

# What Can We Learn From Germany's Response to COVID-19?

**- Medical Preparedness / Flexible Responses / Management of Public Funds-**

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Germany is said to be one of the most successful countries in the world in responding to COVID-19. In this paper, we look at the case of Germany, and attempt to identify points in the nation's response that might be of use to Japan.

The first thing that should be noted is Germany's medical preparedness. In Germany, intensive care capacity was well-established even before the COVID-19 crisis. The utilization of data such as the status of hospital beds has also been promoted, making it possible to provide severely ill patients with ICU spaces rapidly and effectively. In addition, medical institutions were offered incentives by the government to encourage them to significantly increase their number of ICU beds in order to respond to COVID-19.

Further, flexible cooperation between the federal and state governments and the reinforcement of the role of specialist institutions by the passage of legislation that encourages the utilization of scientific information allowed the early realization of infection prevention measures.

Nevertheless, although it can be judged that measures were put into effect in accord with the actual status of each regional area and a good balance with local autonomy was maintained, a certain amount of dissatisfaction is smoldering as a result of severe restrictions on the activities of citizens due to lockdown measures and additional state regulations.

We should also give attention to the fact that ensuring fiscal soundness prior to the crisis enabled bold and rapid expenditure of public funds. Compared to other European nations, Germany has experienced only a minor economic downturn, and the nation is flexibly altering its course to a focus on environment-oriented policies.

These German initiatives will certainly provide a significant reference for Japan as it responds to COVID-19.

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Germany's COVID-19 fatality rate is conspicuously lower than those of other European nations (Table 1). While the infection rate increased over summer in many nations, the number of people showing positive results for PCR tests began to stabilize in Germany (Table 2). Germany can be pointed to as one of the most successful nations in responding to COVID-19. Germany also played an important role in Europe by increasing PCR testing from an early stage and accepting patients from other European nations into its ICUs.

In this paper I would like to consider the background to Germany's success in responding to COVID-19 and explore factors that may be useful for Japan, with reference to the discussions offered below by Ortwin Renn, a specialist in risk management, and Ansgar Lohse, a German physician<sup>1</sup>.

**Table 1 COVID-19 deaths per 100,000 people – European nations and Japan**

| Belgium | Spain | United Kingdom | Italy | Sweden | France | Germany | Japan |
|---------|-------|----------------|-------|--------|--------|---------|-------|
| 865     | 684   | 621            | 594   | 583    | 490    | 113     | 12    |

(Note) As of October 1.

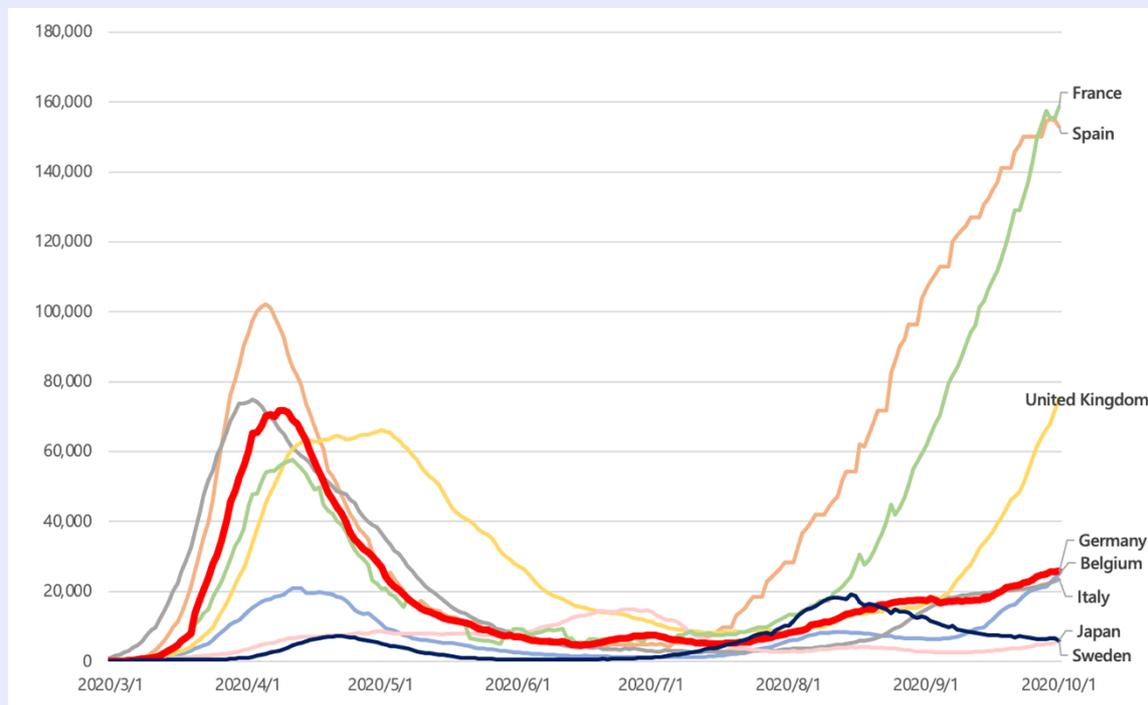
Source: Formulated by the author based on data published by the European Centre for Disease Prevention and Control

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Table 2 Trends in number of COVID-19 patients (patients with positive PCR test results) in European nations



Source: Formulated by the author based on data published by the European Centre for Disease Prevention and Control

## A Well-developed Intensive Care System and “Visualization” of the Status of Bed Use in ICUs are the Keys

Germany has 1.7 times the number of doctors per population as Japan (Table 3), and the nation’s family physician system is known to be well-developed. However, it is Germany’s intensive care system that has proven to be most effective in responding to the COVID-19 pandemic. Germany’s ICU network has more than six times the number of beds per population as Japan’s, at 33.9 against 5.2 in Japan. The high number of ICU beds in Germany has been the subject of criticism as a factor in the nation’s high medical costs, but it has contributed to allowing Germany to avoid the collapse of its medical system in the current crisis. Another point that we should take note of is the large number of intensive care specialists working at German hospitals. Looking at total numbers, Germany has 8,328 specialists (as of 2018), while Japan has 1,850 (as of 2019), clearly a significant difference (figures taken from a survey conducted by the Japan Medical Association). Considered by population, there is actually a sevenfold difference between the number of intensive care specialists in Germany and Japan. Furthermore, the promotion of the utilization of data and the ability to grasp the status of vacant beds in ICUs and other wards in each of the nation’s hospitals online increases the possibility of providing ICU beds for severely ill patients

quickly and effectively. With regard to considering the resilience of its medical system in a time of crisis, Japan can certainly learn from Germany’s well-prepared intensive care system (from both physical and personnel perspectives) and the efficient data-based operation of that system.

(Table 3) Comparison of medical preparedness in Germany and Japan

|  | Germany | Japan  | As of time of survey        | OECD average |
|--|---------|--------|-----------------------------|--------------|
| Number of hospital beds per 1,000 populati | 8       | 12.98  | Germany : 2017, Japan : 201 | 4.5          |
| Number of doctors per 1,000 population     | 4.31    | 2.49   | 2018                        | 3.4          |
| Number of pharmacists per 1,000 populatio  | 0.66    | 1.90   | 2018                        | 0.9          |
| Number of CT units per million population  | 35.13   | 111.49 | 2017                        | 27.6         |
| Number of MRI units per million populatio  | 34.71   | 55.21  | 2017                        | 17.3         |
| Number of ICUs per 100,000 population      | 33.9    | 5.2    | Germany : 2017, Japan : 201 | 12           |
| Number of hospitals per million population | 37.3    | 66.2   | Germany : 2017, Japan : 201 | 28.9         |

Source: Formulated by the author based on OECD data

## Advance Preparation by Experts and a Flexible Response that made use of Government Incentives

Germany has had a crisis response plan that projects risk scenarios in place for eight years, since it experienced severe acute respiratory syndrome (SARS). Because of this, the nation was able to rapidly implement response measures when the true nature of COVID-19 began to become clear. First, Germany established the principle that understanding the status of viral infection would be directly related to the prevention of further infections, and therefore enhanced its PCR testing system from the earliest stage. Tests were also conducted on asymptomatic people. By March 15, 18,000 tests per day were being conducted, but this figure rapidly increased to reach 50,000 per day by March 22. Following this, the number of tests conducted remained constant until mid-June, but then increased significantly, exceeding 160,000 a day over the course of September.

Several factors have been indicated as reasons that Germany was able to establish a PCR testing system in such a short period. First, in mid-February, 300 laboratories and university hospitals throughout the country participated in a “testing scheme.” In addition, the Robert Koch Institute, a federal agency, issued a recommendation regarding the necessity for testing, and most states followed this recommendation. Testing was also made the subject of government medical insurance, and 250 private sector testing companies are conducting tests, with the result that large numbers of citizens have been able to receive tests<sup>2</sup>. In Japan also, former Prime Minister Abe announced a policy for the expansion of testing; it will, however, be necessary to examine why this policy was not realized at an early stage. The German government succeeded in actively providing support for medical institutions that created ICU to respond to severely ill patients. In concrete terms, looking

at the incentives provided to hospitals, the government provided subsidies of 50,000 euros per bed (equivalent to 6 million yen), enabling it to rapidly increase the nation's ICU capacity from 25,000 beds to 40,000 beds.

## **A Focus on Scientific Opinion**

In addition, the German government created a system under which the Federal Cabinet has been advised on a weekly basis by epidemiologists and other experts since the early stages of the spread of COVID-19, allowing expert knowledge to be incorporated in policy. In particular, specialists at the Robert Koch Institute have played a central role in the provision of expert opinion, and have supported measures to prevent the spread of the infection through diverse and constant cooperative initiatives conducted with the government. A mechanism that allows scientific experts to provide advice to the government has existed in Germany since the 19<sup>th</sup> century. Today, numerous advisory bodies are active, and experts play a variety of roles in the presentation of advice. With regard to the current measures to prevent the spread of COVID-19, the experts have been scrupulous in providing verified and evidence-based opinions, but judgment on policy measures and the responsibility for the formulation of policy has ultimately rested with the government. The role of the Robert Koch Institute was enhanced in late March based on the Law for the Protection of the Population in the Event of an Epidemic Situation of National Significance (Gesetz zum Schutz der Bevölkerung bei einer epidemischen Lage von nationaler Tragweite). Specifically, the Federal Ministry of Health has established the authority to make recommendations regarding cooperative actions within the government based on recommendations from the Institute; the Institute has also been authorized to coordinate cooperation with the federal government, states, and other institutes, and to exchange information with these entities.

Other experts are actively providing advice to the government in addition to the specialists associated with the Robert Koch Institute. The world-renowned virologist Christian Drosten, for example, directly advised Chancellor? Angela Merkel regarding the necessity for PCR testing. Dr. Drosten also explained issues including COVID-19 and measures to prevent its spread from an expert perspective for the general public in a podcast which was downloaded by large numbers of people, becoming, it is said, the most-listened-to podcast in Germany.

## **Efforts to realize a Balance between Cooperation at the Federal Level and a Respect for Regional Autonomy**

In Germany, the federal and state governments have worked together to promote measures to prevent the spread of infection based on guidelines agreed between them. Since

March, Chancellor Merkel has issued messages to the entire nation, and has intensified initiatives at the federal level.

Federal and state governments have cooperated in order to flexibly advance measures against COVID-19 in a process of trial and error. On March 12, the first guidelines were established based on agreement between the federal government and state governments. At the federal level, these guidelines banned gatherings of more than 100 people, and also closed schools. In the middle of the month the states issued ordinances based on the Protection against Infection Act (IfSG)<sup>3</sup>, deciding to close nursery schools and stores (restaurants and drinking establishments, hairdressers, entertainment venues, etc.), but the status of implementation of these measures varied depending on the state. Because of this, a new agreement was established between the federal government and the states on March 22, and integrated federal government guidelines were established, for example restricting the freedom of movement of citizens (i.e., establishing a lockdown)<sup>4</sup>. And on March 27, the abovementioned Law for the Protection of the Population in the Event of an Epidemic Situation of National Significance, consisting of seven articles, was established. This made it possible for the federal government to more easily respond to infections that transcended state borders, and strengthened the role of the Robert Koch Institute<sup>5</sup>.

In this way, while cooperating with the federal government, each of Germany's states enacted regulations that were supplemental to the government's integrated guidelines, responding to the status of COVID-19 infections in their state and the specific characteristics of their region. The situation continued to vary from state to state as a result of these additional regulations, but in some cases policies enacted in states that responded particularly well provided models that allowed the improvement of other states' initiatives. As Drs. Renn and Lohse indicate, many people are appreciative of the fact that measures have been implemented with consideration of the actual conditions in specific regions.

## **The Importance of Maintaining Sound Fiscal Management before a Crisis**

We must also give attention to the fact that the German government maintained sound public finances from before this crisis, enabling it to respond boldly and rapidly when the crisis did occur, for example through public expenditure (grants for the curtailment of business operations, subsidies, etc.) and the ability to offer tax cuts. In addition, the use of taxpayer identification numbers and other identifiers for the provision of subsidies and similar payments made it possible for the government to respond rapidly via the Internet. In addition to a temporary reduction in value-added tax from July<sup>6</sup>, the government has also increased expenditure on subsidies for the purchase of environmentally-friendly vehicles, and is promoting policies that emphasize responses to environmental issues and the advancement of digitalization<sup>7</sup>. These policies have resulted in a 2.9-fold increase in the number of newly-registered EVs and PHVs against last year in July this year. Consumption is also displaying a recovering tendency, and Germany's economic downturn in 2020 is

expected to be lower than that of other European nations

Germany's federal government has issued government bonds totaling 218.5 billion euros, corresponding to 60% of its initial budget amount, in order to respond to COVID-19. This represents a debt-to-GDP ratio of 77%, an extremely large-scale issue of government debt for Germany, which has always maintained a balance of public expenditure. However, at the same time as this issue of government bonds, the government has established a plan to make up the shortfall in revenue represented by the project cost for COVID-19 responses and the decline in tax revenues, and the Cabinet has already decided on a 20-year government bond redemption scheme to be commenced from 2023. This should provide food for thought to Japan with regard to the nation's fulfillment of its responsibility to future generations.

It should be noted that in July, Germany actively supported the 750 billion-euro (equivalent to 92 trillion yen) EU recovery fund that will benefit nations such as Italy and Spain. This may be cause for concern over the future soundness of Germany's public finances, but is also viewed as a step in the direction of the nation's leadership in the fiscal integration of the EU.

## **Germany has also experienced Skepticism regarding the Imposition of Lockdown**

According to a recent survey of public opinion, between 60 and 70% of German citizens support the responses to COVID-19 implemented by the federal and state governments. At the same time, the lockdown enforced between March and May, and the state regulations established in addition to this, placed severe restrictions on citizens' freedom of behavior, resulting in a smoldering resentment among a certain segment of the population. State authorities and police were intolerant of violations of the regulations, and imposed fines in these cases. The imposition of strict regulations in Germany differs greatly from the situation in, for example, Sweden and Japan, where citizens were requested to make voluntary changes in their behavior. As a result, there have been suits in the nation's states arguing that lockdown violates the freedoms guaranteed by Germany's constitution. In the initial stage of the pandemic, the judgments of the courts in these cases largely favored the government, but as time has passed, rulings have become more diverse. Opposition to the lockdown has also included a demonstration held in Berlin on August 1 that was attended by around 20,000 protestors.

Some are also skeptical that lockdown was necessary from an epidemiological perspective. Below, Dr. Lohse points out that the infection rate in Germany was stabilizing prior to the imposition of lockdown, that it was unnecessary to close kindergartens and schools, and that in Europe and the US as a whole, the fear of COVID-19 has reduced emergency hospitalization by 40% and had a significant impact on the health of heart attack patients. With regard to lockdown, it appears that the view that a comprehensive evaluation

is necessary is also gaining ground in Germany.

As has been demonstrated above, it is clear that Germany's approach offers numerous points of reference for Japan's own response, including the maintenance of a well-developed intensive care system, the data-driven coordination of beds and patients, the provision of incentives to promote rapid crisis response, the utilization of scientific knowledge, the realization of a balance between cooperation at the federal level and a respect for regional autonomy, and the maintenance of fiscal soundness before a crisis strikes.

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**Yuri Okina**

Dr. Okina is an Executive Vice-President of the Nippon Institute for Research Advancement and the Chairperson of the Japan Research Institute, Ltd. She holds a Ph.D. in economics from Kyoto University, and is the author of publications including *Financial Crises and Prudential Policy* (Nihon Keizai Shinbun Shuppansha, 2010; in Japanese). She holds a variety of public positions, including as a member of the Financial System Council and the Industrial Structure Council.

## Note

<sup>1</sup> The discussions by Drs. Renn and Lohse are based on their presentations at the following two seminars:

<https://www.dijtokyo.org/event/national-approaches-to-systemic-riskgermany-and-japan-under-the-covid-19-crisis/>

<https://www.dijtokyo.org/event/how-real-are-numbersmaking-sense-of-national-covid-19-statistics/>

<sup>2</sup> See Kumagai (2020) , Eckner (2020) , etc.

<sup>3</sup> Article 28 of the Protection against Infection Act (IfSG) states that when an individual is being treated for an infectious disease or is suspected of being infected, the authority with jurisdiction shall apply the necessary preventive measures, including prohibition of movement and restrictions on entry to buildings, etc., in addition to quarantine and occupational restrictions. This Article also includes provisions regarding measures such as restrictions on gatherings and the closure or partial closure of child welfare facilities. The fundamental rights that are restricted are freedom of the person, freedom of assembly, freedom of movement, and inviolability of the home.

<sup>4</sup> An outline of the guidelines is as follows: 1. The minimum possible contact with others who are not part of the same household; 2. Maintenance of a minimum distance of 1.5 meters from other people in public spaces; 3. If spending an extended period in a public space, one should be by oneself, with a member or members of the same household, or with a maximum of one person who is not a member of the same household; 4. Essential activities may be conducted (examples include commuting, seeking emergency care [care for children, elders, etc.], shopping, visits to hospitals, fulfilling important commitments such as exams and attendance at meetings, provision of support for others, practicing individual sports, and performing outdoor activities in the fresh air); 5. Prohibition on gatherings of groups of people in both public and private spaces. Prosecution of violations of restrictions on contact by relevant authorities or police, and application of fines; 6. Closure of all eating and drinking establishments; 7. Complete closure of all service businesses related to personal care (hairdressers, beauty salons, etc.) other than providers of essential medical care; 8. Compliance with hygiene regulations at all places of business. Implementation of effective protective measures for employees and visitors; 9. A two-week minimum period of application of the measures described above.

<sup>5</sup> Specifically, in addition to enhancing the functions of the Institute, the law has allowed details to be decided by the federal government in accordance with general administrative rules, with the approval of the Bundesrat. In addition, the law has made it possible to provide compensation for the closure of businesses such as childcare facilities, and has clarified the basis for the previously vague application of fines. It has been assumed that the states do not lose any authority, but in actual fact, the interpretation has been that federal law has greater authority than state law.

<sup>6</sup> The tax rate has been reduced from 19% to 16% from July 1. The tax on foodstuffs, etc. has been reduced from 7% to 5%.

<sup>7</sup> Financial incentives for the purchase of electric vehicles (EVs) and plug-in hybrid vehicles (PHVs) (available until the end of 2021).

# Analyzing Germany's Approach to the Pandemic

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**Ortwin Renn**

Director, Institute for Advanced Sustainability Studies

I would like to review and offer some insights regarding Germany's performance with respect to the COVID-19 crisis.

First of all, based on the number of fatalities, we can say that Germany has been fairly effective and mobile in managing the crisis. Recent studies show that excess mortality in Germany is less than one percent above average while in the US, excess mortality is almost 20% above average. Germany was not sufficiently prepared for this unprecedented pandemic at the beginning, and lost at least a week before taking action. Most experts, including myself, thought that the pandemic was not as problematic as it appeared, because we thought that the virus would be less infectious than most other flu viruses, and less fatal than SARS and other recent epidemics. We also thought that risk managers would be able to contain the spread of the virus within China and surrounding countries. Over time, we corrected this notion and the central government acted swiftly within a short period of time.

## **One of the Countries with the Best Record**

In Germany, we have been testing as many people as possible to get accurate numbers, which I think is contributing to the containment of the disease, although mass testing alone does not explain the significant difference between Germany and countries like the United States or Italy. Testing in itself does not change anything in terms of risk management, but it gives us more certainty about how widespread the threat actually is. It is critical to know where and how the infection has spread in the population.

Like many other countries, we isolated the infected from the rest of the population to avoid stress on the healthcare system. We engaged in a fairly strict lockdown from the end of February, implementing what I call physical rather than social distancing measures. These measures were not as strict as they were in many East Asian countries. Families could visit parks for a walk; however, no more than two individuals were allowed to gather unless they were members of the same family. Travel was banned and many businesses were closed. Germany has gradually lifted its six weeks of strict regulations starting from mid-April, based on the condition that there were fewer than 50 infected people per 100,000 inhabitants. At present, the federal and regional governments agreed in July to allow

tougher and more targeted lockdown measures to contain local outbreaks, following a cluster infection in a local community. In late August, the number of newly infected individuals was on the rise again but the threshold has not been reached to adopt more stringent measures (i.e. 50 infected per 100,000 people) throughout Germany. However, the threshold has been surpassed in some regions and more severe measures have been enacted locally.

As part of its strategy, the government planned to launch a centralized tracing app but there was a backlash due to concerns over privacy, reflecting the fact that Germans are fairly sensitive to civil rights issues and privacy, probably more so than the citizens of many other countries. The app that has now been developed and freely distributed is based on a decentralized tracking system by means of which individuals are warned if they have come close to infected persons. This information is not centrally stored or transmitted to public institutions. Furthermore, the use of the app is voluntary. At this point in time, a little more than a quarter of the German population has been reported to have activated the app.

## **Tensions between Central and Regional Governments**

Germany has a federal structure that divides authority between the central and regional governments. Despite the existence of tensions, the division of government roles seems to be effective overall, and allows for flexible approaches given the fact that different regions are affected differently.

The federal government is responsible for the overall strategy, but standards and restrictions are set by state-level governments. Furthermore, there are municipal-level governments that can modify these standards, and which are responsible for their implementation and oversight.

The state governments were very much in accord with the federal government in the beginning. As some states were more affected than others, it became difficult to set standards nationwide, which produced tensions among the federal, state and municipal levels due to their inability to align. Because there are different levels of risk in different regions, it makes sense to shy away from standardized regulations. States are now acting more independently in setting their own regulations.

It should be added that some state leaders saw this as an opportunity to achieve a better public profile, and maneuvered the crisis at the expense of strategical coherence, productivity and people's trust in the government. Many state and municipal leaders are pressing for the removal of all restrictions, although the majority of the public still supports strict measures.

## **The Role of Scientists and Specialists**

The German policymaking process is highly influenced by scientific advice.

What could be regarded as a specific characteristic in Germany is the nation's strong reliance on scientific institutions, in particular the Robert Koch Institute, which is the government's central scientific institution in the field of biomedicine and is responsible for safeguarding public health in Germany. It plays a major role in framing the debate and suggesting measures and rules. Scientists, specifically virologists and epidemiologists, also have a significant role in policymaking as well as in the public debate about what should be done. The debate was strongly dominated by virologists and epidemiologists in the beginning, but this meant that economic ramifications, psychological consequences and social impacts were not always considered. This situation has been changing since May 2020 and other experts from the economic, social sciences and management fields have become more vocal in evaluating the adopted measures. To respond to frequent debates regarding whether the current regulations are proportional to the threat, as the principle of proportionality is very important in German law, the government has often consulted institutions like the National Academy of Sciences for advice. Science plays a major role and the government adheres to evidence-based policymaking.

The approval ratings of the federal government as well as state governments, including the main ruling party, the conservative Christian Democrat Union, have increased dramatically and are still at a high level. The Christian Democrat Union had lost public support over the past two and a half years, but now they would gain between 30 - 40% of the vote in an election. It is not unusual that ruling parties increase in popularity during a crisis, but in this case it has been apparent that Chancellor Merkel was given credit for being an excellent crisis manager. The strict measures applied were approved by the vast majority, despite a vocal and sometimes even violent protest movement led by so-called "Querdenker" ("mavericks").

## **The Public's Response to the Crisis**

The general public supported the government in the first phase of the crisis, but is gradually becoming more impatient and more polarized with the continuation of the regulations.

In the beginning in early January, there was considerable diversity of viewpoints, ranging from downplaying the risk to dramatizing the risk. However, that changed dramatically at the end of January and the beginning of February, as the general public reached a strong consensus in its support of the government's decisions. The lockdown was welcomed by the vast majority (at least 70%) of the population.

Following this, public responses pluralized, and many are now questioning the validity of the current government strategy, with the continuation of strict social distancing rules but otherwise relaxed measures. We now face many local protests of up to 10,000 people who are opposed to the government rules and organize demonstrations in large cities such as Stuttgart and Berlin. People are becoming more familiar with the large numbers of

cases and deaths, which I think is an interesting psychological phenomenon and signals a trend towards the re-calibration of normality. COVID-19 has become a familiar and almost expected concomitant of modern life.

People do understand that the top priority is to save lives, but once they get used to the crisis and see figures drop, they pressure the government to remove the restrictions.

Yet national opinion polls reveal that more than 70% of the public are still supporting the central government's policies and are in favour of a cautious approach in removing the restrictions.

## **The Major Future Challenges**

Finally, I would like to address the major future challenges for Germany's recovery programme – whether it will move in the direction of sustainability, of redirecting funds into improved resilience, and how to compensate for inequitable consequences nationally and internationally.

Germany has announced an ambitious economic recovery programme. The planned programme has been exposed to many conflicting expectations, for example whether it should boost the economy regardless of purpose, or give it a specific direction such as green and sustainable economic development. Should the government merely hand Germans more money to boost consumption for a specific industry that is suffering severely, like the automobile industry? There has also been a huge debate involving the automobile industry, green NGOs and the general public, as to whether the government should only subsidize electric vehicles, should include vehicles using hydrogen or synthetic fuel, or should subsidize any type of car, and these have become sensitive issues. In the end the government decided to launch a recovery program that shows clear indications of directing economic growth towards sustainability, for example by subsidizing the purchase of electric cars but not of cars with conventional internal combustion engines.

With regard to investment in public health, the German health system was well prepared for emergencies, and most of those infected with COVID-19 were brought to hospitals at an early stage. Equipped with a large number of hospital beds, Germany's intensive care units (ICU) were far from being over-taxed, and in fact, we have made ICU beds available to patients from other EU countries. In the past, our health system was criticized for its overcapacity, because the investment of public funds brought up issues of efficiency versus resilience, but it now seems that the investment in resilience has paid off.

To reduce systemic risks like the pandemic, more investments are likely to be made in resilient public health structures including social support systems as well as critical technical infrastructure, for example for the nation's electric power system. Many hospitals in Germany are run privately but receive public funds. Under public supervision, the basic quality of rural and city hospitals does not differ significantly, but there is debate on how to provide hospitals with equal expertise to ensure equal access to treatment for this new virus.

I must add that there were hospitals as well as elderly care homes that failed fairly badly in terms of limiting the disease, but these were fortunately exceptions to the rule. Investments towards resilient infrastructures may be accompanied by a re-nationalisation of critical supply chains. This could also become an issue between the right and the left of the political spectrum.

With regard to international relationships, it is expected that there will be strong pleas for solidarity with nations that are more affected than Germany, specifically the southern states of Europe, i.e. Italy, Spain and in part France, but also from third world nations in Africa and South America. Italy was already in debt, and is asking the EU for support; the EU is also asking for solidarity. Germany has pledged to provide support to neighbouring countries through EU mechanisms. In a tough negotiation, the EU countries finally agreed to provide a substantial support fund for recovery based mostly on a regular EU budget and additional loans that need to be paid back over a long period of time. This EU policy is still controversial in Germany. Traditionally, there has been a major reluctance to utilize taxpayer funds for supporting other EU countries. Nevertheless, the new EU compromise has received overall approval from Germany's political parties, other than the right wing AfD, and the public at large. International concerns extend to the growing conflict between the US and China, as Germany is one of China's major trading partners.

We continue in our pursuit of a future vision and recovery.



### **Ortwin Renn**

Ortwin Renn is an internationally renowned risk researcher. As a scientific director at the Institute for Advanced Sustainability Studies (IASS) in Potsdam, Germany, his research focuses on the role of systemic risks as threats to sustainable development, and structures for sustainable transformations in Germany and beyond. He continues to serve as acting chair of the Stuttgart Research Center for Interdisciplinary Risk and Innovation Studies at the University of Stuttgart (ZIRIUS) and as scientific director of DIALOGIK, a non-profit research institute for the investigation of communication and participation processes. He has a PhD in social psychology from the University of Cologne. His honors include the National Cross of Merit Order, an honorary doctorate from the Swiss Institute of Technology and the Distinguished Achievement Award of the Society for Risk Analysis (SRA).

# Rethinking Lockdown: The Lessons, Limitations, & Future of Germany's COVID-19 Response

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## Under the Surface of Germany's Test, Trace, and Lockdown Regime

The hallmark of Germany's response to COVID-19 has, since the earliest days of the pandemic, been a high testing rate. The result has been a good understanding of the viruses spread, and a relatively low incidence of undetected clinical disease. However, because only a small portion of those infected develop symptoms, some regional studies suggest that even in Germany the actual infection rate is probably 10 times higher than the officially registered case load. Consequently we believe that the official death rate in Germany of 4.7% is probably an overestimate of around 10 times. This is supported by postmortem analyses at our hospital of COVID-19 positive patients who died, showing that at least 20% of "COVID-19 deaths" were actually not directly attributable to the virus but to unrelated preexisting deadly conditions.

Tracing the course of infections in Germany over time, a fairly rapid rise in the reproduction rate in early March is evident, but I believe a closer analysis of the way the curve developed contradicts much of what is commonly believed about lockdown: The maximum infection reproduction rate in Germany was reached around the 10th of March. Lockdown measures were subsequently put in place between the 15th and 17th of March, depending on the region and state responsible. However, by that time the reproduction rate had already dropped dramatically and started to fall below the critical figure of  $R=1$ . Clearly other factors such as improvements in hand washing, sneezing and coughing etiquette and increased testing contributed to Germany's impressive success in bending the curve quickly, even before lockdown. This begs the question, was lockdown really necessary and was it necessary in the way it was done? I think there is plenty of space for discussion on that going forward, and much will remain speculative.

## Exploring the Impact of Age on COVID-19 Mortality and Transmissions

Another important point is the age distribution of cases, because both the case fatality and infection rates differ dramatically with age. Looking at the number of positive cases per population, the younger more socially active people, and most notably young children, have much lower rates of disease compared to the higher age groups. What we are seeing here is actually the rate of virus detection, not the actual disease rate, as many people

are asymptomatic and thus never tested even in Germany. Thus the data have a certain bias. Looking at mortality data, COVID-19 induced mortality only starts to be statistically detectable above the age 50, and only becoming more relevant from the age of 60 onwards. Extremely few people below the age of 40 died, and these were primarily patients with other severe underlying diseases such as advanced malignancies.

Further highlighting the importance of age distribution, a lot of attention was given to the recent research by Professor Drosten, the virologist who discovered the SARS virus and was one of the first to develop PCR testing for COVID-19: Major differences between age groups were identified in the amount of viral material isolated from the throat of infected people. While the data is still preliminary, it suggests that children and young people under age 20 seem to become infected at far lower rates, and when they do catch the virus they have significantly lower viral loads than people above 20 and older. Furthermore, it is increasingly clear that this virus is spread primarily by a small number of so called “superspreaders,” who infect a lot of other people, rather than being spread equally by infected persons. These superspreaders are probably those with a very high viral load and subsequently a lot of viral material in their throat, and with coughing and other behaviour facilitating viral spread. What is clear is that while case numbers are reported as if every infection were equal, this is not clinically and epidemiologically the case. The highly differentiated age distribution should guide policies when going forward.

## **German Health Care System is Federally organized and backed by a High Level of Per Capita Intensive Care beds**

Stepping back for a moment, tracing infections in Germany demonstrates the impact of a regional methodology on data collection. In Germany, healthcare is organized on a federal basis around the states, with Regional Health Offices (“Gesundheitsamt”) being responsible for both data collection and local health regulations. While the National Centre of Disease Control, the Robert Koch Institute, advises the national government and compiles national guidelines, it is fundamentally reliant on the cooperation of local health offices. The main advantages of this regional approach are that it preserves flexibility, can take into account specific local conditions, enables direct communication between local healthcare providers and regulators, and empowers local agencies to react quickly to a change in the situation. The importance of this is clear when looking at the regional distribution of cases in Germany. In some areas, the rate of infection is very low. However, at the same time there are also regional hotspots: in the south of Germany related to travel and trade with northern Italy, in the west from commerce with France, and in Hamburg, in the north due to its wealthy population traveling to skiing resorts and other tourism hotspots. This variability across regions begs the question, did the whole country really need to lockdown?

The disadvantage of a localized approach like Germany’s is that national reporting

is delayed. Much like in Japan, Germany always reports a drop in cases on Monday and an increase on Tuesday, because over the weekend local offices often do not report in. Furthermore, this regional organization also leads to incoherent vertical data collection. For example Germany lacks reliable national mortality figures, as they are always highly delayed, the local offices that prepare them often have limited expertise and there is always the risk of local political interference. Nonetheless, I believe that with what we know now, reacting regionally is the much more appropriate course of action.

A highly praised aspect of the German pandemic response has been its high intensive care and ventilator capacity. This is actually a symptom of structural deficiencies that, in normal times, make the healthcare system extremely expensive due to overuse of intensive care beds, and as it encourages lengthy inpatient care because hospitals get more money the longer a patient stays, especially the longer a patient is being ventilated. Nonetheless, in the case of COVID-19 these disadvantages were enormous advantages. At 25,000, German ICU capacity far surpassed that of the United Kingdom at 5,000, quadrupling it on a per capita basis. The result was that through the pandemic Germany had 12,000 unused intensive care beds. This means we could easily deal with far more cases than we have actually had to deal with.

## **Pandemic Response Must Go Beyond “Fear” & “Waiting for a Vaccine”**

This brings us to a very important question underlying the global COVID-19 response, and what is the appropriate level of fearfulness. I believe that in Germany the way in which deaths were initially reported fueled an overabundance of concern. Every day it was “the number of deaths has increased,” but, logically there is no way that the number of deaths could decrease. It is only now, later in the pandemic, that the death rate per day is being regularly reported despite the fact that, after a short initial rise, the number has declined very rapidly.

The overabundance of fear surrounding COVID-19 has obscured the ways in which our pandemic response has created other problems. For example, across Western countries, emergency admissions dropped 40%, so people with, for example, myocardial infarction did not receive the necessary emergency care. Increased mortality may therefore be related to the pandemic much more indirectly, because of reduced availability of, or willingness to pursue, health care for people with other diseases. At the same time, the economic consequences of our response are also very real, with one easy example being an increase in hunger worldwide. Very few, if any epidemiologists have adequately addressed the possibility of an increase in total mortality, resulting from not only COVID-19, but from our response to it. It remains an open question whether increased morbidity and mortality during and following the pandemic will be more due to the virus directly, or more due to the indirect secondary effects.

Because we have not been discussing the longer term consequences of our response,

in Germany people have been saying “we will do a lockdown until we have a vaccine, and once we have a vaccine we will reopen the schools .” However, a vaccine against this virus will be complicated, probably delayed, and the question of who actually gets it, controversial. For example, should priority be given to the elderly, who are most at risk, but whose immune response to vaccines is weakest, or to younger people who are less at risk, but who will have a better chance of developing immunity and thus help in stopping the viruses spread?

In consideration of the above, I proposed in late March that we should open kindergartens and primary schools. The children are not really in danger and are not really a major spreader of the disease. At the same time I argued that we need a much stronger protective response for the really endangered population, the elderly and chronically diseased persons, who continued to be put at risk due to a lack of face masks and protective clothing in nursing homes. We should have better protected the elderly, while allowing infections in the younger population so that at least some degree of herd immunity could have developed to better protect all of us from future infection waves.

In conclusion, Germany’s pandemic response so far has had clear positives and negatives. Relatively low rates of infection and mortality, a high rate of testing, and a fortunate excess of ICU capacity have enabled Germany to effectively steer through the crisis so far. However, Germany missed the chance to develop a limited herd immunity, while also failing to adequately protect the vulnerable earlier in the crisis. Furthermore, children were kept out of schools leading to learning and social disadvantages without adequate medical justification. Going forward, a reassessment of Germany’s pandemic policy that incorporates the latest research to mitigate the high level of collateral damage, which includes children’s education, research activity, and long term economic vitality, is desirable



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