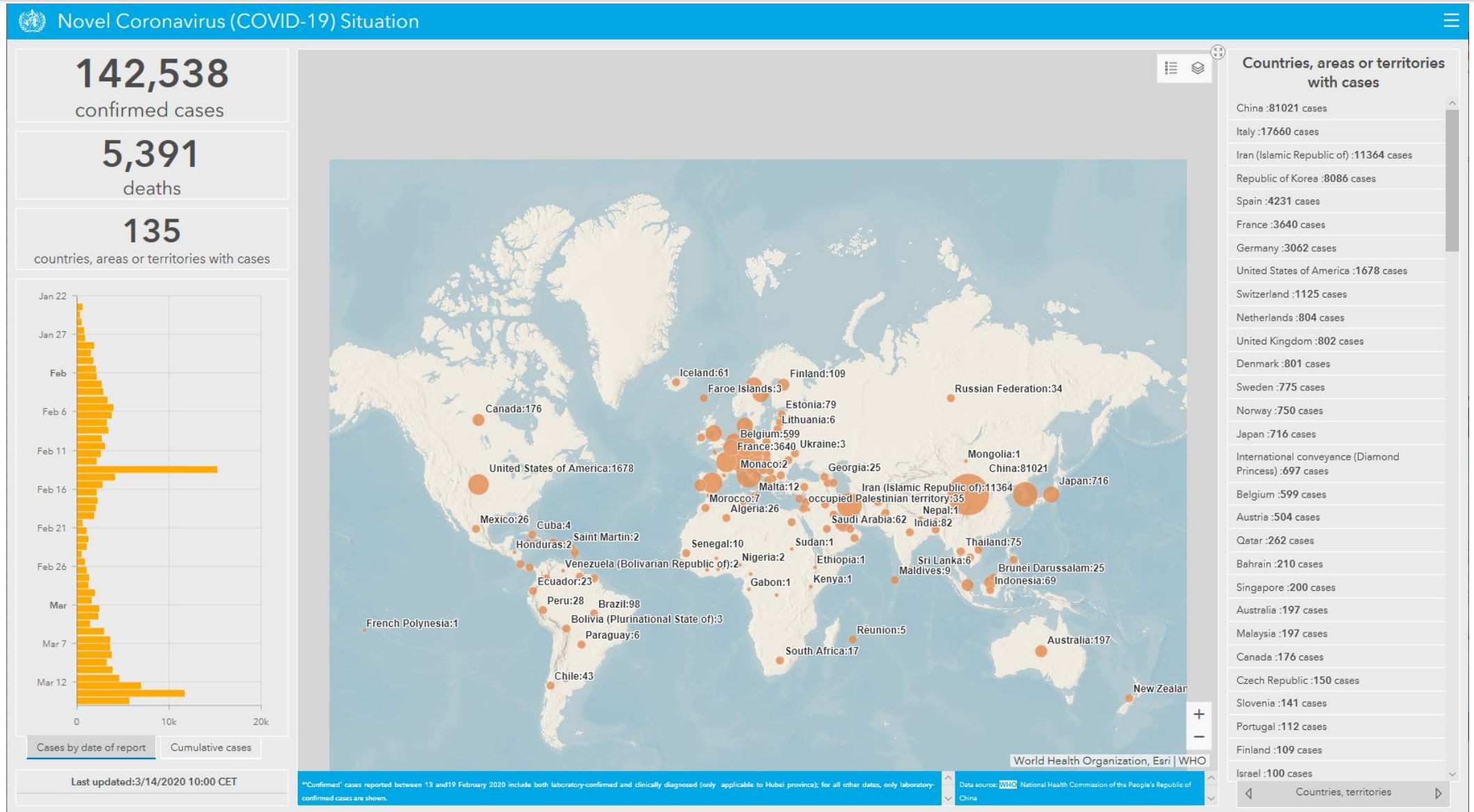


Coronavirus Disease 2019 (COVID19) intervention strategies

WHO Collaborating Centre for Infectious Disease Modelling
MRC Centre for Global Infectious Disease Analysis

Current Epidemiological Situation



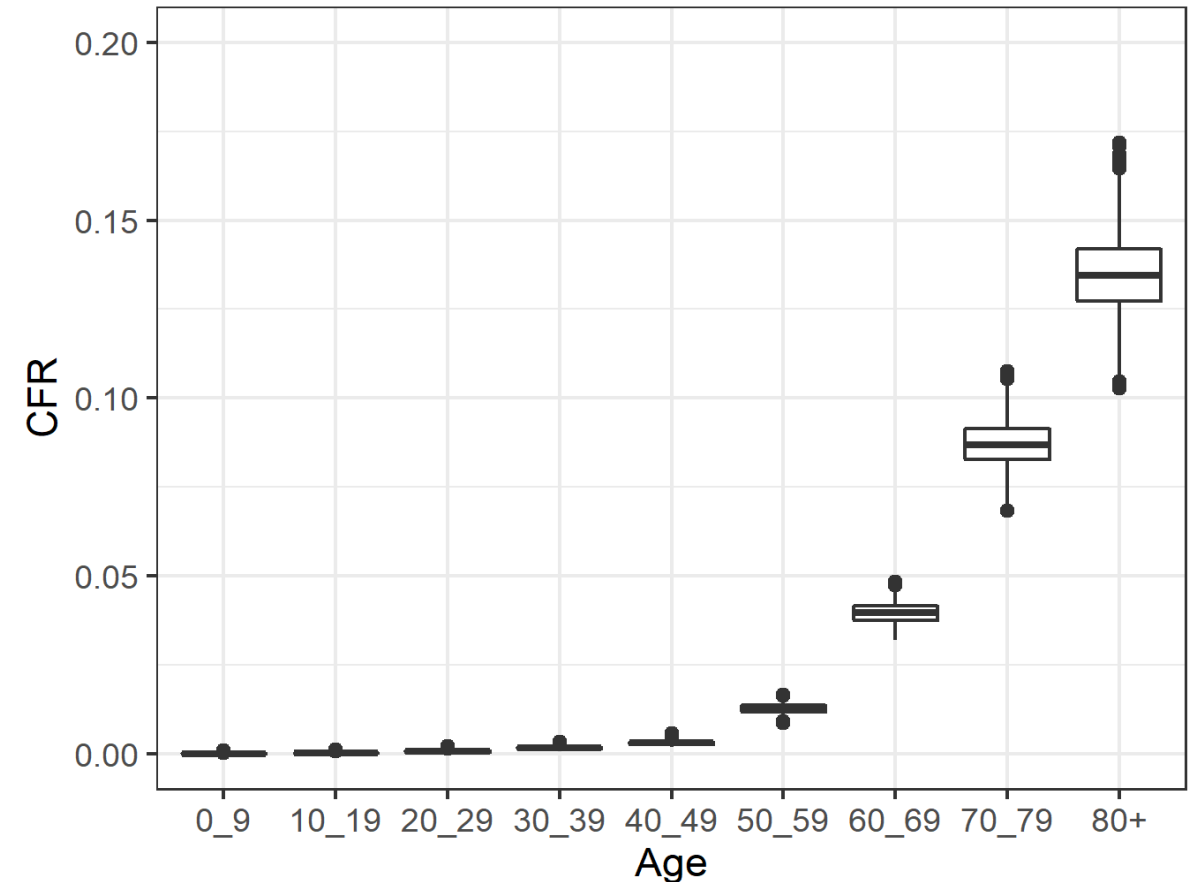
Lethality of COVID-19

Current best estimates for China

- Case fatality ratio 1.4%
- Infection fatality ratio 0.7%
- Steep rise from age 50 upwards

Case fatality ratios for other respiratory diseases

- SARS ~10%
- H1N1 flu (2009) ~0.01%
- Spanish flu (1918) ~ 2%



Healthcare Demand

- Likely to place severe demands on even the most developed healthcare systems
- Approximately 5% of cases will require hospitalisation (i.e. at least oxygen support)
- Of these, 30% will require ventilation – preferably mechanical ventilation (i.e. ICU facilities)
- These are now NHS central case planning assumptions

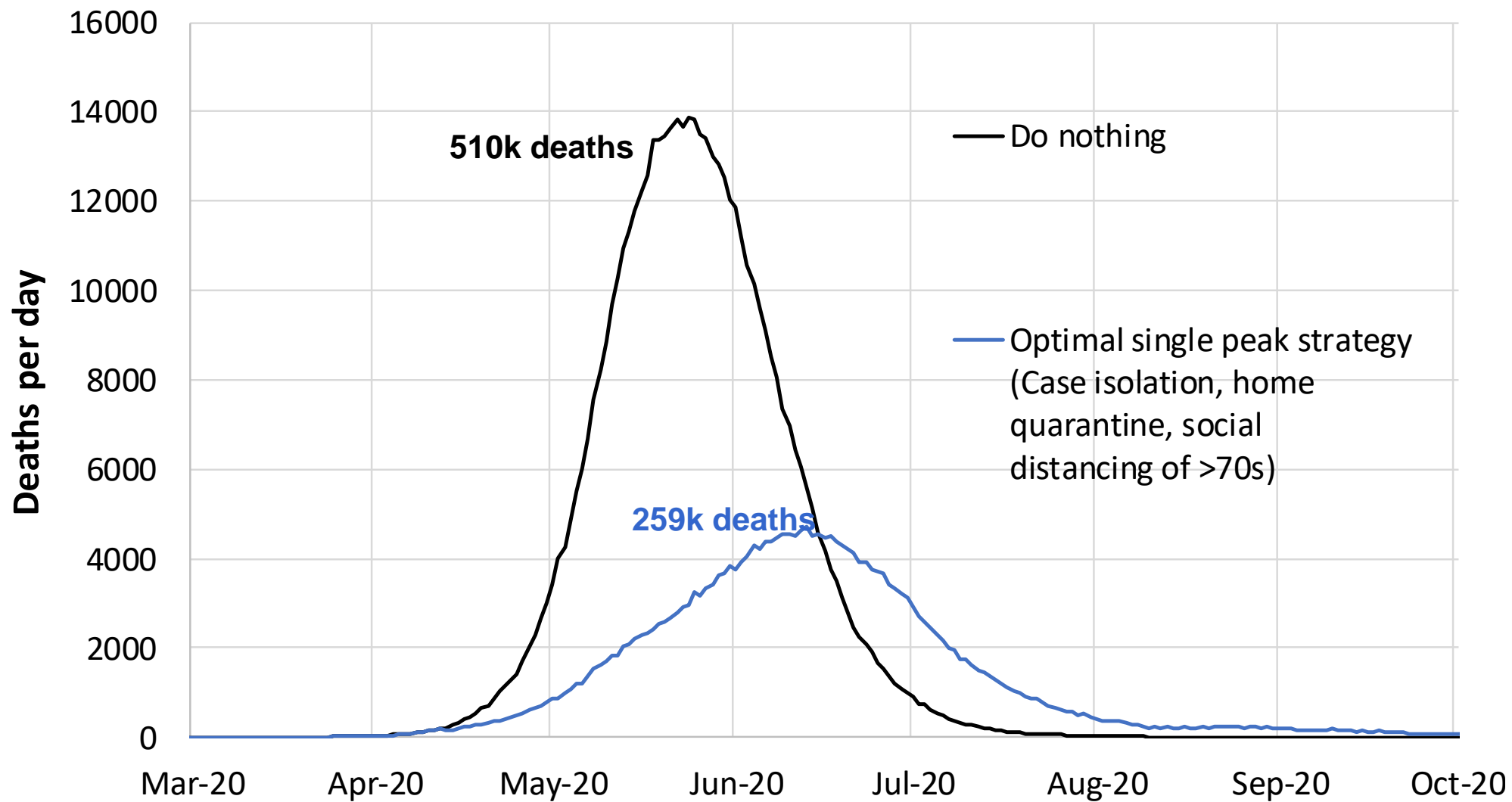
Mitigation Strategies

- No pharmaceutical interventions (drugs or vaccines) likely to be available in near-term (vaccine is at least 12 months away)

Behavioural and social interventions:

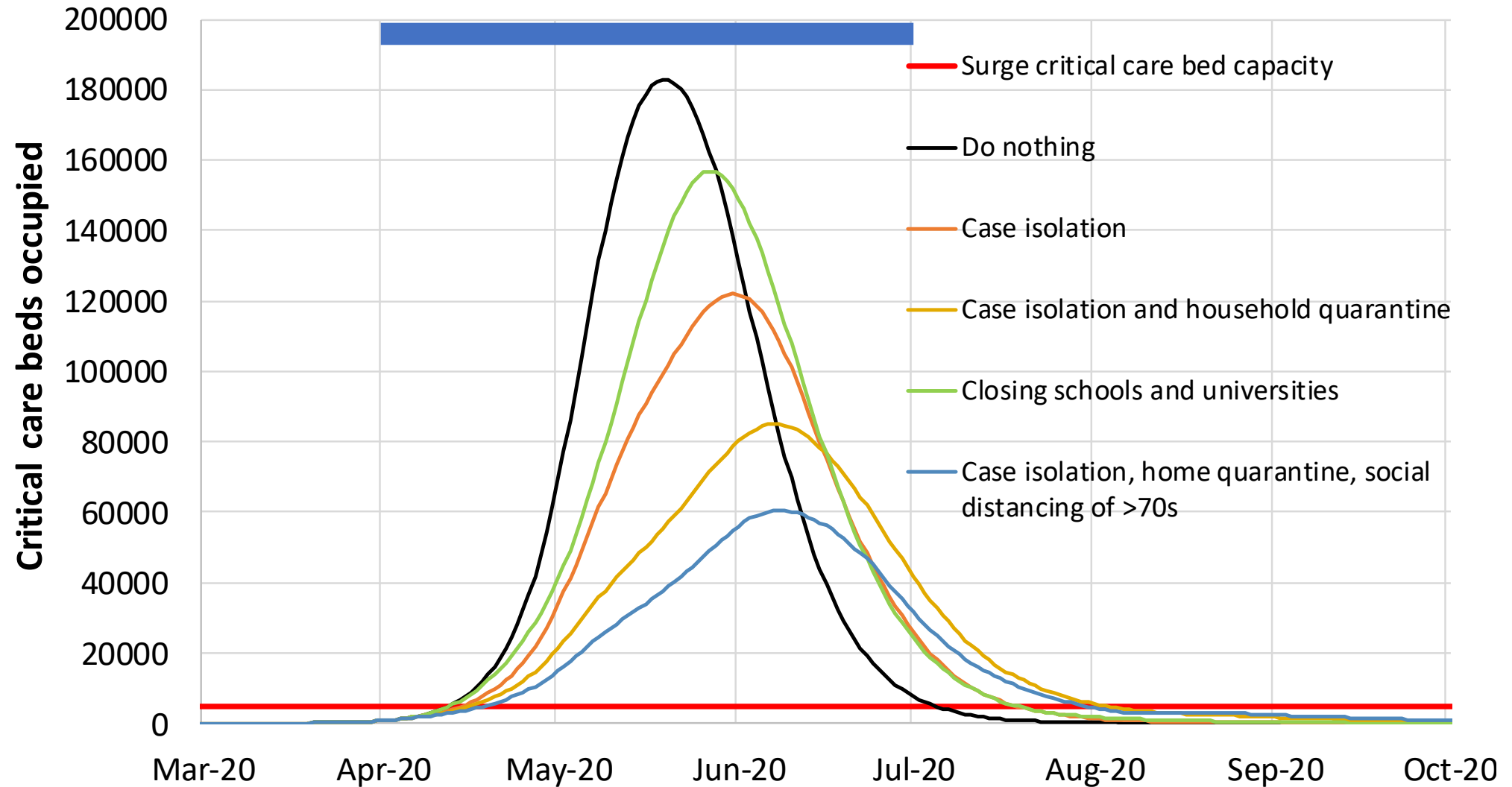
- CI – case isolation in the home
- HQ – voluntary household quarantine
- PC – close of schools and universities
- MG – stopping mass gatherings
- SD – social distancing of entire population
(75% reduction in contact rates outside the home, school or workplace)
- SDO – social distancing of those over 70 years of age

UK impact – deaths

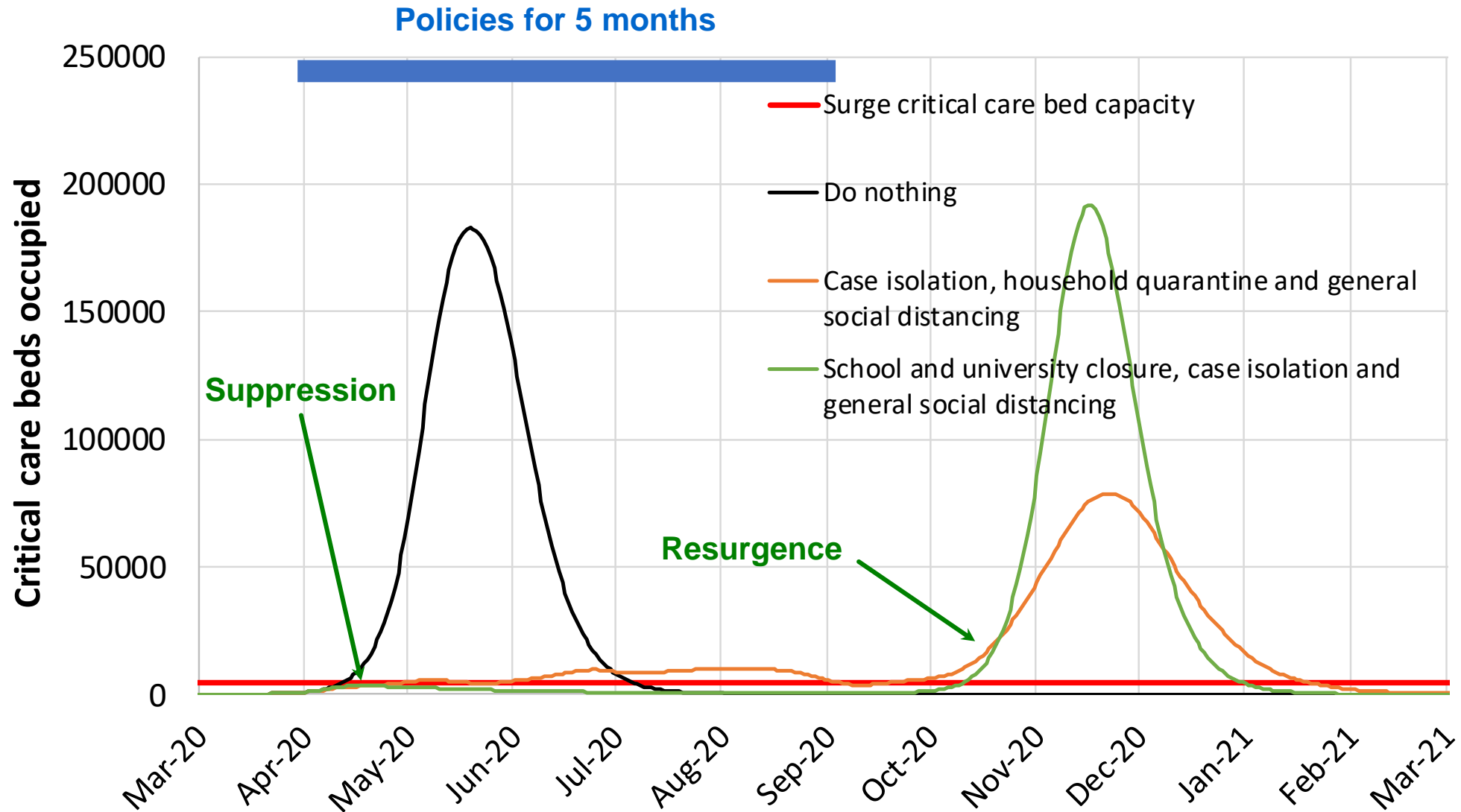


UK impact – intensive care beds

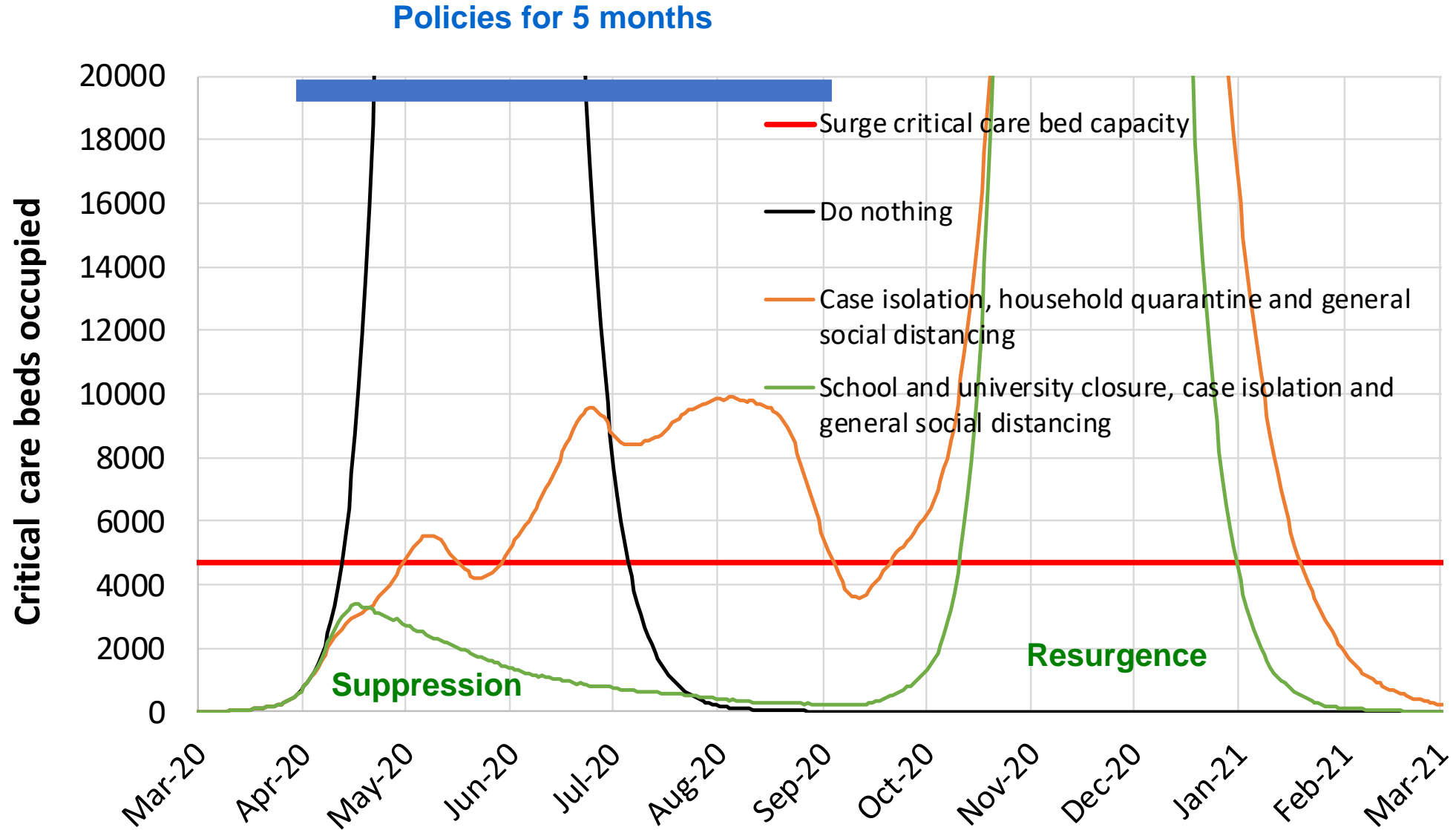
Policies for 3 months (extra month for social distancing of >70s)



More intensive policies



Zooming in



Conclusions

- Tuning behavioural and social interventions (BSI) to minimise the epidemic without giving a second peak can halve deaths, reduce peak by $2/3$
- But remaining peak still overwhelms UK surge critical care bed capacity by 8-fold
- Remaining within the surge capacity of the NHS will require more intensive social distancing
- Measures will need to be introduced in the next 2 weeks, 3 maximum
- These measure will need to be in force (perhaps intermittently) into 2021 to avoid a resurgence of transmission