

# Population Prevalence Modelling

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## Applying existing population prevalence models for chronic disease to the island of Ireland

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# Population prevalence estimates and forecasts

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Estimating the number of people in the population with a condition and how that might change over time

Accurate estimates allow us to:

- Describe the pattern of disease in a population
- Estimate the number and pattern of undiagnosed cases
- Plan and deliver services in a rational way
- Monitor performance



# Existing population prevalence models

- Association of Public Health Observatories (APHO; [www.apho.org.uk](http://www.apho.org.uk)) is a network of 12 public health observatories working across England, Scotland, Wales and Ireland.
- APHO have developed models to estimate/forecast the population prevalence of;
  - Stroke
  - Hypertension
  - Coronary heart disease (CHD)
  - Chronic obstructive pulmonary disease (COPD)



# Existing population prevalence models

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- Models based on data from the Health Survey for England.
- Risk factors identified by the literature that were available in Health Survey for England were included in a logistic regression model.
- Logistic regression model allows you to derive prevalence estimates for groups of people defined by combinations of risk factors.

# Existing population prevalence models

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Two models constructed for each condition:

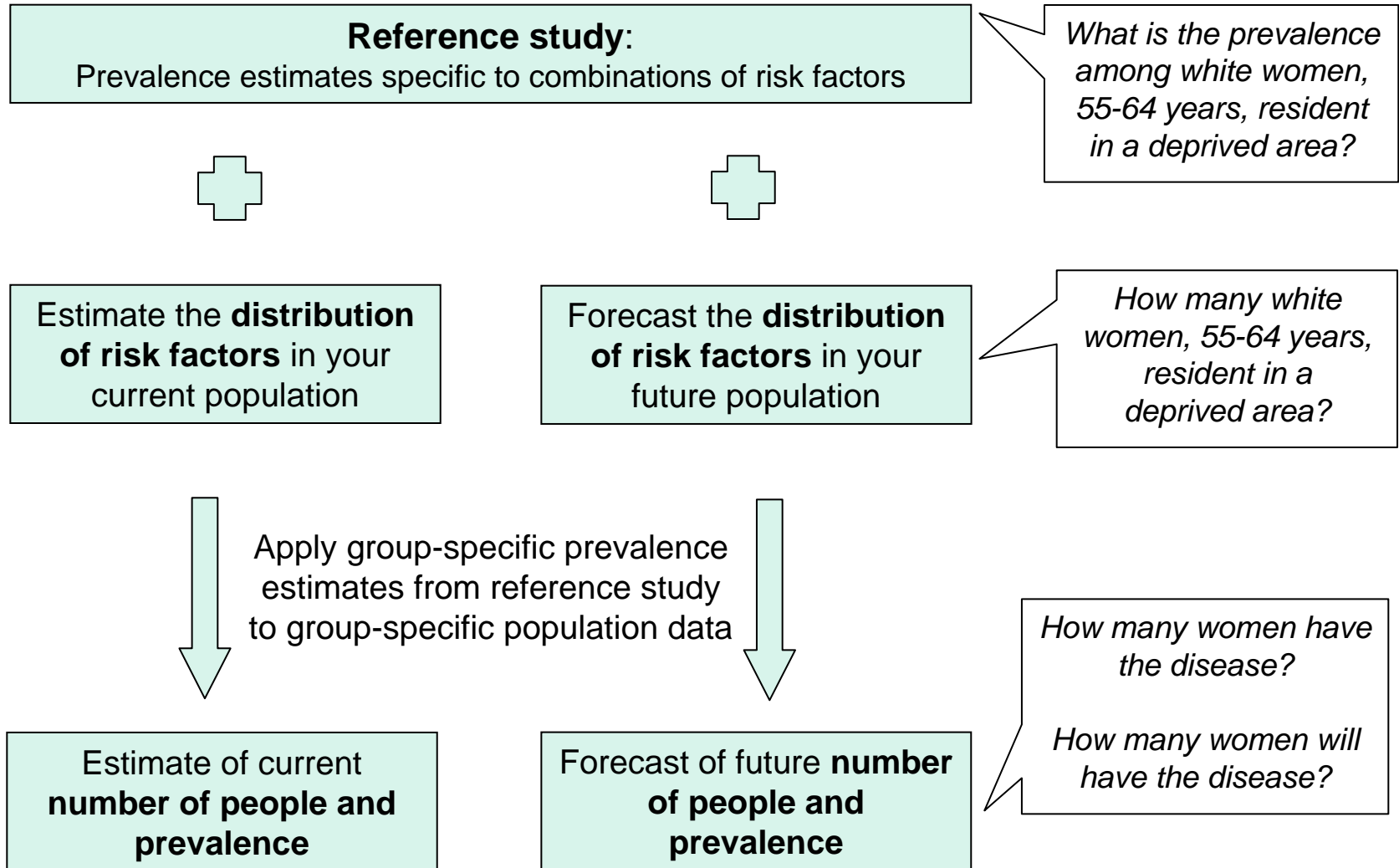
- “Complete” model that includes all relevant risk factors that were available in Health Survey for England
- “Local” model that includes risk factors for which population data (ie not sample data) are available
- “Local” model was used to estimate/forecast the prevalence of the condition

# Risk factors included in the “local” models

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- Stroke: age, sex, area deprivation, smoking
- Hypertension: age, sex, area deprivation, ethnicity
- CHD: age, sex, area deprivation, smoking, ethnicity
- COPD: age, sex, area deprivation, smoking, ethnicity, rurality

# How the population prevalence models broadly work...



# Data sources we are using in the models

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- Group-specific prevalence estimates from Health Survey for England (reference study)
- Population counts by age, sex, ethnicity, area
  - Census data and population projections from Ireland and Northern Ireland
- Current smoking prevalence
  - SLÁN; Continuous Household Survey
- Area-based deprivation
  - SAHRU Deprivation Index; Northern Ireland Multiple Deprivation Measure

# Limitations of data used in the models

- Prevalence estimates taken from English reference studies
  - Are they applicable to Ireland?
  - Are better estimates available from Irish data?
- Availability of risk factor data at area level?
- Estimating the future distribution of risk factors
  - Assumptions used in population projections; different scenarios
  - Availability of population projections by ethnicity and sub-national areas
  - Accounting for changes in other risk factors; deprivation, smoking prevalence

# INIsPHO plans...

- Deprivation adjusted population prevalence estimates / forecasts by age, sex, ethnicity for stroke, hypertension, CHD and COPD
- Years 2007, 2015, 2020
- Available for 32 Local Health Offices and 26 Local Government Districts
- Stroke, hypertension and CHD preliminary data have been prepared. COPD to follow later in the year
- Data and documentation will be available for public download



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**Questions / discussion**



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