



# **Epidemiology of hepatitis B in Ireland**

**Provisional - data validation in progress**

Niamh Murphy, July 2023

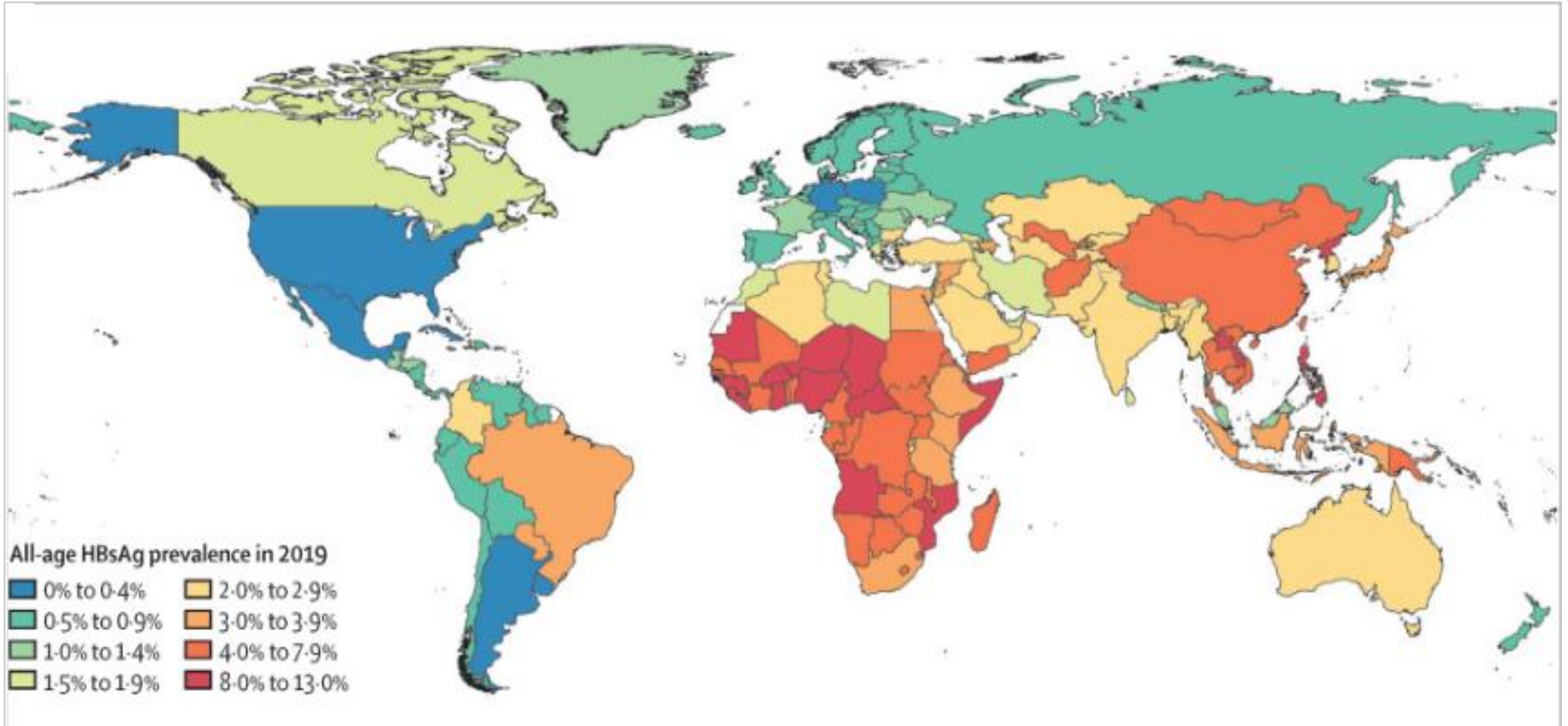
# Hepatitis B virus (HBV) (1)

- Hepatitis B is a viral infection, which causes inflammation of the liver
- It is transmitted through contact with semen, blood or other body fluids from an infected person
- **Most common means of transmission:** from mother to baby around the time of birth, unprotected sex & sharing needles when injecting drugs
- **Less common means of transmission:** unscreened blood or blood products (very rare in Ireland), accidental needlestick/blood exposure in healthcare settings, household/close contact particularly in early childhood, sharing razors or toothbrushes
- 50-100 times more infectious than HIV
- Incubation period (time from infection to onset symptoms) is 6 weeks to 6 months, average 2-3 months

# Hepatitis B virus (HBV) (2)

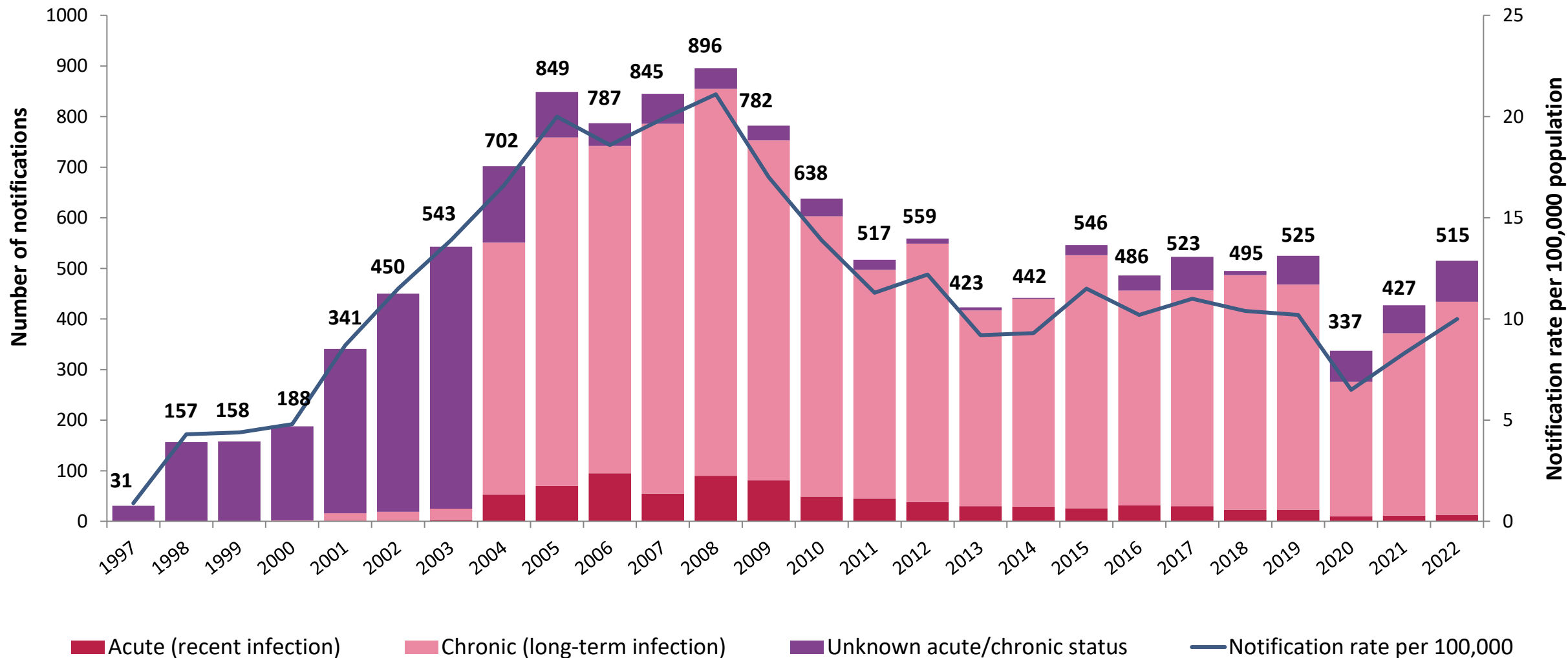
- **Acute (new infection):** <10% children and 30-50% adults develop symptoms when first infected
- Symptoms include: loss of appetite, nausea, vomiting, abdominal discomfort, joint pain, fever, fatigue, dark urine, pale stools, jaundice
- **Chronic (long-term) infection** develops in 80-90% of those infected as infants, 30-50% of children <6 years and <5% of those infected as adults
- Chronic infection can lead to chronic liver disease, cirrhosis, liver cancer or liver failure, usually over 20-30+ years
- World Health Organization (WHO) estimates that almost 300 million people are chronically infected worldwide
- **Vaccine preventable** – universal infant vaccination introduced in Ireland in 2008. Vaccine also recommended for high risk groups:  
<https://www.hse.ie/eng/health/immunisation/hcpinfo/guidelines/chapter9.pdf>
- **Long term viral suppression** is possible with treatment using nucleoside/nucleotide analogues (TAF, tenofovir alafenamide; ETV, entecavir; TDF, tenofovir disoproxil fumarate)  
[\*EASL clinical practice guidelines 2017 hepatitis B\*](#)

# Worldwide prevalence of hepatitis B infection

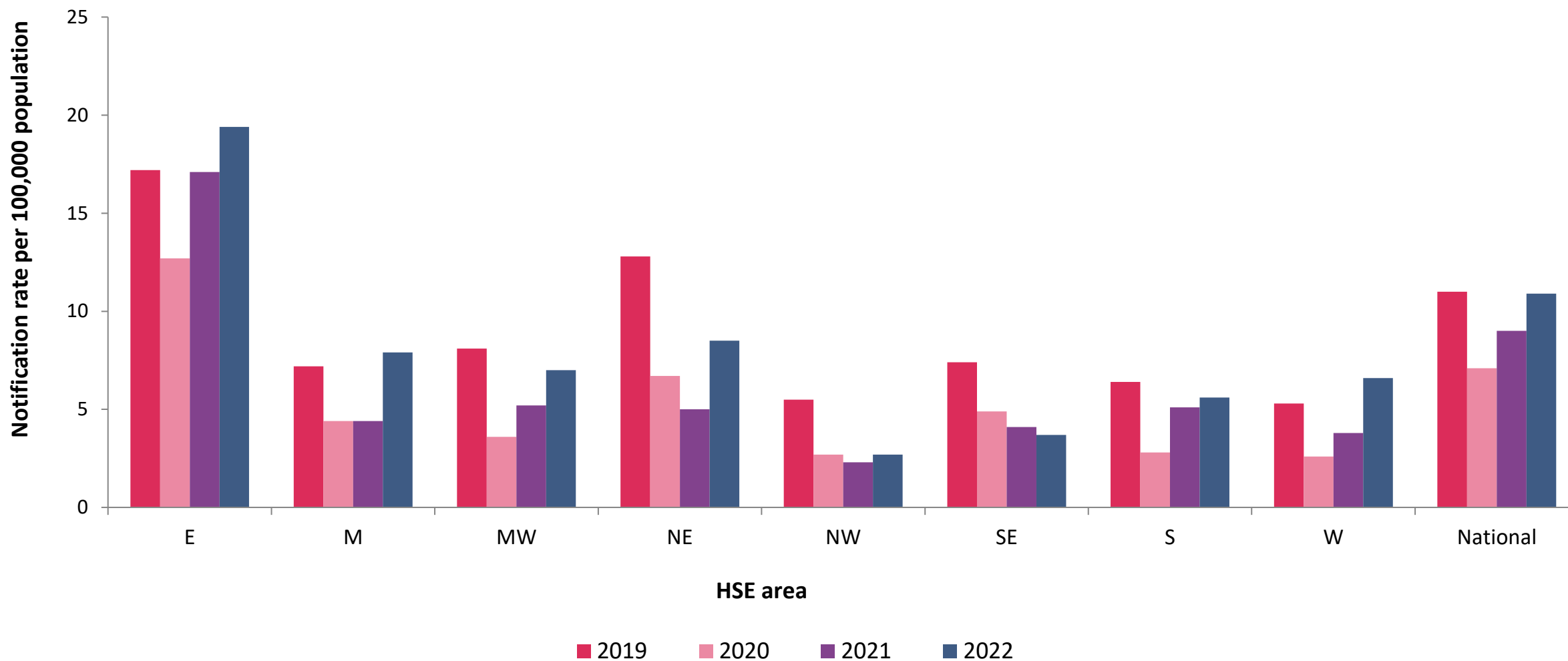


Source: [https://www.thelancet.com/journals/langas/article/PIIS2468-1253\(22\)00124-8/fulltext](https://www.thelancet.com/journals/langas/article/PIIS2468-1253(22)00124-8/fulltext)

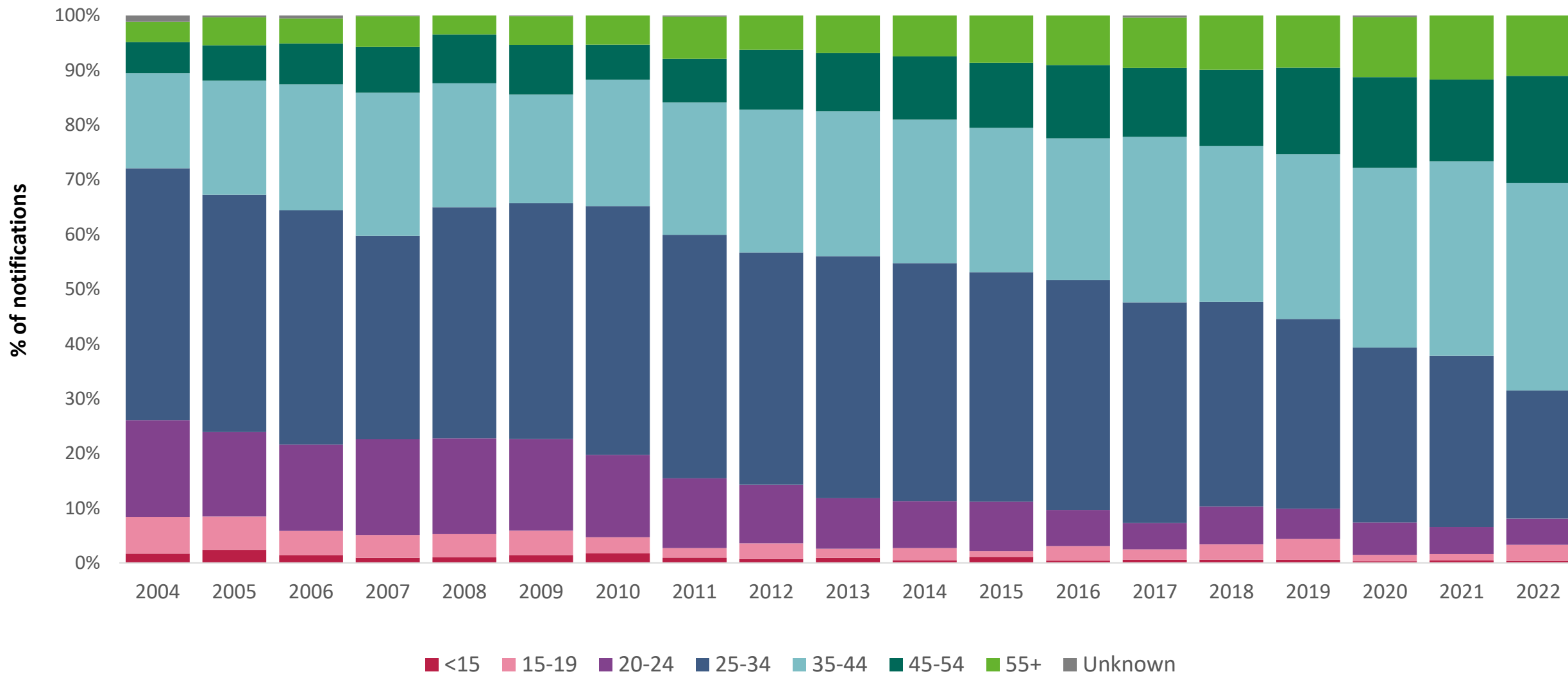
# Number of notifications of hepatitis B, and notification rate per 100,000 population, in Ireland, 1997-2022



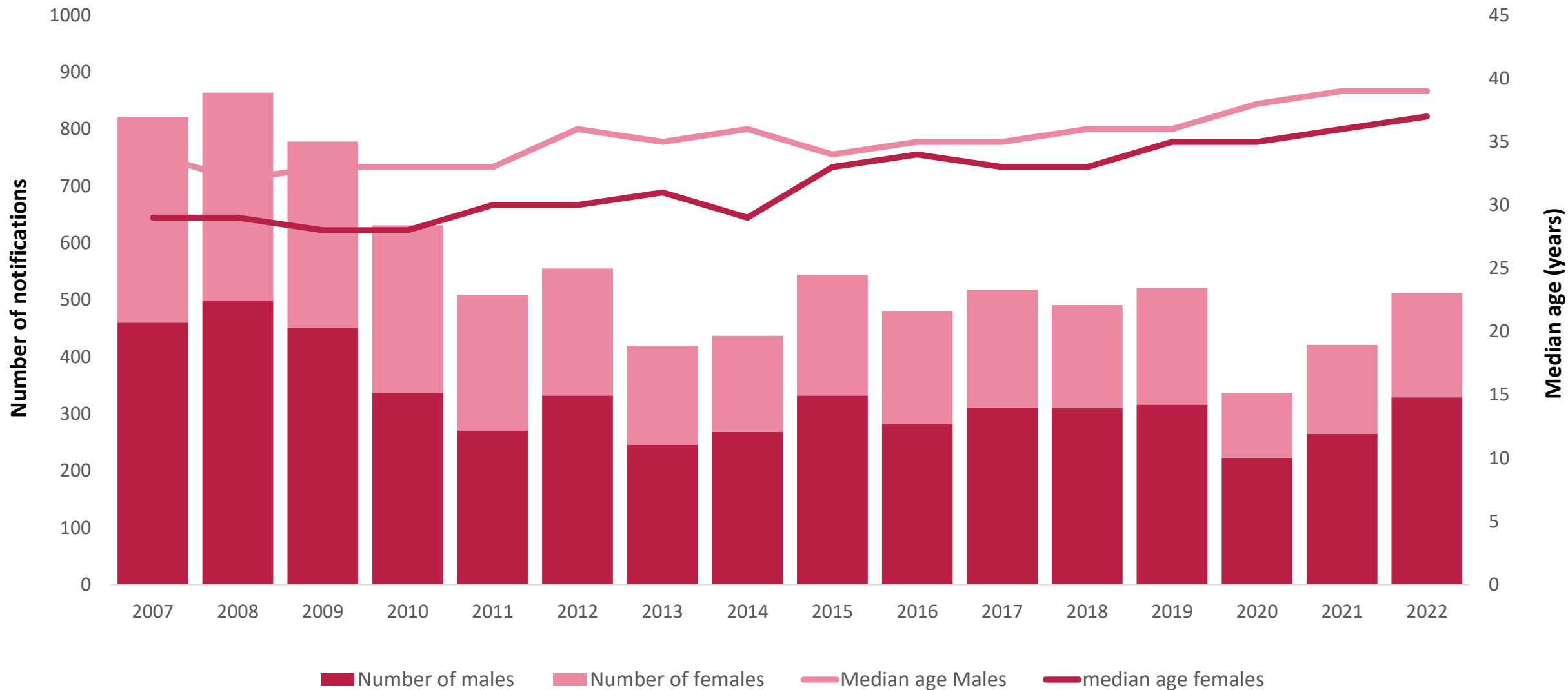
# Hepatitis B notification rates per 100,000 population, by HSE area in Ireland, 2019-2022



# Trends in % cases by age group for **all** cases of hepatitis B notified in Ireland, 2004-2022



# Trends in **all** hepatitis B notifications, by sex and median age, in Ireland, 2004-2022



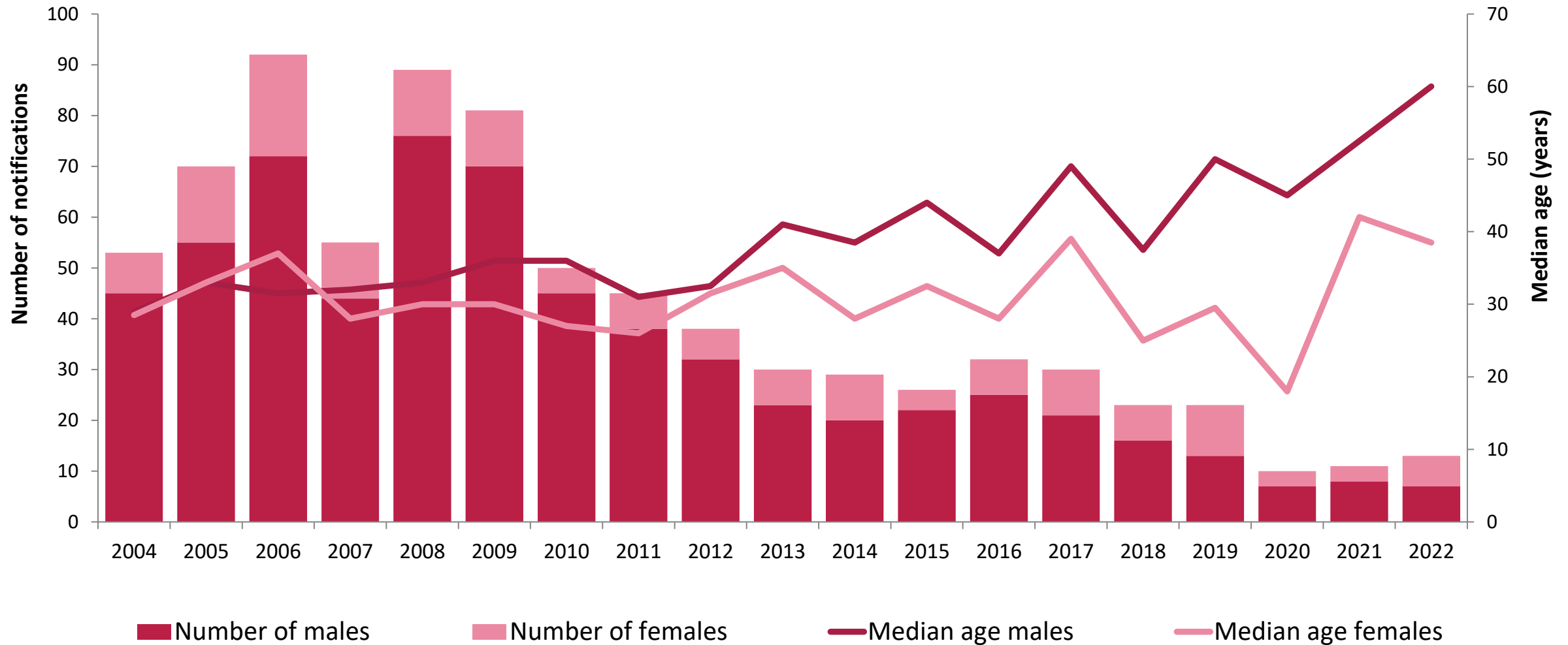


# Summary of acute hepatitis B in Ireland, 2007-2022

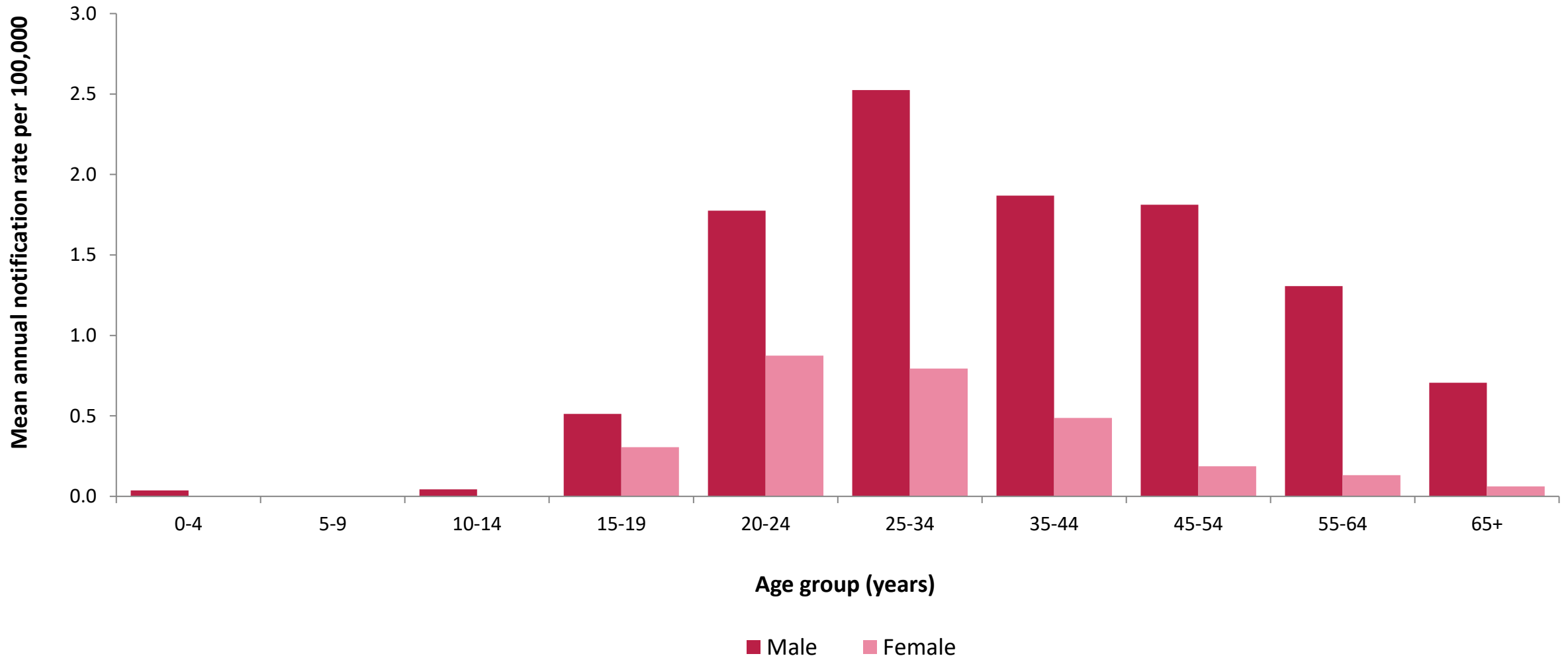


- 7% of cases of hepatitis B notified 2007-2022 were acute infections
- 585 acute HBV notifications in this time period (annual average: n=37)
- Decrease in recent years:
  - Average annual acute HBV notifications 2007-2017: 46
  - Average annual acute HBV notifications 2018-2022: 16
- 80% of acute cases notified 2007-2022 were male (M:F = 4:1)
- Annual median age at notification fluctuates, but increasing trend: 29 years in 2007, 43 years in 2022
- Where risk factor data available, 67% of cases were sexually acquired
- Sexual orientation reported for 94% of sexually acquired cases: 55% heterosexual, 45% men who have sex with men
- Where country of birth was available, 70% of acute cases were born in Ireland
- 13 acute cases of hepatitis B notified in 2022 (3% of notified hepatitis B cases)
  - 27% born in Ireland, 27% in Asia, 27% in sub-Saharan Africa and 18% in central or eastern Europe
  - 7 males, 6 females – median age 43 years

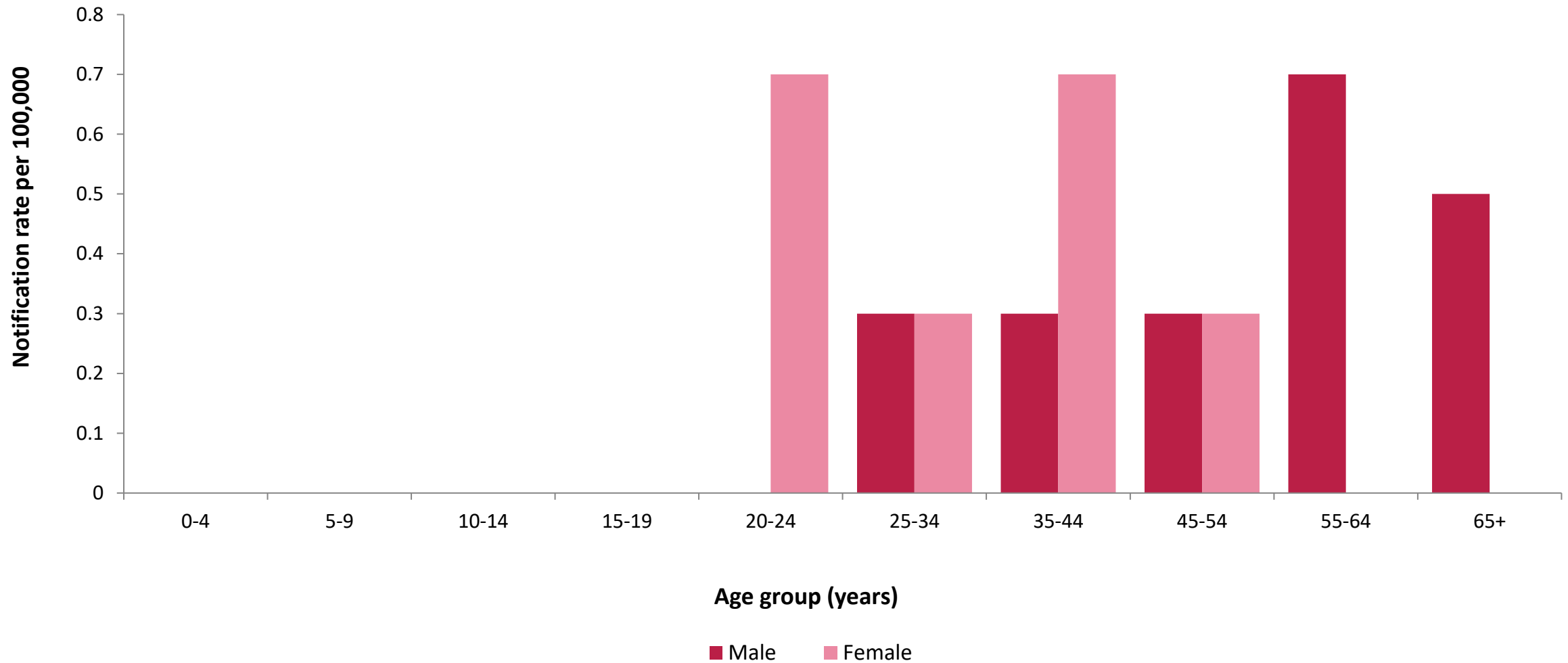
# Trends in acute hepatitis B notifications, by sex and median age, in Ireland, 2004-2022



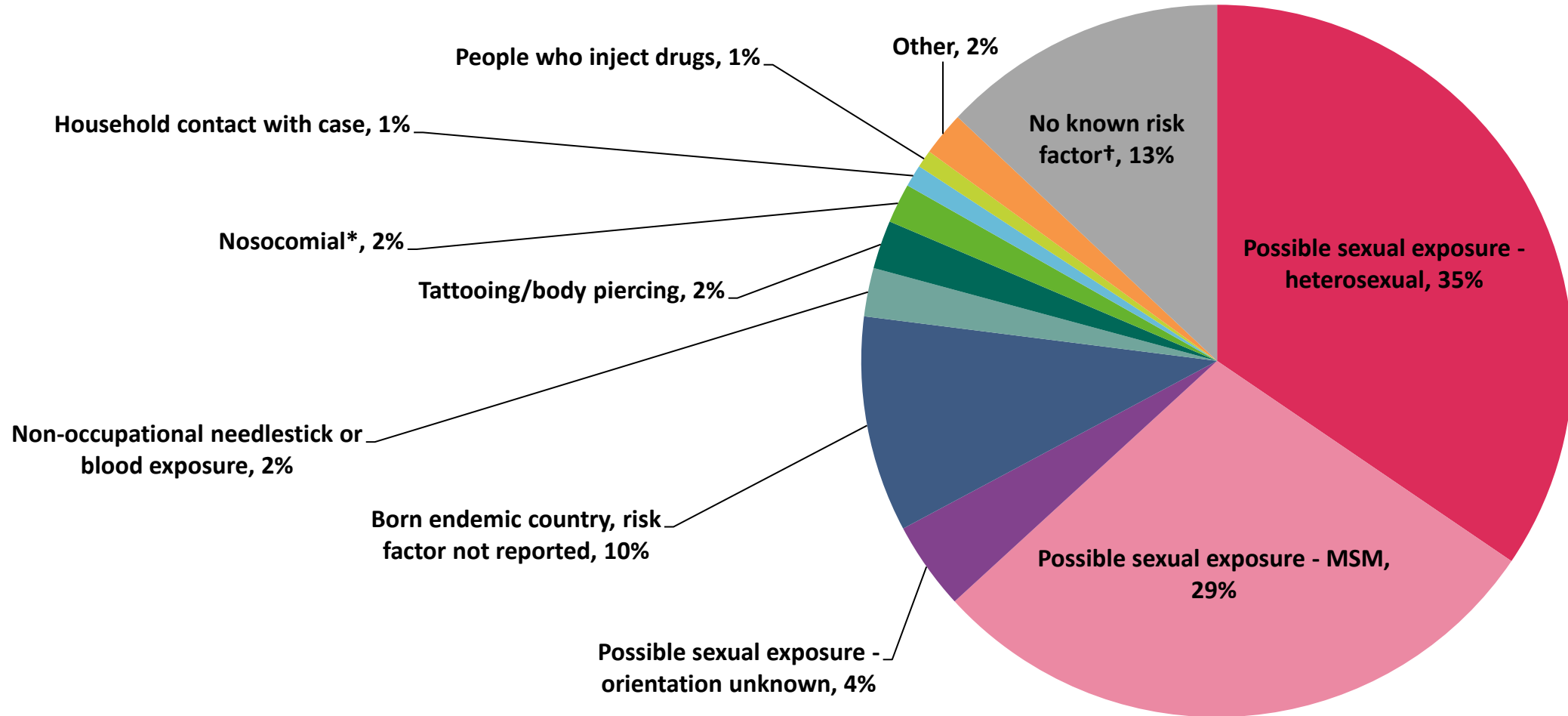
# Mean annual age and sex specific notification rates per 100,000 population for **acute** cases of hepatitis B in Ireland (n=585), 2007-2022



# Age and sex specific notification rates per 100,000 population for acute cases of hepatitis B in Ireland (n=13), 2022

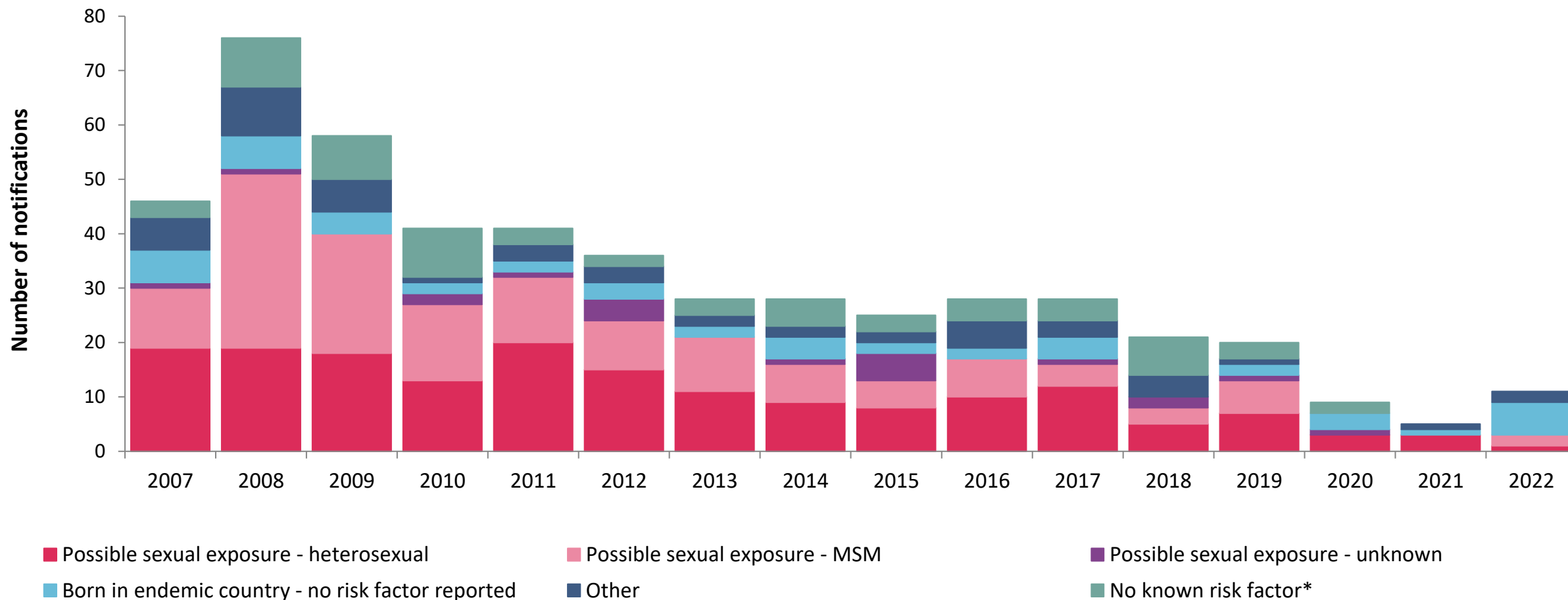


# Most likely risk factor (%) for **acute** cases of hepatitis B notified in Ireland, 2007-2022 (where data available, n=501, 86%)



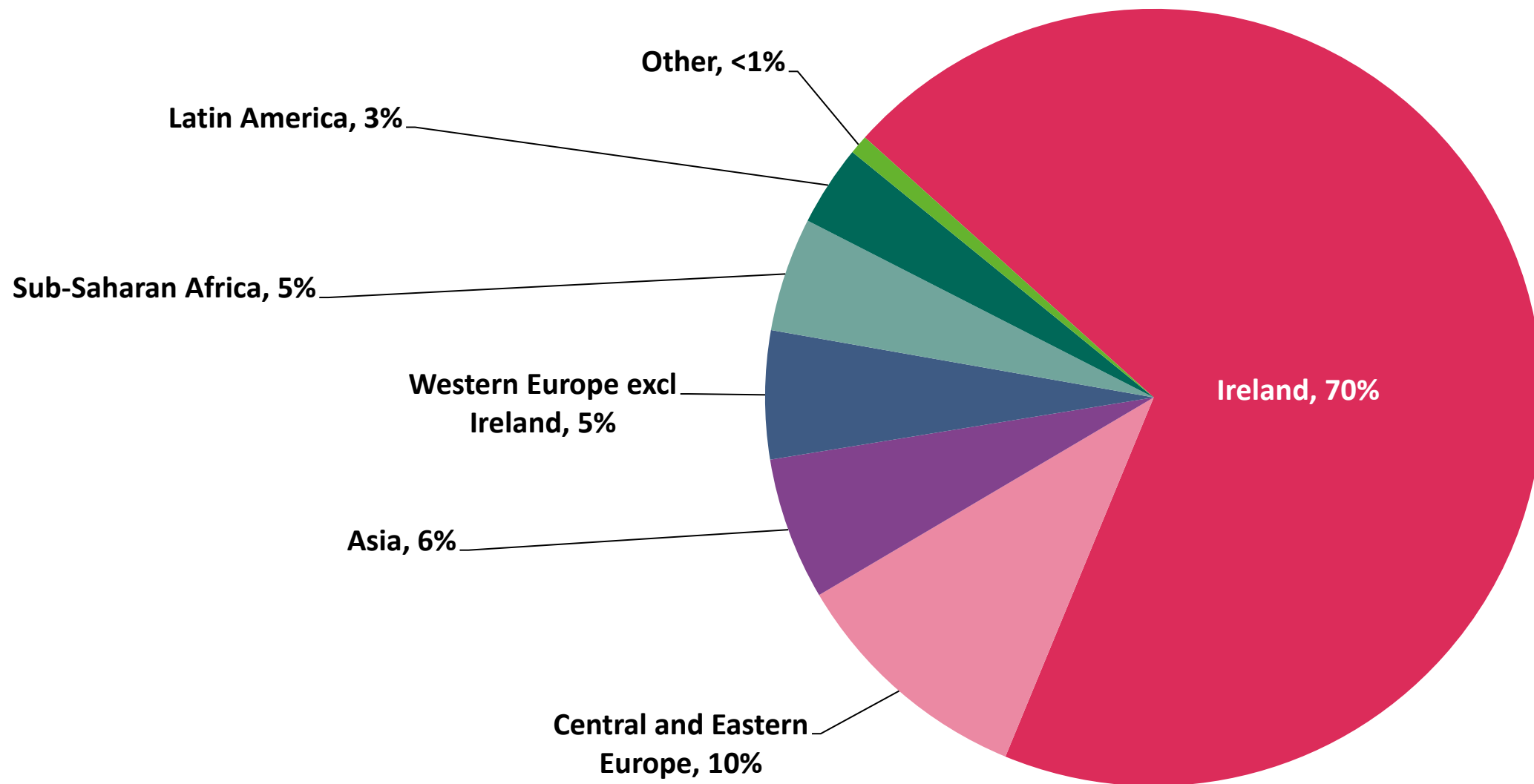
†No known risk factor refers to cases where information on risk factor was collected but no risk factor was identified. \*Nosocomial risk factors include surgery, dental work and blood products (in Ireland/outside Ireland).

# Trends in most likely risk factor for **acute** cases of hepatitis B notified in Ireland, 2007-2022 (data available, n=501, 86%)

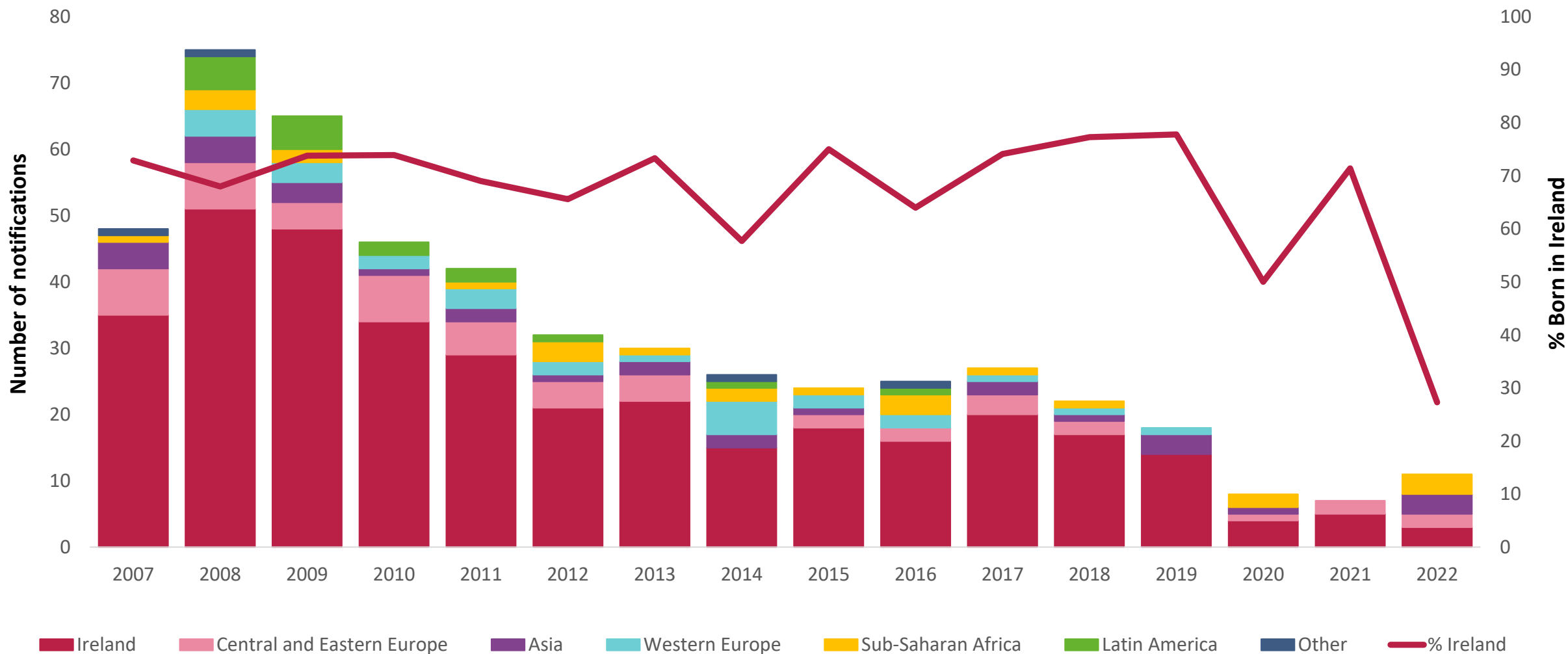


\*No known risk factor refers to cases where information on risk factor was collected but no risk factor was identified.  
Trends in acute cases should be interpreted with caution due to the low number of cases reported each year.

# Country/region of birth (%) for **acute** cases of hepatitis B notified in Ireland, 2007-2022 (where data available, n=506, 87%)



# Trends in country/region of birth for **acute** cases of hepatitis B notified in Ireland, 2007-2022 (data available, n=506, 87%)



\*Trends in region of birth for acute cases should be interpreted with caution due to the low number of cases reported each year

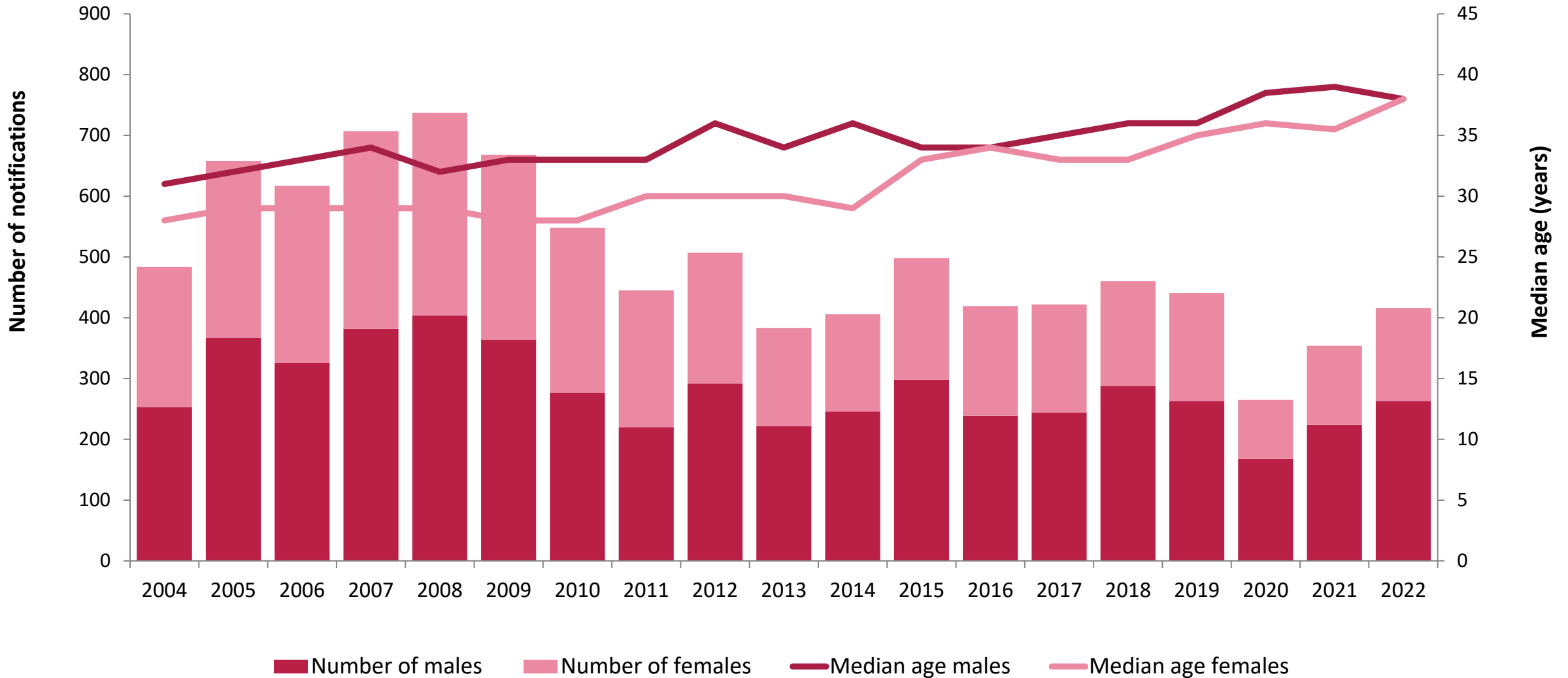


# Summary of chronic hepatitis B in Ireland, 2007-2022

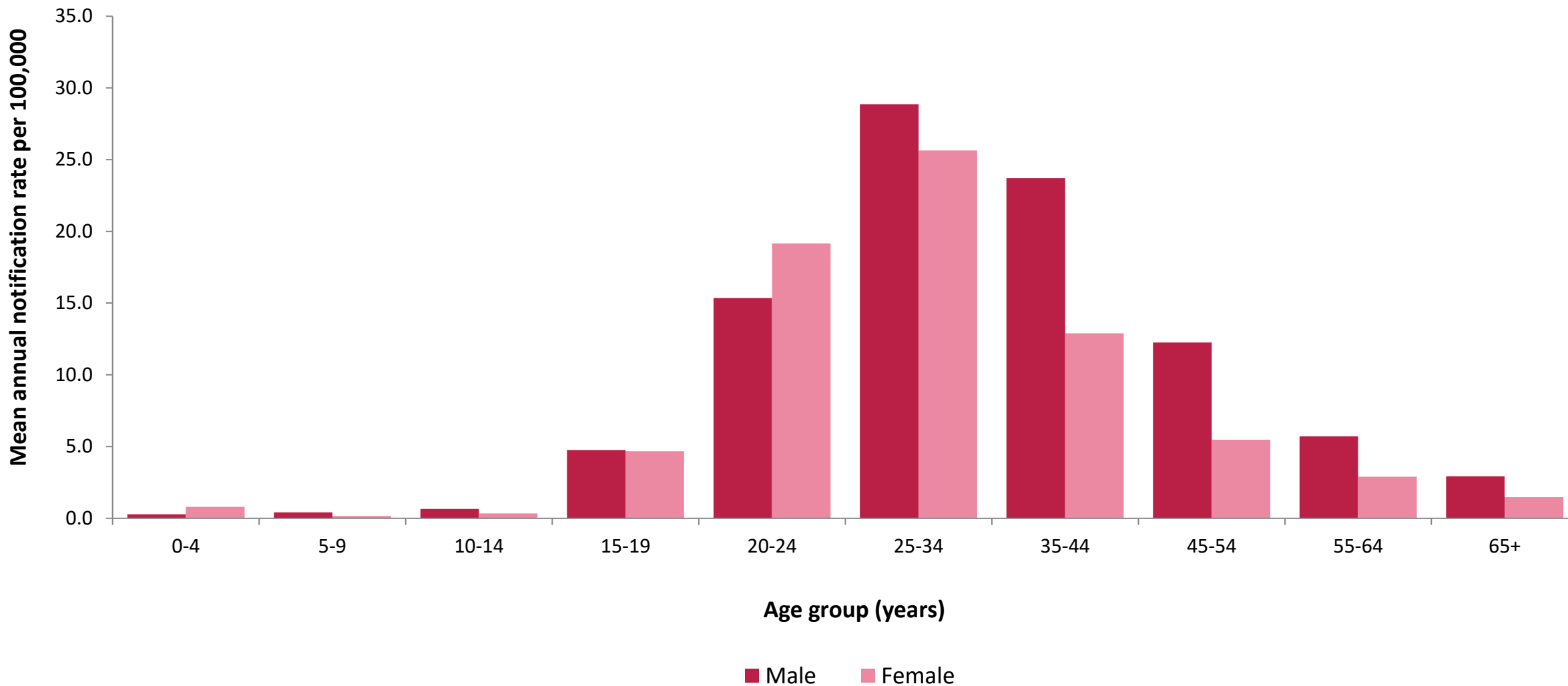


- 93% of cases of hepatitis B notified 2007-2022 were chronically infected
- 7,791 chronic HBV notifications in this time period (annual average: n=487)
- Decrease in 2020 and 2021, increase in 2022 (similar to pre-pandemic levels):
  - 421 chronic cases of hepatitis B were notified in 2022
  - Acute/chronic status not reported for an additional 81 cases in 2022 (73 likely to be chronic based on lab results)
- 57% of chronic cases notified 2007-2022 were male
- Mean ages at notification (years): 37 for males, 33 for females, 35 for all
- Median ages at notification (years): 35 for males, 31 for females, 33 for all
- 2022: 63% chronic cases male, median age for both males and females was 38 years
- Most chronic cases were born and infected outside of Ireland, mostly in central & eastern Europe, Asia and sub-Saharan Africa
- It is likely that most became infected at birth or in early childhood and have been infected for decades
- Trends in chronic cases of hepatitis B notified in Ireland mirror trends in immigration

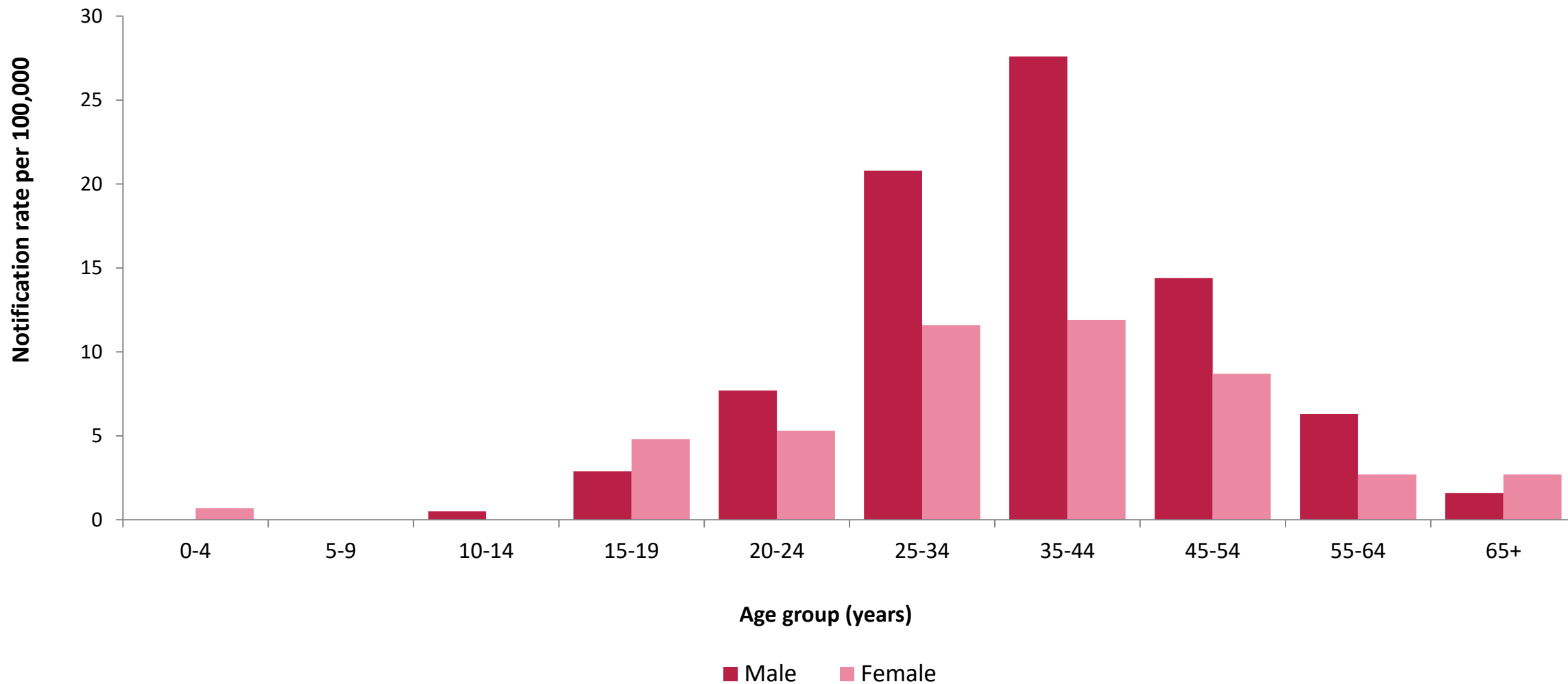
# Trends in **chronic** hepatitis B notifications, by sex and median age, in Ireland, 2004-2022



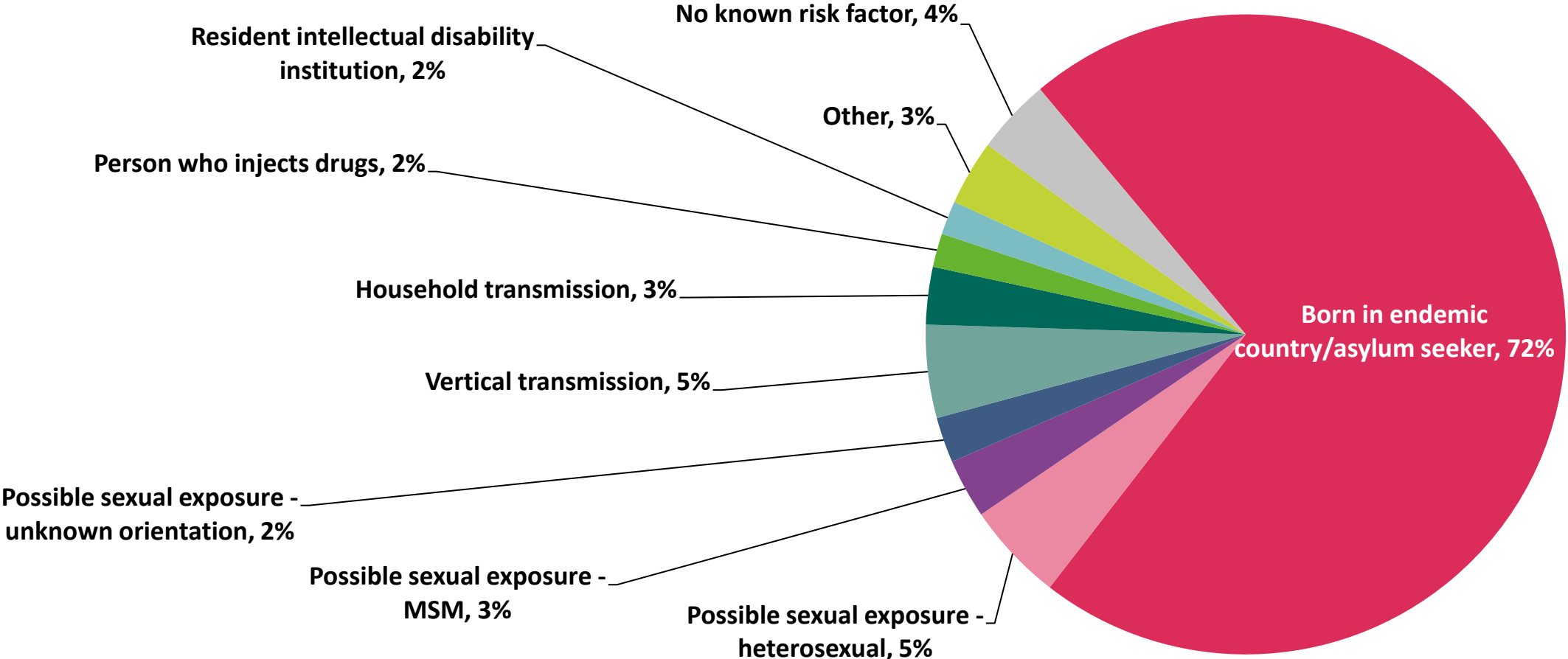
# Mean annual age and sex specific notification rates per 100,000 population for **chronic** cases of hepatitis B in Ireland (n=7,791), 2007-2022



# Age and sex specific notification rates per 100,000 population for chronic cases of hepatitis B in Ireland (n=421), 2022

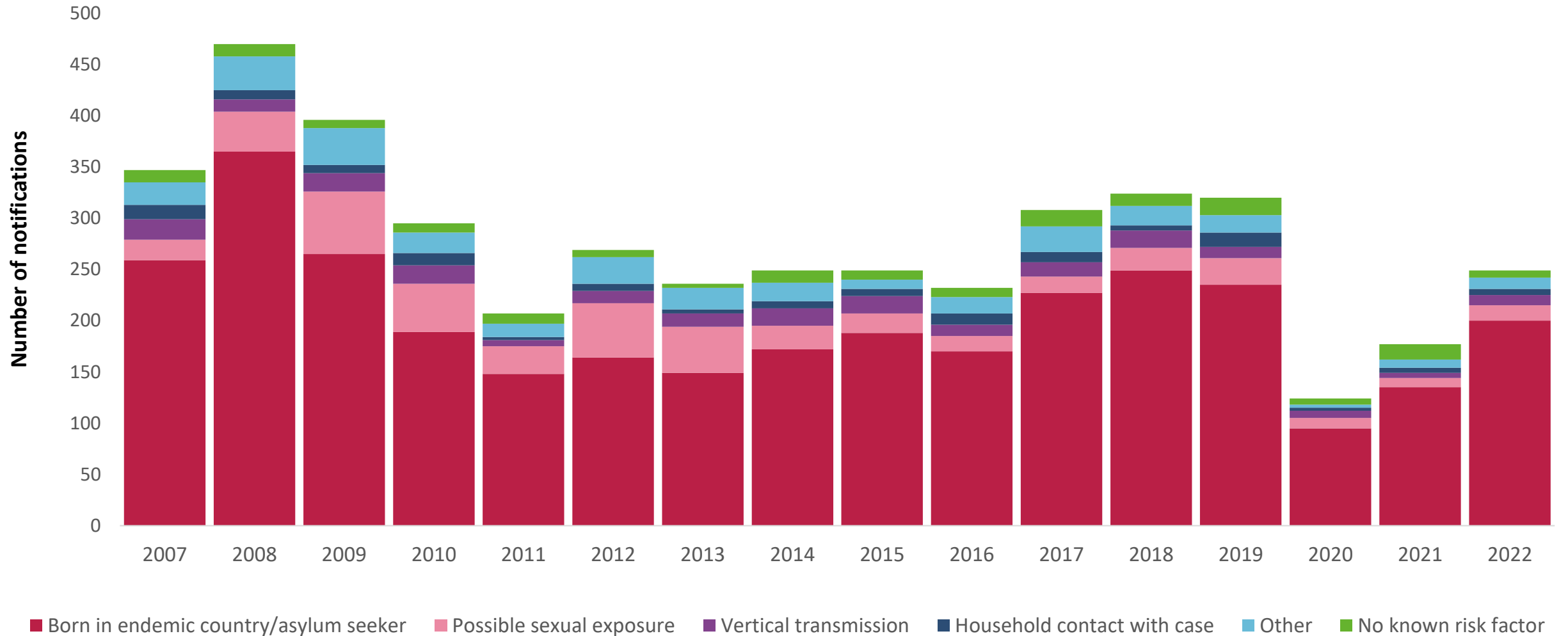


# Most likely risk factor (%) for **chronic** cases of hepatitis B notified in Ireland, 2007-2022 (where data available, n=4,452, 57%)



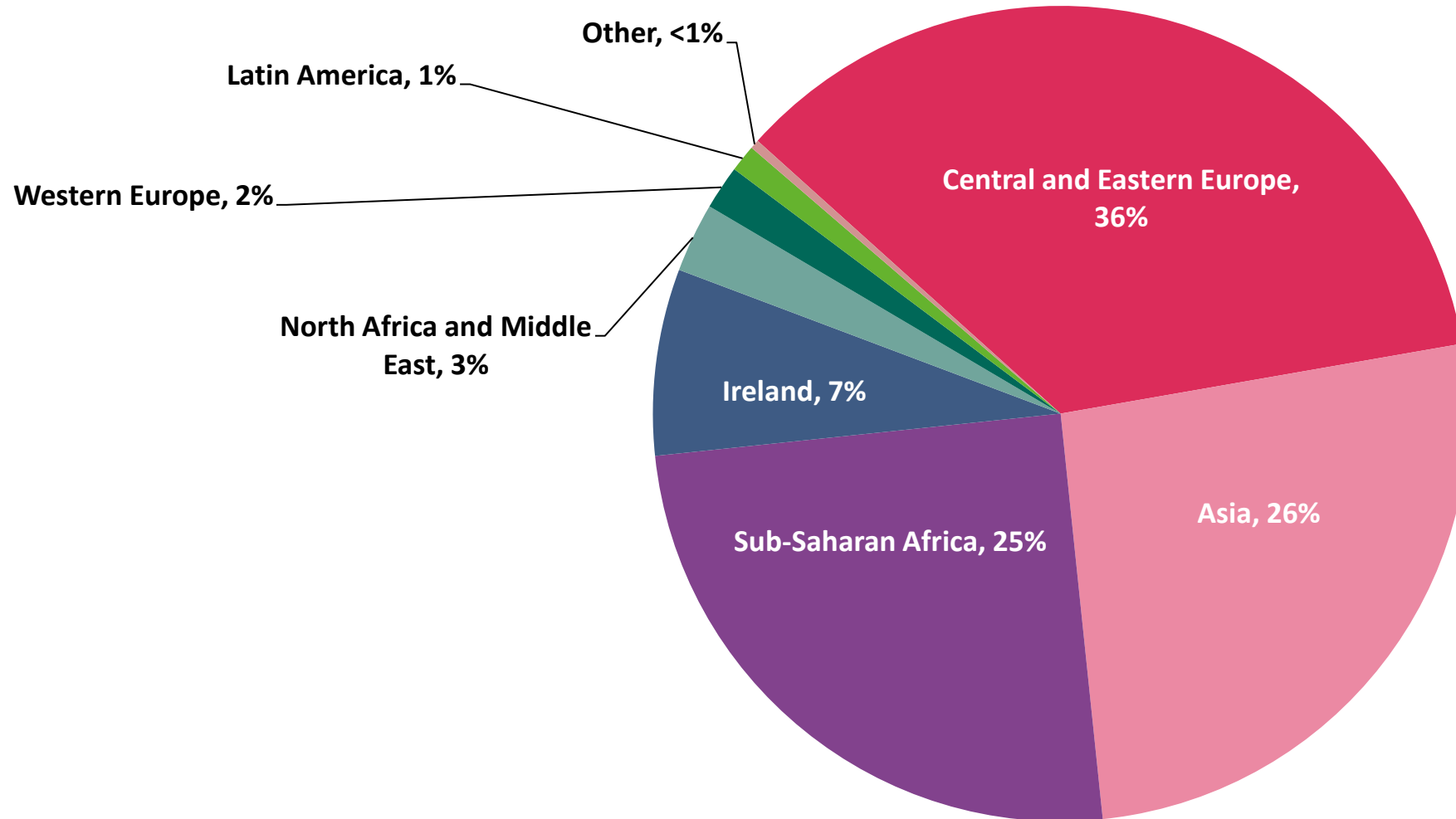
**Born in endemic country (HBsAg prevalence of 2% or higher)/asylum seeker** is used as a proxy for risk factor when no risk factor information has been reported or no other risk factors have been identified. Some of the cases with information on mode of transmission were also born in endemic countries – **79% of all chronic cases** with information on country of birth or asylum seeker status **were born in endemic countries or were International Protection applicants.**

# Trends in most likely risk factor for **chronic** cases of hepatitis B notified in Ireland, 2007-2022 (data available, n=4,452, 57%)

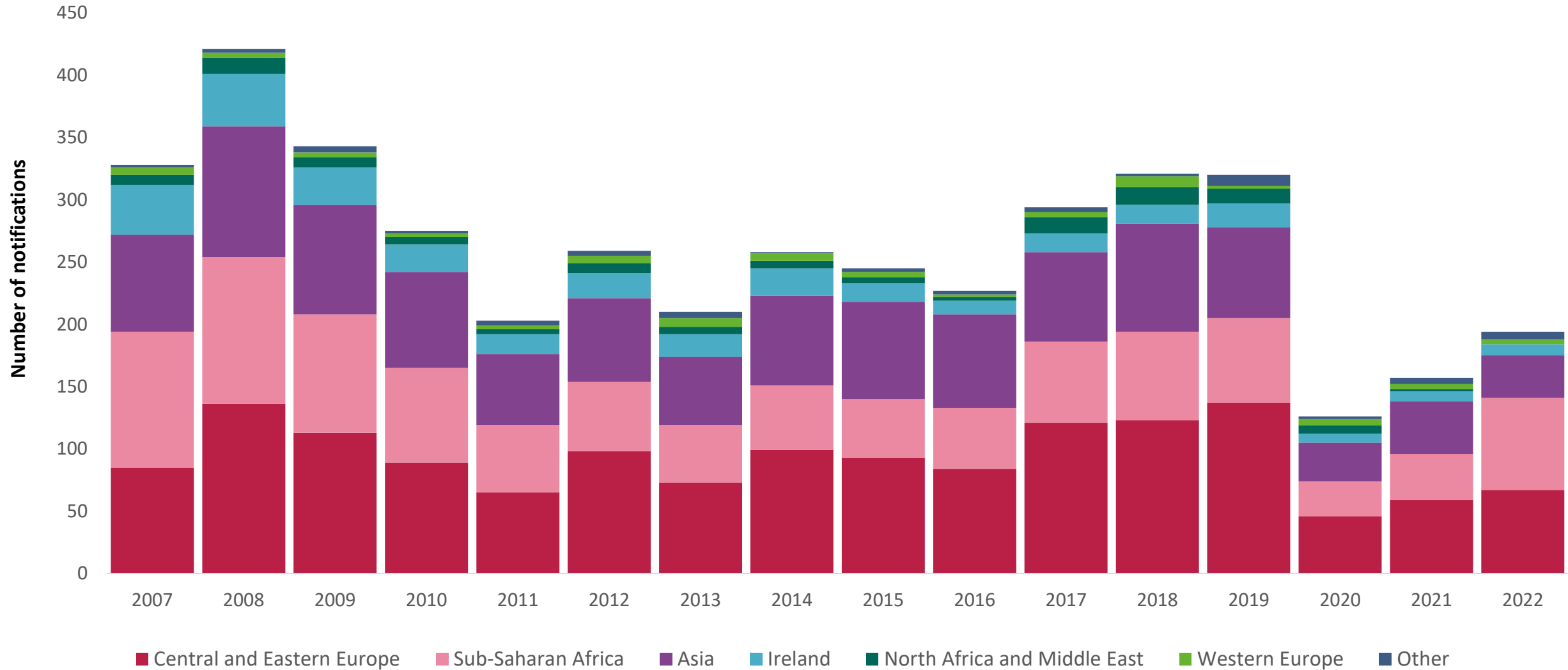


**Endemic country:** countries with reported HBsAg prevalence of  $\geq 2\%$

# Country/region of birth (%) for **chronic** cases of hepatitis B notified in Ireland, 2007-2022 (where data available, n=4,181, 54%)



# Country/region of birth for **chronic** cases of hepatitis B notified in Ireland, 2007-2022 (where data available, n=4,181, 54%)

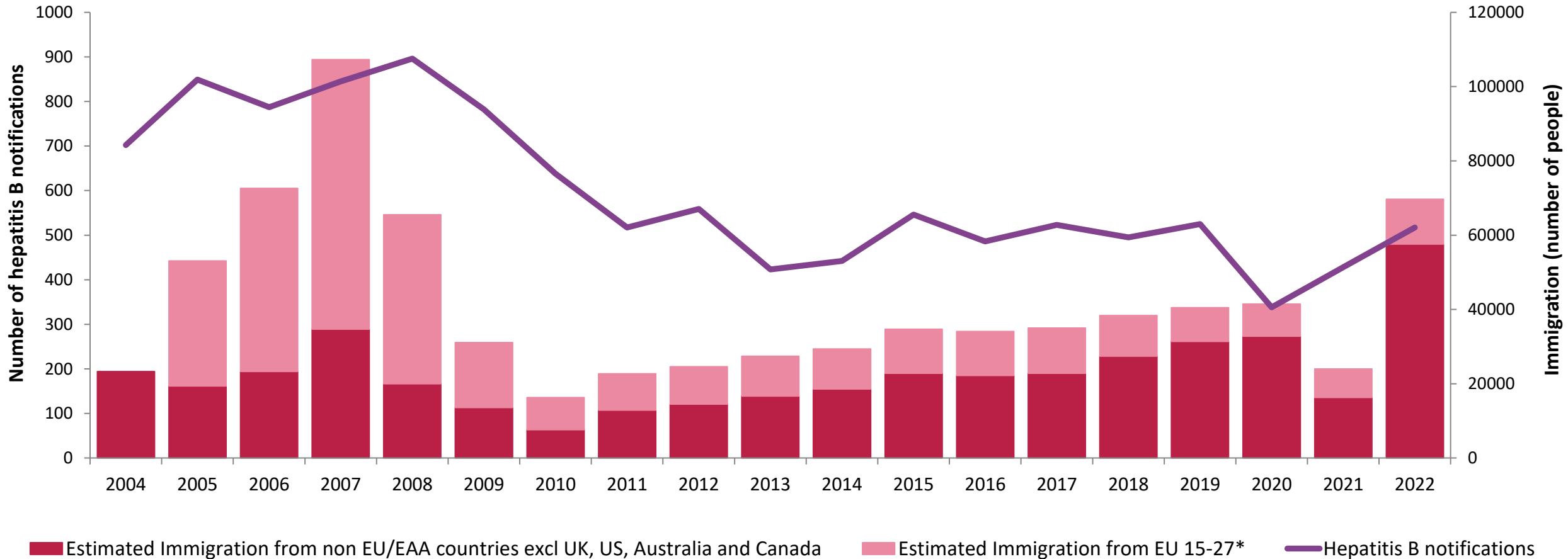




# Hepatitis B notifications in the first 6 months of 2023

- 293 cases of hepatitis B notified in the first half of 2023
  - 30% increase compared to same period 2022
- 5 acute infections (2%), 282 chronic infections (96%) and status not reported for 6
- 89% of cases were aged 25-54 years, median age 39 years, mean age 40 years
- 69% of cases were male
- Some information on risk factor or country of birth was available for about half of cases
  - 86% were born in an endemic country
  - The most common countries of birth were in sub-Saharan Africa (29%), eastern Europe (23%), south/south east Asia (18%) and central Europe (15%)
  - 6% of cases were born in Ireland

# Number of hepatitis B notifications in Ireland and estimated number of immigrants from EU15-27\* & non EU/EEA countries\*\*, 2004-2022

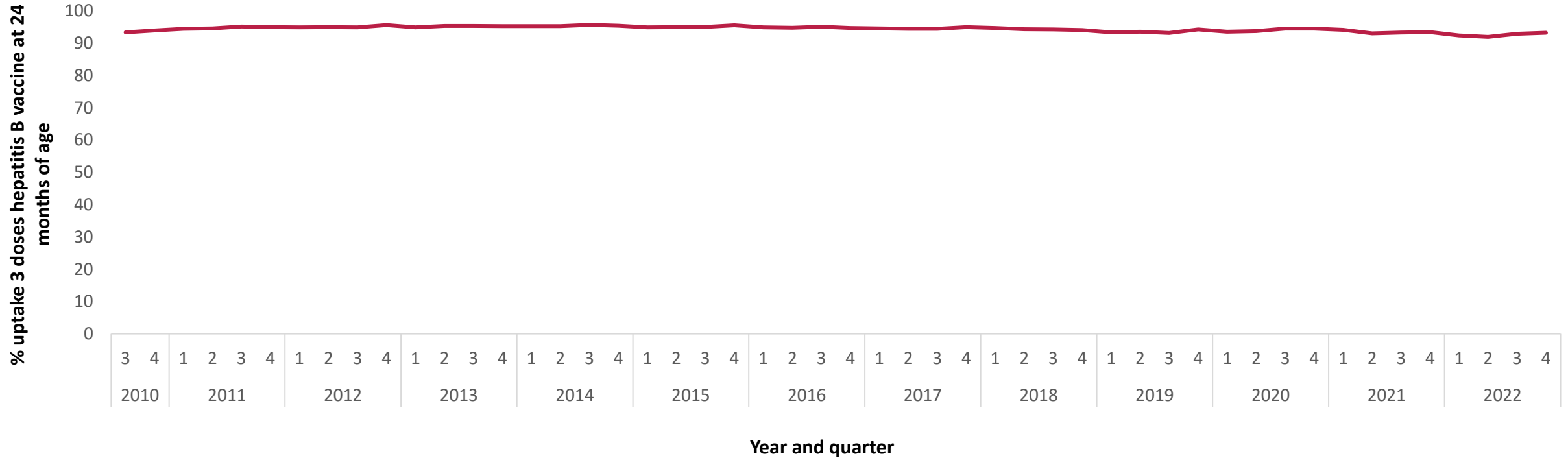


Source immigration data: Immigration estimates are as of end of April each year: Central Statistics Office <https://data.cso.ie/table/PEA18>

\*EU 15-27 countries: Cyprus, Czechia, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia, Bulgaria, Romania and Croatia

\*\*Non EU/EEA excluding United Kingdom, United States, Australia and Canada

# Hepatitis B (3 dose) immunisation uptake at 24 months of age, Q4 2010 – Q4 2022



- Hepatitis B was added to the primary childhood immunisation schedule in Ireland in October 2008 for children born from July 1<sup>st</sup> 2008
- It is included as part of the 6 in 1 vaccine and it is recommended that it be administered at 2, 4 and 6 months of age
- The average 3 dose immunisation uptake, at 24 months of age, between Q3 2010 and Q4 2022 was 94.4%

**More information:**

<https://www.hpsc.ie/a-z/vaccinepreventable/vaccination/immunisationuptakestatistics/immunisationuptakestatisticsat12and24monthsofage/>  
<https://www.rcpi.ie/Healthcare-Leadership/NIAC/Immunisation-Guidelines-for-Ireland>

# Studies of hepatitis B surface antigen (HBsAg) prevalence in Ireland

(% with current acute/chronic infection at time of study)



## General population

- **Residual sera, 2003:** estimated HBsAg prevalence (current infection) of **0.1%**<sup>1</sup>
- **Census data & published hepatitis B prevalence data, 2017:** estimated HBsAg prevalence of **0.4-0.5%**<sup>2</sup>

## Antenatal females:

- **Dublin** Rotunda Hospital annual report, 2021: HBsAg prevalence in 2021 **0.4%**<sup>3</sup>  
Coombe Hospital annual report, 2021: annual HBsAg prevalence range **0.2-0.5%**, between 2015 and 2021<sup>4</sup>
- **West of Ireland,** Galway University Hospital, 2004-2009: HBsAg prevalence **0.2%**<sup>5</sup>

**New blood donors:** New donors tested 1997-2022: HBsAg prevalence **0.009%**

*(personal communication: Irish Blood Transfusion Service)*

## People who inject drugs (PWID) and prisoners

- Studies of PWID (mostly heroin users) in Ireland, 1992-2002: HBsAg prevalence **1-5%**<sup>6</sup>
- Prison study, 2011: **0.3%** of prisoners screened were HBsAg positive<sup>7</sup>

## International Protection Applicants

- Baleskin reception centre, 2016-2018: of almost 3,000 IPAs screened: **2.9%** HBsAg positive
- Baleskin & Safetynet, 2022: of >2,600 IPAs screened: **2.9%** HBsAg positive

*(personal communication: HSE Social Inclusion)*

# References



1. Nardone A, Anastassopoulou CG, Theeten H, Kriz B, Davidkin I, Thierfelder W, et al. A comparison of hepatitis B seroepidemiology in ten European countries. *Epidemiol Infect* 2009;137(7):961-9.
2. O'Connor L. Evaluation of the hepatitis B enhanced surveillance system in Ireland, 2018. Available from: <https://www.hpsc.ie/a-z/hepatitis/hepatitisb/hepatitisbreports>
3. The Rotunda Hospital, Dublin Annual Report 2021. Available from: <https://rotunda.ie/rotunda-hospital-annual-report-2021/>
4. The Coombe Women Hospital Annual Report 2021. Available from <https://www.coombe.ie/annual-report>
5. O'Connell K, Cormican M, Hanahoe B, Smyth B. Prevalence of antenatal hepatitis B virus carriage in the west of Ireland. *Ir Med J*. 2010 Mar;103(3):91-2.
6. HSE Health Protection Surveillance Centre. Drug-related bloodborne viruses in Ireland, 2018. Available from: <https://www.hpsc.ie/a-z/hepatitis/injectingdrugusers/publications/>
7. Drummond A, Codd M, Donnelly N, McCausland D, Mehegan J, Daly L, Kelleher C: Study on the prevalence of drug use, including intravenous drug use, and blood-borne viruses among the Irish prisoner population. Dublin: National Advisory Committee on Drugs and Alcohol; 2014. Available from: <https://www.nacda.ie/index.php/press-releases/165-drug-use-among-the-prisoner-population-in-ireland.html>

# Acknowledgements

- Area Departments of Public Health: SPHMs, SMOs, AMOs, Epidemiologists, Surveillance Officers, Surveillance Assistants, IPCNs, Administration staff
- Notifiers: Laboratory Directors and their staff, and Clinicians
- Immunisation uptake data: Sarah Gee, Senior Epidemiologist, HPSC
- International Protection Applicant screening data: HSE Social Inclusion
- Blood donor screening data: Irish Blood Transfusion Service