# *Flu*nomics Report

## Assessing the impact of previous influenza seasons on people, health systems and economies

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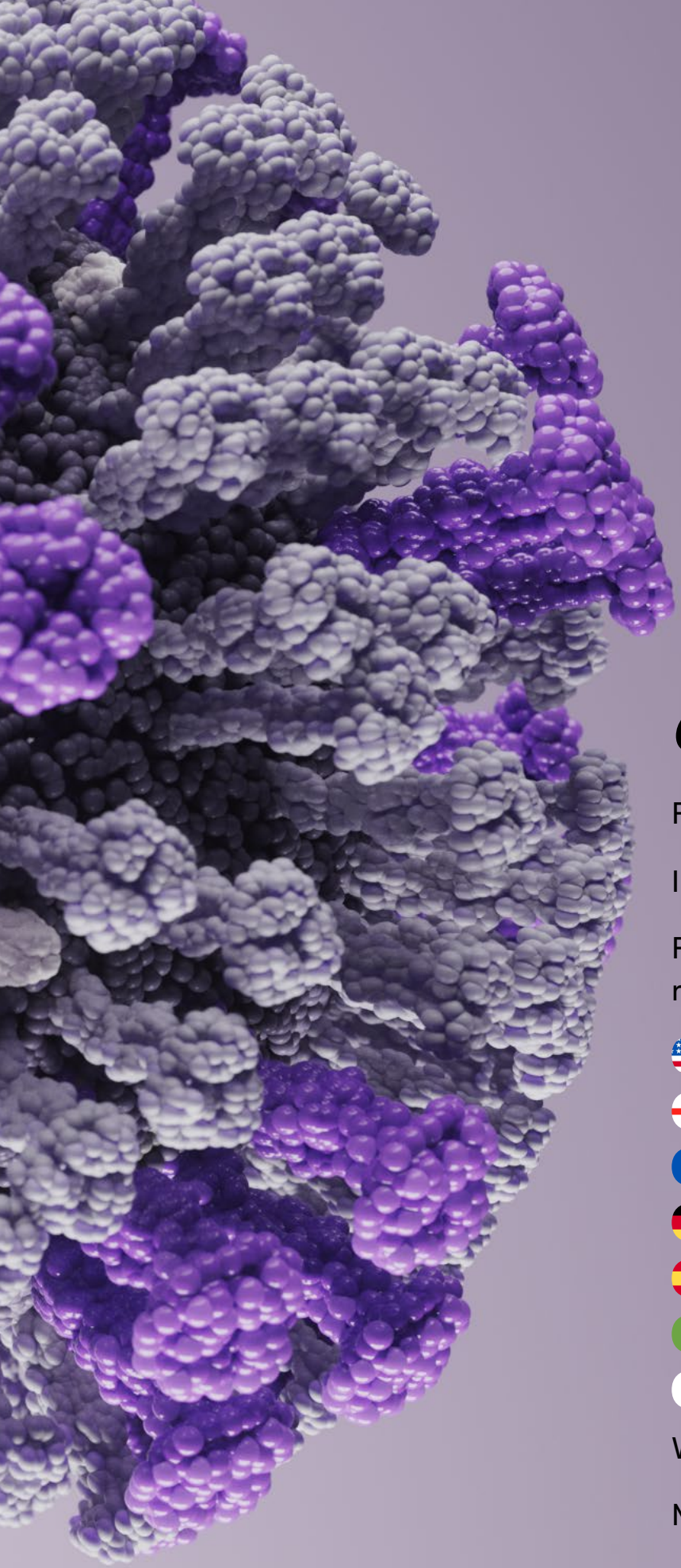
This report has been developed and funded by Sanofi.



MAT-XU-2504130 V1.0 10/2025



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# Foreword by *Dr Marco del Riccio, MD*

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Seasonal influenza remains a persistent yet underestimated threat to global public health. Despite its seasonal recurrence, our collective response often falls short — particularly in shielding older adults, who bear a disproportionate share of influenza-related morbidity and mortality.

The *2024/2025 influenza season was notably severe across multiple countries*, exposing structural fragilities in healthcare systems through high levels of influenza circulation, excess hospitalisations, potentially avoidable deaths, and widespread system strain.

This report offers a critical lens through which to examine these shortcomings. By leveraging real-world data from diverse national settings, it highlights not only the continuing burden of influenza but also the systemic challenges — such as *fragmented data collection and inconsistent surveillance protocols* — that hinder effective public health responses. These deficiencies obscure our understanding and constrain the capacity for agile intervention.

At a time when preventive services are expected to deliver more with fewer resources, comparative analyses like this are highly valuable. These analyses strengthen the argument for targeted, high-impact interventions and also reinforce economic rationale for prioritising prevention, particularly in ageing societies. Importantly, they also help *shift the framing of influenza from a seasonal inevitability to a preventable cause of healthcare system strain*.

As we recalibrate immunisation strategies in light of evolving viral dynamics and new vaccine technologies, this report serves as a practical and strategic resource: It underscores where we are making progress, and where greater investment, innovation and coordination are urgently needed.

# Introduction

The 2024/2025 influenza season placed extraordinary pressure on health systems across multiple countries, exposing a persistent challenge: while most countries have established policies to protect high-risk groups, these do not consistently translate into real-world protection.[1-10]

At the heart of this burden are people, particularly older adults, whose lives, health and independence are directly impacted by seasonal influenza.[11-13] Beyond the statistics lie missed family gatherings, extended hospital stays, and lives cut short by a virus we have the tools to help prevent.

*Flunomics* draws on publicly available data to *estimate the real-world burden of influenza, particularly for older adults*, across seven countries:

**United States** **England** **France** **Germany** **Spain** **Italy** **Japan**

It brings together epidemiological surveillance, hospitalisation figures, and cost data — highlighting not only the strain placed on health systems but the consequences of under-protection for individuals, families and communities.

Across these countries, national surveillance systems *reported elevated rates of influenza-related hospitalisations*, *intensive care unit (ICU) admissions*, and *excess mortality, particularly among older adults*.[1,2,4,8-10,14-18]

Influenza remains a *leading cause of hospital admissions* and winter system pressure, not only because of the respiratory complications it causes but because it can worsen underlying conditions such as heart failure and diabetes, among others.[19-23] This burden may be substantially prevented if vaccination and other infection prevention measures are implemented optimally. Yet national strategies continue to rely on established procurement patterns and static budget frameworks, rather than adapting to evolving evidence or real-world needs.[24,25] For older adults who account for a disproportionate share of severe outcomes, this can mean delayed or incomplete access to age-appropriate vaccination.[26,27]

The aim of this report is to *support more informed conversations* by quantifying the scale of the problem, identifying where structural barriers may be limiting protection, and offering a shared evidence base to guide seasonal planning and policy engagement. Ultimately, it is about ensuring that future strategies place people, not just programmes, at the centre of preparedness.

# Flunomics:
## Estimating the *real-world impact* of influenza

The 2024/2025 influenza season underscored a familiar pattern across all seven countries examined in the Flunomics report: *older adults faced the greatest burden* — with elevated rates of hospitalisation, ICU admission, and influenza-attributable death.[1,2,4,8-10,14-18] This occurred despite the presence of national vaccination strategies aimed at high-risk groups, highlighting real-world gaps in protection due to delayed access, insufficient immunity against circulating strains, and system-level delivery challenges.

**Inconsistencies in flu surveillance limit comparability across countries**

- Testing strategies differ – not all cases, admissions or deaths are captured.
- Timeliness gaps – many systems report late, limiting real-time burden estimates.
- Reporting standards vary – countries track and publish data differently.
- Cross-country comparisons – lack of harmonised data makes it hard to measure protection consistently.

The following analysis explores *four key dimensions of the 2024/2025 influenza season* across the United States, England, France, Germany, Spain, Italy, and Japan:

1. **Epidemiological patterns in influenza incidence**
2. **Health system impact, including hospital and ICU burden**
3. **Economic impact illustrating the estimated cost to national health services**
4. **Policy context to contextualise each country's landscape**

Where 2024/2025 data were unavailable, the most recent historical data were used to identify trends in disease burden, healthcare utilisation, and vaccine uptake. These data, while not from the 2024/2025 season, offer valuable insights into persistent vulnerabilities and help interpret likely scenarios for 2024/2025 — particularly among older adults.

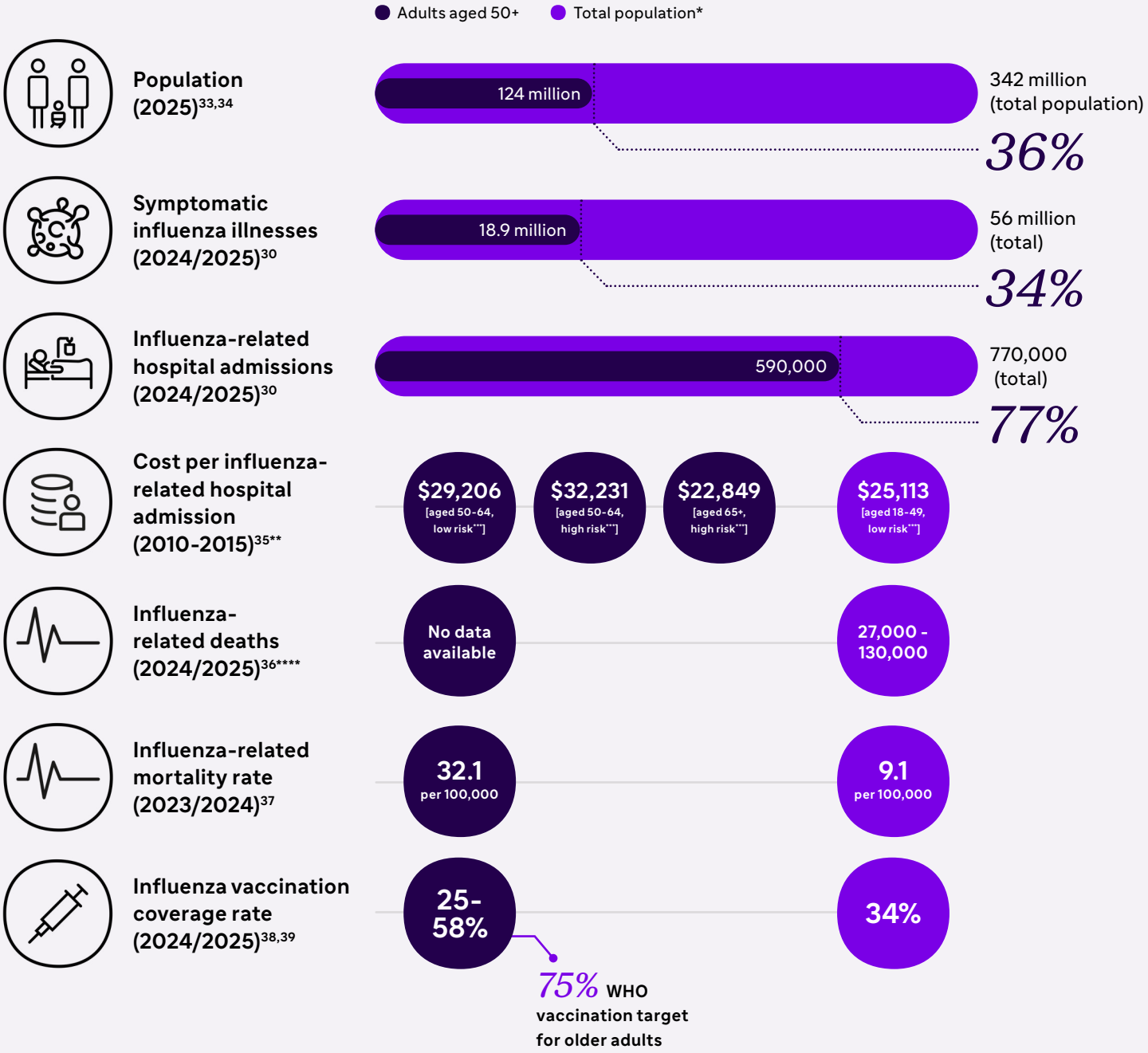
The 2024/2025 season also *marked a pivotal policy shift*: in response to the absence of B/Yamagata circulation since 2020, the World Health Organization (WHO) recommended *reverting to trivalent vaccines*.[28,29] This aimed to streamline vaccine composition and better match circulating strains.

For all regions, influenza disease burden figures are likely an underestimate of the true impact, as these figures do not include possible asymptomatic or unreported cases. Equally, existing data may not reflect hospitalisations and deaths linked to conditions that were worsened due to influenza.

# United States

Marked by *high hospitalisation rates* and *significant mortality* among adults aged 50 and over, the 2024/2025 influenza season represented *one of the worst experienced in 15 years* in the United States, despite it having one of the largest and most complex healthcare systems.[8,20,30,31] Last season was classified as a high severity season overall and for all age groups (children, adults, older adults) and is the first high severity season since 2017-2018.[32]

## Estimated influenza burden




*Total population values are shown for context only and are not used as a statistical comparator to the 65+ group.
**Figures originate from the 2010-2015 Marketscan database and are inflation-adjusted to US$ 2020.
***Risk status as defined by the CDC's Advisory Committee on Immunization Practices (ACIP): people at higher risk of influenza complications ("high risk") or not ("low risk").
****Figures based on preliminary CDC estimates from the 2024/25 season, as influenza surveillance does not capture all cases of influenza.[36]

## Data and *Limitations*

Despite historically benefiting from a comprehensive surveillance system led by the CDC — and being one of the only countries with published 2024/2025 data — current reporting still does not capture all influenza cases.[36] In particular, this data does not take into account asymptomatic infections or those who did not seek medical care while infected, likely resulting in an underestimation of the true burden.[36] Data on symptomatic cases, hospitalisations, and deaths are based on modelled estimates, not exhaustive counts.[36] These limitations highlight the need for improved, real-time data to fully quantify the health and economic burden of influenza in older adults.

## The Economic *Impact*

Understanding the economic impact of influenza is essential for designing more effective, sustainable prevention strategies, particularly in aging populations. Each hospitalization, readmission, or prolonged stay places measurable financial pressure on healthcare systems, much of which is avoidable. This section outlines how older adults disproportionately drive influenza-related costs, reinforcing the value of preventive measures not just for health outcomes, but for economic resilience.

Data from the MarketScan database show that the mean cost per influenza-related hospitalization was $29,206 for low-risk* adults aged 50–64 years and $32,231 for high-risk* adults in the same age group.[35] In comparison, adults aged 18–49 years incurred a mean hospitalization cost of $25,113 per stay.[35] Among older adults, those aged 65 and older had a slightly lower mean hospitalization cost of $22,849.[35] Despite this lower per-case figure, *the overall system impact is far greater for this group due to their substantially higher hospitalization rates*.[35]

While adults aged 18–49 years were hospitalized with influenza at a rate of 6.5 per 100,000, adults aged 65 years and older were hospitalized at a rate of 755.3 per 100,000 – *more than 100 times higher*.[35]

*Risk status as defined by the ACIP: people at higher risk of influenza complications (“high risk”) or not (“low risk”).

This contrast underscores a critical dynamic: *older adults generate the majority of influenza-related hospital costs* not because their individual hospital stays are more expensive, but because they experience *vastly higher rates of severe illness requiring hospital care*.[35] As a result, *older adults contribute disproportionately to the total economic burden of influenza* in the United States, despite their lower average cost per hospitalization. To contextualize this cost further, the Centers for Disease Control and Prevention (CDC) reported that the average cost of a general inpatient stay in U.S. community hospitals was $14,101 in 2019.[40] Though it is important to note that these numbers are for a different year, this value has been used to help illustrate the difference in scale.

Hospital readmissions further compound the economic burden of influenza. Older adults, specifically those over the age of 45, accounted for 85.8% of all 30-day all-cause readmissions following an influenza-related hospitalization in 2014.[41] Although age-specific cost data were not available, the mean cost per readmission was estimated at $14,772.[41]

Influenza's economic impact also extends well beyond hospital bills. An estimated $3.2 billion dollars were spent on indirect medical costs as a result of influenza in 2015 in people over the age of 50.[42] This includes indirect costs as a result of lost earnings due to death and absences from paid employment.[42]

The 2023/2024 influenza vaccination campaign in the U.S. is estimated to have prevented nearly *9.8 million illnesses*, reflecting the broader cost avoidance potential of timely, high-coverage protection efforts.[43]

Taken together, these data highlight the outsized economic toll of influenza in older adults. Beyond individual patients, influenza exerts cascading costs on caregivers, employers, and health systems—underscoring the value of prevention not just as a public health imperative, but as a fiscal one.

## Policy *Landscape*

In 2024, the U.S. FDA's Vaccines and Related Biological Products Advisory Committee (VRBPAC) recommended a shift from quadrivalent to trivalent influenza vaccines, citing the continued absence of the B/Yamagata lineage since the COVID-19 pandemic.[44] The CDC's Advisory Committee on Immunization Practices (ACIP) endorsed this change ahead of the 2024/2025 season, and trivalent vaccines became standard in national recommendations.[45] While this shift is now fully implemented, it reflects how U.S. influenza policy has adapted in response to evolving viral patterns.

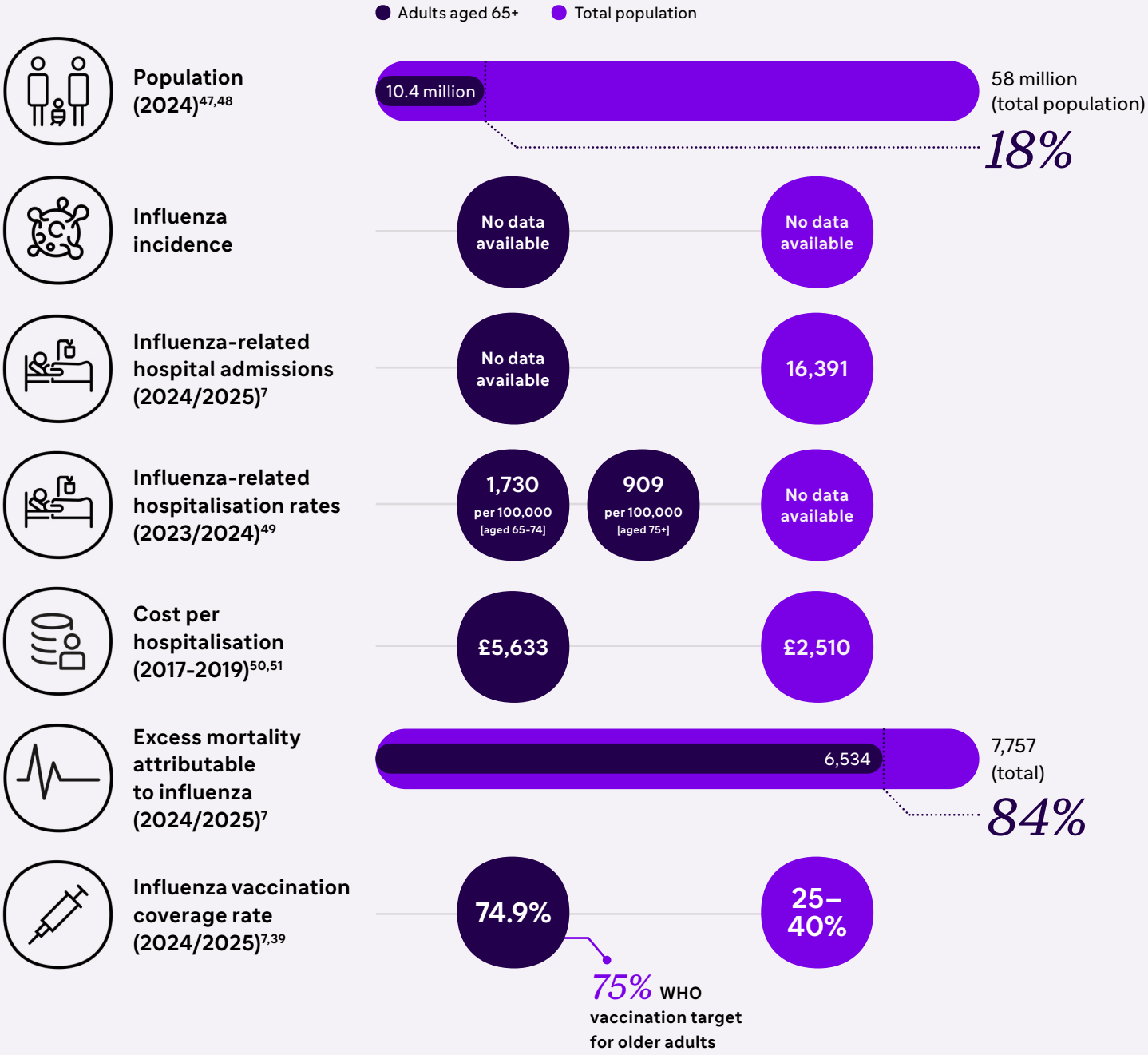
For the 2024/2025 season, ACIP continues to recommend that adults aged 65 and older should preferentially receive an age-appropriate vaccine.[11] An estimated 93% of influenza vaccines administered to people aged 65 and older during the 2024/2025 season were preferentially recommended formulations, signaling strong alignment between policy guidance and real-world practice.[46] Despite this, influenza vaccination coverage rate in older adults was still lower than the 75% WHO target, with only 25% of adults aged 50–64 and 58% of adults aged 65 and older having received an influenza vaccine.[38,39]

While most vaccinated older adults are receiving preferentially recommended formulations, there is no federally mandated programme to ensure consistent access or uptake across all settings. Local variability in infrastructure, provider practices, and vaccine availability—particularly in under-resourced regions or facilities—may limit the reach of these recommendations. Without targeted strategies to address these systemic barriers, a significant share of high-risk adults may continue to go unprotected, despite clear national guidance.

# England

Despite having a long-established universal influenza vaccination programme, England, in the 2024/2025 season, was marked by *substantial winter system strain* where elevated excess mortality was recorded and national hospitalisation reporting remained limited. Cost per hospitalisation for adults aged 65 and older was more than *two times higher* than that for the total population. In addition to this, older adults made up *84% of excess mortalities attributable to influenza*.

## Estimated influenza burden



## Data and *Limitations*

The UKHSA did not publish total influenza case numbers for the 2024/2025 season. Available reports covered just 29 of 202 NHS Trusts (public organisations that deliver healthcare services on behalf of the National Health Service) in England, documenting *16,391 hospitalisations* — indicating that this data only accounts for approximately 15% of NHS Trusts in England.[7,52] However, when taking into consideration that approximately 30,000 individuals were hospitalised with influenza annually between 2016 and 2020, the 2024/2025 hospitalisation numbers, for just a fraction of the total NHS Trusts in England, clearly illustrate the severity of the season.[53]

This pattern aligns with a marked increase in influenza-attributable excess mortality — reaching 7,757 deaths in England, as recorded by UKHSA using historical baselines.[7] Adults over the age of 65 made up 84% (6,534) of these excess mortalities.[7]

## The Economic *Impact*

Due to incomplete national reporting on hospital admissions, the total economic burden of influenza-related hospitalisations in 2024/2025 cannot be precisely determined. However, the available figures indicate a substantial rise in recent years in healthcare costs for older adults.

Based on the most recently available data from 2018, it is estimated that the average cost of an influenza-attributable hospitalisation for adults aged 65 and over was approximately *£5,633 in England*, which is twice as high as the average cost for the total population at £2,600.[50,51]

All in all, these figures reinforce the broader economic strain placed on the NHS by influenza in older populations — particularly during high-severity seasons where under-protection persists.

# Policy *Landscape*

In 2024/2025, the national influenza vaccination programme for adults in England began in October.[54] This shift aimed to address concerns around waning vaccine effectiveness, ensuring stronger protection during the anticipated peak of influenza circulation.[55] In line with evolving international guidance, the Joint Committee on Vaccination and Immunisation (JCVI) recommended a transition to three-strain (trivalent) vaccines for the season.[54,55]

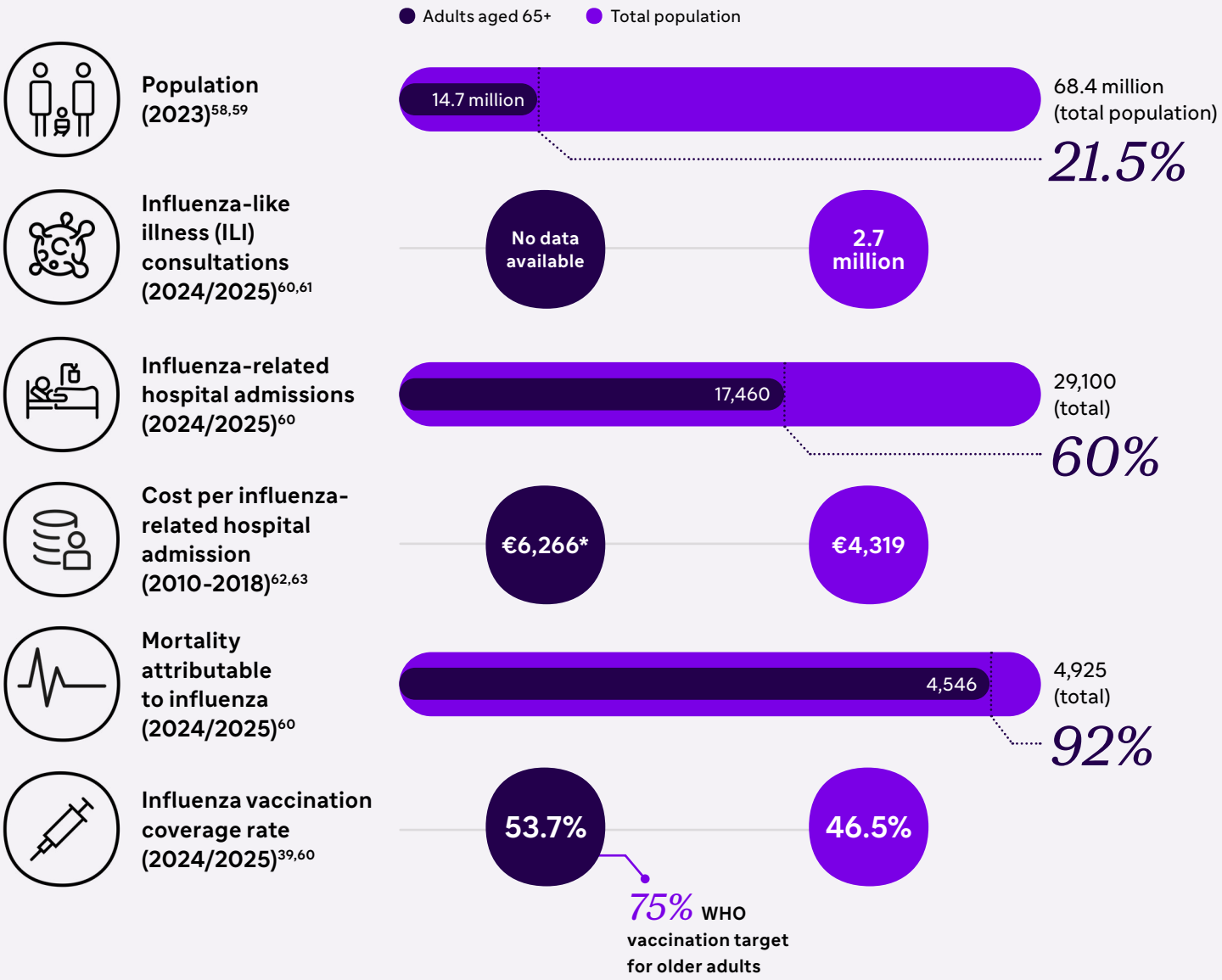
Adults aged 65 and older were eligible for a free NHS influenza vaccine, with age-appropriate formulations available.[56] While England's influenza vaccination coverage in older adults approached the WHO target in 2024/25, the burden remained high, likely due to a combination of factors: delayed programme start, limited hospital reporting, and real-world barriers to timely protection.[7,39,54-56] Even when coverage is high, vaccine effectiveness can wane before peak flu circulation, and older adults often face a greater risk of complications from flu-triggered exacerbations of chronic conditions—amplifying system strain despite strong policy intent.[7,39] However, modelling from the UKHSA estimates that the 2024/2025 influenza vaccination programme averted between 96,000 and 120,000 hospital admissions due to influenza in England.[7]

Collating influenza data across the entire UK remains a challenge due to the devolved nature of healthcare systems in England, Scotland, Wales and Northern Ireland. Each nation operates its own surveillance infrastructure, reporting protocols, and healthcare service structures, which can result in variations in data availability, frequency, and format.[7,57] While England often provides the most granular and regularly updated figures, this does not always reflect trends across the UK as a whole. As such, interpreting national-level influenza burden or vaccine impact *requires careful consideration of these structural differences* and, where possible, *greater coordination in data collection and reporting across the devolved nations*. Greater alignment would enable a clearer understanding of how policy intent translates into practice and help to identify opportunities to ensure older adults receive effective, timely protection in future seasons.

# France

France experienced a *high-intensity 2024/2025 influenza season*, marked by significant hospital burden, elevated mortality among older adults, and renewed policy efforts to strengthen vaccination access. Notably, people aged 65 and older made up approximately *92% of all influenza-related deaths*.

## Estimated influenza burden




*Mean cost of hospitalisations for influenza and pneumonia in people over the age of 65 over the course of six seasons (2012-2017). Hospitalisation costs were inflated to 2022.

## Data and *Limitations*

The Sentinelles surveillance network in France, a research and monitoring network made up of 1,142 private GPs and 129 private pediatricians in metropolitan France, recorded approximately 2.7 million consultations for influenza-like illness during the 2024/2025 season, but age breakdowns were not available.[60,61] Additionally, the GPs in the Sentinelles network make up approximately 2.1% of the total GPs in metropolitan France.[61] This greatly limits insight into how heavily the burden fell on older adults, as this is likely a severe underestimation of the true value.

Santé Publique France, the national public health agency for France, reported 29,100 influenza-related hospitalisations between weeks 49/2024 and 08/2025.[60] Reported influenza-attributable mortality reached 4,925 deaths.[60] Again, this is likely an underestimation of the true value due to the limited scope of the Sentinelles network. Adults aged 65 and older make up a significant proportion of these mortalities, accounting for *92% of influenza-related mortalities*.[60]

## The Economic *Impact*

The mean cost of hospitalisations for influenza and pneumonia among adults aged 65 and older over six seasons (2012–2017) was estimated at €6,266, adjusted to 2022 values.[62] For reference, the mean cost for influenza-related hospitalisations for the total population was estimated to be €4,319 between the 2010/2011 and 2017/2018 influenza seasons.[63] The direct economic burden of influenza in France has varied considerably with seasonal severity — from €26.4 million in 2011/2012 to €209.8 million in 2017/2018 — representing nearly an eightfold increase.[64] During severe epidemic seasons between 2010 and 2018, the average total cost of influenza-related hospitalisations across all age groups was €145.5 million.[64] Adults aged 65 and older accounted for more than 67% of this amount, representing an average cost of €98.3 million.[64] It is important to note that the increased economic burden may also be due to improved reporting of data.


*Adjusted to 2022 values.

# Policy *Landscape*

In response to a high-burden 2024/25 season, French health authorities extended the influenza vaccination campaign through February 2025.[65] At the time, only standard-dose vaccines were included in national recommendations for adults aged 65 and over.[66] In May 2025, new guidance from the Haute Autorité de Santé introduced an update for the 2025/2026 season, recommending the use of age-appropriate vaccine formulations offering enhanced protection for this population.[66] As this guidance had not yet been implemented during the 2024/25 season, no data are available on its uptake or impact

Despite the severity of the season, *vaccination coverage among adults aged 65 and older declined to 53.7%* — continuing a downward trend from previous years.[60] This divergence — between rising system demand and falling coverage — underscores the need for stronger outreach, clearer public messaging, and more consistent delivery mechanisms to reach those at highest risk.

**In France, the system need and public protection are moving in opposite directions.**

**System pressure**
*Cases, hospitalisations, ICU demand*

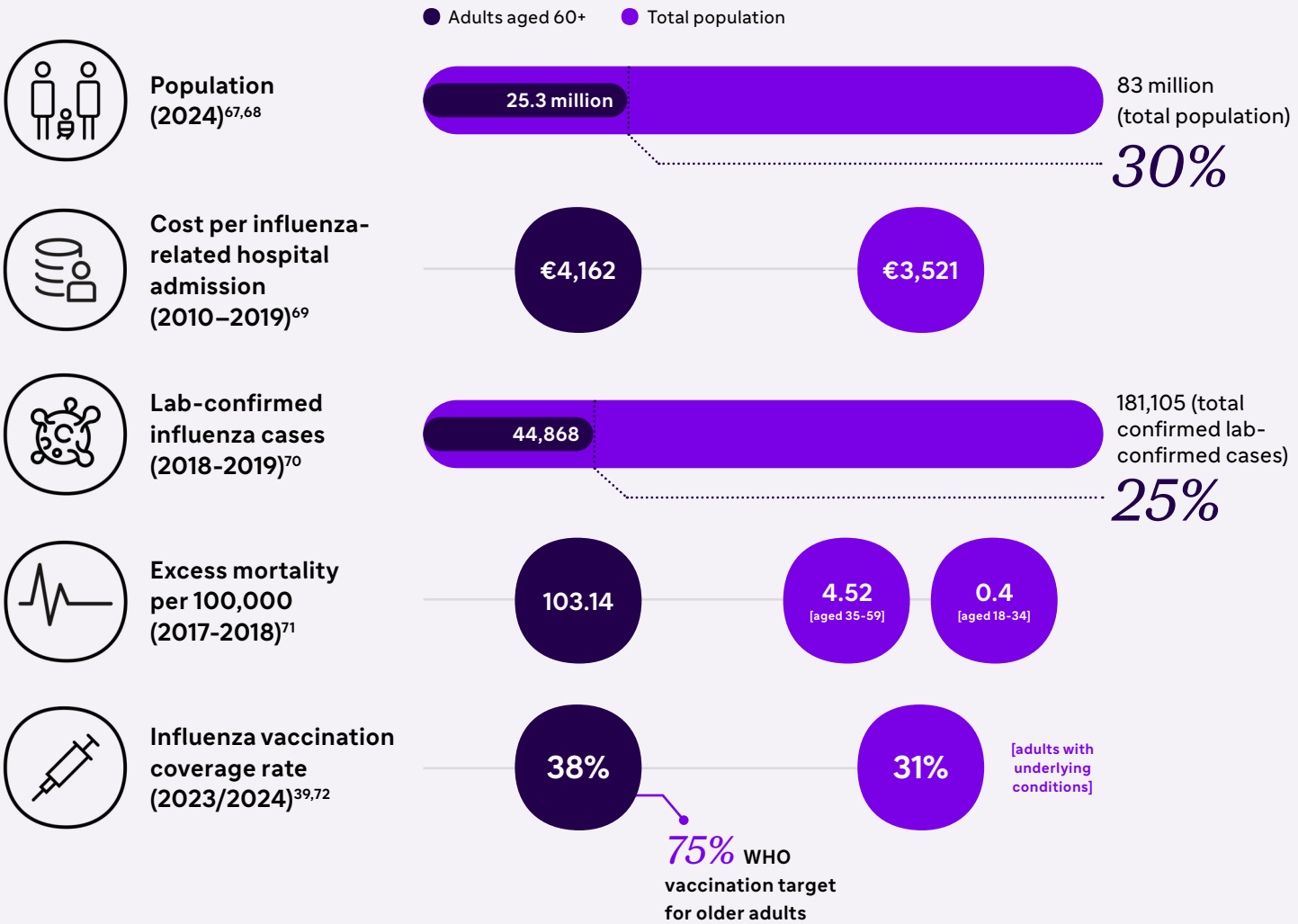
**Vaccination coverage in 65+**
*to 53.7%*

# Germany

Germany's 2024/2025 influenza season again showed that *older adults are at higher risk of serious illness*. However, changes in how national data is reported make it harder to capture the full impact in a single-season snapshot. Following the onset of the COVID-19 pandemic, the Robert Koch Institute (RKI) adjusted its reporting approach: it no longer publishes seasonal surveillance reports including totals for influenza-attributable excess hospitalisations, excess deaths, or excess GP visits. Instead, the RKI now focuses on tracking trends as they happen, including how different viruses behave across the season — a core priority for public health surveillance. The detailed results of various surveillance components, including virological data, the outpatient disease burden of acute respiratory diseases and the inpatient disease burden of severe acute respiratory infections, are published in weekly reports and subsequent seasonal summaries in the Epidemiological Bulletin.

*To give a clearer picture of how influenza affects older adults, this report uses historical data from 2018/2019* — the last year with estimates of excess disease burden. Where comparisons are made, they use distinct age groups (people aged ≥60 vs people aged <60) to ensure the analysis is robust and meaningful. Together, these data highlight a consistent challenge: older adults in Germany continue to face a high burden from influenza, often without adequate protection.

## Estimated influenza burden



# Data and *Limitations*

Germany's influenza surveillance system, led by the Robert Koch Institute (RKI), continues to provide robust weekly data on case detections, circulating strains, and hospital activity. However, these figures are primarily designed for real-time monitoring of seasonal trends rather than retrospective influenza burden analysis.

Prior to the COVID-19 pandemic, the RKI published annual reports *estimating excess hospitalisations, deaths, and GP visits due to influenza*.[70,73-76] However, no seasonal reports have been published since the COVID-19 pandemic, and while some seasonal summaries are now included in the Epidemiological Bulletin, they focus largely on virological trends and pathogen distribution.

As a result, the most recent comprehensive burden data (including estimates of excess disease burden) remain those from the *2018/2019 season*.[76] For 2024/2025, only partial indicators are available (e.g., notification data of lab-confirmed cases and hospitalisations). To preserve comparability across countries, this report therefore combines historical burden estimates with current-season surveillance, while clearly noting the limitations of both. The data shows the variability between influenza seasons, clearly highlighting the difficulty in predicting the severity of any upcoming season.

The German influenza data, particularly from the 2018/2019 season, highlights a critical nuance in how influenza burden presents in older adults. Excess GP consultations were comparatively low in those aged 60 and over (1,500 excess consultations per 100,000, versus 5,800 per 100,000 in adults aged 35–59 and 4,500 per 100,000 in those aged 15–34), however, this same age group experienced significantly higher rates of hospitalisation, and in the 2017/2018 season saw significantly higher rates of influenza-attributed mortality.[69,70,73-76]

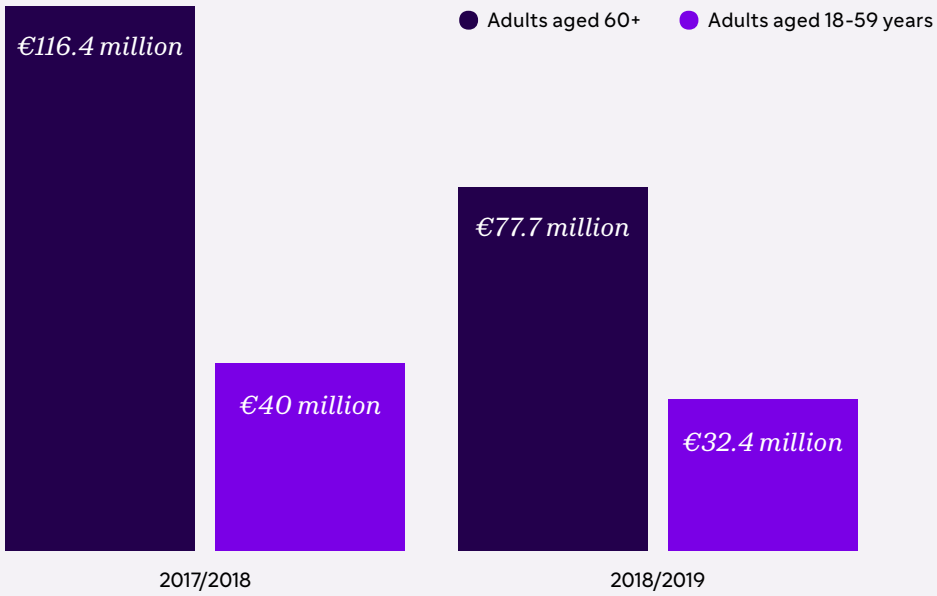
This disconnect between lower outpatient activity and higher severe outcomes suggests that, even when fewer infections are recorded, illness in older adults is far more likely to lead to serious complications. It reinforces the need to assess influenza risk not just by incidence, but by severity and healthcare system impact — particularly in high-risk populations.

# The Economic *Impact*

Estimates of Germany's influenza-related healthcare costs are derived from retrospective data covering 2010 to 2019, when the average cost of hospitalisation was *€3,982 for adults aged 18-59*, rising to *€4,162 for patients aged 60 and older*.[69] In 2019, influenza led to the *hospitalisation of 18,661 people aged 60 and older and 8,138 people aged 18–59, at a cost of €77.7 million and €32.4 million*, respectively.[69] The burden was even greater during the 2017/2018 season, with *27,966 hospitalisations among those over 60 and 10,039 among 18–59-year-olds, generating costs of €116.4 million and €40 million*.[69] In both seasons, individuals aged 60 and above accounted for more than half of the total economic burden of influenza-related hospitalisations.[69]

It is important to note that these figures are based on lab-confirmed hospitalisations only and do not include outpatient visits or unconfirmed cases. As such, they provide a conservative estimate of the true economic burden.

**Overall cost of influenza-related hospitalisations in €**




# Policy *Landscape*

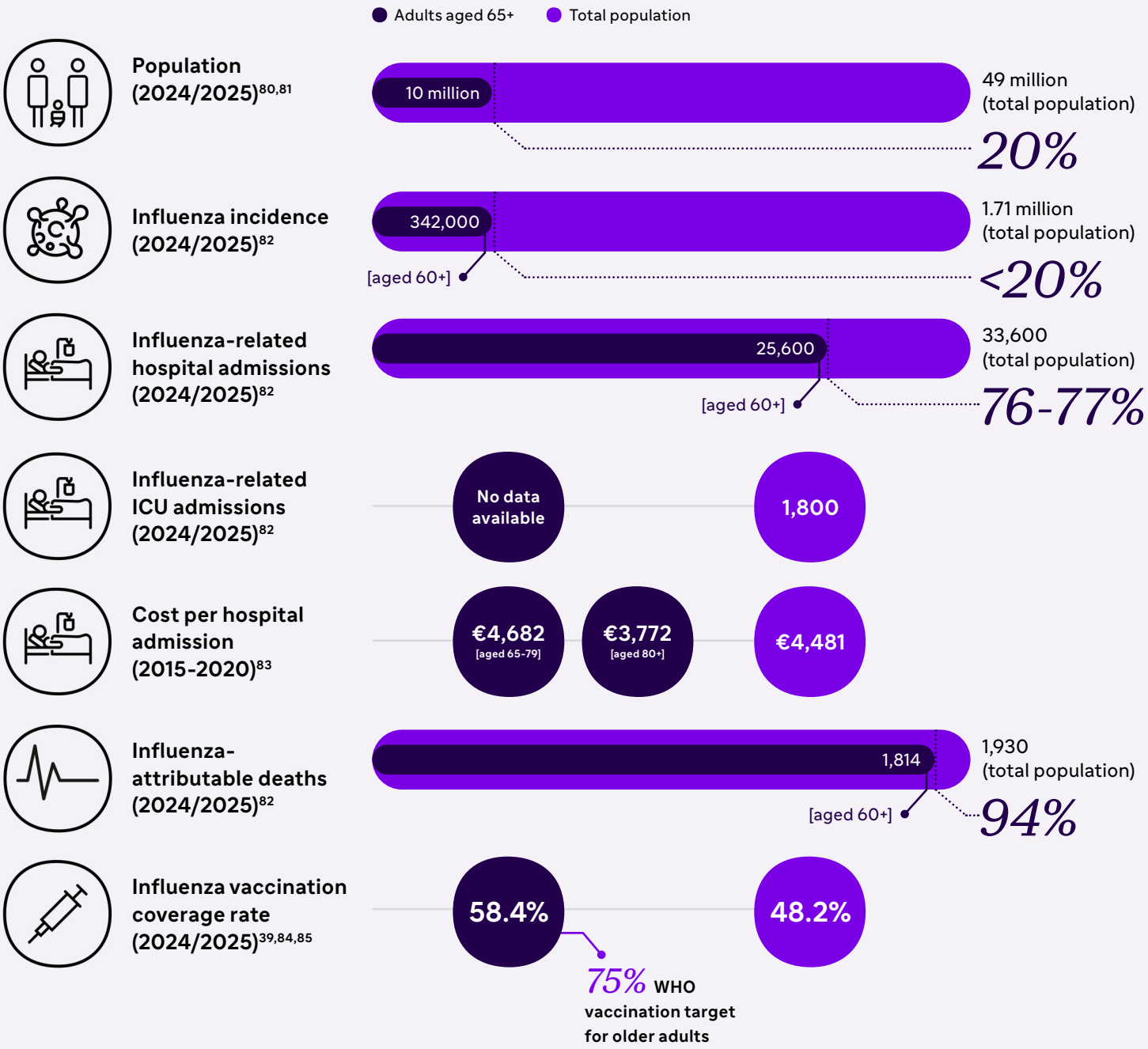
Germany's Standing Committee on Vaccination (STIKO) continues to recommend annual influenza vaccination for adults aged 60 and older, specifically noting that they *should receive a vaccine tailored to them*.[77,78] Yet uptake remains well below WHO targets: for the 2023/2024 season, just 38% of people aged 60 and over were vaccinated, according to the Robert Koch Institute.[72] In response to the 2024/2025 season's severity, 19.9 million vaccine doses were made available by late October — including age-appropriate formulations.[79] Despite adequate supply and infrastructure, coverage remained low.

This reflects a wider challenge observed across many countries: *even with clear recommendations and sufficient supply, achieving high vaccination rates among older adults remains difficult*. Continued investment in communication strategies, confidence-building, and targeted outreach could help strengthen uptake over time. A stepwise approach that gradually raises coverage toward the WHO target may offer a practical and sustainable path forward.

# Spain

Spain's *2024/2025 influenza season reflected ongoing challenges* in data completeness and vaccination coverage among older adults, with national uptake remaining below target, and gaps in age-specific reporting limited full assessment of impact. Though local news reports noted that this was a particularly severe influenza season, reporting inconsistencies and missing mortality data make it difficult to fully capture the true burden.

## Estimated influenza burden




Up to week 20 of 2024/25, Spain recorded an estimated *1.71 million* influenza cases, *~33,600* hospitalisations, *~1,800* ICU admissions, and *~1,930* influenza-attributable deaths.[82]

## Data and *Limitations*

Based on consolidated data from the Sistema de Vigilancia de Infecciones Respiratorias Agudas (SiVIRA), Spain recorded an estimated *1.71 million symptomatic influenza cases, approximately 33,600 hospitalisations, around 1,800 ICU admissions*, and approximately *1,930 influenza-attributable deaths* during the 2024/25 season (data up to epidemiological week 20).[82]

While this represents a lower severity season compared to 2023/2024, the *prolonged duration of virus circulation led to a higher total case count*.[86] Notably, *94% of all influenza-related deaths and over three-quarters of hospitalisations occurred in individuals aged 60 and over*, reinforcing the disproportionate impact on older adults.[82]

Despite improved national surveillance, important limitations remain. These include:

- Under-detection of influenza among older adults not presenting to care
- Incomplete linkage between clinical severity and vaccination status
- Absence of real-time data disaggregated by vaccine type or formulation
- Potential under-reporting of ICU admissions and post-discharge outcomes

These gaps limit the precision with which vaccination programme effectiveness and health system impact can be assessed. Ongoing improvements in age-stratified surveillance and outcome monitoring will be essential to guide future influenza prevention strategies.

## The Economic *Impact*

Influenza hospitalisation was estimated to cost approximately *€4,682 per admission in adults aged 65–79 years* and an average of *€3,772 for people aged 80 and over*.[83] Though the average cost per hospital admission for older adults did not vary greatly from the mean cost for the total population (€4,481), given that older adults made up a greater proportion of hospitalisations, it can be assumed that older adults were the greatest contribution to the overall economic burden of influenza.[83]

The inability to generate a full national cost estimate is not just a data gap — it is a *visibility gap*. It limits policymakers' capacity to quantify returns on prevention investment and undermines efforts to prioritise influenza protection in national planning. Closing this gap should be a strategic priority: more complete and timely data would enable better resource allocation, clearer accountability, and more targeted interventions for those at greatest risk.

## Policy *Landscape*

Vaccination coverage among adults aged 65 and older fell to 58.4% during the 2024/2025 season, *down from 66% in the previous season* and the steady state of 66–69% that had been held since the COVID-19 pandemic, pushing the needle further away from the WHO's 75% coverage target.[39,84,85]

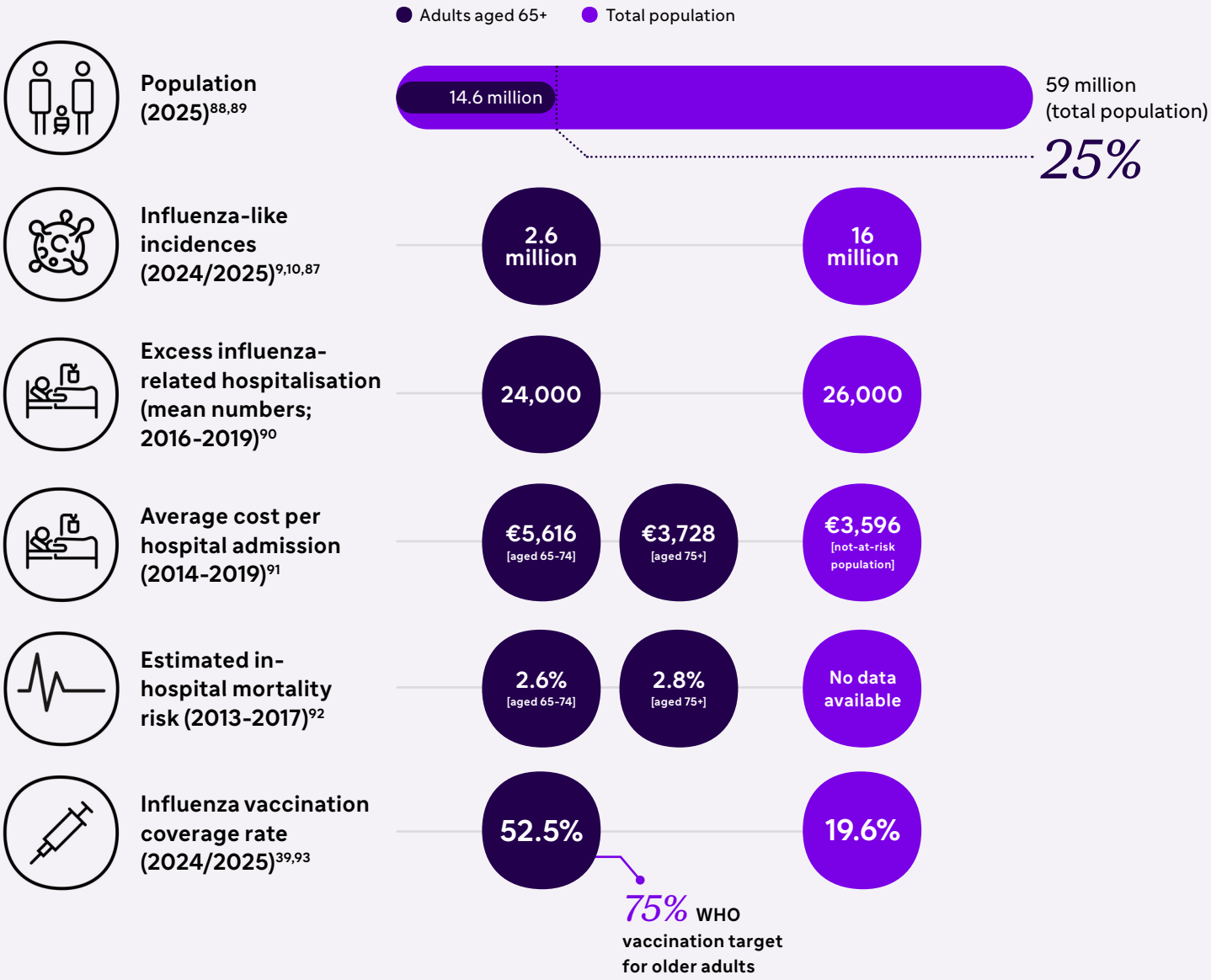
The drop in vaccination coverage is particularly concerning given the clear age gradient observed in influenza burden during the 2024/2025 season. Older adults experienced the highest rates of hospitalisation and influenza-related complications.

Strengthening influenza protection in Spain will require more than updated recommendations. It demands robust follow-through: ensuring appropriate formulations reach those most at risk, closing data gaps that obscure performance, and embedding real-world delivery metrics into post-season evaluations.

# Italy

Italy recorded its *highest-ever number of influenza-like incidence (ILI) cases in 2024/2025*,[9,10,87] yet persistent gaps in hospital and mortality data make it difficult to fully assess the impact – especially among older adults, who remain under-protected despite long-standing policy commitments.

## Estimated influenza burden



## Data and *Limitations*

Italy recorded *an estimated 16 million ILI cases during the 2024/2025 season — the highest incidence since national surveillance began*.[9,10,87] However, official data for age-specific hospitalisations and ICU admissions have not been published.

Adults over the age of 65 were the largest contributor to excess influenza-related hospitalisations. Over the course of three influenza season between 2016 to 2019, the 3-season mean number of excess influenza-related hospitalisations was approximately 24,000 for adults over the age of 65.[90] In comparison, the mean number of excess hospitalisations was 26,000 for the total population over the same period.[90]

Though it can be seen that older adults are more greatly impacted by the burden of influenza, the inconsistency in data collection reflects *persistent gaps in influenza surveillance*, making it difficult to fully quantify the impact of influenza — especially on older populations — or track year-on-year shifts in disease severity.

## The Economic *Impact*

The most recent cost data comes from a 2024 study analysing influenza seasons between 2014/2015 and 2018/2019, which estimated an average hospitalisation cost of €3,596 for people not considered to be at-risk.[91] The same study estimated that total direct costs (mostly hospitalisation-related) amounted to approximately €9.7 million, with around 95% of this borne by hospital care.[91] Notably, individuals aged 65 and older and those with comorbidities accounted for nearly half of these hospitalisation costs with adults aged 65-74 averaging €5,616 per hospitalisation, and those aged 75+ averaging €3,728 per hospitalisation.[91]

# Policy *Landscape*

Italy maintains a longstanding national recommendation for annual influenza vaccination and offers the vaccine free of charge to adults aged 60 and over.[94] Despite this, *vaccination coverage in this group was only 52.5% during the 2024/2025 influenza season, well below the WHO's 75% target*.[39,93]

For the 2024/2025 campaign, authorities authorised eight influenza vaccines, including formulations specifically indicated for older adults.[95] However, authorisation does not guarantee that all vaccines were marketed or available across the country. *Systemic barriers persist* — from regional tenders to uneven distribution logistics and inhomogeneous access to vaccination among Regions, and a declining number of general practitioners, which continues to impact timely and equitable vaccine delivery.[96,97]

The 2024/2025 season reinforced a recurring challenge: strong policy intent has not yet translated into consistent, real-world protection for high-risk groups. As Italy's population ages, improving both access and uptake among older adults will be critical to reducing the growing annual burden of influenza.

**Systemic barriers impact vaccination rates - despite free access for people aged 65 and over, eight vaccines being available and influenza vaccination being ingrained in national policy, barriers remain**

- *Ministry of Health guideline delays*
- *Regional tender delays*
- *Uneven distribution*
- *Fewer GPs*
- *Logistical inconsistencies*

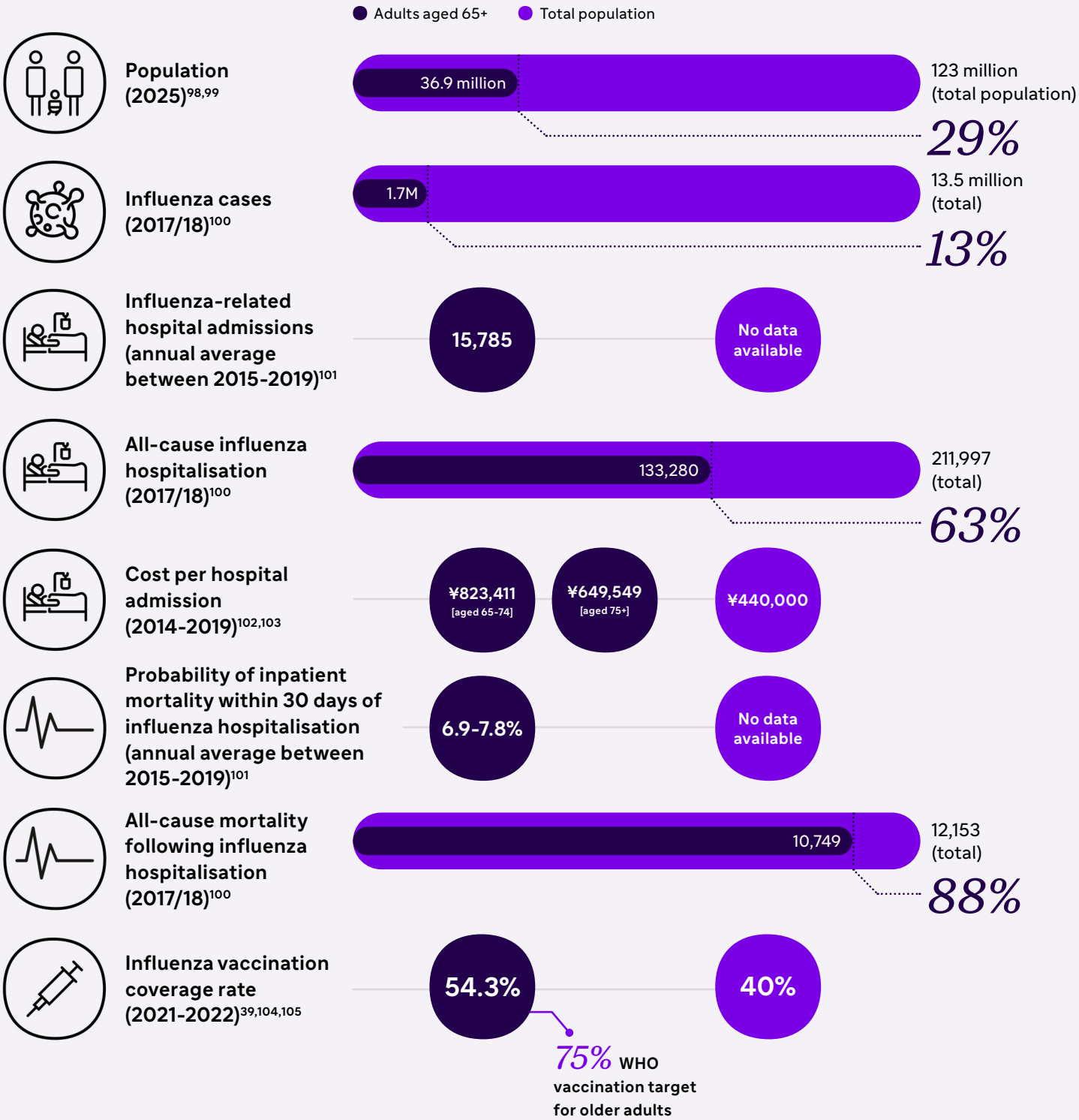
**Vaccination coverage in adults 65+ was 52.5%**

**The WHO vaccination coverage rate goal is 75% in this age group**

# Japan

Japan, already one of the world's most aged societies, entered the 2024/2025 influenza season with a long-standing *demographic vulnerability* and a *history of severe outbreaks*, but limited reporting and low vaccination uptake among older adults continue to hinder efforts to reduce the annual burden. Despite making up less than a fifth of total influenza cases, older adults over the age of 65 bore a higher burden of serious outcomes.

## Estimated influenza burden



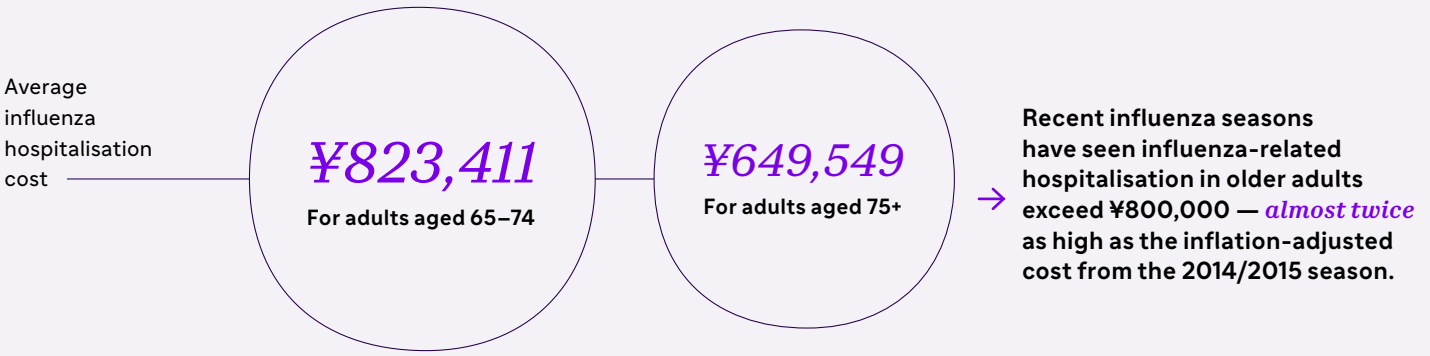
## Data and *Limitations*

Japan's 2024/2025 influenza season unfolded amid *one of the most severe outbreaks since modern surveillance began*. Comprehensive incidence data for the full season remain unpublished, and surveillance continues to rely on sentinel reporting rather than population-wide estimates. The *most comprehensive data available for the total Japanese population comes from the 2017-2020 period*.[100] However, the Noda publication primarily reported all-cause hospitalisation and mortality for people, which means these estimates likely include cases unrelated to influenza.[100] The Arashiro and de Courville publications reviewed influenza data from four seasons between 2015 and 2019.[101,102] This data only reported on data for older adults and thus it is not possible to effectively compare the severity of influenza in this population against the total Japanese population.[101,102]

## The Economic *Impact*

Sanofi-derived projections estimated an average hospitalisation cost of ¥823,411 per influenza admission in adults aged 65–74 years and an average cost of ¥649,549 in people aged 75 and older.[102]

A 2017 study based on the 2014/2015 influenza season estimated the average cost of influenza-related hospitalisation at $5,402 per patient, which would be the equivalent of approximately ¥440,000, when adjusted for inflation.[103] This indicates that the recent influenza seasons have seen the average cost of influenza hospitalisations double within a decade.




## Policy *Landscape*

Japan faces a unique challenge in influenza preparedness due to its rapidly ageing demographic. With over 36 million people aged 65 and older — accounting for approximately 29% of the population — *Japan is one of the most elderly societies in the world*.[98] This high proportion of older adults amplifies the potential health system impact of seasonal influenza and underscores the importance of ensuring effective protection for this group.

Despite national subsidies and longstanding vaccination recommendations, influenza *vaccine coverage among older adults has historically remained low*.[104,105] In 2022, fewer than 50% of adults aged 65 and older were vaccinated.[105]

In response, Japan's Ministry of Health launched public information campaigns and introduced new access measures, including:[106]

- Tailored communication materials for older adults
- Expanded promotional efforts through public channels

However, no updated vaccination coverage data for 2024/2025 has been published — limiting the ability to evaluate the real-world impact of these initiatives.

Japan's case reflects a recurring pattern seen across multiple markets: strong policy intent without sufficient visibility on delivery and outcomes. In the absence of consistent data and improved uptake among high-risk groups, the health system remains exposed to recurring seasonal strain.

# What *needs to change*

The 2024/2025 influenza season exposed *recurring weaknesses in influenza preparedness across all assessed markets* — with older adults bearing the brunt of hospitalisations, mortality, and system pressure. To address these persistent gaps, three strategic shifts are essential: stronger surveillance, data collection and reporting systems, targeted vaccination strategies, and a redefinition of value.

## 1 Enhancing surveillance and data infrastructure

The variability and inconsistency in data collection across countries have significantly impeded accurate assessments and effective policy responses. Though many publications highlighted the severity of the 2024/2025 season, it was difficult to effectively assess the severity of the last season, as surveillance data and economic data for the season have not yet been published at the time of writing. Enhanced surveillance and standardised reporting practices are critical for informed decision-making.

*Recommended actions:*

- Establish standardised influenza metrics, including age-disaggregated hospitalisation and mortality data
- Invest in real-time surveillance for clinical and economic burden
- Create interoperable data-sharing platforms to enable quicker public health action

## 2 From broad coverage to individual needs

Influenza programmes have traditionally focused on maximising overall uptake, but the 2024/2025 season revealed that volume alone is not enough — particularly for high-risk groups. Older adults remain under-protected despite formal eligibility.

*Recommended actions:*

- Scale up the use of age-appropriate vaccines and protection for older adults
- Deliver targeted outreach to address hesitancy and improve uptake in older populations
- Align vaccine delivery with peak season timing, supported by local monitoring systems
- Integration of influenza vaccination into routine care for chronic conditions, delivered not only by GPs, but also by geriatricians, cardiologists, pulmonologists, etc.

Delivering better protection — especially for older adults — requires coordinated, evidence-led change. These shifts must be owned jointly by policymakers, healthcare providers, and industry. The data suggest that vaccine coverage that takes into account needs of specific populations, systemic value, and strength of data may result in improved outcomes and reduce burden to patients and health systems.

## 3 From unit cost to system value

Current procurement strategies frequently prioritise low unit costs, inadvertently increasing long-term healthcare expenditures. The 2024/2025 season demonstrated how lower upfront vaccination investments can result in significantly higher downstream costs through increased hospitalisations, ICU admissions, and extended recoveries.

*Recommended actions:*

- Use health economic frameworks that reflect long-term system savings, not just per-dose price
- Integrate cost–benefit analysis into national vaccine policy and tendering processes
- Recognise vaccines as preventive investments, not discretionary spends

# Methodology

Accurately quantifying the health and economic burden of influenza is challenging due to symptom overlap with other respiratory illnesses, varying diagnostic criteria, and differences in healthcare practices per country. These factors result in *wide estimate ranges that require cautious interpretation* — particularly in older adults with comorbidities.

The Flunomics report assesses the *real-world impact of influenza in older adults during the 2024/2025 season* across seven priority markets: the United States, England, France, Germany, Italy, Spain, and Japan. It brings together publicly available epidemiological, economic, health system, and policy data, supplemented with historical trends and light-touch modelling where real-time figures were incomplete.

To ensure comprehensive coverage and accuracy, data for this analysis were sourced from the following national influenza surveillance systems:

| Country | Data sources |
|---|---|
| United States | Centers for Disease Control and Prevention (CDC) providing weekly influenza surveillance data, including incidence rates, hospitalisation estimates, and mortality statistics. |
| England | UK Health Security Agency (UKHSA) and National Health Services (NHS) data, including hospital admission figures and excess mortality reports. |
| France | Santé Publique France surveillance reports and Sentinelles Network consultations data, providing influenza incidence and hospitalisation rates. |
| Germany | Robert Koch Institute (RKI) and SurvStat database, offering laboratory-confirmed influenza cases, hospitalisation, and mortality data. |
| Spain | Centro Nacional de Epidemiología, reporting influenza incidence rates and hospitalisation data by age groups. |
| Italy | Istituto Superiore di Sanità, providing influenza incidence data complemented by historical hospitalisation rates and economic cost estimations from published retrospective studies. |
| Japan | Ministry of Health, Labour and Welfare (MHLW) and national healthcare studies providing hospitalisation and mortality figures, supplemented by historical data due to gaps in real-time reporting. |

Economic data were drawn from published hospital cost studies and national health economic reports. The report also includes influenza-related hospitalisation and mortality data based on Sanofi approved projections. Vaccination policy and procurement context was derived from public immunisation guidelines and official government communications.

## Limitations and *Assumptions*

This methodology assumes that historical data provide a valid baseline for estimating 2024/2025 impacts. However:

- Data quality and completeness varied widely across countries
- Age-specific and cost data were inconsistently reported
- Estimates are directional and illustrative, not a substitute for national economic evaluations or clinical datasets

These limitations reinforce the urgent need for standardised, age-disaggregated surveillance and cost reporting across settings.

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