

# Evidence of waning effect of the influenza vaccine during the 2014-2015 season. Valencia Hospital Network for the Study of influenza and other Respiratory Viruses (VAHNSI), Spain.

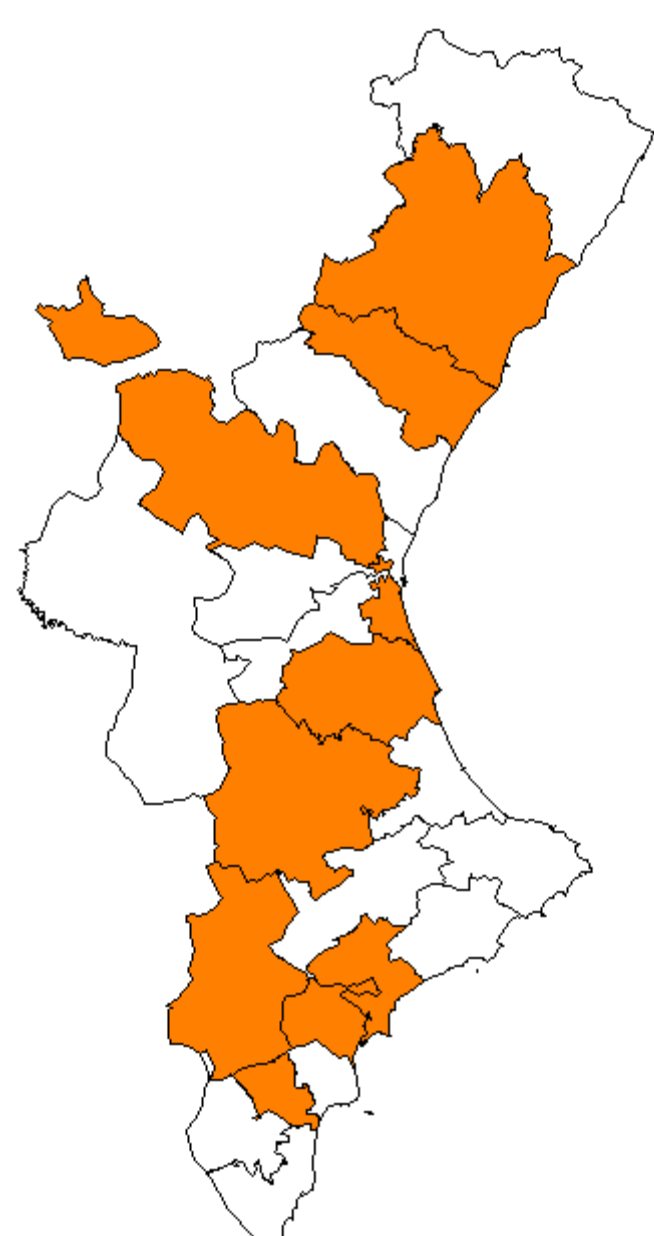
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## Introduction

We estimated the relationship between date of vaccination (DOV) and the probability of being positive for influenza in admissions with acute respiratory symptoms during the 2014/15 influenza season in Valencia Region.

Following a test-negative design, we fitted a mixed effects logistic regression model to estimate the probability of influenza admission by tertiles of DOV after adjusting for age, gender, smoking habits, calendar time, socioeconomic status, previous health care contacts, and hospital as a random effect.



Health department	Population
General Castellón	277672
La Plana	185686
Arnau de Vilanova	255648
La Fe	192572
Doctor Peset	359893
La Ribera	259125
San Juan	212894
Elda	190389
General Alicante	264490
Vinalopó	153157
TOTAL	2351526

Figure 1: Participating Health Districts (hospitals) and population.

## Methods

Consecutive patients were enrolled per protocol, without knowledge of influenza vaccination status or influenza infection. Vaccination data was obtained from Valencia Region vaccine registry and influenza was confirmed by RT-PCR. Only registered vaccinated patients were included in our study.

We split patients in tertiles according to their vaccination date. We explored the heterogeneity of belonging to tertiles due to age, comorbidity, hospital and other confounders.

## Results

We enrolled 1,599 immunized individuals 18 years old or older belonging to target groups for vaccination (Figure 2), 357 were positive for influenza (6 A(H1N1); 296 A(H3N2); 30 B/Yamagata; 25 A not subtyped).

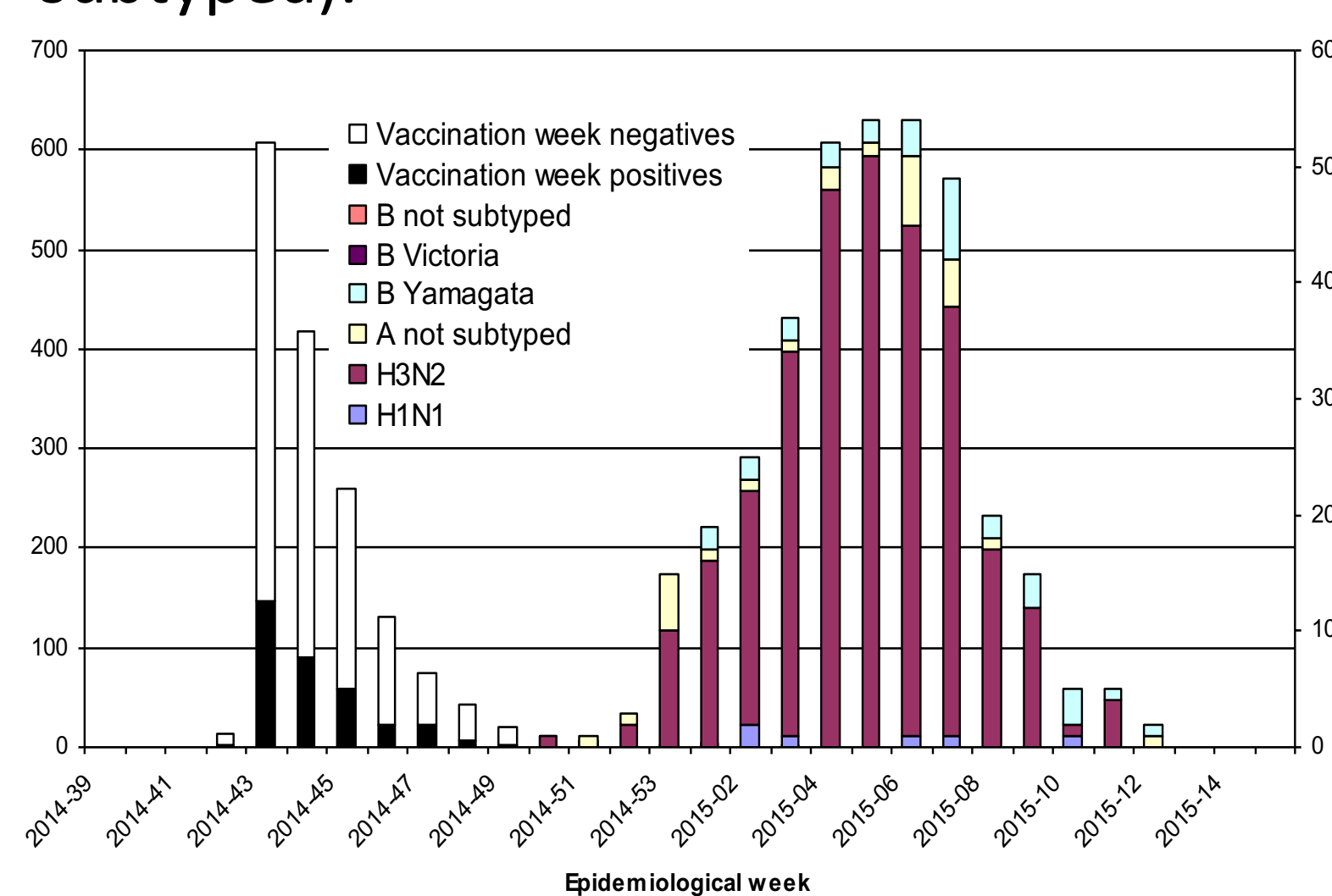


Figure 2: Distribution of vaccination date with PCR result (black and white) and distribution of influenza strains (colours) by epidemiological week.

Older age and being vaccinated in the previous season were related with earlier vaccination (Figure 3). By contrast, being female was related to a later vaccination (Figure 3).

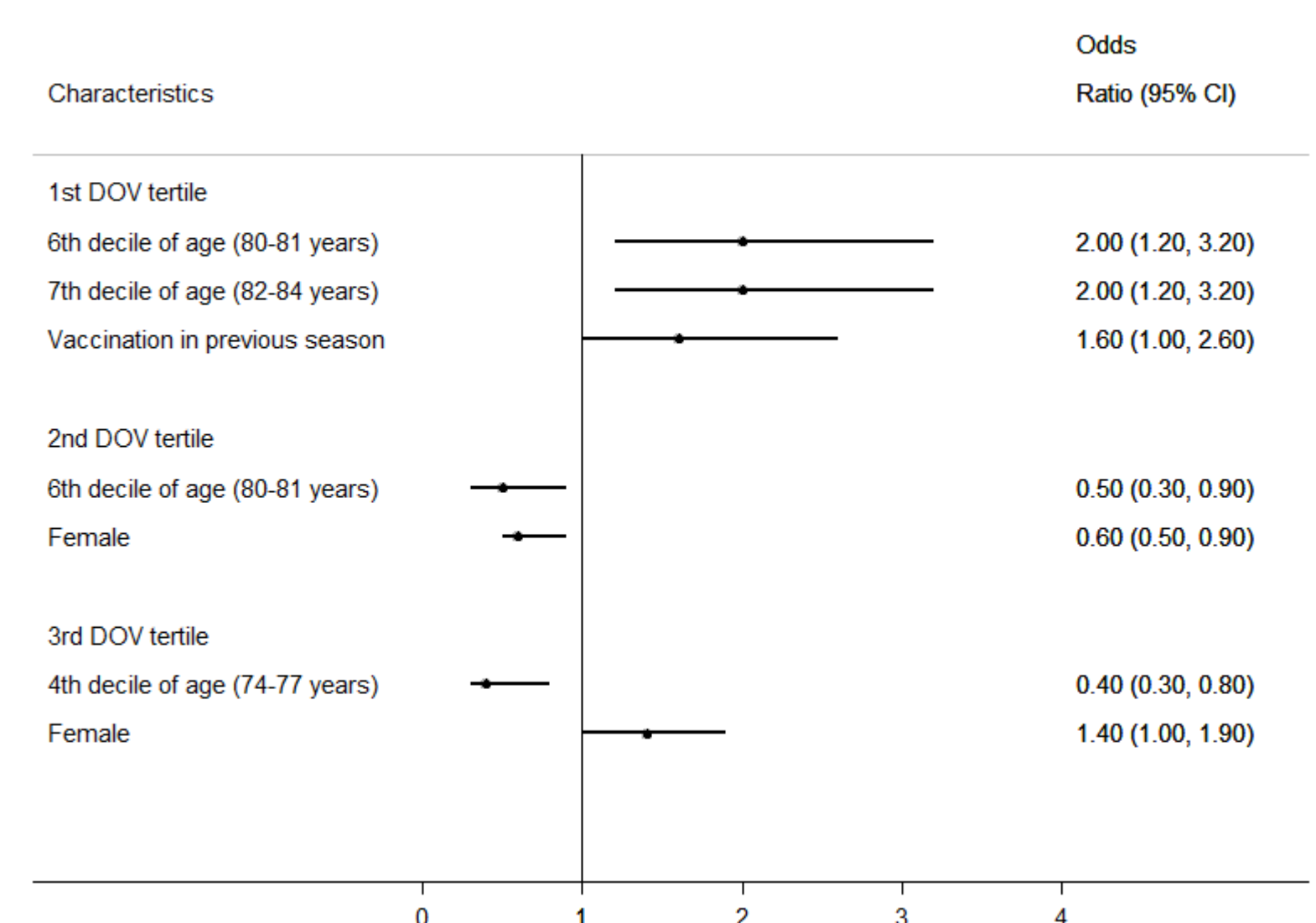


Figure 3: Variables related to an early or late vaccination date. Results of multivariable logistic regressions with each tertile as outcome (reference categories: first decile of age (29-65 years), male and unvaccinated in the previous season).

The final model showed that the probability of infection by influenza A(H3N2) decreased for people vaccinated closer to the beginning of the influenza season (Figure 4).

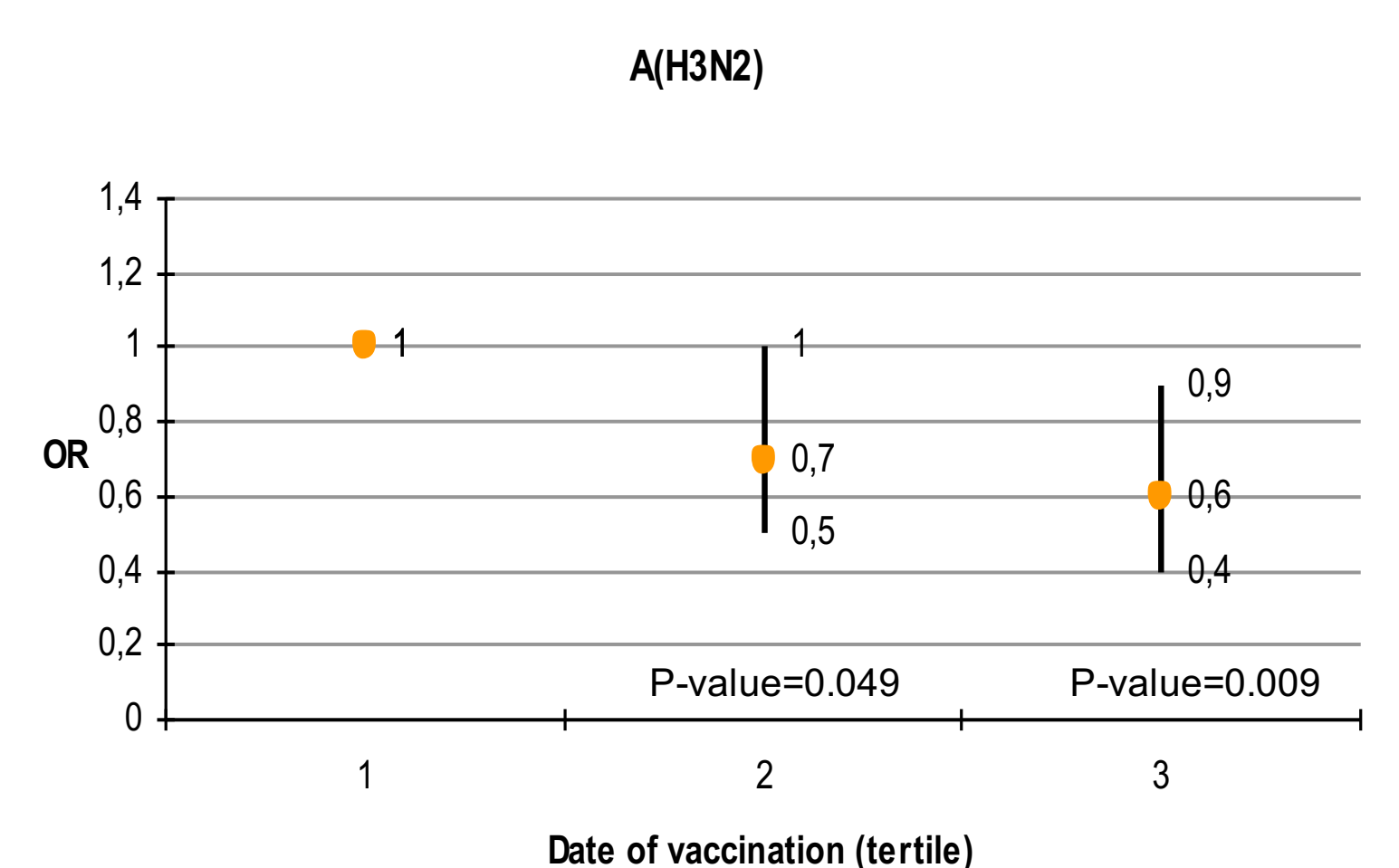


Figure 4: Adjusted OR of admission with influenza taking 1st DOV tertile as reference.

## Conclusions

We observed a significant influenza vaccine waning effect in protecting against admissions with A(H3N2) strain. Small numbers preclude valid conclusions for B/Yamagata or A(H1N1)pdm09.