



WORKING PAPER SERIES ON EUROPEAN STUDIES

INSTITUTE OF EUROPEAN STUDIES

CHINESE ACADEMY OF SOCIAL SCIENCES

Vol. 12, No. 6, 2020

**An Analysis of the COVID-19
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Low?**

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Working Paper Series on European Studies of IES, CASS can be found at:

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An Analysis of the COVID-19 Outbreaks in Germany: Why the Death Rate in Germany Is Relatively Low?

Yang Xiepu¹

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Abstract: *In the context of the global outbreak of COVID-19, the death rate of COVID-19 in Germany is much lower than some of the European neighbors such as Italy, France and Spain. However, due to the time difference of outbreak in each country, it is only sensible to select data from the same stage of the outbreak for comparison. This article first defines the selected data and compares the number of confirmed cases and mortality in the same stage of the epidemic in four European countries. It is concluded that the mortality rate of Germany under the COVID-19 epidemic is indeed relatively low. On this basis, we analyzed the reasons for Germany's relatively low death rate in terms of emergency mechanisms for preventing and controlling infectious diseases, medical and health resources, medical insurance systems, social and family structures, civil society and political consensus. Although Germany has achieved "fragile interim success" in the prevention and control of COVID-19, But there is still uncertainty in the future development of the pandemic. However, compared to some of European neighbors, Germany's prevention and control situation is relatively optimistic.*

Keywords: Germany; Death rate; COVID-19; Healthcare system

1. Introduction

The COVID-19 pandemic has raged around the world, causing millions of infections worldwide and hundreds of thousands of deaths. Among European countries, the situation in Italy, Spain and France has not been alleviated, but is relatively optimistic in Germany. The current confirmed cases in Germany are 145,742 and the death toll is 4,642. Although the

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death rate in Germany rose from 0.2% on March 11 to 3.19% on April 20.³ But compared with 13.22% in Italy, 10.29% in Spain and 12.9% in France, Germany clearly has a considerable advantage in responding to the COVID-19 epidemic. On April 15, Chancellor Merkel and the Heads of Government of the Federal State have reached agreement that Germany has reached a “fragile interim success” in the fight against the COVID-19. The contact restrictions are to be extended until 3 May, schools will gradually reopen since May 3 and shops (up to 800 square meters) may reopen.⁴

Compared with other European countries, the death rate in Germany was relatively low in the outbreak. The striking disparity attracted our attention and caused us to think about the following questions: Can these data reflect outbreaks in different countries? If so, to what extent? And why German performance in COVID-19 crisis is so outstanding? What lessons and experience could be learned by other countries?

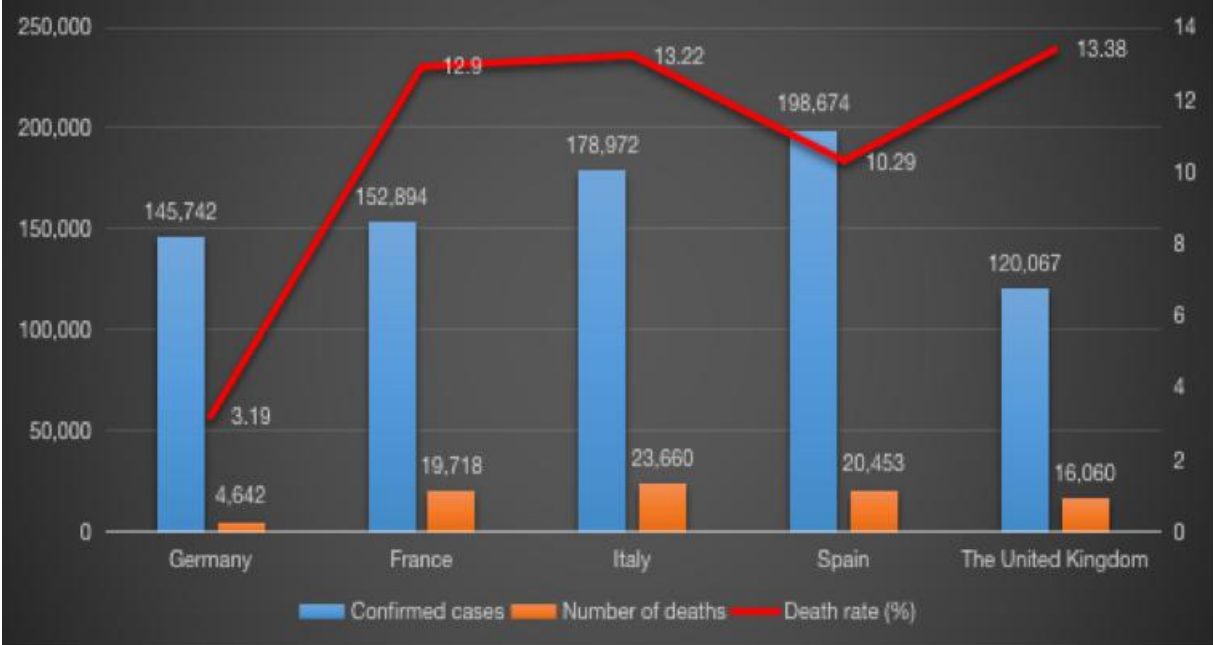
According to WHO (World Health Organization), the formula used to calculate the death rate of COVID-19 is: cumulative current total deaths / current confirmed cases. The number describes the probability of dying if infected by the virus. While the death rate is more than 4% worldwide, many European countries have figures higher than the world average. First of all, it has to be made clear that the statistics of the individual countries can only be compared to a limited extent. The current death rates are based on the proportion of deaths in the officially reported numbers, however, these often lag behind due to technical delays and different data sources. In addition, the number of tested and the resulting number of confirmed cases also have an enormous impact on the death rate: if a country conducts a large number of tests, the number of confirmed patients with mild complaints will increase accordingly, which indirectly results in a lower death rate. One explanation for the low death rate is that there are far more people tested in Germany than in other European countries. This means testing more people with no / mild symptoms trends to increase the number of known cases but not the number of deaths. Secondly, since each country does not have an outbreak at the same time, so they are at different stages of COVID-19. If we compare data from the same date in different countries, can we fully reflect the situation in each country? Taking Germany as an example, the outbreak of COVID-19 in Germany was relatively later than in Italy, and

³ “Coronavirus (COVID-20) death rate in countries with confirmed deaths and over 1,000 reported cases as of April 20, 2020”, <https://www.statista.com/statistics/1105914/coronavirus-death-rates-worldwide/>.

⁴ „Wir müssen ganz konzentriert weiter machen“, <https://www.bundeskanzlerin.de/bkin-de/aktuelles/bund-laender-corona-1744306>.

the death rate has gradually risen since the outbreak, from 0.2% at the beginning to the current 3.19%. And with the spread of the epidemic, this number is likely to rise further.

Figure 1: Coronavirus (COVID-19) death rate in countries with confirmed deaths as of April 20, 2020

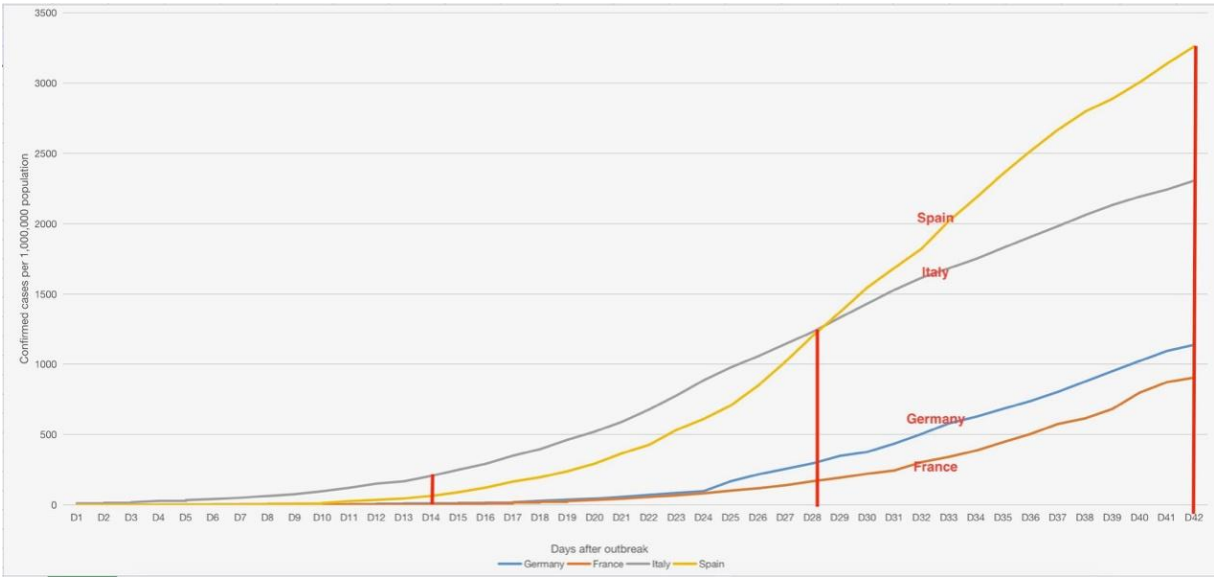


Source: Statista: Coronavirus (COVID-19) death rate in countries with confirmed deaths and over 1,000 reported cases as of April 20, 2020, by country. Available at: <https://www.statista.com/statistics/1105914/coronavirus-death-rates-worldwide/>

After the carnival, the German COVID-19 outbreak began in North Rhine-Westphalia (Nordrhein-Westfalen) at the end of February and then spread to the whole country. Let us compare the curve of infection (confirmed cases per 1,000,000 population) and mortality (deaths per 1,000,000 population) within 42 days after the outbreak in Germany, France, Italy and Spain. (According to the WHO, China’s National Health Commission and The United States’ CDC, the incubation period of COVID-19 is estimated to be between 2 and 14 days, therefore, we take the statistics of the 14th day; 28th day and 42th day after the outbreak as observation points). Figure 2 shows the infection curve (confirmed cases per 1,000,000 population), the starting point of the abscissa in this figure is the date of the outbreak (given the incubation period, we take the 29th day after the date of the first confirmed case appears as the date of the outbreak) in each country (the date is different) rather than the same date. This facilitates a horizontal comparison of the same stage of the epidemic. The ordinate is the average number of confirmed cases per million people, which makes it more scientific to

combine countries with different population bases. It can be seen from the figure that the speed and scale of virus outbreaks in Germany (blue curve) are very close to Italy (grey curve), and the average upward trend curve of confirmed cases per million people is very similar.

Figure 2: The infection curve (confirmed cases per 1,000,000 population)



Source: Author self-made.

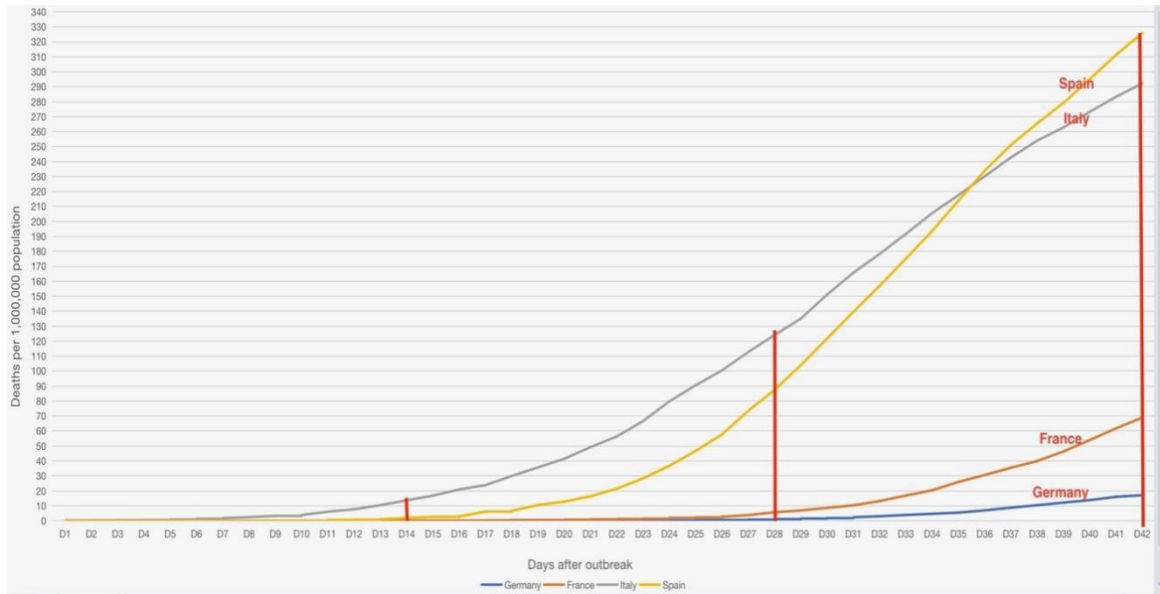
Data sources: European Centre for Disease Prevention and Control, <https://www.ecdc.europa.eu/en/publications-data/download-todays-data-geographic-distribution-covid-19-cases-worldwide>

From the mortality curve (deaths per 1,000,000 population) in Figure 3, we can see that the average number of deaths per million population in Germany is very low. For example, on the 28th day after the outbreak of COVID-19, 1.122 out of every million people in Germany died of this disease, which is far lower than the average number of deaths in France (5.699), Italy (124.128) and Spain (87.456) during the same period.

Therefore, according to these comparisons, the death rate in Germany is indeed much lower than in several other countries. Although the death rate of the various countries will gradually increase with the development of the disease course, based on the overall data flow, the death rate in Germany continuously at a relatively low level, with a relatively slow climbing rate.

In the following, we will analyze the reasons for Germany's relatively low death rate in the fight against COVID-19.

Figure 3: The mortality curve (deaths per 1,000,000 population)



Source: Author self-made.

Data sources: European Centre for Disease Prevention and Control,

<https://www.ecdc.europa.eu/en/publications-data/download-todays-data-geographic-distribution-covid-19-cases-worldwide>

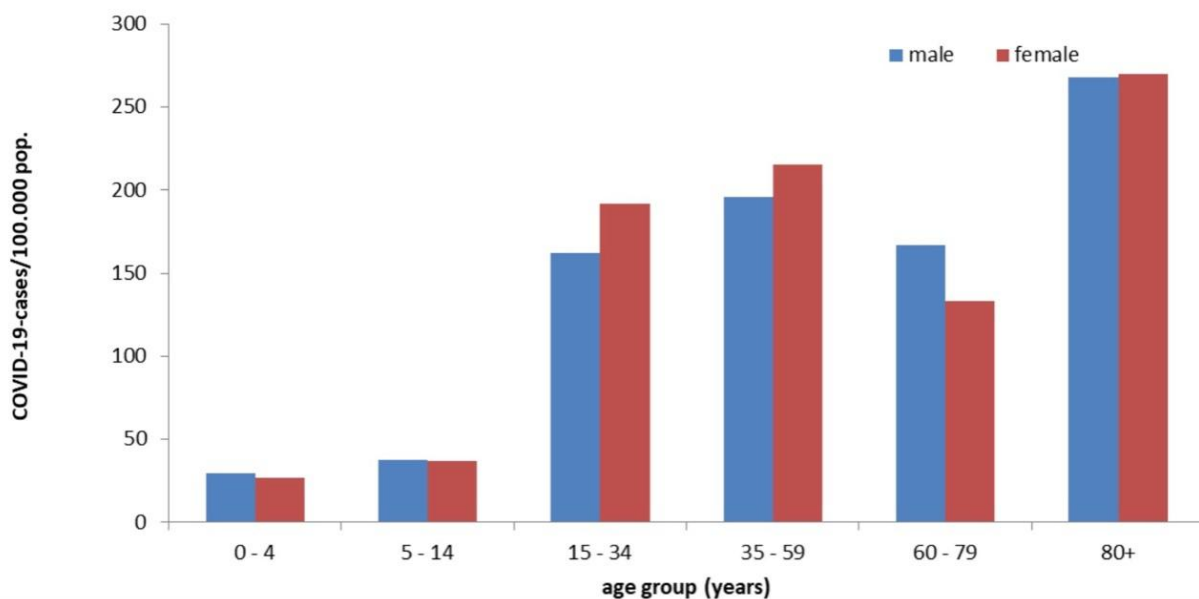
2. Main Reasons for the low Death rate in Germany

There are many reasons for the difference in mortality between Germany and some of European neighbors. It is not only related to the national emergency mechanism for the prevention and control of infectious diseases, but also related to various factors such as the country's medical and health resources, medical insurance system, economic and financial strength, and social and cultural environment. Combining information from different channels such as the World Health Organization, the German RKI (Das Robert Koch-Institut), the German Federal Ministry of Health (BGM: Bundesministerium fuer Gesundheit), and the German media, we have summarized five main reasons for the low death rate in Germany.

2.1 Younger patients and smaller household size in Germany

It is suspected that the number of deaths in Italy is so high because there are comparatively many elderly people living there, since among other things, the risk of a severe COVID-19 disease increases with age. The average age of those infected in Germany is lower than in countries such as Italy or Spain. According to the Robert Koch Institute, the majority of COVID-19 cases (70%) in Germany are between 15 and 59 years old.⁵ In Italy, on the other hand, according to a national daily report, 36 percent of those infected are over 70 years old. In many cases, younger also means healthier. According to Hans-Georg Kräusslich, Head of Virology at Heidelberg University Hospital, many - young people in particular - were infected in the Austrian and Italian ski areas. “It started as an epidemic of skiers”, Kräusslich told The New York Times.⁶

Figure 4: Electronically reported COVID-19 cases/100,000 population in Germany by age group and sex (n=139,248) for cases with information available (19/04/2020, 12:00 AM)



Source: Coronavirus Disease 2019 (COVID-19) Daily Situation Report of the Robert Koch Institute 19/04/2020 - UPDATED STATUS FOR GERMANY.

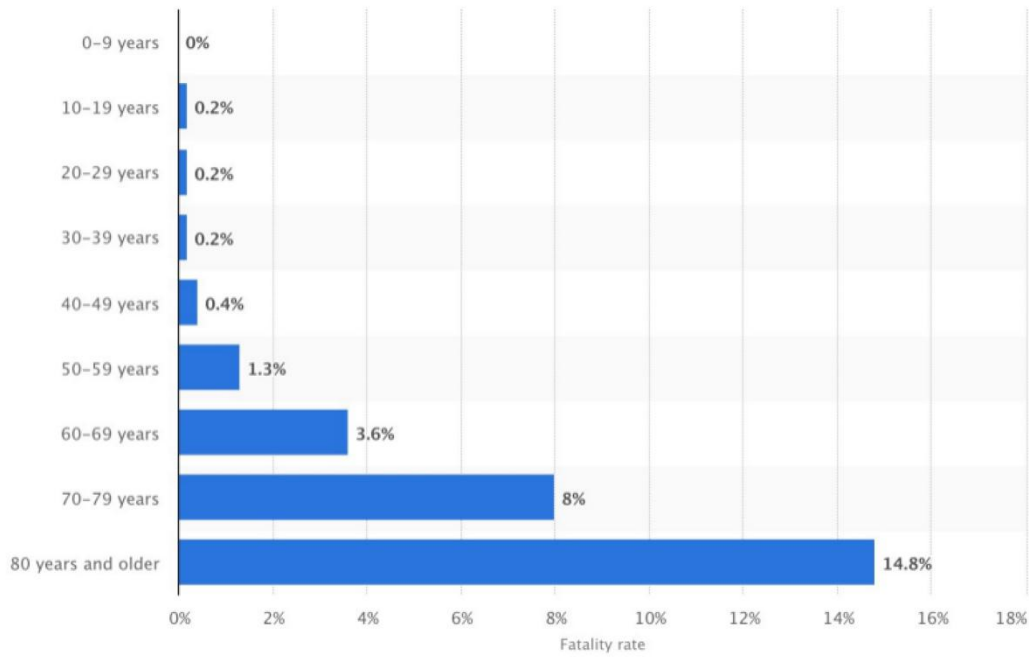
⁵ „Täglicher Lagebericht des RKI zur Coronavirus-Krankheit-2019(COVID-19)09.04.2020 – AKTUALISIERTER STAND FÜR DEUTSCHLAND“, https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Situationsberichte/2020-04-09-de.pdf?__blob=publicationFile.

⁶ „Warum die Zahl der Toten in Deutschland vergleichsweise niedrig ist“, <https://www.tagesspiegel.de/wissen/drei-erklarungsversuche-fuer-erstaunliche-corona-zahlen-warum-die-zahl-der-toten-in-deutschland-vergleichsweise-niedrig-ist/25726578.html>.

According to the experience of China, the death rate of novel coronavirus accounted for 0.2% in the population under 39 years old, and the death rate of 60-70 years old was 3.6%, that of 70-79 years old was 8%, and that of over 80 years old was 14.8%. Therefore, the lower the age of the infected people, the lower the death rate, and from this perspective, it's easy to understand the low death rate in Germany. However, we need to pay attention to the fact that the initial group of people infected in Germany is indeed young people, but given that Germany is an aging country, almost a quarter of the German population is older than 60 years. Both the infection rate and death rate of the COVID-19 among the elderly are high. So why aren't older people in Germany immediately infected by the younger ones? The median age of Germany's population known to be infected by COVID -19 is lower: 46 as opposed to Italy's 63. This should be attributed to the German family structure. According to the data from the Federal Statistical Office (Statistisches Bundesamt) in 2018, 41.9% of German households consist of one person, and 33.8% of households consist of two persons. Fewer than 25% of German households are made up of 3 or more people. Compared with Germany, more than 20% of Italians between the ages of 30 and 49 live with their parents.⁷ That's more than double the rate for Germans in that age bracket. In addition, at the beginning of the outbreak, Germany took non-medical interventions on the elderly, and advised young people not to visit the elderly, to reduce the spread of infection, and to focus on protecting the elderly and other high-risk groups. It is because of the low average age of infected people in Germany, and its smaller family size compared with Italy, that the death rate in Germany has been kept at a very low level.

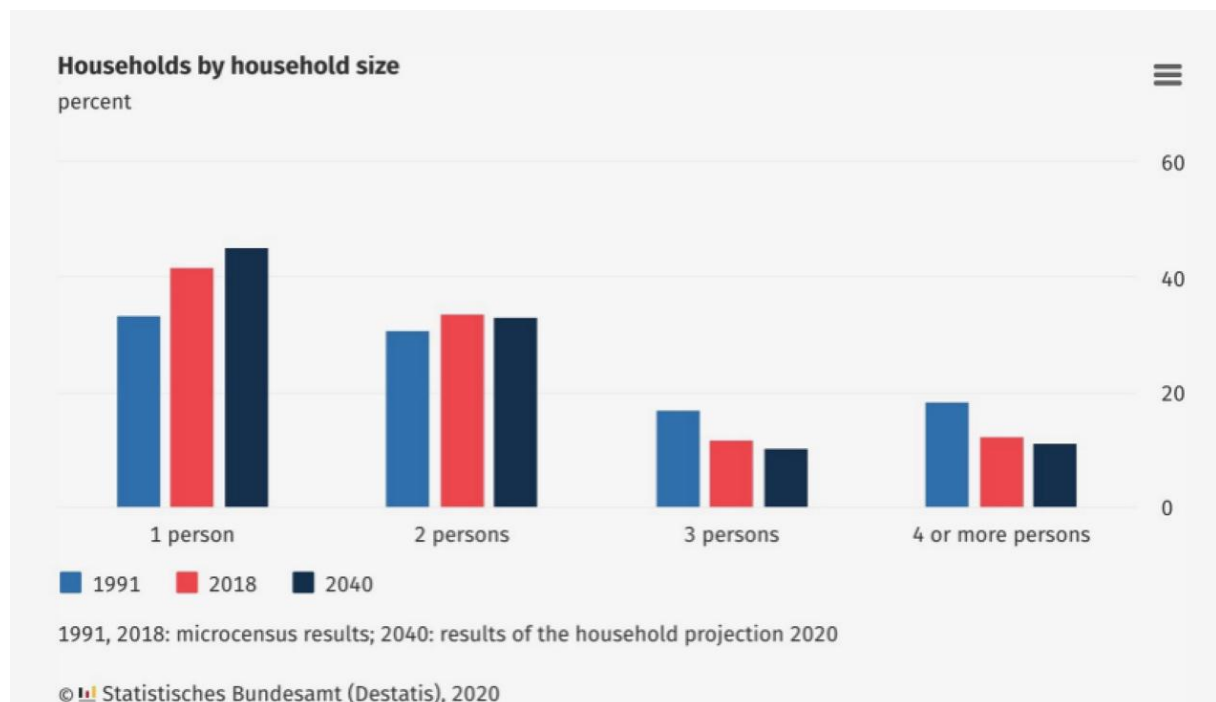
Figure 5: Fatality rate of novel coronavirus COVID-19 in China as of February 11, 2020, by age group

⁷ "Coronavirus Less Deadly in Germany Because of Youthful Patients", <https://www.bloomberg.com/news/articles/2020-03-24/coronavirus-less-deadly-in-germany-because-of-youthful-patients>.



Source: <http://weekly.chinacdc.cn/en/article/id/e53946e2-c6c4-41e9-9a9b-fea8db1a8f51>

Figure 6: Households by household size in Germany



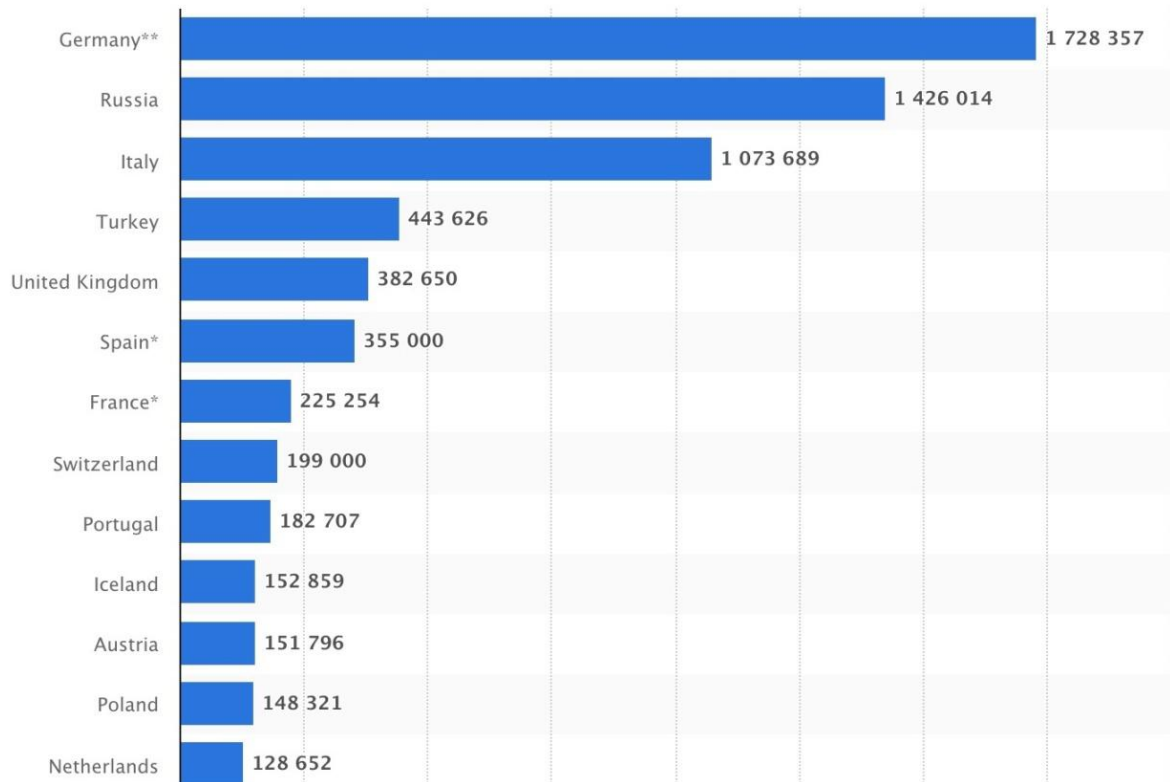
Source: https://www.destatis.de/EN/Themes/Society-Environment/Population/_Graphic/_Interactive/households-size.html;jsessionid=6D172456DF968EEAF2FD6722C6C15E0F.internet8721

2.2 Early mass tests and prompt action

The second reason for the low death rate may be the prompt action by the German authorities. Germany was very early in recognizing the virus and thus securing an advance in the detection of the epidemic. Scientists of the Institute for Virology at the Berlin Charité developed one of the first tests for the COVID-19 in January, and Germany also has a decentralization diagnostic system, laboratories across the country carry out independent testing. Many laboratories started testing in January when the number of cases was still very low. The high laboratory density makes it easier to test in Germany than in other countries. According to Robert Koch-Institut (RKI), as of April 12, private labs in Germany have helped the country test 1,317,887 people for COVID-19. In the first week of March, Germany tested 160,000 people. In the third week of March, it reached 250,000 people, and in the fourth week it reached 400,000 people, after March Germany insists on testing 500,000 people a week.⁸ Compared with Italy, where the epidemic is most serious, only 150,000 people have been tested in Italy as of March 20. Germany's detection capabilities are much higher than some of European neighbors. On the one hand, the mass tests lead to a statistical anomaly: in Italy, Spain or the United States, patients with a much higher risk of death are primarily tested. In Germany, on the other hand, people who have no symptoms at all, but who have had contact with the person who has tested positive are also tested. Thus, many more people fall into the statistics. In Germany, early testing also brings decisive advantages: first, treatment can be started early if necessary, which increases the patient's chance of survival. Second, the infected person can be isolated as early as possible to avoid more infections.

Figure 7: Number of coronavirus (COVID-19) tests carried out in Europe as of April 15, 2020

⁸ "Germany 'increases its COVID-19 tests to 500,000 per week'", <https://www.euronews.com/2020/03/27/germany-increases-its-covid-19-tests-to-500-000-per-week>.



Source: <https://www.statista.com/statistics/1109066/coronavirus-testing-in-europe-by-country/>

With the development of economy and society and the improvement of public health, Germany has regarded epidemic prevention and control as one of the country's important tasks. The German Federal Ministry of Health has developed a national pandemic plan (Nationaler Pandemieplan) and each state has its own epidemic plan. Germany first released a national epidemic plan in 2005, which is updated every two years, the last update was in 2017. Its main contents are as follows: providing the public with the latest information; implementing compulsory report; closing public places such as kindergartens, schools; prohibiting assembly and large-scale activities; quarantine measures; disinfecting public places, adding hospital wards; setting up crisis groups; observing and timely evaluating the current situation; adjusting epidemic plans according to the actual situation etc.. These measures were also largely highlighted in the Merkel TV speech on March 18. In addition to the early large-scale and decentralized testing, Germany noticed the development of the COVID-19 earlier and adopted active measures, such as issuing a ban on nursing homes, tracking close contacts, etc., which made the German epidemic under better control at the beginning and kept the death rate at a lower level. In March 2020, the RKI has released the "Supplement to the National Pandemic Plan - COVID-19 - Novel Corona Virus Disease" (Ergänzung zum Nationalen Pandemieplan-COVID-19-neuartige Coronaviruserkrankung), its

contents include relevant infection control measures, continuous risk assessment of the outbreak (disease transmission capacity, severity, medical system burden, etc.); disease surveillance; medical treatment; personal protection; vaccine development; antibody testing; and disclosure of information to the public etc..⁹

Because Germany attached importance to the prevention and control of the COVID-19 epidemic earlier, and adopted strong and rapid response measures, such as large-scale, decentralized testing, and isolation of high-risk groups, the COVID-19 epidemic did not cause a large number of deaths. In the early stages of the outbreak, large-scale decentralized detection found many no / mild symptoms cases, which made the base of confirmed cases larger and lead to a low death rate.

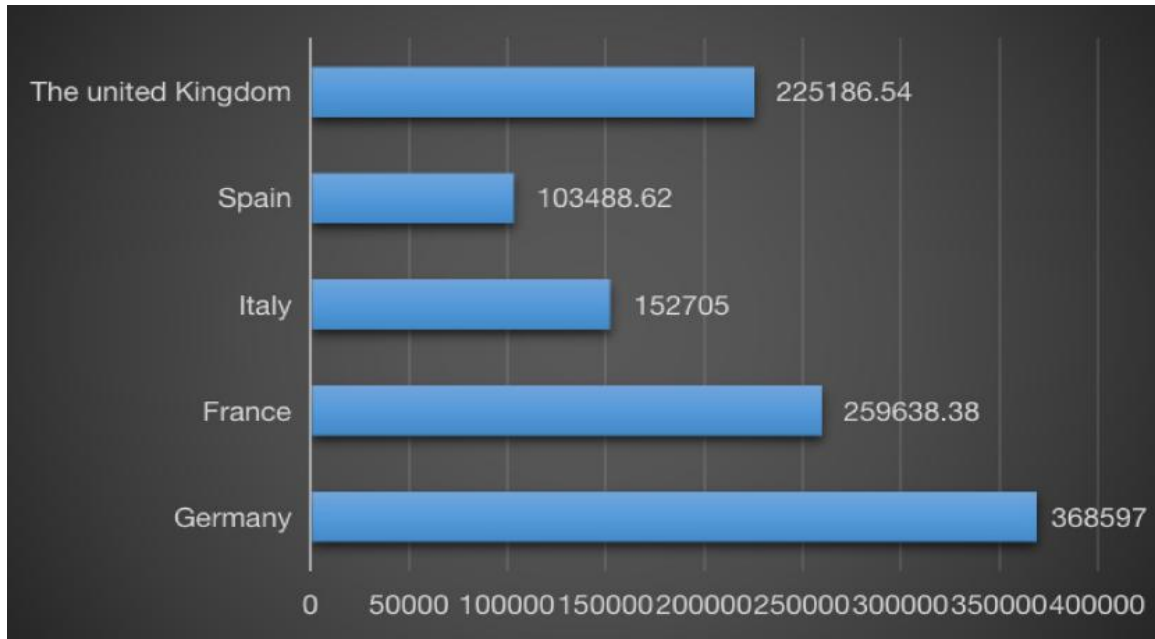
2.3 Sufficient and high quality medical resources in Germany

Whether a country has sufficient and high-quality medical resources is one of the important factors for the country to overcome the epidemic. Germany is more capable of responding to the epidemic than most of other European countries. According to OECD and European statistics (Eurostat) data, compared with France, Italy, Spain and the United Kingdom, Germany has a great advantage in terms of Total Health Care Expenditure, Number of hospitals, Number of total hospital beds, Total numbers of critical care beds per 100,000 inhabitants and the Number of ventilators.

Health care expenditure quantifies the economic resources dedicated to health functions, and is an important indicator of a country 's medical resources. Take Eurostat data in 2017 (the last date) as an example (see Figure 8 and Figure 9): Germany's Total Health Care Expenditure is 368,597 Million Euro, and Total Health Care Expenditure per inhabitant is 4,459.36 Euro. However, the Total Health Care Expenditure in Italy and Spain are 152,705 Million Euro and 103,488.62 Million Euro respectively, which is only about one third of Germany. Total Health Care Expenditure per inhabitant are 2,252.52 Euro and 2,221.11 Euro, which is only about half of that in Germany.

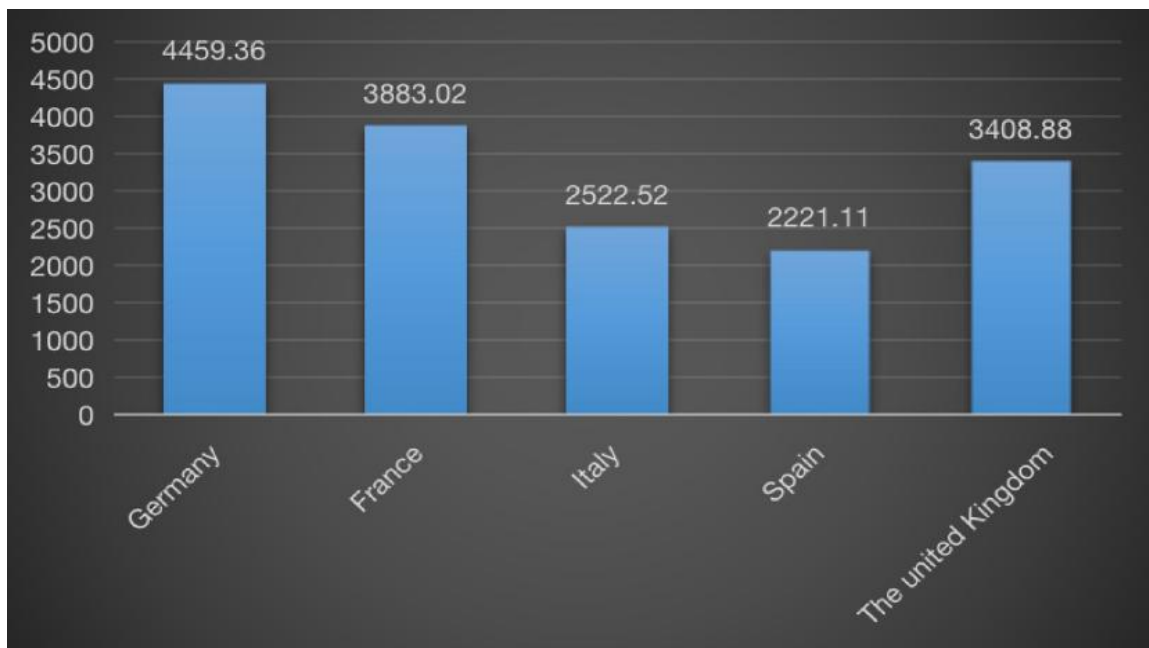
Figure 8: Total Health Care Expenditure in select countries in 2017(Million Euro)

⁹ Ergänzung zum Nationalen Pandemieplan-COVID-19-neuartige Coronaviruserkrankung, https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Ergaenzung_Pandemieplan_Covid.pdf?__blob=publicationFile.



Source: Total Health Care Expenditure , Available at <https://ec.europa.eu/eurostat/databrowser/view/tps00207/default/table?lang=en>

Figure9: Total Health Care Expenditure in select countries in 2017(Euro per inhabitant)



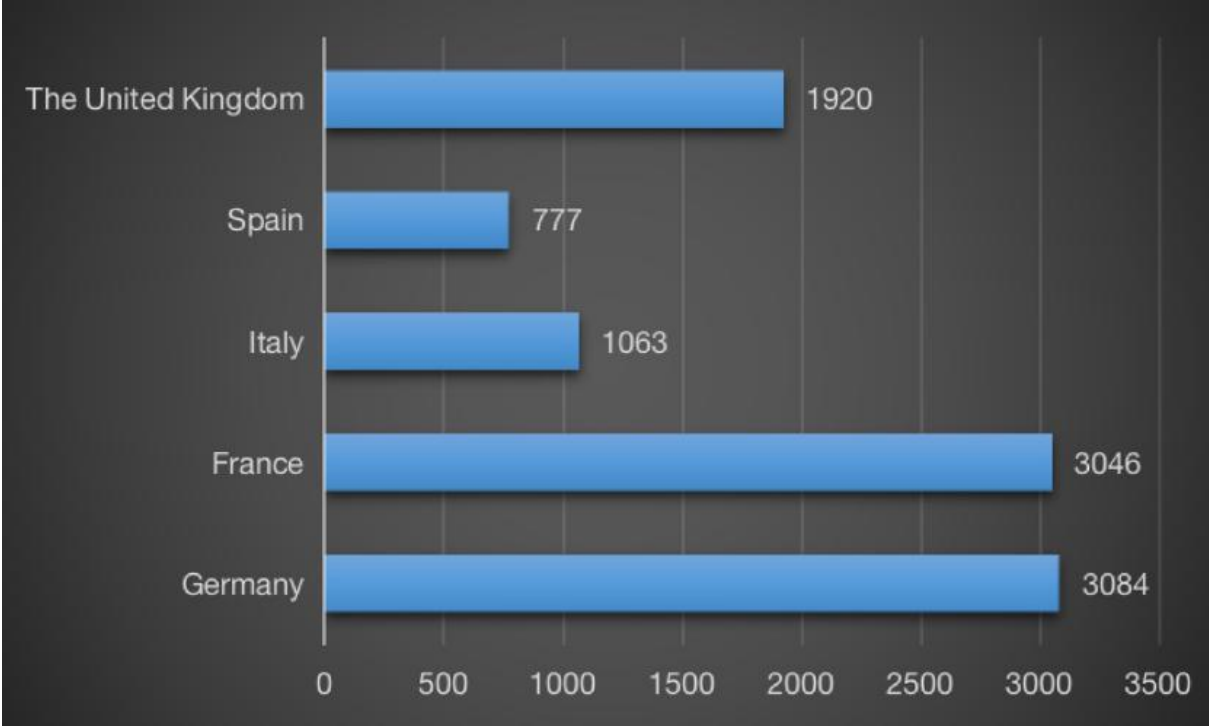
Source: Total Health Care Expenditure, Available at <https://ec.europa.eu/eurostat/databrowser/view/tps00207/default/table?lang=en>

Faced with a large number of infected people, the number of hospitals; hospital beds, the density of hospital beds and the number of ventilators played significant roles in the rescue of severe patients and reducing the overall death rate. According to OECD data in

2017, Germany's number of hospitals, total hospital beds, hospital bed density (per 1,000 population), total numbers of critical care beds per 100,000 inhabitants and the number of ventilators are far higher than some of European neighbors. There are 3,084 hospitals (see Figure 10) in Germany with different sizes. The distribution of medical resources across Germany is relatively even, and the gap between hospitals is not too huge. Compared to Germany (around 80million inhabitants), Italy (60 million inhabitants), the worst-hit country in the epidemic, has 1,063 hospitals, while Spain (47million inhabitants) has only 777 hospitals, which is only a quarter of the number in Germany.

The number of total hospital beds also differs significantly. According to the OECD (see Figure 11 and Figure 12), Italy with around 60 million inhabitants has 192,548 hospital beds, hospital bed density (per 1000 population) is 3.2. Spain, with 47 million inhabitants, has 138,511 hospital beds, hospital bed density is 3. Germany, with around 80 million inhabitants, there are 661,448 hospital beds, is more than 3 times of Italy, is nearly five times (4.77) of Spain. The hospital bed density in Germany is 8, which is nearly three times of numbers in Italy and Spain. The most critically medical resources in the crisis: critical care beds, Italy had 5,000 critical care beds before the crisis, and more beds are being made. In Germany, there are about 28,000 before the crisis, now there are around 40,000. Italy critical care beds per 100,000 inhabitants are 12.5 (see Figure 13), Spain are 9.7 and Germany are 29.2. It is worth mentioning that Germany is not only provided better beds overall, clinics have also made emergency plans ahead of time, increased staff, postponed operations and cleaned wards for the COVID-19 patients.

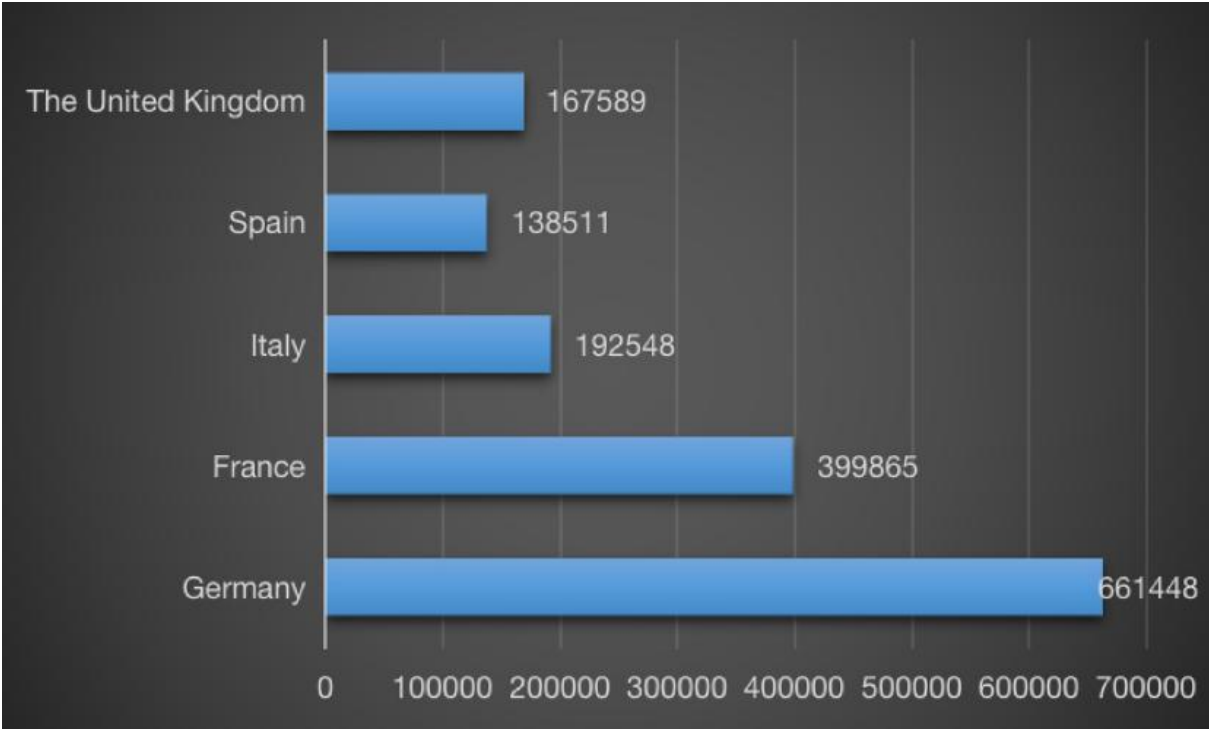
Figure 10: Number of hospitals in select countries as of 2017



Source: Health Care Resources , Available at:

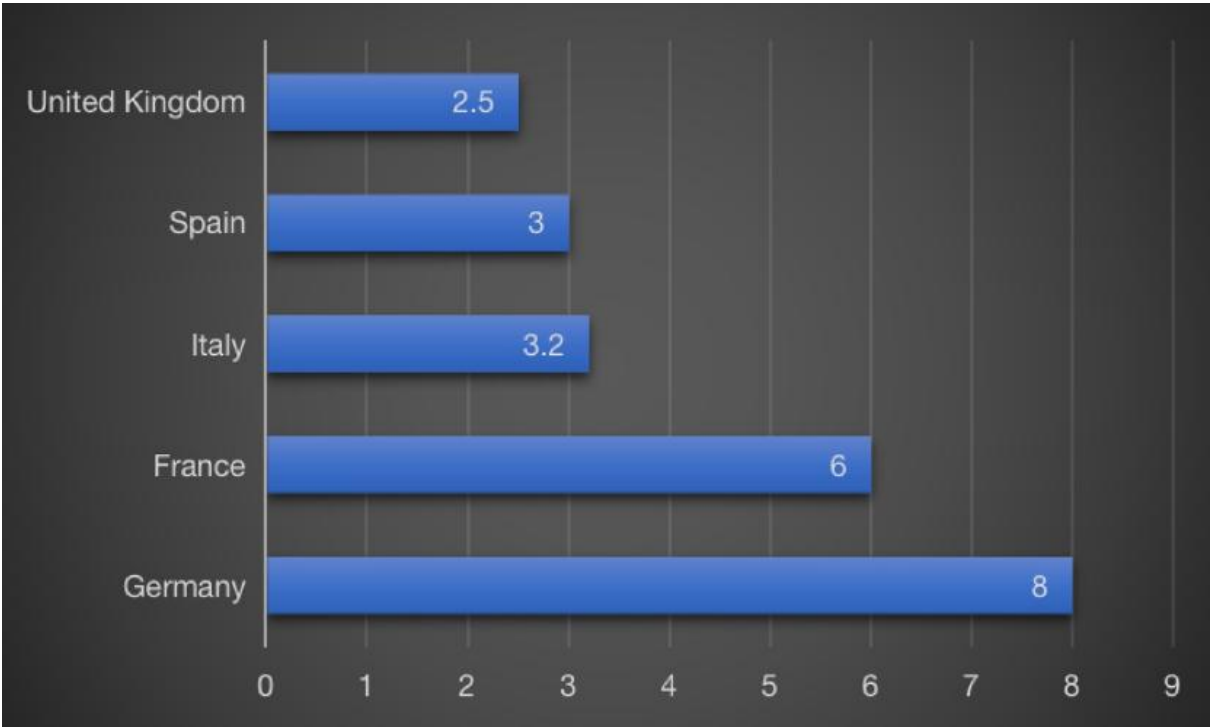
https://stats.oecd.org/viewhtml.aspx?datasetcode=HEALTH_REAC&lang=en#

Figure 11: Number of total hospital beds in select countries as of 2017



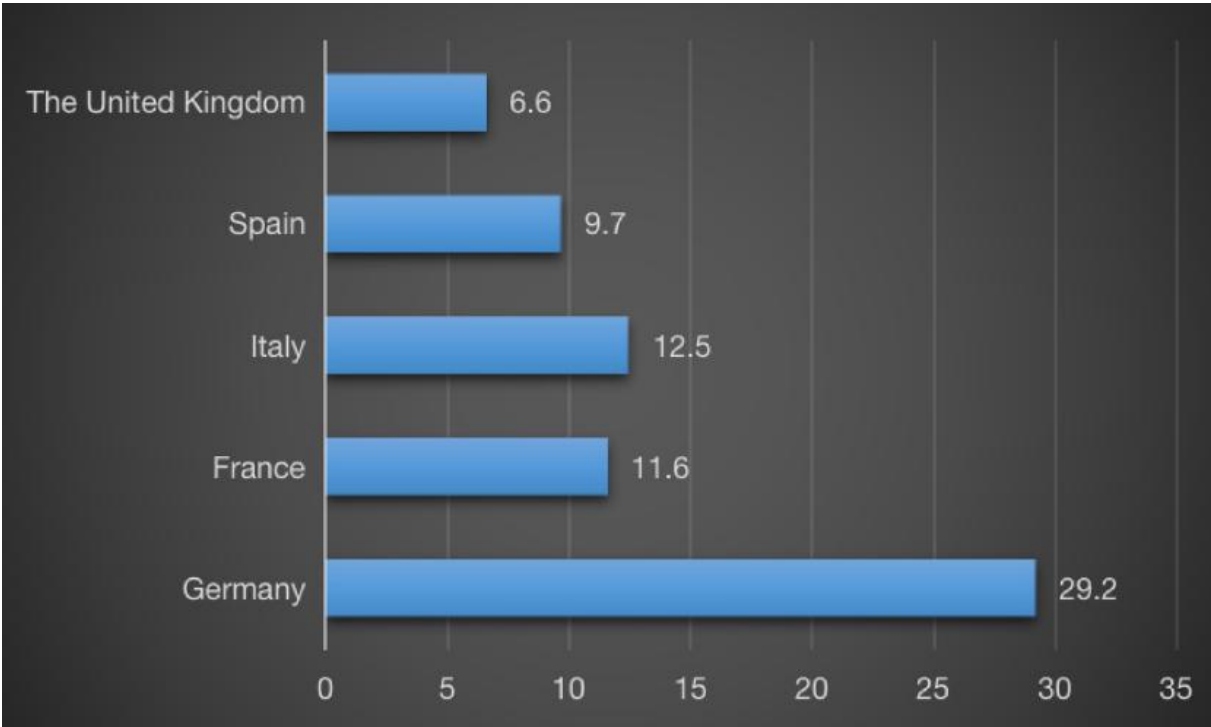
Source: Health Care Resources, Available at: https://stats.oecd.org/viewhtml.aspx?datasetcode=HEALTH_REAC&lang=en#

Figure 12: Hospital bed density in select countries as of 2017(per 1,000 population)



Source: Health Care Resources , Available at:
https://stats.oecd.org/viewhtml.aspx?datasetcode=HEALTH_REAC&lang=en#

Figure 13: Total numbers of critical care beds per 100,000 inhabitants in selected countries



Source: https://www.researchgate.net/figure/Numbers-of-critical-care-beds-corrected-for-size-of-population-per-100-000-inhabitants_fig1_229013572

Before the Corona crisis, there were 28,000 critical care beds nationwide in Germany, of which 20,000 with ventilators. According to the German Hospital Federation (DKG: Deutsche Krankenhaus Gesellschaft), these beds are only 70-80% occupied. The number of critical care beds has recently been increased to 40,000 and the ventilators to 30,000.¹⁰ Compared with Germany, France has only around 5,000 ventilators available.¹¹ Germany has enough ventilators and can produce more by ordering from domestic healthcare companies. For example, German government ordered for 10,000 ventilators and other medical equipment from the Drägerwerk AG & Co. KGaA in mid-March and the batch are ready now, according to Draeger CEO Stefan Draeger.¹²

During the epidemic, lack of medical resources is the main reason for the surge in mortality. With the spread of COVID-19 in Germany, the number of confirmed cases is indeed increasing, but medical resources have not yet been exhausted. This is partly because the confirmed cases in Germany are relatively evenly distributed. The population of Germany mostly lives in small and medium-sized cities, and only four cities have a population of more than one million (Berlin, Hamburg, Munich, Cologne). Therefore, the epidemic in Germany is not as concentrated as Wuhan, New York and Lombardy, resulting in a shortage of local medical resources and a high death rate. On the other hand, the distribution of medical resources across Germany is relatively even, and the gap between hospitals is not too large. For example, if calculated according to the total population of each state, the proportion of ventilators in hospitals in different German states will not be much different.

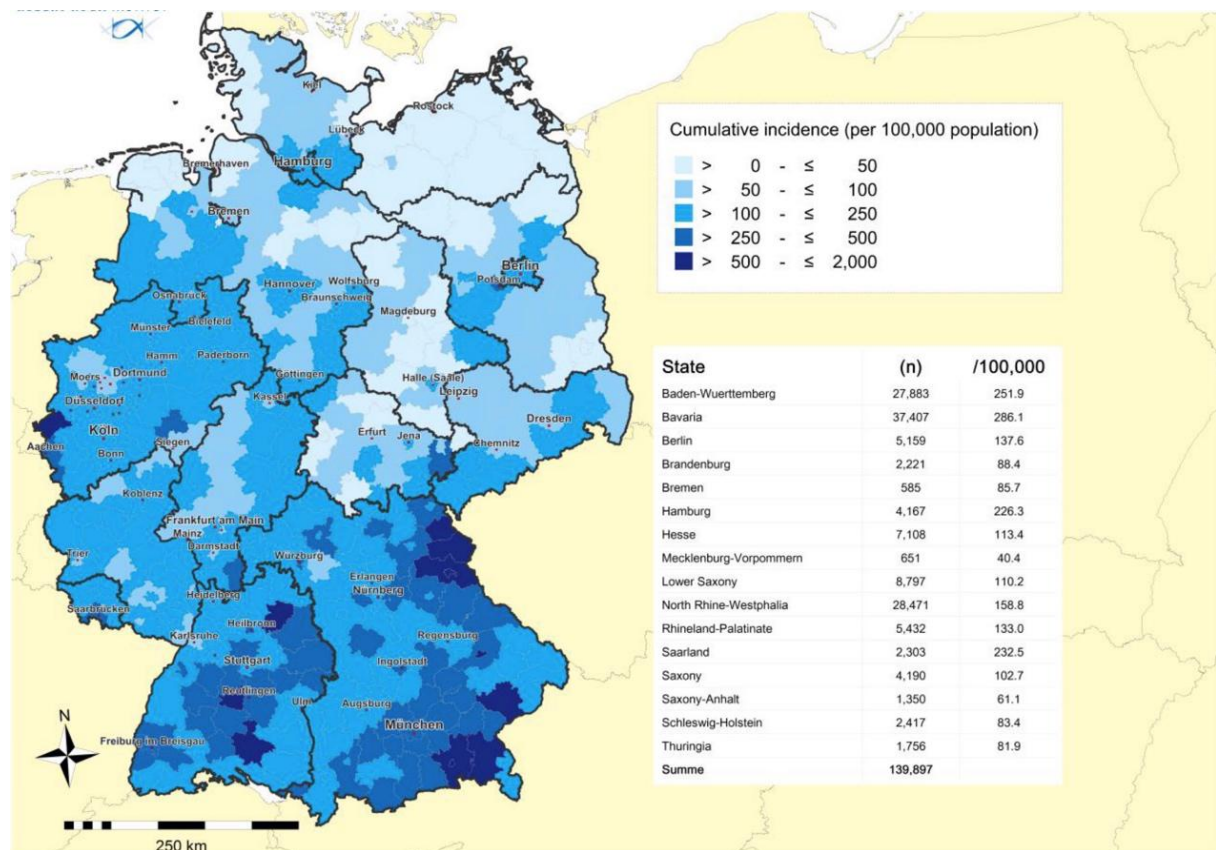
Although Germany's medical resources are indeed sufficient and have great advantages compared to some of European neighbors, they are not perfect. In fact, there are still some deficiencies, such as shortage of medical staff, which we will discuss in the conclusion of this article.

¹⁰ „Coronavirus: Fakten und Infos“, <https://www.dkgev.de/dkg/coronavirus-fakten-und-infos/>.

¹¹ “Germany Has More Than Enough Ventilators. It Should Share Them,” <https://www.nytimes.com/2020/03/17/opinion/coronavirus-europe-germany.html>.

¹² “Shares of a German Ventilator Manufacturer Are Soaring”, <https://www.bloomberg.com/news/articles/2020-03-30/a-ventilator-maker-is-germany-s-best-performing-stock-this-year>.

Figure14: Number and cumulative incidence (per 100,000 population) of the 139,897 electronically reported COVID-19 cases in Germany by county and federal state (19/04/2020, 12:00 AM)



Source: Coronavirus Disease 2019(COVID-19)Daily Situation Report of the Robert Koch Institute 19/04/2020 - UPDATED STATUS FOR GERMANY.

2.4 The efficient Healthcare System in Germany

The German healthcare system is one of the oldest and improved healthcare systems in the world, and its history can be traced back to the 1880s. The system is divided into two main areas: public and private health insurance. The German healthcare system is based on the principle of solidarity. All people on public health insurance (GKV: Gesetzliche Krankenversicherung) receive the same medical care regardless of their financial status.¹³ Everyone who earns up to 62,550 Euros per year (the standard of 2020) is legally obliged to take out public health insurance.¹⁴ The law stipulates that every person who earns below this specified value must pay the same premium fees. In 2020, all residents registered with public health insurance funds have to share around 14.6% (generally 14.6%, each state is different)

¹³ GERMANY HEALTH INSURANCE SYSTEM, <https://www.germanyhis.com/de/>.

¹⁴ „Wie hat sich die Beitragsbemessungsgrenze und Versicherungspflichtgrenze entwickelt?“, <https://www.krankenversicherung.net/beitragsbemessungsgrenze>.

of their gross earnings for their health insurance.¹⁵ If you earn more than 62,550 Euros per year, you can opt for private health insurance (PKV: Private Krankenversicherung) .¹⁶ Some other groups of persons, such as civil servants and self-employed people, may also take out this type of insurance. According to official statistics, more than 70 million inhabitants or about 90% of the total population in Germany are entitled to public health insurance. In general, GKV covers you for primary care with registered doctors, hospital care and basic dental treatment etc.¹⁷

Doctors are known as *Ärzte* in German; *Hausarzt* is equivalent to a GP (general practitioner) or primary care doctor. Under the German medical system, you are free to choose your own doctor. Hospital is known as *Krankenhaus* in German, including three main types: public hospitals (*öffentliche Krankenhäuser*) operated by local and regional authorities; voluntary non-profit hospitals (*freigemeinnützige Krankenhäuser*) operated by churches or organizations of the German Red Cross and private hospitals (*Privatkrankenhäuser*). The German family doctor system has become very popular and mature. When ordinary people get sick, they usually go to see the family doctor instead of going to the hospital first. If you need further diagnosis and treatment by a specialist, the family doctors will issue a list for you to go to the specialist. Most of these specialists are not in hospitals, but in their own small clinics, scattered throughout the community. After the diagnosis and treatment by specialists, only a small number of patients with serious illnesses need to go to a large hospital. During the COVID-19 epidemic, most patients with mild symptoms will first contact their family doctor, and then follow the doctor's instructions to isolate themselves at home. During the isolation period, if their symptoms change, they will communicate with the doctor at any time. With the participation of family doctors, most mild patients have received effective treatment and do not need to be admitted to hospital, which also reduces the pressure on residents.

Germany also benefited from its federal structure, particularly the decentralized structure of its healthcare system. Germany is a federal state with 16 states, like education, health belongs to the jurisdiction of each state. German is generally referred to as *Ländersache*, the power of each state is free from the power of Federal Ministry of Health (BMG). The power of the Federal Ministry of Health is enshrined by the Basic Law. The

¹⁵ „Wie hoch ist der Krankenkassenbeitrag 2020?“, <https://www.krankenversicherung.net/krankenkassenbeitrag>.

¹⁶ „Private Kranken--versicherung: Voraus-setzungen, Gesundheits-fragen, Leistungen im Vergleich“, <https://www.krankenversicherung.net>.

¹⁷ GERMANY HEALTH INSURANCE SYSTEM, <https://www.germanyhis.com/de/>.

three levels of the federal health system (federal, state, and local) have clearly defined divisions of labor and perform their duties separately. Faced with a large number of infected people, the staff of the tertiary health system took positive action. At the same time, the federal and state governments as well as local administrators and research institutions (such as the Robert Koch Institute) keep in constant contact, which greatly shortened the emergency response time. In the fight against COVID-19, rapid and effective actions played a decisive role. The joint cooperation of the three-tier institutions in the German federal health system, as well as the decentralized structure of the medical system such as family doctors are important reasons for Germany to avoid the shortage of medical resources in this epidemic. The above factors also made the German medical system more effective in this crisis.

2.5 The contributions of civil society and political consensus

On March 18th, German Chancellor Angela Merkel delivered an extraordinarily rare nationwide televised speech that is about the Coronavirus, in which she stressed that the COVID-19 is Germany's greatest challenge since World War II and hoped that everyone would take it seriously, "Only by working together can we meet the challenge". Therefore, she wants everyone to do their part, and called on the Germans to abide by the government's series of recommendations and change their living habits temporarily. Under the appeal of German politicians (such as Spahn, the health minister, who has called on the public to increase their sense of personal responsibility and forgo concerts and games), scientists (such as Drosten urged people to take responsible actions in private life to protect older family members) , social celebrities and angels in white (WE WILL STAY HERE FOR YOU !! PLEASE STAY AT HOME FOR US !!!), the German society gradually formed a consensus: the infected people follow the suggestions of the government and doctors, isolate at home, and do not contact with the elderly; Various social groups are also actively contributing to the fight against the epidemics. For example, college student groups in the medical department volunteer to support the medical staff in the hospital. Social Media has become an important platform for social groups assembly and action. People have been launching various public activities on social media to provide help to those in need within their power, such as helping the elderly who are at high risk of the epidemic to purchase daily necessities.

At the same time, in the fight against the epidemic, we have also observed that all political parties and government agencies temporarily abandoned ideological barriers, united

and cooperated to jointly cope with the “Germany’s greatest challenge since World War II”, the Green Party and other opposition parties have also actively put forward suggestions to fight the epidemic. The federal and state governments have been taking drastic measures against the spread of the corona virus for a few weeks. Since July 2018, the current ruling coalition, the Union Party (CDU / CSU) and the Social Democratic Party (SPD), have achieved more than half of the opinion polls for the first time.¹⁸ In terms of policy coordination, the federal level has set up an inter-ministerial crisis headquarters, which meets every two weeks to coordinate policies; in the economic sphere, the German Grand Coalition Government has introduced economic assistance measures to deal with the COVID-19. The Bundesrat and Bundestag have been remarkably efficient in the fight of epidemic. On March 27th, Germany’s €156 billion (4.9 percent of GDP) bail-out plan has been signed by the President, and has officially come into force, providing financial assistance to enterprises and individuals affected by the outbreak.¹⁹

3. Conclusion

Germany’s achievements are the result of multiple factors and efforts. We have summarized some reasons in the article. Infected persons returning from ski resorts in Italy and Austria are younger, have better health and are more resistant. Even if they have been infected, they are mostly mild patients who are not prone to complications or develop into severe patients. At the same time, the family size in Germany is relatively small, reducing the probability of mutual infection among family members. Germany started early decentralized large-scale testing and implemented rapidly anti-epidemic operations nationwide. Compared with other European countries, Germany has sufficient and high quality medical resources, and the operation of its tertiary health system is powerful and efficient. In this battle against the COVID-19, German civil society has made a great contribution, and all the parties have temporarily reached a political consensus to unite against the epidemic.

With the severity of the COVID-19, the death rate in Germany is likely to continue to rise. For example, the German death rate has climbed from 0.2% at the beginning to the current 3.19% (as of 20.04.2020). The reason lies that, first of all, Germany has a high degree

¹⁸ Infratest dimap: Umfragen & Analysen, <https://www.infratest-dimap.de/umfragen-analysen/bundesweit/ard-deutschlandtrend/2020/april/>.

¹⁹ Key Policy Responses of Germany as of April 16, 2020, <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19#G>.

of aging, 21.4% of the German population is older than 65 years, this ratio is certainly extreme on a global level. In addition, the elderly are the high-risk group in the epidemic, and the deaths median age in Germany is 82 years. If the infection rate of the elderly increases, the death rate in the later period will probably continue to rise. Secondly, the German medical system is far from perfect. As mentioned above, the lack of qualified doctors and nurses is a huge challenge facing the German public health system. Currently, widespread effects of the COVID-19 lie in the catastrophic conditions in hospitals. Doctors and nursing staff are completely overworked and there is still a lack of protective equipment such as face masks, protective gowns and disinfectants.²⁰ There are also many discussions about it. Social groups also have a lot of activities, for example, many medical college students volunteer to support. However, the shortage of staff in the German medical system is an issue that has plagued all sectors of German society for a long time. The fundamental solutions of this problem still remain to be considered and observed. Finally, under the German federal system, there are still some altercation between the Federation and the States in the measures taken in the epidemic. For example, on a conference on March 22, Chancellor Angela Merkel and Governors of the federal states adopted new rules to control the spread of the COVID-19. This raises the obvious dispute between the federal and state governments over the further measures, particularly between Bavarian governor Markus Söder and Armin Laschet, governor of North Rhine-Westphalia.²¹

Although the current death rate in Germany is indeed relatively low, the future trend of the German epidemic remains largely uncertain. On the one hand, Chancellor Merkel announced on April 15 that the contact restrictions will be extended to May 3, schools will gradually reopen since May 3, and the store may also reopen. However, we must be aware that due to these easing restrictions, the virus may start to spread again. Merkel also mentioned in an April 20 media interview that the effects of these deregulations will not be seen until 14 days. If the number of infections rises, the country will shut down again. On the other hand, despite the risk of continued spread of COVID-19, compared with some of European neighbors, we believe that Germany's advantages in medical resources, R & D capabilities, super economic strength, and the government's crisis management capabilities make Germany's prevention and control situation relatively optimistic. Meanwhile, with the

²⁰ "German hospitals become COVID-19 hotspots for health care workers", <https://www.wsws.org/en/articles/2020/04/11/hosp-a11.html>.

²¹ "Kontaktssperre: Die neuen Regeln", <https://www.deutschlandfunknova.de/beitrag/kontaktssperre-gegen-covid-19-neue-regeln-von-bund-und-laendern>.

vaccine research and large-scale corona virus antibody testing, we can't rule out the possibility that the epidemic can be controlled in Germany in the near future. Everything is constantly changing; nothing remains static. The follow-up development of the situation in Germany remains to be seen.

When the COVID-19 epidemic just raged in Europe, European countries behaved as "Sweep the snow in front of own door". After the initial panic had passed, European unity has repeatedly been emphasized. Germany, a neighbor of the severely affected countries, with a relatively low death rate, began to provide treatment for critically ill patients in Italy and France and provided Italy with medical equipment such as ventilator. German and French politicians continue to call on European countries to work together to strengthen European unity. Under the situation that the COVID-19 has a serious impact on the global economy and society, the solidarity and cooperation of European countries may bring a glimmer of light to the stagnant European integration in recent years.