



# Influenza Vaccination Coverage Gaps in Older Adults in Germany

## A Claims Data Analysis of the Influenza Seasons 2016-2023

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### BACKGROUND

- The German Standing Vaccination Committee (STIKO) recommends an annual influenza vaccination for all adults aged 60 years and older and those with increased risk (chronically ill, pregnant women, and health care personnel).
- Despite the benefit of influenza vaccination, vaccination coverage rates (VCRs) in Germany remain below the World Health Organization's (WHO) target of 75% in the elderly. A better understanding of vaccination patterns and the role of outpatient care processes could promote effective vaccination strategies.
- Therefore, this study examines influenza VCRs in the elderly population (aged 60+) and explores the relationship between outpatient care intensity and the likelihood of influenza vaccination.

### MATERIALS & METHODS

- This retrospective study is based on the anonymized database of GWQ ServicePlus AG, which contains claims data from 19 small and medium-sized statutory health insurance (SHI) companies with up to 6.3 million observable insured individuals.
- For seven influenza seasons from 2016/17 to 2022/23, we descriptively analyze seasonal influenza VCRs among adults aged 60+. Subgroups are differentiated by risk status (i.e., presence of a chronic disease) and outpatient care intensity.
- Physician contact frequency during the particularly vaccination-relevant period from September to February and participation in general practitioner-centered care (GP-centered care) or disease management programs (DMPs) are used as proxies for outpatient care intensity.

### RESULTS

#### Population Characteristics

- On average across all seven seasons, 716,395 individuals aged 60+ were considered in the analyses (Table 1). Women represented slightly over 50% of the population in each year.
- Approximately 80% of the population was at increased risk of a severe course of influenza due to a chronic disease. One in four individuals participated in a DMP. The average proportion participating in GP-centered care was about 9%.

Table 1: Characteristics and VCRs of the seasonal study populations.

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Avg.
N	626,418	611,417	595,037	836,390	802,734	776,189	766,582	716,395
Female	51.3%	51.5%	51.7%	51.3%	51.6%	51.8%	51.9%	51.6%
CD*	79.0%	80.1%	81.0%	76.3%	77.0%	78.1%	79.5%	78.7%
DMP	26.0%	26.0%	26.1%	23.8%	23.6%	23.3%	23.2%	24.6%
GP-centered care	8.0%	8.2%	8.5%	8.4%	9.2%	9.8%	10.0%	8.9%
VCRs								
60+ years total	34.8%	35.5%	40.0%	35.9%	47.5%	45.8%	43.1%	40.4%
60+ years w/ CD*	39.9%	40.4%	44.8%	41.8%	53.6%	51.4%	48.0%	45.7%
60+ years w/o CD*	15.8%	16.2%	19.5%	16.8%	27.1%	26.0%	24.0%	20.8%

\* CD were defined according to Damm et al. (2023, doi: 10.1111/irv.13054) and include chronic respiratory diseases (ICD-10: J40-J47, J96.1, J96.6, E84), chronic cardiovascular disease (I05-I09, I10-I15, I20-I25, I26-I28, I30-I52, I60-I69, G45, Q20-Q24, Z99.0-Z99.1, Z99.4), chronic liver disease (K70-K77, B18-B19), chronic kidney disease (N18-N19, Z49, Z99.2), diabetes mellitus (E10-E14), chronic neurological diseases (G20-G21, G30, G35, G40-G41, G10, G12.2, F00), as well as immunodeficiency or immunosuppression (C00-C97 [excl. C44], B20-B24, D70-D71, D80-D90, M05-M06, M08, M30-M35, Z51.0, Z51.1, Z94).

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**Conflicts of interest:** DG and BS are employees of Vandage GmbH. Vandage received funding from Sanofi to perform this study. Vandage received payments from Sanofi-Aventis Deutschland GmbH, GSK, Janssen-Cilag GmbH, MSD Sharp & Dohme GmbH, ModernaTX, Pfizer Pharma GmbH, Viatrix, and consulting fees and grants from AOK Rheinland/Hamburg, BARMER, DAK-Gesundheit, German G-BA, and Techniker Krankenkasse. AP, ACM, and OD are employees of Sanofi-Aventis and may hold shares and/or stock options in the company.

**Abbreviations:** Avg.: average; CD: chronic disease; CHD: coronary heart disease; COPD: chronic obstructive pulmonary disease; DMP: disease management program; N: total population included in study; pp: percentage point; SHI: statutory health insurance; T1DM: Type 1 diabetes; T2DM: Type 2 diabetes VCR: vaccination coverage rates; w/: with; w/o: without; WHO: World Health Organization.

#### Seasonal Vaccination Coverage Rates

- The VCRs of individuals aged 60+ ranged from 34.8% in the 2016/17 season to 47.5% in the 2020/21 season (Table 1). The cross-seasonal average VCR of those with a chronic disease was more than twice as high as the average VCR of those without a chronic disease (45.7% vs. 20.8%). Across all seasons, about 93% of flu shots were administered by GPs.

#### Vaccination Coverage Rates and Care Intensity

- Across all seasons, VCRs increased with the number of GP contacts between September and February. In the total population aged 60+, the cross-seasonal average VCR was 21.9% for individuals with one GP contact compared to 52.7% for individuals with five or more GP contacts.
- Among patients with conditions for which DMPs are offered, VCRs were generally higher for DMP participants (Figure 1). Only among T1DM patients, participation in the relevant DMP was not associated with higher VCRs.
- Across all seasons, VCRs were slightly higher among participants in GP-centered care (average VCRs: 43.9% vs. 40.0%).

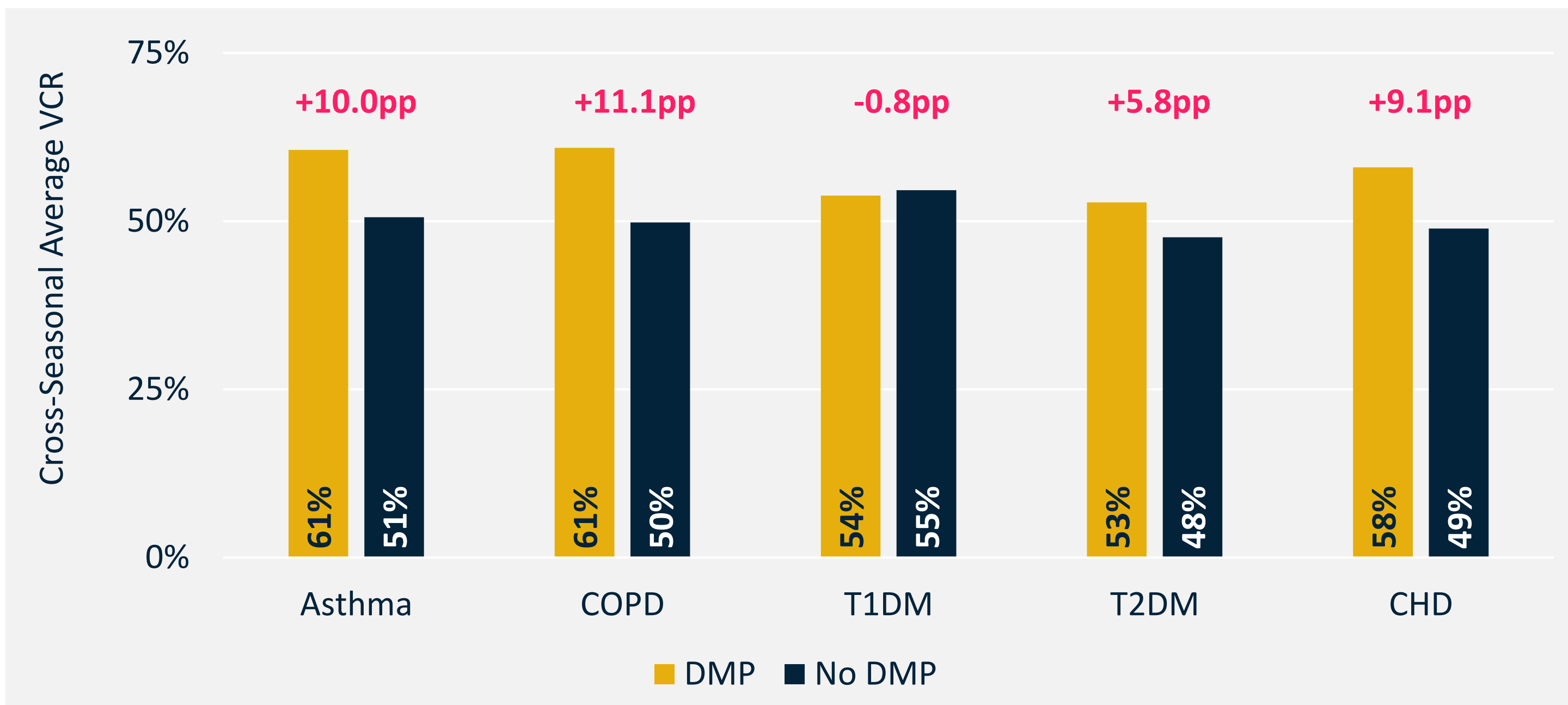


Figure 1: VCRs of individuals aged 60+ with a DMP-specific disease by DMP participation status.

#### GP Contact Frequency of Unvaccinated Individuals

- More than four in five unvaccinated individuals aged 60+ had at least one GP contact between September and February (Figure 2). More than half of the unvaccinated persons with chronic disease even had five or more GP contacts.

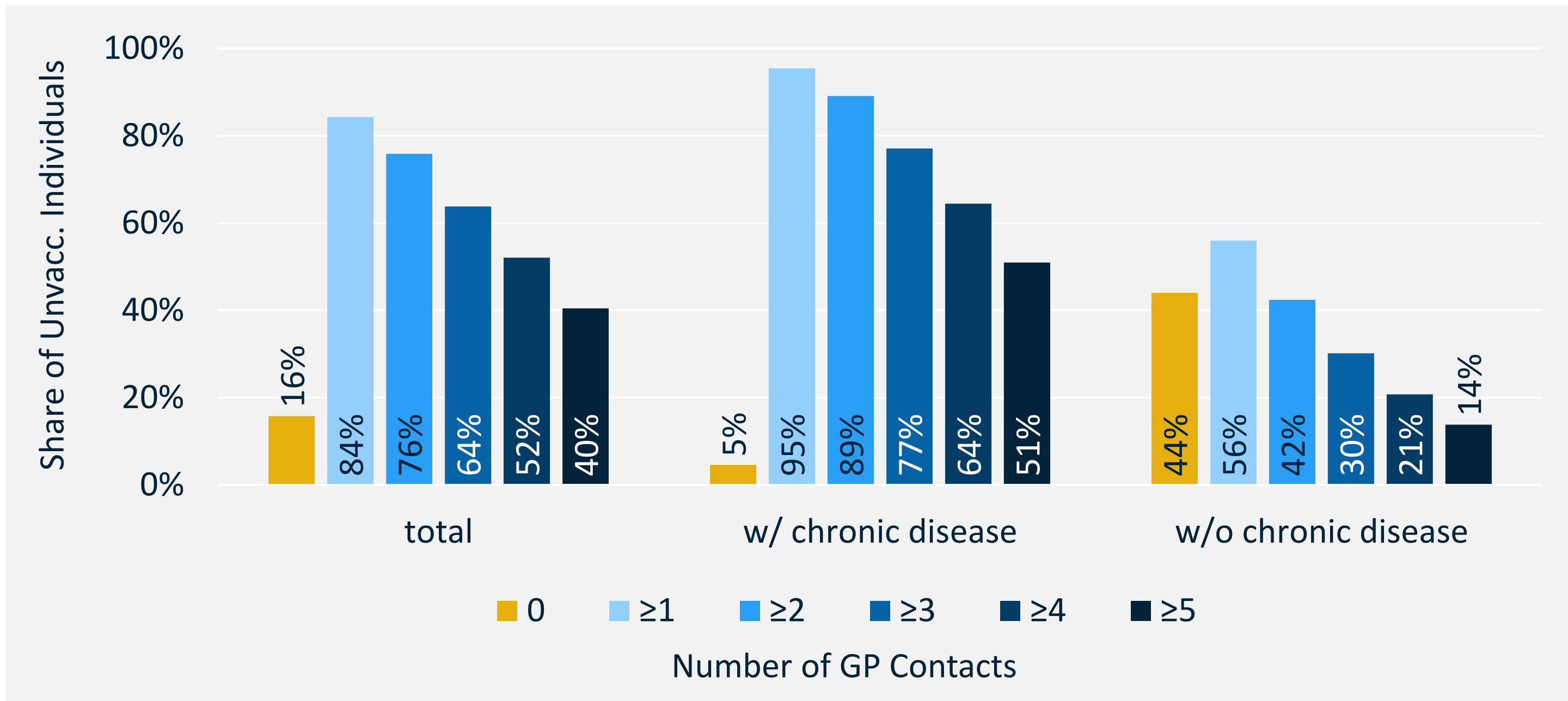


Figure 2: Distribution of unvaccinated individuals aged 60+ by GP contact frequency.

### CONCLUSION

- Our results indicate a positive association between outpatient care intensity and the likelihood of influenza vaccination.
- However, the high proportions of unvaccinated individuals with regular physician contact point to a notable unexploited potential to increase vaccination uptake.
- GPs, who administer over 90% of flu vaccinations, are key actors in the care process and may be a pivotal leverage point for future vaccination strategies.