



Northern Ireland
Assembly

Research and Information Service Briefing Note

7 May 2020

Dr Raymond Russell

Comparative analysis of Covid-19 statistics

NIAR - 2020

This Briefing Note examines a number of issues concerning comparisons of surveillance data on COVID-19 across different countries and regions. In terms of the pandemic, the note also identifies three models of good practice and presents some meta data from selected countries.

Contents

- 1. Introduction3**
- 2. Case Definitions and Surveillance Procedures.....3**
 - World Health Organisation3
 - European Centre for Disease Control5
- 3. Making Comparisons with other Countries6**
 - Care Homes.....7
 - Excess Mortality.....8
- 4. Examples of Good Practice 10**
 - South Korea.....10
 - Australia.....12
 - New Zealand.....13
- 5. Dying Before their Time 13**
- 6. Meta data on Covid-19 from Selected Countries..... 14**
- 7. Summary..... 14**
- Annex 1: Background Information on COVID-19 for selected countries..... 16

1. Introduction

COVID-19 is a disease caused by a new type of coronavirus (SARS-CoV-2). It was first identified in China in December 2019, although deaths of a suspicious nature were reported some weeks earlier. There was an outbreak of Covid-19 in the Chinese municipality of Wuhan, quickly spreading to other regions of China and the rest of the world. By January 2020, isolated cases began to appear in some EU member states.

At the end of February 2020, Italy reported a significant increase in Covid-19 cases, concentrated in the northern regions of the country. Most other EU member states also started reporting cases of infection. By March 2020, all EU member states had reported Covid-19 cases, and the number of cases has since continued to increase substantially.

The World Health Organisation (WHO), an agency of the United Nations, is coordinating the worldwide response. On 11 March 2020, the WHO declared Covid-19 a global pandemic. The latest global figures from the European Centre for Disease Control (ECDC) show there were 3,350,000 confirmed cases and 239,000 deaths up to 3 May 2020 ¹. On the same day, Public Health England reported a total of 28,446 deaths in the UK.

A feature of the present emergency has been the way in which the categorization and counting of cases by national and regional health authorities has been regularly changing, as they respond to a rapidly evolving and unprecedented situation. This has made the surveillance and tracking of the disease challenging, particularly when attempting to compare the severity of the outbreak across jurisdictions. Before looking at this issue it may be helpful to outline the case definitions and data collection methods of the WHO and its partner in Europe, the ECDC.

2. Case Definitions and Surveillance Procedures

World Health Organisation

On 20 March 2020, the [WHO issued interim guidance](#) in respect of the global surveillance of Covid-19 infection. The guidance contained case definitions which referred to three categories, namely: suspected, probable and confirmed cases of the disease (see overleaf). A case is confirmed only when a laboratory test for the virus ² is positive.

¹ WHO (2020) **Situation Report No. 104, 3 May 2020**. Available at https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200503-covid-19-sitrep-104.pdf?sfvrsn=53328f46_2

² A **case definition** is a set of standard criteria for classifying whether a person has a particular disease, syndrome or other health condition.

Suspect case

A. A patient with acute respiratory illness (fever and at least one sign/symptom of respiratory disease, e.g., cough, shortness of breath), AND a history of travel to or residence in a location reporting community transmission of COVID-19 disease during the 14 days prior to symptom onset.

OR

B. A patient with any acute respiratory illness AND having been in contact with a confirmed or probable COVID-19 case in the last 14 days prior to symptom onset;

OR

C. A patient with severe acute respiratory illness (fever and at least one sign/symptom of respiratory disease, e.g., cough, shortness of breath; AND requiring hospitalization) AND in the absence of an alternative diagnosis that fully explains the clinical presentation.

Probable case

A. A suspect case for whom testing for the COVID-19 virus is inconclusive.

OR

B. A suspect case for whom testing could not be performed for any reason.

Confirmed case

A person with **laboratory confirmation** of COVID-19 infection, irrespective of clinical signs and symptoms.

When reporting surveillance data to the WHO, national authorities are advised to use either **case-based** (single) or **aggregate** (multiple) reporting. This should be done within 48 hours and uploaded to the WHO self-reporting platform, using web-based forms or Excel spreadsheets. Both forms clearly refer to either “laboratory confirmed” or “confirmed” cases (see Annex 2 and Annex 3).

Somewhat confusingly, while the reporting forms appear to be designed for confirmed cases, the WHO “requests that national authorities report **probable** and confirmed cases of COVID-19 infection within 48 hours of identification “(p. 3). Probable cases are those for whom laboratory testing was either inconclusive or could not be performed for whatever reason. Further, while countries are encouraged to use the WHO case definitions, they “may need to **adapt** case definitions depending on their local epidemiological situation and other factors” (p. 1).

Taken together, both factors introduce a degree of uncertainty to the task of comparing surveillance data across jurisdictions. While the inclusion of deaths among probable cases provides a more complete assessment of the impact of the pandemic, if some

countries are including probable cases, when others are not ³, or are using non-standard definitions, comparing across jurisdictions may become challenging.

European Centre for Disease Control

The ECDC, an agency of the European Union, and the WHO Regional Office for Europe, in collaboration with their surveillance networks in the Member States, are coordinating the rapid reporting of data as requested by the WHO. For EU level surveillance, the ECDC requests EU/EEA countries and the UK to report laboratory-confirmed cases of COVID-19 within 24 hours after identification. This should be done through the Early Warning and Response System (EWRS) ⁴. [The ECDC uses the same case definitions as adopted by the WHO](#) (see above) and states that suspected cases (which require diagnostic testing) should not be reported at the European level.

In relation to mortality reporting, the ECDC endorses the guidance of the WHO, and [defines a death due to COVID-19](#) as “ ... resulting from a clinically compatible illness, in a **probable or confirmed** COVID-19 case, unless there is a clear alternative cause of death that cannot be related to COVID-19 disease (e.g. trauma).” (p. 20). In brief, therefore, in addition to laboratory-confirmed cases, both the WHO and ECDC encourage Member States and national authorities to incorporate ‘probable’ cases into their statistical returns. The ECDC publishes a [Daily Situation Update](#) and Fig. 1 shows an example (the update of 6 May 2020 for a selected number of Member States plus the UK).

Fig. 1 – ECDC Daily Update, 6 May 2020

| EU/EEA and the UK | Sum of Cases | Sum of Deaths | Reported cases per 100 000 population | Reported deaths per 100 000 population |
|-------------------|--------------|---------------|---------------------------------------|--|
| Spain | 219,329 | 25,613 | 469.4 | 54.8 |
| Italy | 213,013 | 29,315 | 352.5 | 48.5 |
| United Kingdom | 194,990 | 29,427 | 293.3 | 44.3 |
| Germany | 164,897 | 6,996 | 198.8 | 8.4 |
| France | 132,967 | 25,531 | 198.5 | 38.1 |
| Belgium | 50,509 | 8,016 | 442.2 | 70.2 |

³ The Public Health England daily data series, for example, does not include deaths in people where COVID-19 was suspected, but a laboratory test was not carried out or was negative (source: Public Health England, 29 April 2020, *Technical Summary, PHE data series on deaths in people with Covid-19*).

⁴ **The Early Warning and Response System (EWRS)** is a web-based platform linking the European Commission, ECDC and public health authorities in EU/EEA countries responsible for measures to control serious cross-border threats to health, including communicable diseases such as SARS, MERS, or Covid-19.

| EU/EEA and the UK | Sum of Cases | Sum of Deaths | Reported cases per 100 000 population | Reported deaths per 100 000 population |
|-------------------|--------------|---------------|---------------------------------------|--|
| Netherlands | 41,087 | 5,168 | 238.4 | 30.0 |
| Portugal | 25,702 | 1,074 | 250.0 | 10.4 |
| Sweden | 23,216 | 2,854 | 228.0 | 28.0 |
| Ireland | 21,983 | 1,339 | 452.9 | 27.6 |

This section has outlined the case definitions and some metadata for Covid-19 surveillance by the WHO and ECDC. The next section will draw attention to some of the issues facing epidemiologists, and members of the general public, when attempting to make valid comparisons of Covid-19 mortality and morbidity across jurisdictions.

3. Making Comparisons with other Countries

Given the scale of the global pandemic, and the impact it is having on the lives of billions of people throughout the world, there is a natural inclination to compare and contrast – to find out how well one’s own country is tackling the virus. This task, however, can be fiendishly complex. It may be tempting to try to construct a league table, but as Spiegelhalter, a Cambridge statistician and risk analyst points out, we may have to wait months, if not years, for the true picture to emerge ⁵.

There are a number of issues and confounding factors which make it difficult to make valid and reliable comparisons of cases and fatalities across countries. These include: death rates, hidden deaths, differences in demographic profiles, and surveillance in care homes.

There are a number of ways of measuring deaths, including the **case fatality rate** and the **crude death rate** (i.e. the rate per head of population). Case-fatality refers to the proportion of people who die who have tested positive for the disease. For example, if 100 people test positive, and ten of them die, the case-fatality rate is 10 per cent. However, case-fatality is a function of testing – the more people are tested, the more positive cases are likely to be identified, which will in turn have an effect on the case-fatality rate ⁶. So, if some countries only test patients ill enough to go to hospital – and don’t test those with mild symptoms, or even asymptomatic Covid-19 patients who don’t get to hospital (as happens in the UK), – the death rate can appear higher than in countries where testing is widespread (such as Germany or South Korea).

⁵ Spiegelhalter, D. (2020) **Coronavirus deaths: how does Britain compare with other countries?** *The Guardian*, 30 April 2020. Available at: <https://www.theguardian.com/commentisfree/2020/apr/30/coronavirus-deaths-how-does-britain-compare-with-other-countries>

⁶ If 200 people are confirmed positive, rather than 100, then the case-fatality rate will fall from 10 per cent to 5 per cent.

Some epidemiologists argue that the lack of widespread, systematic testing in most countries is the main source of discrepancies in death rates internationally⁷. This is because, to get an accurate figure across a population, it is necessary to test not just symptomatic cases, but asymptomatic people also. Having that data would give an accurate picture of how the pandemic is affecting whole populations, not just the sick.

Similarly, relying on the **crude death rate** is also problematic, as this method does not take into consideration factors such as the demographic profile of the population. It is known, for example, that the elderly are more susceptible to Covid-19 than younger cohorts. Thus, comparing crude death rates in Italy (median age, 46) to Ireland (median age, 37) is unlikely to be illuminating.

There is also the issue of **hidden deaths** – people who succumb to the virus without having been tested. This would include some care home residents and those who died in the community. For example, in Northern Ireland over the 4 weeks ending 24 April 2020, 596 ‘excess deaths’ (i.e. deaths above the average for the corresponding week in previous years) were registered in Northern Ireland⁸. This jump in excess deaths is speculated to include undiagnosed and untested cases of Covid-19⁹.

Population densities may also be a factor in the transmission of the virus, as Covid-19 is known to spread rapidly in crowded areas (e.g. New York). This makes it difficult, for example, to compare Ireland (which has a low population density) with England (where the population is considerably larger).

Care Homes

During the pandemic, the treatment of Covid-19 in care homes has been a difficult issue in many countries, including Northern Ireland¹⁰. Nursing home residents are ideal prey for the virus, as they are usually elderly, and often with underlying health conditions. They live in close proximity to each other, and some residents suffering from dementia or Alzheimer’s may not remember social distancing rules or adhere to them. Care home staff also go from one room to another to look after residents, and

⁷ Henriques, M, (2020) **In Italy, the death rate from Covid-19 is more than 10 times greater than in Germany. Why does the death rate vary so much internationally?** 2 April 2020. Available at: <https://www.bbc.com/future/article/20200401-coronavirus-why-death-and-mortality-rates-differ>

⁸ NISRA (2020) **Deaths registered in Northern Ireland – Weekly Statistics, Week ending 24 April 2020 (week 16)**, Statistical Bulletin. Available at: <https://www.nisra.gov.uk/sites/nisra.gov.uk/files/publications/Deaths%20Registered%20in%20NI%20-%20Week%2016%20-%202020.pdf>

⁹ Surveillance statistics have undergone a number of revisions and some improvements since mid-April 2020. NISRA now publish weekly summaries, which include deaths involving COVID-19 – i.e. where COVID-19 or suspected COVID-19 was mentioned anywhere on the death certificate, including in combination with other health conditions.

¹⁰ Source: Euronews (2020) **Coronavirus: Care homes could be where over half of Europe's COVID-19 deaths occur, says new study**. 17 April 2020. Available at: <https://www.euronews.com/2020/04/17/coronavirus-care-homes-could-be-where-over-half-of-europe-s-covid-19-deaths-occur-says-new>

many staff (including some in Northern Ireland) [have complained of not having enough personal protective equipment \(PPE\)](#) to ensure they're not unknowingly spreading the disease ¹¹.

The surveillance and reporting of Covid-19 statistics from care homes varies widely across jurisdictions. France has been reporting such deaths from the onset of the pandemic, while Spain has not, and the UK has only recently began to incorporate them into daily figures. The importance of including such deaths is illustrated by a recent preliminary study by researchers at the London School of Economics (LSE), who found that care home deaths in five countries (Belgium, Canada, France, Ireland and Norway) accounted for between 49 and 64 per cent ¹² of overall deaths from the virus.

Given the inherent difficulties of comparing or ranking countries using case fatalities or crude death rates, some authorities have suggested that 'excess deaths' may be the most promising comparator when comparing the virulence of the disease across jurisdictions.

Excess Mortality

According to *The Economist* (2020), in some countries, official daily figures may exclude those who did not die in hospital, or who did not test positive for the virus, or who were never tested. Often the cause of death will take several days to establish and report, which creates a lag in the data. "And even the most complete covid-19 records will not count people who were killed by conditions that might normally have been treated, had hospitals not been overwhelmed by a surge of patients needing intensive care", so-called 'collateral damage' ¹³.

There is a growing consensus that the best way to measure the impact of the Covid-19 emergency is to look at "excess mortality" – the gap between the total number of people who died from any cause, and the historical average for the same place and time of year ¹⁴. This is because excess mortality figures are likely to contain, not only

¹¹ In a tragic story reported by *Euronews* on 24 March 2020, an unspecified number of elderly people were found dead and abandoned in some nursing homes in Spain. It appears the Spanish army made the discoveries while disinfecting old people's homes. The Spanish Prosecutor's Office said the military had verified "the existence of elderly people, some of them ill, residing in extreme situations and poor conditions, as well as deceased residents" (source: *Euronews*, 24 March 2020. Available at: <https://www.euronews.com/2020/03/24/coronavirus-elderly-found-dead-and-abandoned-in-spanish-nursing-homes>)

¹² Comas-Herrera, A., Zalakain, J. Litwin, C., Hsu, A. and Fernandez-Plotka, J. (2020) **Mortality associated with COVID-19 outbreaks in care homes: early international evidence**. 17 April 2020. International Long-term Care Policy Network, London School of Economics

¹³ *The Economist* (2020) **Tracking covid-19 excess deaths across countries**. 16 April 2020, Available at: <https://www.economist.com/graphic-detail/2020/04/16/tracking-covid-19-excess-deaths-across-countries>

¹⁴ For example, see *Euronews* (2020) **Coronavirus: there's a better way of judging countries on their COVID-19 response, says expert**. 27 April 2020. Available at: <https://www.euronews.com/2020/04/27/coronavirus-there-s-a-better-way-of-judging-countries-on-their-covid-19-response-says-expe>

confirmed Covid cases, but also those who died from the virus without being tested, plus those who died from 'collateral damage' during the outbreak, such as cancer patients and coronary cases.

The Financial Times (FT) recently conducted an analysis of overall mortality in 14 countries affected by the pandemic. Mortality statistics revealed that 122,000 deaths in excess of normal levels had occurred across these locations, considerably higher than the 77,000 official Covid-19 deaths reported for the same places and time periods ¹⁵.

According to the FT analysis:

“Overall deaths rose 60 per cent in Belgium, 51 per cent in Spain, 42 per cent in the Netherlands and 34 per cent in France during the pandemic compared with the same period in previous years.”

“Some of these deaths may be the result of causes other than Covid-19, as people avoid hospitals for other ailments. But excess mortality has risen most steeply in places suffering the worst Covid-19 outbreaks, suggesting most of these deaths are directly related to the virus rather than simply side-effects of lockdowns.” ¹⁵

Markéta Pechholdová, assistant Professor of Demography at the University of Economics, Prague, added:

“Even the much higher numbers of deaths in the pandemic suggested by excess mortality statistics are likely to be conservative, as lockdowns mean that “mortality from numerous conditions such as traffic accidents and occupational injuries possibly went down” ¹⁵.

The extra deaths have completely overwhelmed reporting mechanisms in some countries. In Ecuador's Guayas province, for example, just 245 official Covid-related deaths were reported between 1 March and 15 April, but data on total deaths show that about 10,200 more people died during this period than in a typical year — an increase of 350 per cent ¹⁵.

In brief, by comparing mortality figures from the period of the pandemic to what it was in previous years at the same season, excess mortality has certain advantages over both case-fatality ratios and crude death rates, and provides a more comprehensive picture of the way it has affected not only the sick, but the overall population as a whole. However, as Caul (2020) points out, daily and weekly statistics are still valuable because they are available very quickly, and give an indication of both overall trends and what is happening day by day ¹⁶.

¹⁵ Financial Times (2020) **Global coronavirus death toll could be 60% higher than reported**, 26 April 2020. Available at: <https://www.ft.com/content/6bd88b7d-3386-4543-b2e9-0d5c6fac846c>

¹⁶ Source: ONS (2020) **Counting deaths involving the corona virus (Covid-19)**, Sara Caul, National Statistical Blog, 31 March 2020. Available at: <https://blog.ons.gov.uk/2020/03/31/counting-deaths-involving-the-coronavirus-covid-19/>

4. Examples of Good Practice

When the history of the pandemic is finally written, a number of countries which managed to contain and control the outbreak will stand out as models of good practice. The list is likely to include three countries in the Western Pacific region, namely: South Korea, Australia and New Zealand.

Table 1 presents statistics on laboratory-confirmed cases and deaths for the UK and the three aforementioned nations. The sheer magnitude of the differences between the UK and the others raises many questions. Up to 5th May 2020, over 190,000 confirmed cases and 28,700 deaths have been reported in the UK. This contrasts with under 11,000 cases and 254 deaths in South Korea, where the population (51million) is not that dissimilar to the UK (68 million). In other words, while the populations of both countries are roughly comparable, the UK has reported 17 times more cases, and 112 times more deaths, than South Korea. Similarly, Australia (95 deaths) and New Zealand (20 deaths) have recorded dramatically fewer fatalities than the UK. Even allowing for their smaller populations, the gap in mortality and morbidity figures is remarkable. Why are the differences so stark? Some clues were provided by the Government of South Korea on 15 April 2020, when they published a document for global consumption, which showed how they had responded to the emergency ¹⁷.

Table 1. Reported laboratory-confirmed COVID-19 cases and deaths, by Selected Countries on 5 May 2020.

| Country | Total Confirmed Cases | Confirmed New Cases | Total Deaths | New Deaths | Population * (millions) |
|-------------|-----------------------|---------------------|--------------|------------|-------------------------|
| UK | 190,588 | 3,985 | 28,734 | 288 | 67.80 |
| South Korea | 10,804 | 3 | 254 | 2 | 51.26 |
| Australia | 6,825 | 24 | 95 | 0 | 25.45 |
| New Zealand | 1,137 | 0 | 20 | 0 | 4.82 |

Source: WHO Daily Situation Report No. 106, 5 May 2020;

* Population figures are latest estimates, based on Worldometer elaboration of recent UN data.

South Korea

The in-depth document released by the Korean government comprehensively summarizes how Korea tested, traced, and treated COVID-19 cases. According to the report, Korea had a surge of COVID-19 cases in February 2020, and the virus started spreading at the local and community level. The number of new coronavirus cases increases exponentially, peaking at 909 new infections on February 29. But new cases

¹⁷ Government of Korea (2020) **Flattening the curve on COVID-19: How Korea responded to a pandemic using ICT**. 15 April 2020. Available at: http://www.moef.go.kr/com/cmm/fms/FileDown.do?atchFileId=ATCH_000000000013739&fileSn=2

dropped significantly thereafter, and the country was able to successfully flatten the curve on COVID-19 in only 20 days without enforcing extreme draconian measures, such as the lockdowns seen in much of Western Europe.

The key features of the Korean experience were (i) rapidity of response; (ii) a comprehensive testing regime; (iii) aggressive contact tracing and follow-up; and (iv) the nation-wide use of highly sophisticated ICT and mobile apps. A timeline produced by the Government ¹⁸ shows just how quickly the authorities reacted.

| | |
|------------------|---|
| 3 January 2020 | The Korean government raised the alert level after a cluster of pneumonia cases of unknown origin were reported from China. |
| 12 January 2020 | Coronavirus was named 2019-nCoV, and Chinese scientists shared the genetic sequence of the virus internationally, |
| 30 January 2020 | WHO declares the coronavirus a global public health emergency. |
| 20 February 2020 | First Covid-19 death reported in Korea. |
| 23 February 2020 | Korean government issues Level 4 (Red) Alert. Schools ordered to start new semester one week late.. |
| 19 March 2020 | Special entry procedures for all foreigners, including surveillance and quarantine. |

Source: extracted from Govt. of Korea (2020) *Flattening the Curve*, p. 74

Testing began early on, with the first diagnostic test released on 4 February, only three weeks after the release of the COVID-19 genetic sequence by the Chinese on 12 January. Talk-through and Drive-through testing centres were quickly set up. Artificial intelligence (AI) algorithms were developed and used in hospitals and medical centres to perform X-ray scans and identify tell-tale signs of pneumonia in patients. The result of the scans came back in seconds.

Emergency alerts were sent by text to inform local residents of the movement paths taken by confirmed cases in their own area. If the resident crossed paths with the confirmed case, they would then get tested rapidly, with the results back in 24 hours.

Contact tracing, which began on a manual basis in February, quickly became semi-automated. Transmission routes and places visited by the infected were identified through GPS, mobile information, and credit card history. In some instances, the time to trace a contact was reduced from 24 hours to 10 minutes. Remote working, online

¹⁸ Ibid.

education, and telemedicine were also strongly encouraged and promoted. Schools were closed but there was no general lockdown.

Self-diagnostic mobile apps, which connected users to medical centres, where symptoms could be checked, became mandatory for all travellers entering the country. Travellers were placed in quarantine for 14 days, and used the app to regularly check their symptoms and report to the authorities. Alarms were set off if the traveller moved out of his designated area. This helped to slow the spread of the disease. Only nine new cases were reported on 1 May 2020, which illustrates the relative success of the surveillance and treatment regime.

The importance of responding early to the pandemic is further illustrated by the examples of Australia and New Zealand. As Table 1 (above) shows, both nations have reported low levels of Covid-19 cases and deaths compared with other major industrialised nations.

Australia

Australia has been one of the most successful countries in fighting the coronavirus pandemic, recording just 93 deaths and 6,767 cases (2 May 2020). Measures include border closures, movement restrictions, a stay-at-home policy, and a robust testing and tracing capability ¹⁹.

On 23 January 2020, the country began restricting flights coming in from Wuhan, China, the initial epicentre of the virus. The country reported its first coronavirus case — a Chinese citizen who returned from China — on 25 January. By 31 January, the Australia had recorded nine cases, and initiated a mandatory two-week quarantine for those entering the country from China. The first death was recorded on 1st March.

On 15 March, Prime Minister Morrison announced that all travellers arriving in or returning to Australia must self-isolate for 14 days. Public gatherings were limited to two people from 29 March, and residents would only be allowed to leave their home for essential shopping, medical reasons, exercise, or work. By that point, the country recorded 4,159 confirmed cases, including 15 deaths. Both Australia and New Zealand have rapidly expanded their testing capabilities, and implemented contact tracing measures, leading to the isolation of suspected cases ²⁰. On 2 May 2020, there were five new confirmed cases and a cumulative total of 93 deaths for the entire period of the pandemic ²².

¹⁹ Source: New York Times (2020) **Australians Rush to Download Coronavirus Tracing App, PM's Popularity Soars**. 26 April 2020. Available at: <https://www.nytimes.com/reuters/2020/04/26/technology/26reuters-health-coronavirus-australia.html>

²⁰ Over one million Australians downloaded a contact tracing app within five hours of its launch on 20 April (source: New York Times, *Op Cit.*).

New Zealand

New Zealand began imposing restrictions on travel weeks before recording even a single coronavirus case within its borders. Starting on 3 February 2020, the government restricted access to individuals who had travelled to mainland China ²¹, then widened the restriction on 28 February to include those who travelled to Iran or were passengers or crew aboard the *Diamond Princess* cruise ship. The country confirmed its first case — a New Zealand citizen who visited Iran — on 28 February 2020 ²².

By 23 March, the country recorded 102 cases. Prime Minister Jacinta Ardern raised the country's alert to Level 3 restrictions, which meant that the country was under "heightened risk that disease is not contained." The move closed schools, cancelled mass gatherings, and allowed people to speak to their doctors online. Two days later, the country entered into Level 4 restrictions, which instructed all individuals to stay at home and severely limited travel ¹⁹. The number of coronavirus cases levelled off around 6 April, just ten days after lockdown began. On 2 May 2020, there were two new confirmed cases and a cumulative total of 20 deaths for the entire period of the pandemic ²³.

5. Dying Before their Time

Finally, it is sometimes argued that most of the elderly victims of who have died during the pandemic would have died anyway of other causes. However, an intriguing, preliminary study suggests that, far from being at 'death's door', many of the victims died at least a decade before their time. Researchers found that the years of life lost (YLLs) for the average Briton or Italian who passed away was around 11, meaning that few of covid-19's victims would have died soon otherwise ²⁴.

The authors analysed data for 6,801 Italian victims, and a small Scottish sample, and calculated how much longer these cohorts would normally survive. When they took

²¹ A travel ban was imposed on 3 February for non-residents travelling from mainland China. This affected up to 12,000 Chinese students who were not permitted to return to New Zealand for the start of the academic year. New Zealand residents returning from China were placed in quarantine for 14 days at an airbase near Auckland. These measures were later extended to flights from Iran (source: The Guardian, 17 February 2020. Available at: <https://www.theguardian.com/world/2020/feb/17/exempt-chinese-students-from-coronavirus-travel-ban-new-zealand-universities-urge>)

²² Business Insider (2020) **Australia and New Zealand have been able to keep their number of coronavirus cases low thanks to early lockdown efforts.** 17 April 2020. Available at: <https://www.businessinsider.com/experts-australia-new-zealand-examples-how-to-slow-coronavirus-2020-4?r=US&IR=T>

²³ WHO (2020) **COVID-19 Situation Report No. 103**, 2 May 2020. Available at: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200502-covid-19-sitrep-103.pdf?sfvrsn=d95e76d8_4

²⁴ Hanlon, P., Chadwick, F., Shah, A., Wood, R., Minton, J., McCartney, G., Fischbacher, C., Mair, F., Husmeir, D., Mathiopoulus, J. (2020.) **COVID-19 – exploring the implications of long-term condition type and extent of multimorbidity on years of life lost: a modelling study.** Welcome Open Research. Available at: <https://wellcomeopenresearch.org/articles/5-75>

into account pre-existing conditions, and adjusted the results accordingly, the YLLs came in at 11.1 for men and 10.2 for women ²⁵. The authors acknowledge a number of methodological weaknesses in the study, including the absence of people who died in care homes from the sample – potentially the most vulnerable of all victims. Nonetheless, this preliminary study suggests that, contrary to popular opinion, a considerable number of casualties from the pandemic may have died well before their time, even the elderly.

6. Meta data on Covid-19 from Selected Countries

Annex 1 contains some limited background information on the measures taken by national authorities to tackle the pandemic. This includes lockdown date, lockdown type, whether care home deaths are included in daily reports, and whether contact tracing is conducted. It is important to note that, as Covid-19 is a fast-moving phenomenon, some of this information may already be out of date, or has been superseded by new measures.

7. Summary

This Briefing Note has examined a number of issues relating to the surveillance of COVID-19 infection during the current pandemic. The Note began by outlining the case definitions and data collection procedures of the World Health Organisation and the European Centre for Disease Control, the key co-ordinating bodies managing the emergency in Europe and globally. Both use the same definitions for the three categories of infection – suspected, probable, and confirmed. However, while the WHO requests that national authorities report probable and confirmed cases of COVID-19 infection, there is some uncertainty whether all jurisdictions are, in fact, doing so.

The next section of the Note outlined some of the methodological issues involved in making comparisons of Covid-19 infection and fatalities across jurisdictions. It was argued that both the case fatality rate and the crude death rate, while useful and important in presenting immediate information and identifying trends, lacked precision and coverage, and are probably under-estimating the toll of the pandemic. Instead, there is a growing consensus that the true cost of the virus, in terms of fatalities, is more likely to be revealed through excess mortality figures.

This was followed by reviewing three examples of good practice (from the Western Pacific region) – South Korea, Australia and New Zealand. The number of confirmed cases and fatalities in the three countries has been comparatively low compared with

²⁵ In Italy, life expectancies for the elderly are quite high. An 80-year-old man can expect to live to around 90. In the study, twenty per cent of the dead were 'reasonably healthy people in their 50s and 60s', who were expected to live for another 25 years on average (source: The Economist (2020) **Would most covid-19 victims have died soon, without the virus? A new study suggests not.** 2 May 2020. Available at: <https://www.economist.com/graphic-detail/2020/05/02/would-most-covid-19-victims-have-died-soon-without-the-virus>).

most industrialised nations. Common to all three was the decision by government to respond early and decisively to the virus, then upscale testing, contact tracing and the isolation of suspected cases. Borders were sealed, and foreign visitors were either placed in mandatory quarantine (14 days) or, in the case of New Zealand, denied entry to the country.

Some commentators have suggested that many of the COVID-19 victims, particularly the elderly, would have died anyway from other causes. This view has been challenged by a preliminary study of coronavirus deaths in Italy and Scotland. It was found that the years of life lost (YLLs) for the average Briton or Italian who passed away was typically around 11.

Finally, the Note concluded with some meta data in respect of a list of selected countries. The indicators are lockdown date, lockdown type, whether deaths in care homes are included, and whether the authorities conduct contact tracing.

Annex 1: Background Information on COVID-19 for selected countries.

| | Lockdown Date | Lockdown Type | Publish Care Home Deaths | Conduct Contact Tracing |
|----------------|---------------|--|--|---|
| Australia | | Partial. Mitigation efforts began early, with air travel restrictions introduced on 23 January. A two-week quarantine for those entering country from China (31 January) extended to all travellers on 15 March. Lockdown began on 29 March. | Yes. Began 15/04/20 | Yes. As soon as an individual returns a positive result for COVID-19, the patient is asked to identify anyone who might have had close contact with them during their infectious window. High risk contacts are then followed up directly and assessed. |
| Austria | 16 March 2020 | Full lockdown. Restrictions fully lifted on 1 May 2020 | Narrow definition. Only deaths of patients who have died "from" COVID-19 and have been reported in the country's epidemiological reporting system. | Limited. Use US app developed by Apple and Google. |
| Belgium | 18 March 2020 | Total | Yes. Began 11/04/20 | Pending. Belgium will hire 2,000 "corona detectives" to trace the contacts of individuals with Covid-19. Those identified will then be tested; if they test positive they will be quarantined for two weeks. |
| Canada | 17 – 22 March | State of Emergency declared in Provinces. No general lockdown, but schools, daycare centres, bars and restaurants closed. | Yes. All deaths in long-term care and seniors' homes included in count. | Yes. Introduced at an early stage in pandemic. Unclear if still used routinely. 27,000 volunteers trained. |
| Czech Republic | 12 March 2020 | State of Emergency declared. Partial lockdown. Closed borders. Schools closed etc. Face masks obligatory. Restrictions lifted gradually from 9 April 2020. | Yes. All deaths in care homes included in count. | 19 March, Use of mobile phone geolocation data and debit card payments for contact tracing (positive cases only) |

| | Lockdown Date | Lockdown Type | Publish Care Home Deaths | Conduct Contact Tracing |
|-------------|--------------------|--|--|---|
| Denmark | 13 March 2020 | Partial lockdown. Gatherings of more than 10 people banned, public sector workers in non-critical posts told to stay home, while public venues closed. Gradual lifting of restrictions from 15 April. | Yes. All deaths included in figures, irrespective of location. | Pending. Release of 'Mobile Proximity app' for tracing contacts imminent. |
| France | 17 March 2020 | Total (may leave home for 1 hour per day for exercise, food or medical; must produce form justifying movement; sanctions include fines or imprisonment) | Yes. Commenced 31/03/20 | Pending. Mobile teams will be used to trace the contacts of those infected with the coronavirus (no. of tracers not published). France aims to be able to test 700,000 people per week for the virus and begin lifting restrictions on May 11. National Assembly to vote on smartphone tracing app. |
| Germany | 20 March 2020 | Responses have varied by region. All states introduced social distancing measures, with six bringing in full lock-down. | Yes. all deaths in and outside of hospitals of patients who have tested positive for COVID-19. | Yes. Under Germany's contact tracing policy, every person who has come into contact with an infected patient in the last two weeks is tracked down and tested. Also smartphone app under development. |
| Ireland | 27 March 2020 | Total (exemptions include going to work, exercise, food shopping and medical reasons) | Yes. Centralised reporting system. All deaths in care homes and the community are included in the official count of deaths | Yes. Prior to lockdown, contacts of every confirmed case in Ireland was contacted (2,000 calls per day from 9 tracing centres - this involved calling around 40 people per person) |
| New Zealand | 19 - 25 March 2020 | All borders and entry ports of New Zealand were closed to all non-residents on 19 March 2020, with returning citizens and residents being required to self-isolate. Since 10 April, all New Zealanders returning from overseas must go into two weeks of supervised quarantine. Full lockdown commenced 25 March | Yes. All deaths included in daily totals. | Yes. Since the outbreak began, the Ministry of Health and district health boards have phoned covid-19 contacts, providing them with advice and checking their health status. Follow up calls also made. |
| N. Ireland | 28 March 2020 | Total (exemptions include going to work, exercise, food shopping and medical reasons) | Yes. All deaths now included in daily totals. | |

| | Lockdown Date | Lockdown Type | Publish Care Home Deaths | Conduct Contact Tracing |
|-----------|---------------|--|---|--|
| Italy | 9 March 2020 | First Member State to introduce lockdowns, beginning with northern regions. Now total lockdown across the country. Schools, universities and non-essential businesses are closed. Supermarkets and banks remain open, along with pharmacies and post offices. Gatherings and events are banned. As in France, people must fill out a form if they leave their homes, giving a valid reason | All deaths everywhere of patients who tested positive | Pending. Italy currently testing smartphone app. |
| Norway | 12 March 2020 | Full lockdown. Everyone returning from trips outside Norway placed in quarantine. Lifted some restrictions, 20 April 2020. Kindergartens and some health specialists to reopen from 20 April. Partial reopening of high schools and universities, hair, massage and beauty salons from 27 April | Yes. Commenced 15/04/20, and now included in daily report | Manual contact tracing in initial stages of outbreak. Mobile app being developed by Norwegian Institute of Public Health. |
| Portugal | 18 March 2020 | State of Emergency declared (ended on 4 May 2020). Widespread restrictions on travel and social distancing. | No, although the Portuguese government announced on 15 April that the number of deaths in nursing homes was around one-third of the total deaths from Covid-19. | |
| Singapore | 7 April 2020 | Yes. "Circuit breaker" (lockdown) declared. Reusable masks distributed to every home. Some easing of restrictions from 4 May. | Yes. Centrally collected and reported on a daily basis. | Yes. able to trace between 2,000 and 4,000 contacts per day. Police and army tracers phone people who may have come into contact with a confirmed case. Also using smart app since 20 March. |

| | Lockdown Date | Lockdown Type | Publish Care Home Deaths | Conduct Contact Tracing |
|-------------|------------------|--|--|---|
| Spain | 14 March 2020 | State of Emergency declared. People can only go out for essential shopping, travelling to and from work, medical needs, to visit those in need, or to get money. Permitted to walk dogs, but not go out running. Fines for offenders start at €100 and can go much higher. Partial return to work in some sectors on 13 April. | All deaths everywhere of patients who tested positive.. | |
| South Korea | None | No lockdown. Social distancing, school closures and supervised quarantine. | All deaths compiled, irrespective of location. | Yes. Since the outbreak began, authorities have rigorously traced an individual's movements after testing positive. Done through interviews, GPS phone tracking, credit-card records, and surveillance camera footage. |
| Sweden | | No lockdown. Gatherings of more than 50 people are banned, senior schools closed, people asked to work from home and avoid non-essential travel. Shops, bars and restaurants allowed to stay open if they obey social distancing rules. | All deaths compiled, irrespective of location. | |
| Switzerland | 28 February 2020 | No lockdown, but schools and universities closed, gatherings of more than five people banned; bars and non-essential shops closed; border restrictions, social distancing encouraged, and anyone flouting the measures can be fined. Gradual easing of restrictions from 11 May 2020. | All deaths compiled, irrespective of location. | Contact tracing halted, but will be reintroduced in mid-May. |
| UK | 28 March 2020 | Major clampdown on freedom of movement. People can only leave home for "very limited purposes", namely essential shopping and travelling to work if "absolutely necessary", for medical needs or helping others in need, or to take exercise. | Since 29 April, all deaths irrespective of location reported in daily briefing | Original contact tracing in UK halted on 12 March 2020. NHS tracing app currently under development (success would require 60 per cent of population to download and use it). Trialed in Isle of Wight, 4 May 2020 onwards. |

Updated: 2020-04-06

Annex 2: Global Surveillance of COVID-19

WHO process for reporting aggregated data

Please read for instructions of each tab.

REPORTING COUNTRY

Select your country to prepopulate other sheets

Country:



Note: Country stands for Country, area or territory

INSTRUCTIONS FOR REPORTING WEEKLY NATIONAL DATA

1. Enter your data to best fit the ISO WEEK proposed (running Monday to Sunday) OF THE WEEK during which the cases were reported. (If your week starts at a different day of the week, please use the following Monday if your week starts between FRIDAY and SUNDAY, and the same if it starts TUESDAY to THURSDAY)
2. Enter the number of NEW CONFIRMED CASES country-wide
3. Enter the number of NEW CONFIRMED CASES DEATHS country-wide
4. Enter the number of NEW CONFIRMED CASES hospitalised
5. Enter the number of CONFIRMED CASES DISCHARGED country-wide
6. Enter the number of persons tested for COVID-19 country-wide.
7. Enter the transmission classification for the all country
8. Enter the confirmed case by age group and the proportion of male cases
9. Enter the confirmed death by age group and the proportion of male cases

Annex 3: WHO Case Report Form



**World Health
Organization**

Revised case report form for Confirmed Novel Coronavirus COVID-19 (report to WHO within 48 hours of case identification)

Date of reporting to national health authority: [D][D]/[M][M]/[Y][Y][Y][Y]

Reporting country: _____

Why tested for COVID-19:

- Contact of a case Ill Seeking Healthcare due to suspicion of COVID-19 Detected at point of entry Repatriation
 Routine respiratory disease surveillance systems (e.g influenza) Unknown

If none of the above, please explain: _____

Section 1: Patient information

Unique Case Identifier (used in country): _____

Age (years): [][][] if <1 year old, [][] in months or if < 1 month, [][] in days

Sex at birth: Male Female

Place where the case was diagnosed: Country: _____

Admin Level 1 (province): _____

Case usual place of residency: Country: _____

Section 2: Clinical Status

Date of first laboratory confirmation test: [D][D]/[M][M]/[Y][Y][Y][Y]

Any symptoms* or signs at time of specimen collection that resulted in first laboratory confirmation?

- No (i.e., asymptomatic) Yes Unknown

If yes, date of onset of symptoms: [D][D]/[M][M]/[Y][Y][Y][Y]

Underlying conditions and comorbidity:

Any underlying conditions? No Yes Unknown

If yes, please check all that apply:

- | | |
|---|--|
| <input type="checkbox"/> Pregnancy (trimester: _____) | <input type="checkbox"/> Post-partum (< 6 weeks) |
| <input type="checkbox"/> Cardiovascular disease, including hypertension | <input type="checkbox"/> Immunodeficiency, including HIV |
| <input type="checkbox"/> Diabetes | <input type="checkbox"/> Renal disease |
| <input type="checkbox"/> Liver disease | <input type="checkbox"/> Chronic lung disease |
| <input type="checkbox"/> Chronic neurological or neuromuscular disease | <input type="checkbox"/> Malignancy |
| <input type="checkbox"/> Other(s), please specify: | |