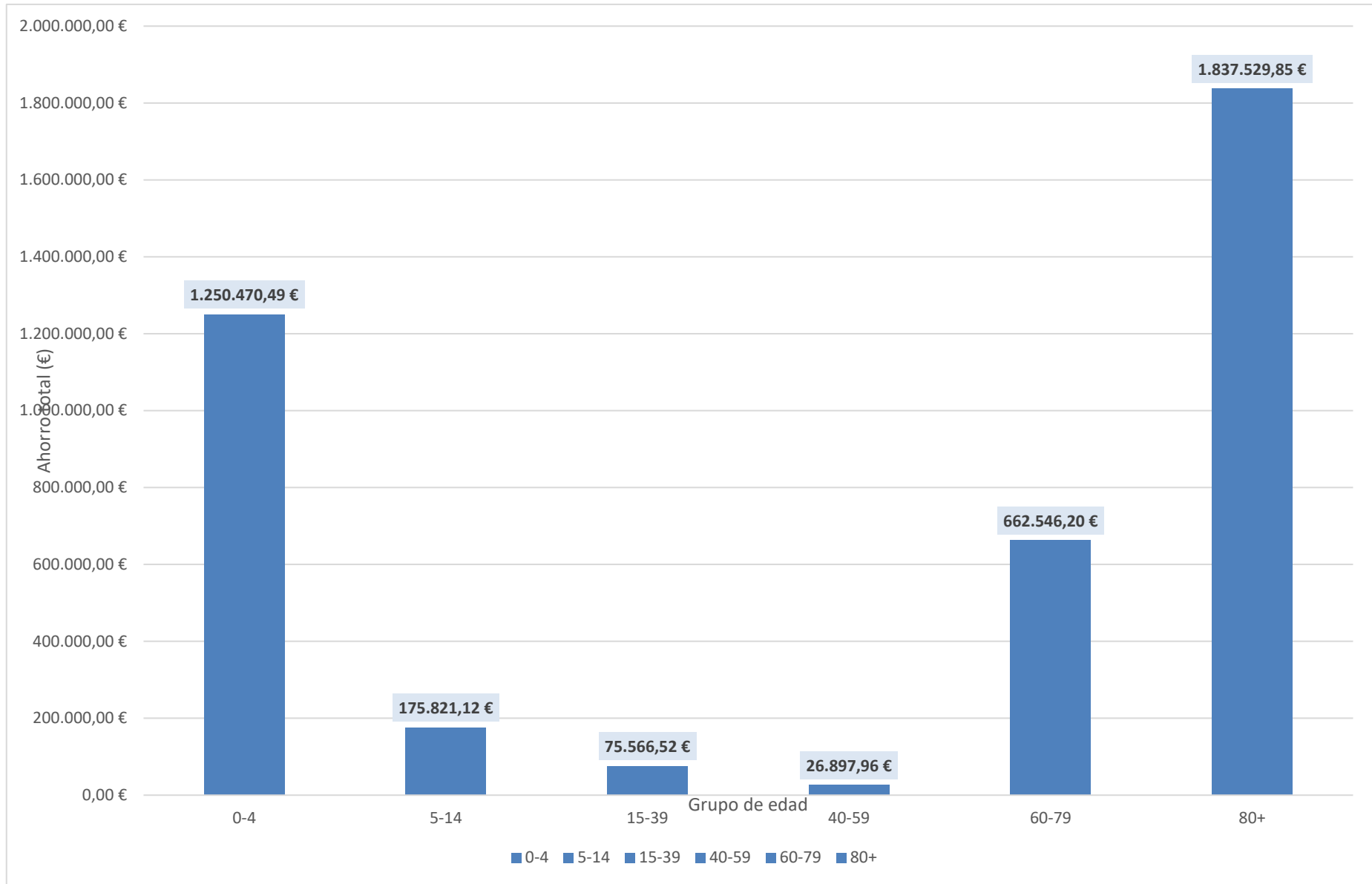
Influenza vaccination reduces healthcare pressure and contributes to the economic sustainability of the health system.

## **Conservative approach**

Savings were not imputed in the 40–59 age group in 2025–2026 due to lack of statistically robust effect.

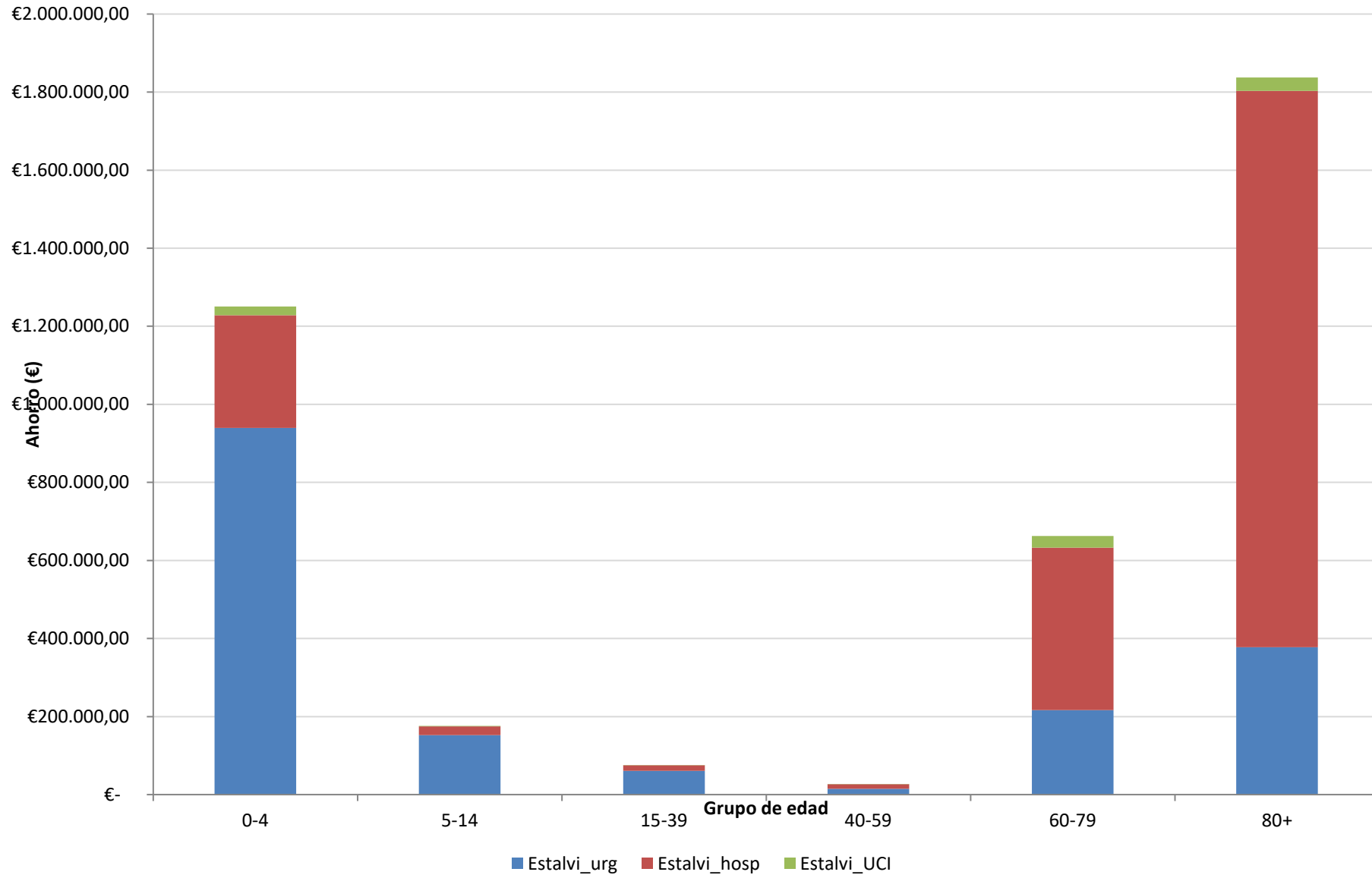
# Savings by Age Group 2024-2025

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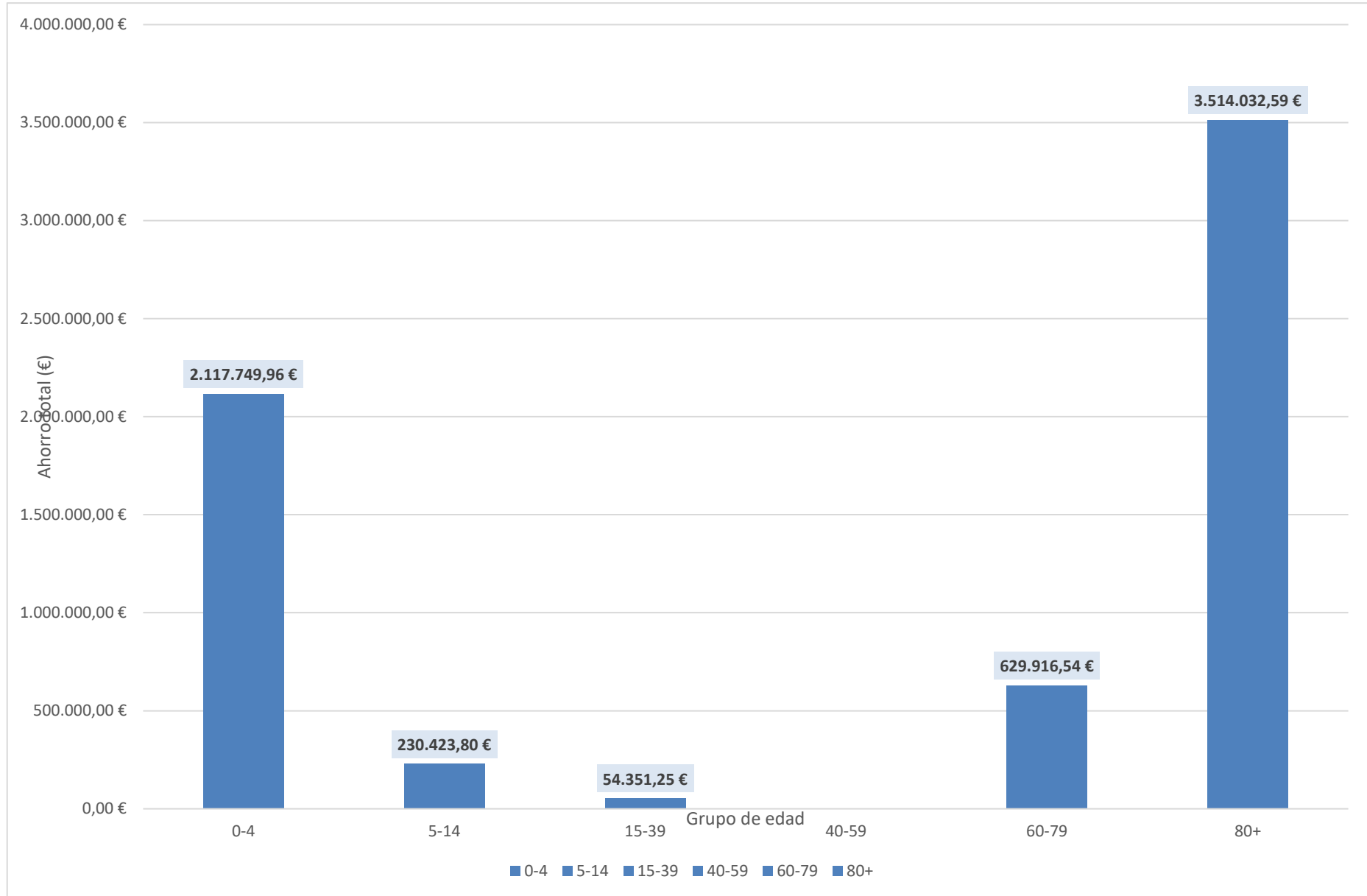
# Savings by Age Group and service (2024-2025)

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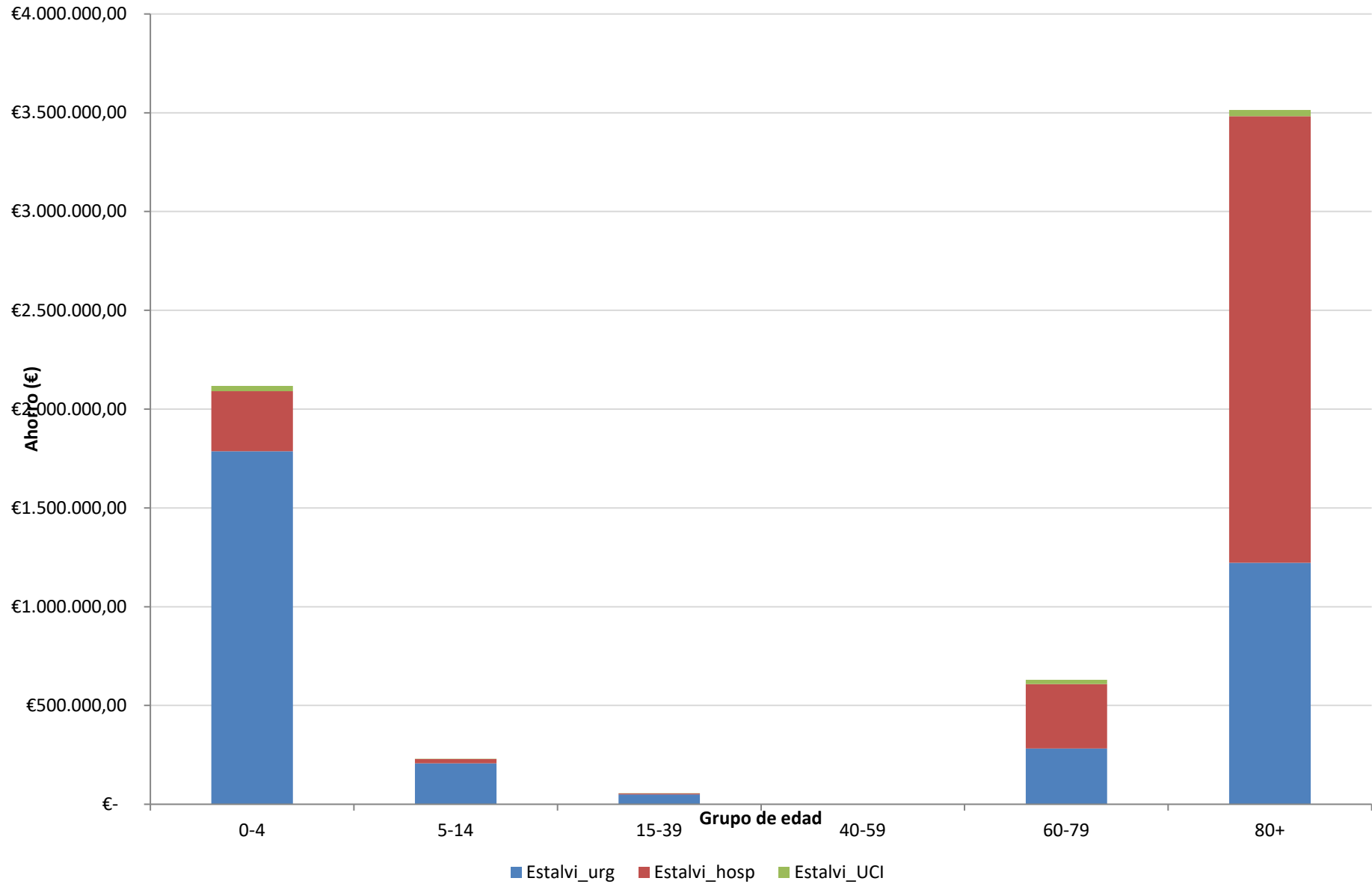
# Savings by Age Group 2025-2026

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# Savings by Age Group and service (2025-2026)

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# Interpretation of the Results

## **Effect of vaccination (OR)**

An OR < 1 indicates a reduction in risk. The magnitude of the effect varies by age group, with stronger and more consistent effects observed in groups with higher baseline disease burden.

## **Baseline incidence (unvaccinated)**

Baseline incidence is the primary driver of impact. It is high in emergency care among younger populations (0–4 years) and markedly higher in hospitalizations among older populations ( $\geq 60$  years), directly determining the absolute effect of vaccination.

## **Vaccination coverage (C)**

Population impact is proportional to vaccination coverage. Higher coverage in older age groups amplifies the reduction in high-cost events, while lower coverage in younger adults limits the observable impact.

# Interpretation of the Results

## **Healthcare cost**

Unit cost differs substantially by level of care: hospitalization represents high-cost events, emergency care moderate costs, and ICU very high costs but with low frequency..

## **Savings**

Economic savings do not depend solely on vaccine effectiveness (OR), but on the interaction between relative effect, baseline incidence, coverage, and unit cost, which together determine the population-level economic impact.

## **Age group**

Economic impact is driven by the alignment of these factors: in younger groups, savings are primarily driven by high incidence and emergency care use, whereas in older groups, savings are driven by high-cost hospitalizations.

## **Key point**

The economic value of vaccination is determined more by the distribution of disease burden and healthcare utilization than by the relative effect alone.

# Main Conclusions

Influenza vaccination in Catalonia (2024–2026) is associated with a consistent reduction in the use of healthcare resources (emergency department visits, hospitalization, and ICU admission), resulting in substantial direct economic savings.

Economic impact is driven not only by relative effectiveness (OR), but by the joint effect of baseline incidence, vaccination coverage, and unit cost, which explains the concentration of savings in high-risk and high-cost populations.

From a health policy perspective, vaccination emerges as a high-value intervention, particularly in groups where the burden of severe disease and associated costs are greatest.

Savings were not imputed in the 40–59 age group in 2025–2026 due to lack of statistically robust effect, ensuring a conservative and non-biased estimation of economic impact.

These findings provide actionable evidence to guide vaccination strategies, supporting targeted interventions that maximise both health benefits and system-level efficiency.



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