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Global Dynamics of Social Policy CRC 1342

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# Taking stock of COVID-19 policy measures to protect Europe's elderly living in long-term care facilities

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# Background and purpose of the study

- The ongoing pandemic has come to impact all areas of life involving health, psycho-social and economic wellbeing.
- This impact was most severe during the first months of the pandemic, before the introduction of vaccines and the benefits of public health measures such as mask usage, testing, and lock downs could be observed.
- Of those hit hardest at the time, the frail elderly living in long-term care (LTC) facilities suffered the highest mortality outcomes and some of the gravest conditions of social isolation.

# Background

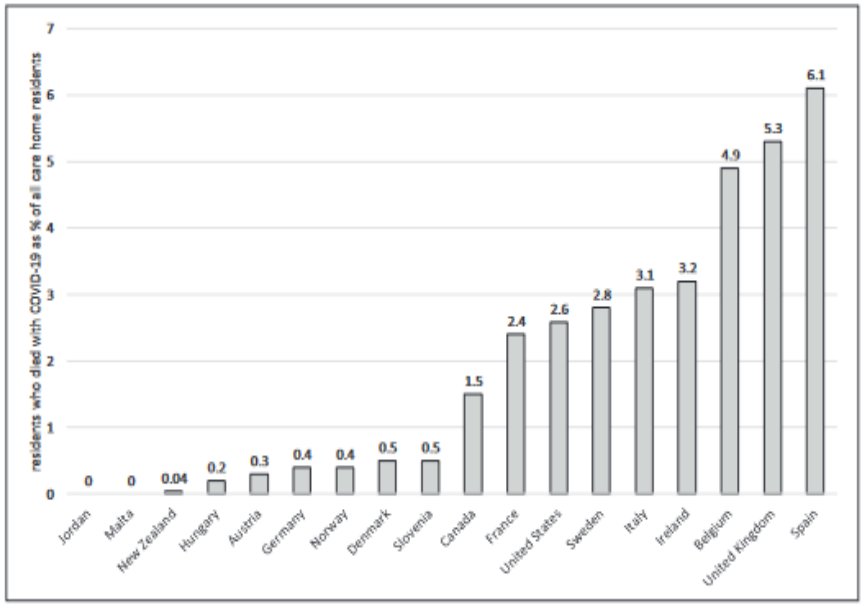


**Fig. 1: Mortality of residents in LTC facilities in mid-June 2020**
Source: Based on Comas-Herrera et al. (2020b: 21)

- While early reporting measures tended to differ between countries making direct comparisons difficult, national statistics worldwide point to a disproportionate and staggering share of COVID-19 mortality concentrated in LTC facilities (ECDC 2020a).

- Still, the severity of the impact on the institutionalized elderly has not been uniform across countries.

- Even within the European Union (EU), substantial differences could be observed in as early as the first wave of the pandemic  -i.e., months March to June 2020 (ECDC 2020b).

# Aims

- In an effort to better understand the disparities in impact on Europe's elderly living in LTC facilities during the first wave of the pandemic, our study examined data on mortality outcomes seen across months March to June 2020.

- Our aim was to understand the potential role played by two factors:

    1. Infection rates in the general population; and

    2. Member state adherence to EU-level policy and guidelines to protect residents in LTC facilities.

# Assumptions

*Why these two factors?*

- **Infection rates:** we assumed that trends in infection rates in the broader population may have affected mortality outcomes for the target population by increasing resident exposure to infected persons (staff and visitors) moving within and between institutional and non-institutional settings.

- **Member state adherence:** we assumed that guidelines defined by the European Center for Disease Prevention and Control (ECDC) represented the most up-to-date and evidence informed policy for Europe at the time.  Hence, where member states adhered to policy guidelines most closely, mortality rates for residents in LTC facilities could be expected to be lower/lowest relative to other member states.

# Research question

- Bearing these assumptions in mind, we posed the following research question:

> To what extent did infection rates in the general population and adherence to EU-level policy on measures to protect residents in LTC facilities influence the mortality outcomes for said residents in European member states during the first wave of the pandemic?

# Research design and methods

- To answer this question, we began by conducting **regression analysis** to establish the correlation between the spread of the virus in the general population and the mortality of residents in LTCFs.

- We then reviewed the evolution of COVID-19 related policy recommendations for the LTC sector made by the ECDC and explored how these were put into place during the first wave of the pandemic in select member states.

- In a final stage of analysis, we brought together the qualitative and quantitative findings to identify how the adoption of sector-specific policy associated with the mortality of residents.

# Research design and methods

*Regression Analysis*

- For the regression analysis, the impact of the pandemic on residents in LTCFs drew on data provided by ltccovid.org, including mortality statistics up until 26 June 2020 (Comas-Herrera et al., 2020b).

- For data on the impact of the pandemic on the general population, we relied on the ECDC (2020a) as a source.

- In order to strengthen the validity of the findings of the regression analysis, we also included data for countries falling outside the European region to maximize the number of observations.

- To analyse the correlation between the spread of the virus in the population and the mortality of residents, we adopted a linear regression model.

# Research design and methods

*Regression Analysis cont.*

**Dependent variable, COVID-19 associated mortality**

- In line with Comas-Herrera et al. (2020b) there are two different ways to measure the mortality of residents in LTCFs:

    1. Number of residents who died with the virus compared to all COVID-19 related deaths in the general population;
    2. Number of residents who died with COVID-19 compared to all residents.

- In an effort to make the best of comparable data, we first analysed both indicators but then decided for mortality as a share of all LTC residents (vs. the general population) in our regression.

# Research design and methods

*Regression Analysis cont.*

**Independent variable, the spread of the virus in the general population or 'general impact'**

- This variable referred to two indicators: (1) cumulative cases per 100,000 people and (2) cumulative deaths per 1,000,000 people, not including deaths of residents in LTCFs.

**Period of observation**

- Data for indicators for both the dependent and independent variables fell within a shared period of observation – that is, months March through June 2020 – and covered a total of 21 countries.

# Research design and methods

*Qualitative analysis of policy adherence*

**Independent variable, member state adherence**

- For information on measures specific to LTCFs, here we looked to the authors of the said recommendations – the ECDC once again – as a source (ECDC, 2020b).
- We then reviewed country reports published by ltccovid.org, which followed the adoption of EU measures in individual member states.
- For some cases, we also supplemented data from the country reports with additional sources listed in our paper.

# Research design and methods

*Qualitative analysis of policy adherence cont.*

**Independent variable, member state adherence**

- Our analysis subsequently focused on a subset of six countries for which comparable data on the impact of the pandemic on residents of LTCFs, as well as on sector-specific policy measures were available:

Austria, Denmark, Germany, Ireland, Spain and Sweden.

# I. Results

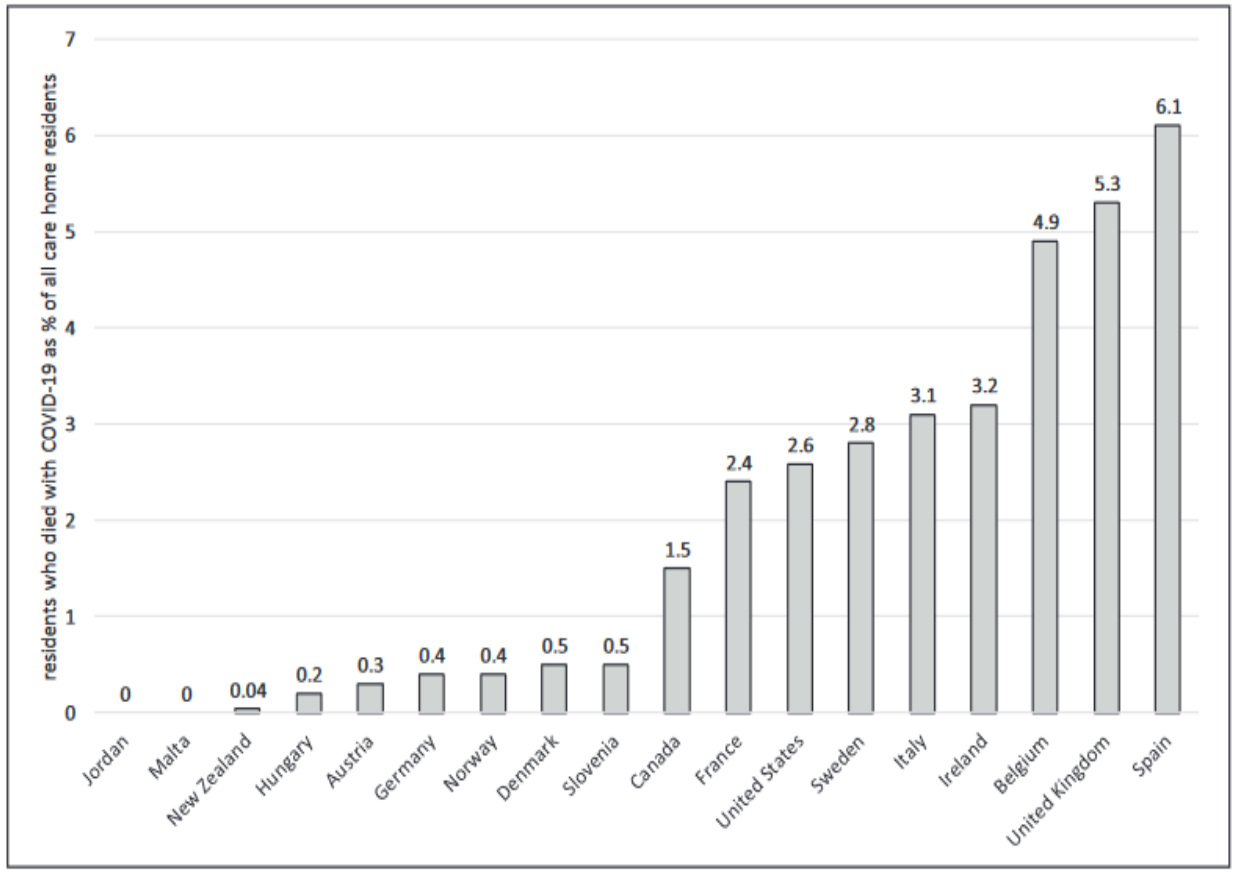


**Fig. 1: Mortality of residents in LTC facilities in mid-June 2020**
Source: Based on Comas-Herrera et al. (2020b: 21)

- Data for mortality was available for 18 countries worldwide.
- Residents who died varied between 0% (Malta and Jordan) and 6.1% (Spain), with a bottom quartile of 0.3% and a top quartile of 3.0%: a median of 1.9%, revealing skewed distribution.
- The coefficient of variation was 1.02.

# I. Results

## Correlation between the spread in the population and mortality of residents

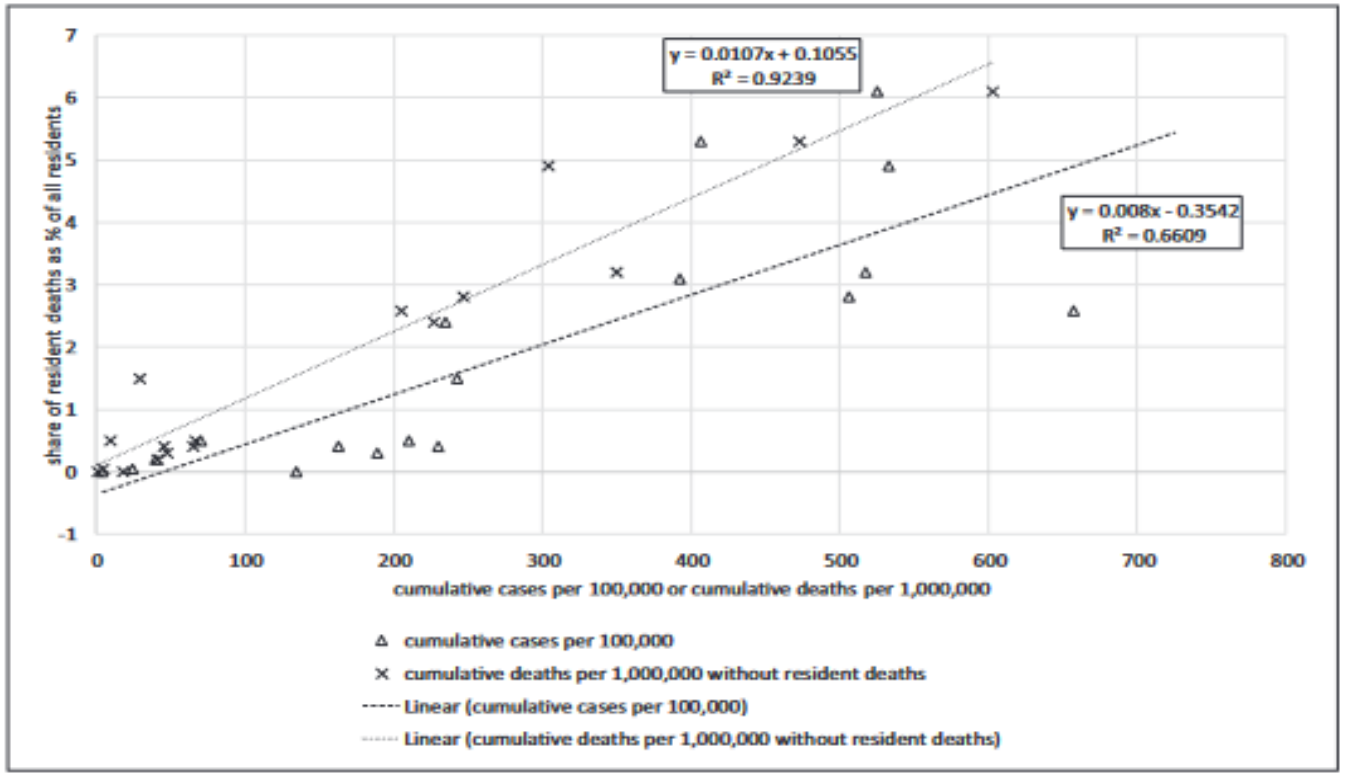


**Fig. 2: Correlation between general impact and number of resident deaths as a percentage of all residents.**
Source: Based on Comas-Herrera et al. (2020b: 21) and ECDC (2020a)

# I. Results – In plain text

## Correlation between the spread in the population and mortality of residents

- Both explanatory indicators – cumulative cases per 100,000 people and cumulative deaths per 1,000,000 (not including resident population) correlated significantly with mortality.
    - When excluding outliers from the analysis, $r^2$ for both cumulative cases (0.59) and cumulative deaths (0.91) sinks and a highly significant positive correlation emerges.
    - Some unexplained variance remained ($r^2 < 1$).
    - Indicators for independent variable correlated significantly ($r^2 = 0.37$, $p < 0.01$), which is evidence of their validity.

# II. Results

## Member state adherence to EU-level policy

**Table 1.** Development of the ECDC guidelines between February and May.

| | Main recommendations for long-term care facilities |
|---|---|
| Administrative | Report from 12 March 2020:<br>- to communicate with local health authorities<br>- to inform all persons affected by the virus (e.g. residents, staff, visitors)<br>- to designate a lead-person responsible for tasks<br>- to reduce visits/resident contact with the public<br>- to self-isolate/refrain from work by symptomatic staff<br>- to train staff in infection prevention and control<br>- to provide sufficient hygiene materials in facilities<br>- to carry out virus screening for new or returning residents<br>Additions made on 31 March and 5 May 2020:<br>- to enforce physical distancing by visitors<br>- to monitor residents after admission/readmission<br>- to expand lead-person responsibility to a lead-team<br>- for staff to wear surgical masks/FFP2 (filtering face piece) masks at all times in the event of community transmission close to facility |
| Management of symptomatic residents | Report from 12 March 2020:<br>- to isolate a (potentially) infected resident<br>- to inform staff and local health authorities<br>- to notify hospital, in the event of hospitalization<br>- for staff to wear PPE (personal protective equipment) when dealing with residents with respiratory symptoms<br>Addition(s) made on 31 March and 5 May 2020:<br>- to strictly implement the isolation of residents and PPE usage by staff<br>- to test all suspected cases, as well as all residents and staff in the event of a confirmed case |
| Environmental cleaning and waste management | Report from 12 March 2020:<br>- to disinfect all surfaces in common areas and residents' rooms<br>- to treat all waste as infectious clinical waste<br>Addition(s) made on 5 May:<br>- for staff to wear PPE when engaging in waste disposal |

# II. Results

## Member state adherence to EU-level policy

**Table 2.** Member state adherence to ECDC policy (+ low adherence; ++ medium adherence; +++ high adherence)

| Country | Aspects | Points | Total |
|---|---|---|---|
| Austria | Overall timeliness of measures | +++ | 9 |
| | Extent of adherence with ECDC guidelines | +++ | |
| | National support for implementation of guidelines | +++ | |
| Denmark | Overall timeliness of measures | +++ | 8 |
| | Extent of adherence with ECDC guidelines | +++ | |
| | National support for implementation of guidelines | ++ | |
| Germany | Overall timeliness of measures | ++ | 8 |
| | Extent of adherence with ECDC guidelines | +++ | |
| | National support for implementation of guidelines | +++ | |
| Ireland | Overall timeliness of measures | +++ | 6 |
| | Extent of adherence with ECDC guidelines | ++ | |
| | National support for implementation of guidelines | + | |
| Spain | Overall timeliness of measures | +++ | 5 |
| | Extent of adherence with ECDC guidelines | + | |
| | National support for implementation of guidelines | + | |
| Sweden | Overall timeliness of measures | + | 3 |
| | Extent of adherence with ECDC guidelines | + | |
| | National support for implementation of guidelines | + | |

ECDC: European Centre for Disease Prevention and Control.

- **Timeliness**: number of days elapsing between the start of the pandemic outbreak in a country and the introduction date of measures.
- **Start of pandemic**: date on which 100 persons were diagnosed with the virus in a country.
- **Extent of adherence**: number of ECDC guidelines addressed by national measures.
- **National support for implementation guidelines**: nature of resources (material, legislative etc.) for the implementation of measures in line with ECDC standards.

# II. Results

## Member state adherence to EU-level policy

**Table 3.** Comparison of select member states.

| | Austria | Denmark | Germany | Ireland | Spain | Sweden |
|---|---|---|---|---|---|---|
| Cumulative cases per 100,000 people 3 months after 100 cases | 191 | 207 | 219 | 516 | 511 | 432 |
| Cumulative deaths per 1,000,000 people 3 months after 100 cases | 76 | 102 | 103 | 348 | 578 | 474 |
| Number of tests per 100,000 people 3 months after 100 cases | 5628 | 12,923 | 5179 | 7749 | 5964 | no data available |
| Test positive rate calculated by data above[a] | 0.034 | 0.016 | 0.042 | 0.067 | 0.085 | no data available |
| Deaths attributed to COVID-19 as the percentage of all care home residents/ beds | 0.30 | 0.50 | 0.40[b] | 3.2 | 6.10 | 2.80 |

Source: Based on ECDC (2020a), Comas-Herrera et al. (2020b: 21) and Roser et al. (2020).
[a]Cumulative cases per 100,000 people or the number of tests per 100,000 people.
[b]Regarding Rothgang et al. (2020: 3f), this number is an underestimation. For about one in three to one in four deceased with COVID-19, it is not known whether they were nursing home residents or not.

# II. Results – In plain text

## ECDC guidelines on preventing the spread of COVID-19 in LTC facilities

- Making direct comparisons based on the reports available was difficult, owing to differences in reporting style and comprehensiveness. This required us to add additional reporting sources to our data for some countries.

- Based on policy reports, Austria adhered most closely to ECDC policy, with Denmark and Germany following close behind. Ireland and Spain represented mid-level adherence, whereas Sweden adhered the least with EU recommendations.

- Generally speaking, those countries adhering more closely to EU-policy also had better mortality outcomes.

# III. Results

## Aggregation of data

- To better understand the role that policy measures may have played in affecting mortality outcomes among residents, we used the results of our regression analysis, i.e., the regression equation to predict values and compare these with actual values.

- In other words, we prognosticated the mortality of residents in line with the significant correlation established between general impact (cumulative deaths per 1,000,000 without resident deaths) and residents who died with COVID-19 as the percentage of all residents.

- **Underlying assumption**: where actual numbers of deaths were lower than predicted based on general impact of COVID-19 in the broader population, this could be attributed to the role of member state adherence to ECDC guidelines.

# III. Results

## Aggregation of data

**Table 4.** Comparison of actual and predicted mortality.

| Country | Actual value | Predicted value | Actual (as the percentage of predicted deaths) | Adherence score |
|---|---|---|---|---|
| Austria | 0.30 | 0.62 | 48.6 | 9 |
| Denmark | 0.50 | 0.82 | 61.1 | 8 |
| Germany | 0.40[a] | 0.80 | 49.9[5] | 8 |
| Ireland | 3.20 | 3.85 | 83.1 | 6 |
| Spain | 6.10 | 6.56 | 93.0 | 5 |
| Sweden | 2.80 | 2.75 | 101.8 | 3 |

[a]With regard to Rothgang et al. (2020: 3f), this is an underestimation. Assuming the number of care home resident deaths as the percentage of all COVID-19 deaths is 50% in Germany as date of these data collections, the actual value would be 0.54% and the actual (as the percentage of predicted) would be 68.0%.

# III. Results – In plain text

## Aggregation of data

- The relationship between predicted and actual values for mortality varied strongly from member state to member state: whereas actual mortality as a share of predicted was at around 50% for Austria, Denmark and Germany, in Ireland, Spain and Sweden the share ranged from 83% to 102%.

- In line with our assumption, if the relation between the predicted and actual values is indicative of the influence of policy measures undertaken by member states, then lower actual numbers reflect the efficacy of national responses.

- Accordingly, measures taken in Austria, Denmark and Germany appear to have been more effective than in Ireland, Spain and Sweden.

- This corresponded well with scores for member state adherence observed for these countries; in countries where adherence was higher, the actual values were lower in relation to predicted numbers.

# Main limitations

- Differences in reporting on mortality and under-reporting on adherence to EU policy by member states obfuscates comparative research.
- Our sampling method for the six countries (in line with the dependent variable) may have introduced a positive selection bias.
- Issue of timing: onset was different for every country. Member states hit by the pandemic later in the first wave had the benefit of better guidance by the ECDC and learning from predecessors than those hit earliest.

*So what does it all mean?*

Our findings are not very robust concerning the role of policy adherence!

# Learnings

- The greatest protection that can be afforded to the institutionalized elderly lies in reducing the transmission of infectious disease in the general population.

- Timely, close adherence to well implemented policies along the lines of the ECDC guidelines may help mitigate the impact on resident mortality. However, the efficacy of such measures is likely subject to the aforementioned spread of the virus in the broader broader.

- This means that policies only targeting the LTC population are not sufficient, if viruses similar to COVID-19 are otherwise widespread throughout a country. This was especially evident during the first wave of the pandemic, when vaccinations and rapid tests were not yet available.

- Looking forward, the dramatic developments of this period stress the necessity for a two-pronged approach to policy-making during a pandemic involving a novel virus: first and foremost, one that addresses the risk of exposure in the general population and second, a set of measures specifically tailored to those most vulnerable – in this case, the frail elderly.

# Conclusions

- Beyond this, our research sheds light on a number of deficiencies in extant international and national data-sources, pointing to the dire need for better methods of measurement and reporting within Europe.

- This requires the use of shared concepts and methods, as well as standardized approaches to testing and reporting on cases across member states. It is only by improving our access to reliable and comparable data that we can develop more effective, well-informed policies that allow us to be better equipped to dealing with future crises of this kind.

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