

A world apart: levels and factors of excess mortality due to COVID-19 in care homes. The case of Wallonia – Belgium

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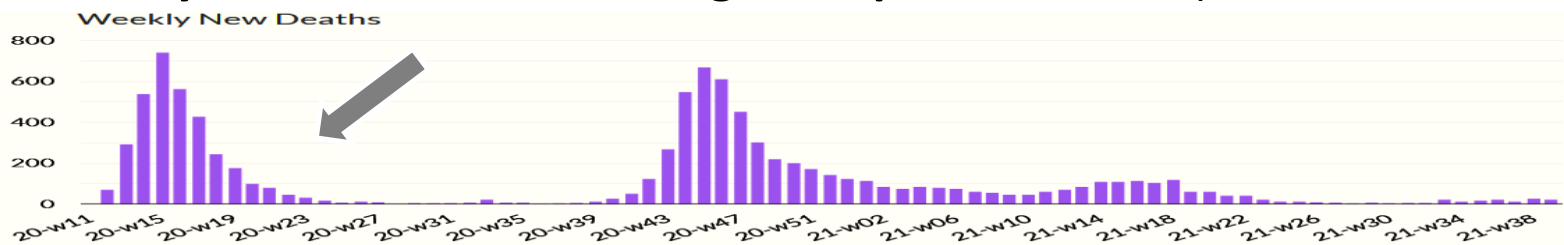


<https://www.medrxiv.org/content/10.1101/2020.08.29.20183210v1>

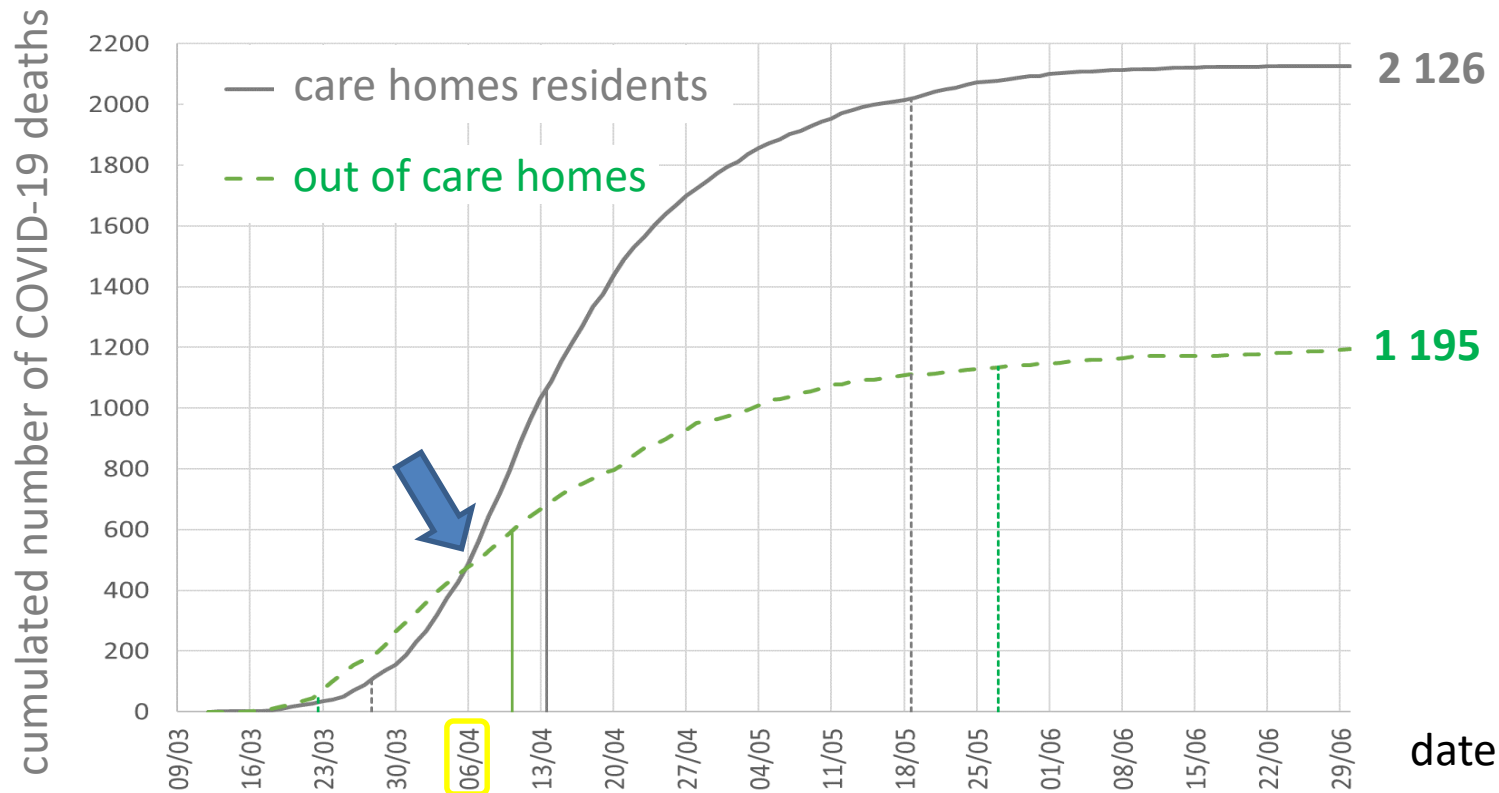
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A study of mortality in care homes for elderly people in Wallonia

- **Two distinct populations :**
 - **Residents of the 573 facilities for elderly people (FE = "MR") :**
 - **446 Nursing homes (NH = "MRS") :**
 - Old people, about half requiring health care
 - Norm : 12 nursing staff for 30 residents
 - **127 Homes for elderly people (HEP = "MRPA")**
 - Old people in relatively good health
 - Norm : 4.5 nursing staff for 30 residents
 - **People not living in facilities for elderly people (OUT_FE)**
- **Mortality due to COVID-19 during first epidemic wave (March-June 2020)**



Contrasted infection/mortality dynamics

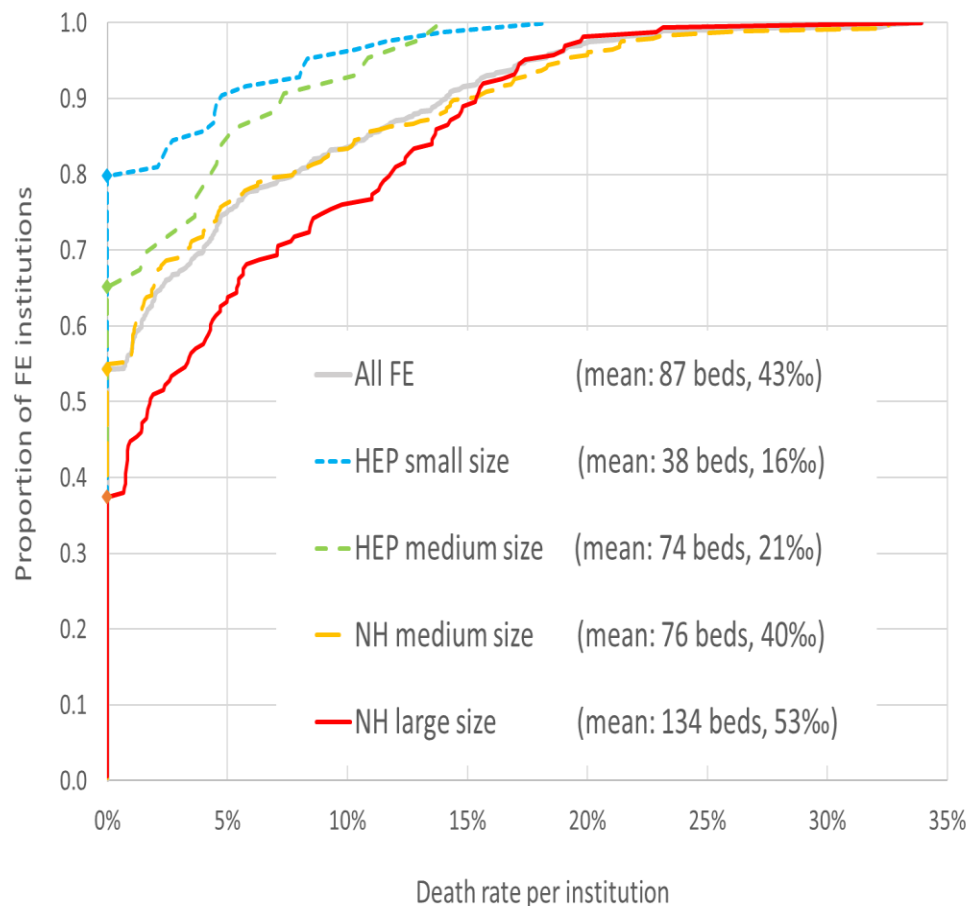


Before 6 April: majority of deaths outside care homes => **delayed contamination in care homes**

90% of deaths occurred within 52 days in care homes, against 65 days outside care homes
=> faster epidemic spread

High variation of COVID-19 mortality among care homes

- **No COVID death in ...**
 - 55% of care homes
- Contrast between care home types
 - **Nursing homes (NH)**
 - 49% no death
 - Mortality rate = 46 ‰
 - 10% with mortality rate > 150‰
 - **Homes for elderly people (HEP)**
 - 75% no death
 - Mortality rate = 18 ‰
 - 0.8% with mortality rate > 150‰



- Hypotheses:**
- higher contamination in larger facilities
 - higher contamination in facilities with more nursing staff

Mortality rate per care home shows no geographic trend but a weak correlation between care homes situated at <10 km from each other

COVID mortality in Wallonia – March-June 2020

	Confirmed and suspected Covid-19 deaths	Population size (x 1.000)	Mortality rate (‰)
In care homes	2 126 (64%)	48 (1.3%)	44.2 (A)
Out care homes	1 195 (36 %)	3 519 (98.3%)	0.3 (B)

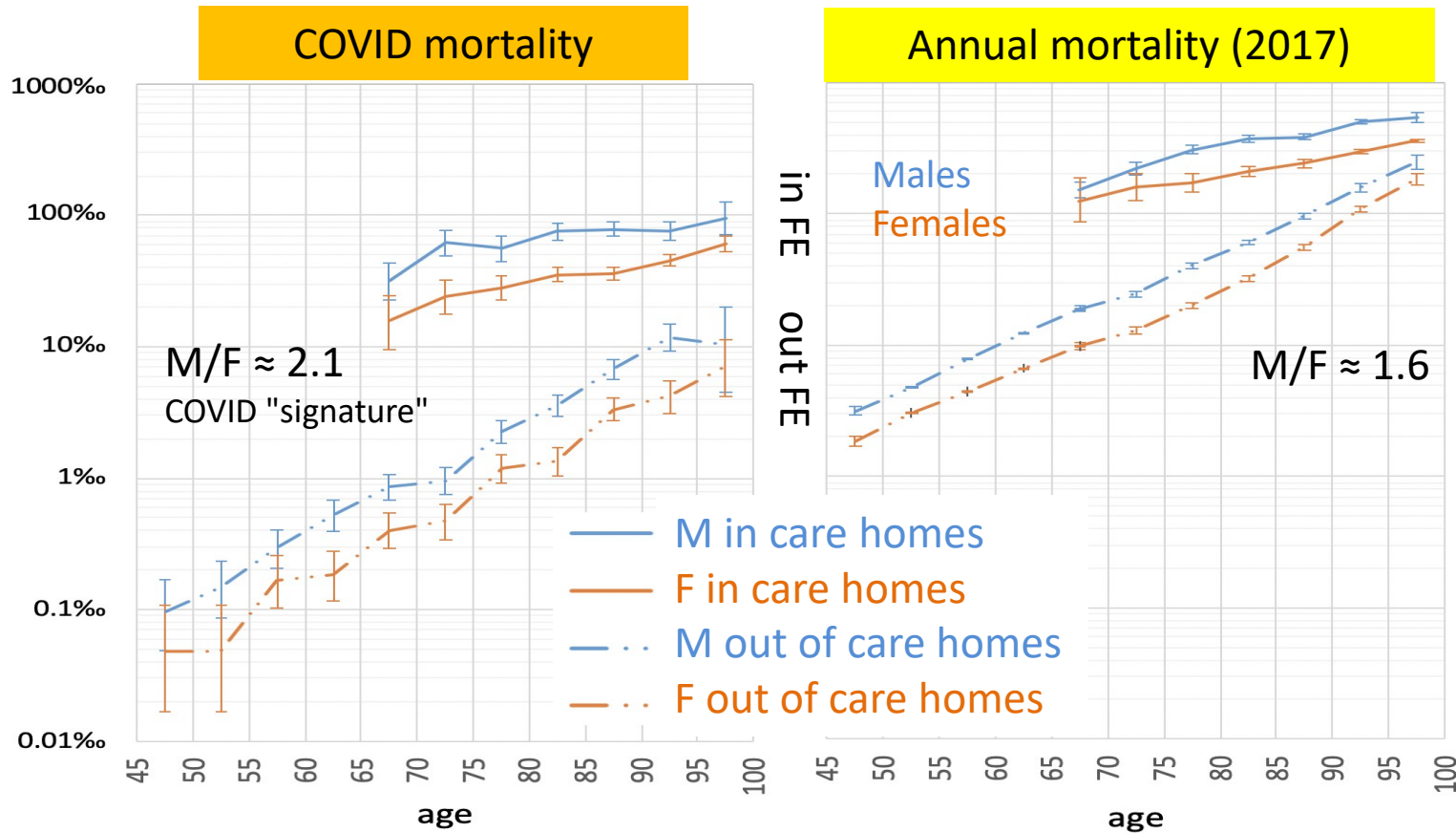
Mortality rate **130x** (A/B) larger in care homes than outside them

Causes of excess?

- age pyramid
- health frailty of residents
- prevalence of SARS-Cov-2
- ... health care quality ?

Sex and age specific mortality rates

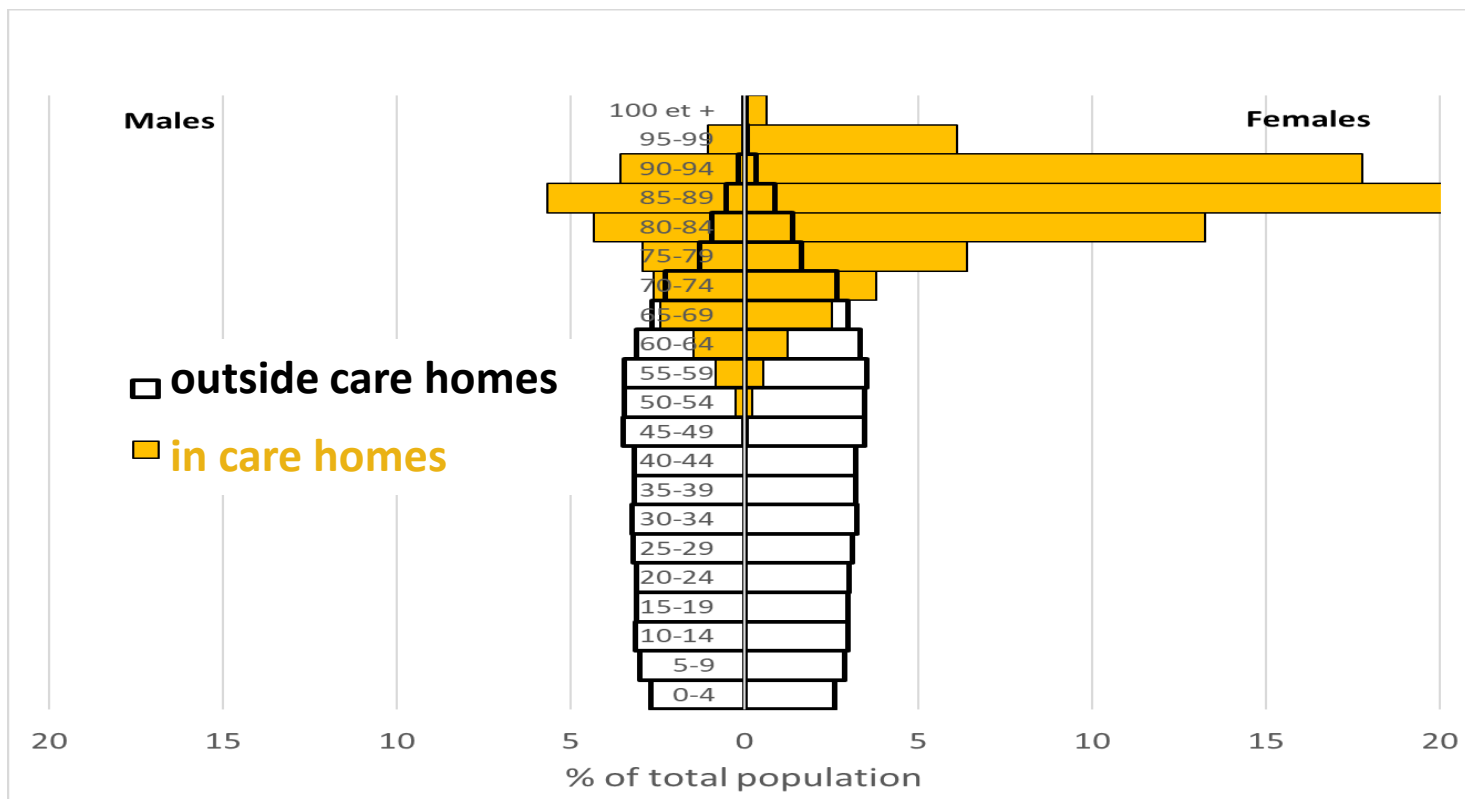
COVID-19 vs annual



Parallelism between
COVID and annual
"all-causes" mortality:

- Mortality ↑ with age
- Mortality higher in males (but COVID increases the M/F)
- At same age, mortality much larger in care homes

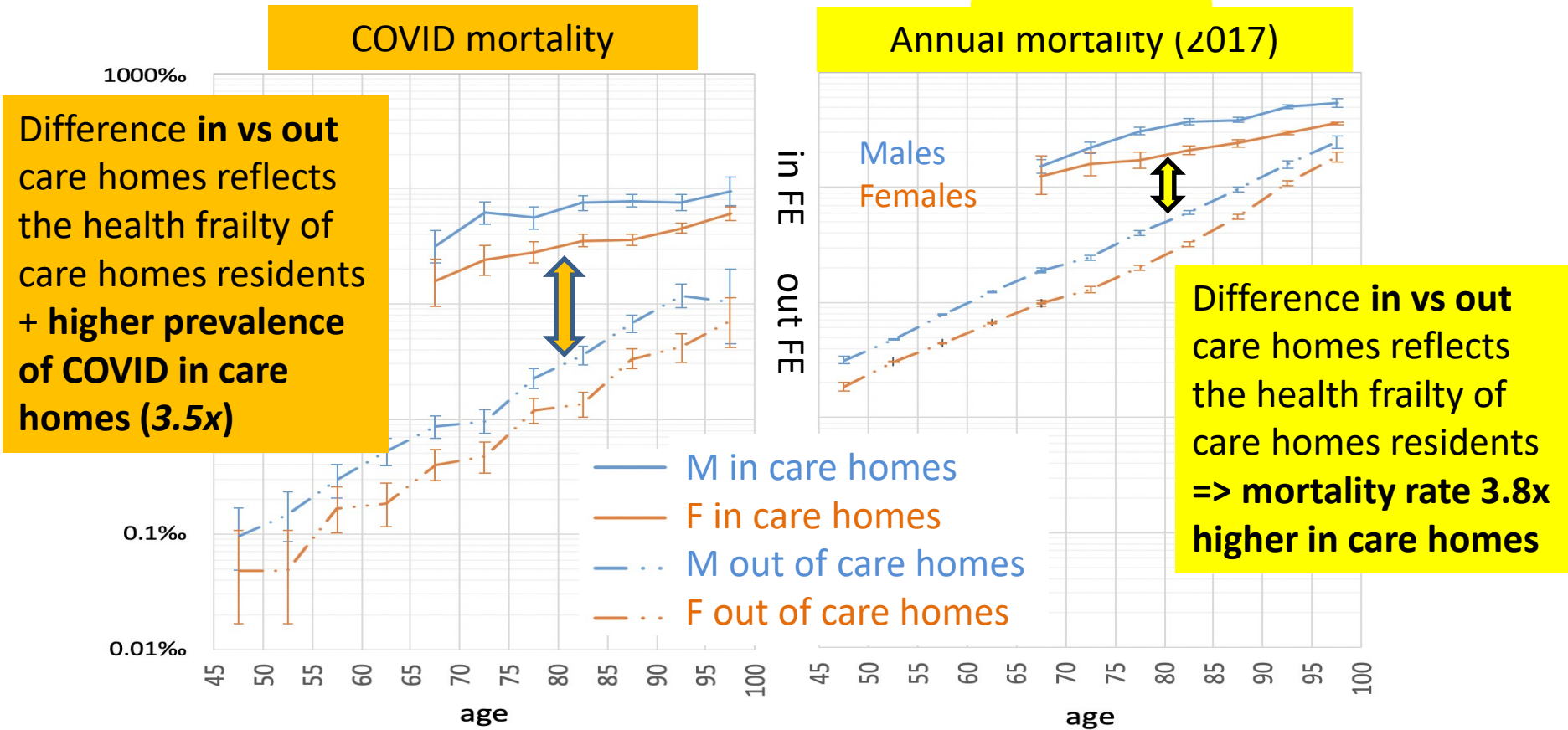
Age pyramids



In care homes : **Mean age: 84 years** vs 41 years outside care homes
% women: 75% vs 51% outside care homes

The difference of age pyramids can explain a COVID-19 mortality rate 11x higher in care homes than outside them

Sex and age specific mortality rates COVID-19 vs annual



Mortality COVID
in / out care homes

130 \approx

11

x

3.8

x

3.5

Age pyramid

Health frailty

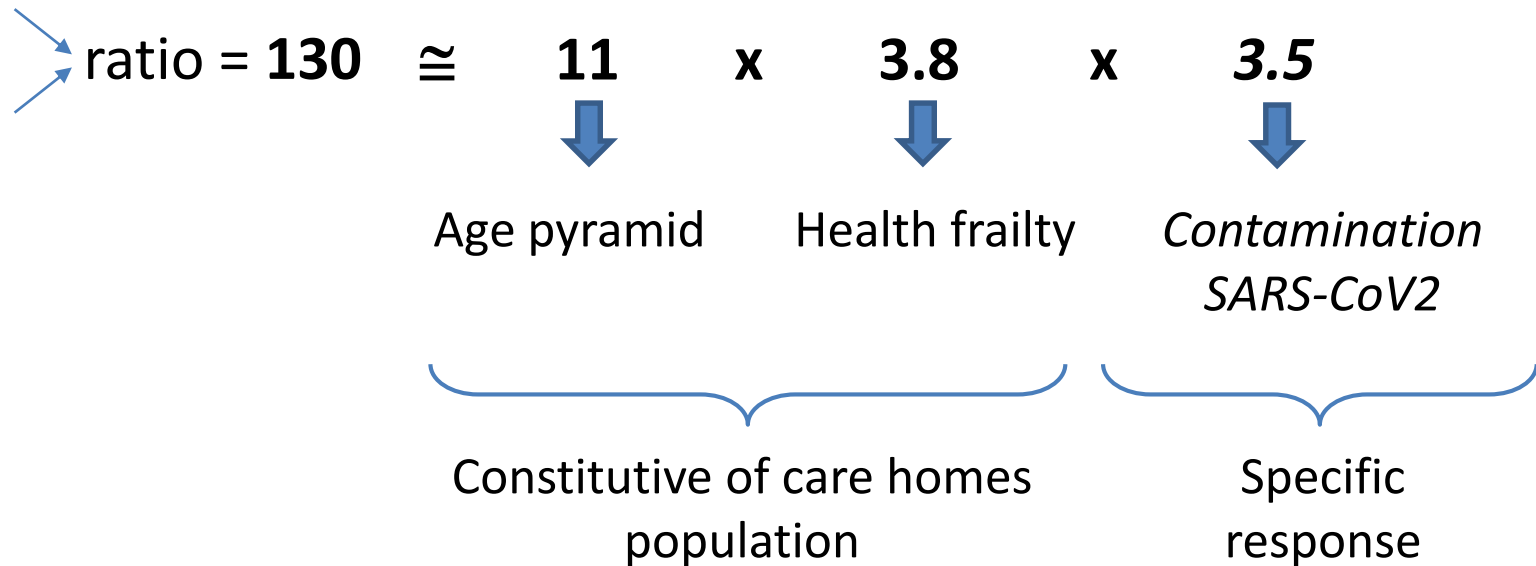
Contamination
SARS-CoV2

Factors explaining high mortality of COVID-19 in care homes : synthesis

COVID mortality rate (‰)

in FE: 44.2

out FE: 0.4



Contamination rate following first wave : **6-7% outside care homes** (measured from serology) **± 20% in care homes** (estimated from our results) **9**

Higher incidence of Covid-19 in care homes

- Factors facilitating the introduction or transmission of the virus in care homes
 - Frequent contact with the outside world, especially in large establishments (more staff, more frequent visits)
 - Faster dissemination in communities
 - Dissemination amplified by the initial lack of protective equipment and the lack of preparedness of personnel to deal with such an epidemic

Next waves:

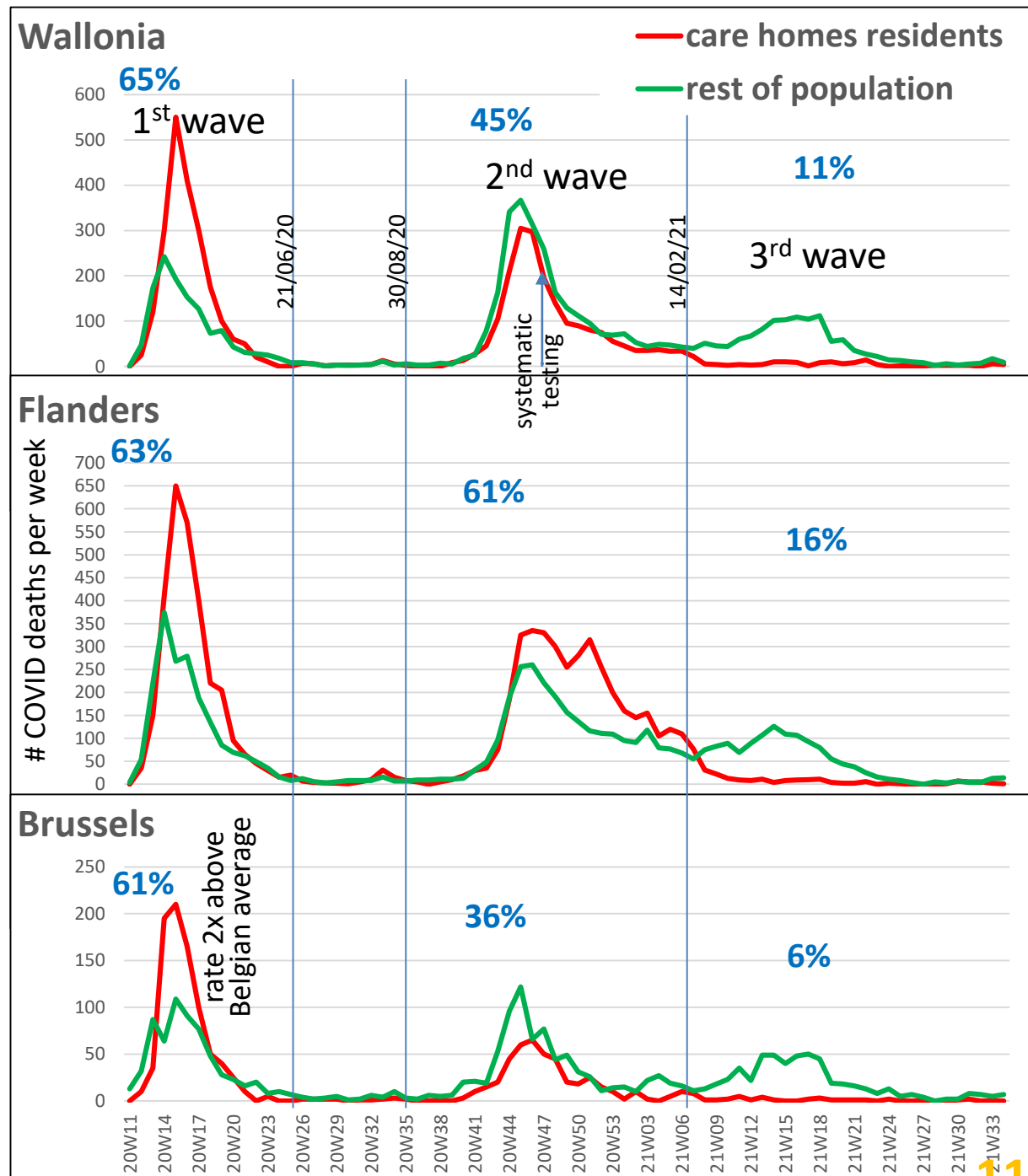
Percentage of care home residents among COVID deaths per region and epidemic wave

In all waves, the epidemics in care homes start after the one in the rest of the population.

The 2nd wave caused less deaths among care home residents in Wallonia (*effect of systematic testing?*) and Brussels (*effect of 1st wave immunity?*) but not in Flanders

The 3rd wave caused much less deaths among care home residents -> effect of vaccination!

After 1st+2nd waves, 9% of care home residents had died from COVID-19, while ±60% had been infected (IFR ≈ 15%)



Conclusions

- Care homes = very specific context for Covid-19
 - Population highly vulnerable (age, health frailty)
 - Difficulty to avoid viral transmission } Mortality ↑
- Epidemiological models might be improved by modelling the care homes population as a distinct entity
- Practical recommendations?
Given the health frailty of care home residents, management measures should limit the risk of virus introduction and limit viral transmission
- Effectiveness of systematic testing (2nd wave in Wallonia) ?
- Effectiveness of vaccination (3rd wave) !