



## Infectieradar analysis

- Associations between **risk factors** (demographic, lifestyle, underlying health conditions) and **severe outcomes** of COVID-19 have been published (eg. OpenSafely study)
- In the Netherlands, such an analysis is restricted to patients with severe illness
  - OSIRIS data pre 1 June consists mostly of hospitalised patients.
- Patients with mild yet symptomatic disease did not enter testing pathway pre 1 June
  - Risk factors for **less severe** illness could not be assessed
  - **Infectieradar internet-based syndromic surveillance** offers opportunity to address this data gap



## Research question

1. What are the associations between participant characteristics and other factors, and the incidence rate of **self-reported COVID-19 syndrome**?

-> Estimation of relative risks of COVID-19 syndrome will help in ascertaining risk factors for **susceptibility to infection, exposure to infectious persons**, and/or **development of symptoms**



## Methods

- Data collection period: 17 March through 24 May 2020 (weeks 12 to 21). Symptom onset dates to end week 20.
- All participants filled out intake questionnaire: demographic information, lifestyle & related factors, pre-existing medical conditions (eg. asthma, diabetes)
- Every week participants were asked to submit a 'weekly survey'; occurrence of **COVID-19 syndrome** according to case definition:
  - Fever ( $\geq 37.5^{\circ}\text{C}$ ) and/or cough and at least one of these other symptoms: chills, runny or blocked nose, sneezing, sore throat, dyspnea (shortness of breath), headache, muscle/joint pain, chest pain, malaise, loss of appetite, coloured phlegm, watery or bloodshot eyes, nausea, vomiting, diarrhoea, stomach-ache, loss of sense of smell/taste, other



## Results

| Factor                    | Rate Ratio  | 95% CI           |
|---------------------------|-------------|------------------|
| Male                      | <b>0.87</b> | <b>0.83-0.92</b> |
| Age 15-24                 | <b>0.86</b> | <b>0.75-0.98</b> |
| Age 25-34                 | 1.01        | 0.94-1.08        |
| Age 35-44                 | Ref.        |                  |
| Age 45-54                 | 1.04        | 0.98-1.12        |
| Age 55-64                 | 1.02        | 0.95-1.10        |
| Age 65+                   | <b>0.80</b> | <b>0.72-0.87</b> |
| Ever smoker               | <b>1.37</b> | <b>1.29-1.44</b> |
| Asthma                    | <b>1.51</b> | <b>1.41-1.62</b> |
| Allergy(s)/hay fever      | 0.99        | 0.94-1.03        |
| Suspected non-COVID cause | <b>4.53</b> | <b>4.30-4.77</b> |

Total of **7067 episodes** of reported COVID-19 syndrome with onset in week 12-20; **131,442 person-weeks** of follow-up

*Multivariable Poisson regression, selected covariates shown*



## Summary

- We have quantified the relative risks of self-reported (mild) occurrence of COVID-19 symptoms associated with demographic, lifestyle, underlying health conditions and other factors
- Raised RRs could reflect a combination of heightened exposure risk, susceptibility to infection and/or development of symptoms, and propensity to report symptoms
- Low specificity of the syndrome definition is an issue and needs to be addressed
- The COVID-19 syndrome incidence rate declined over the analysis period, more or less consistent with the decline in the notified (severe) case rate (from OSIRIS).