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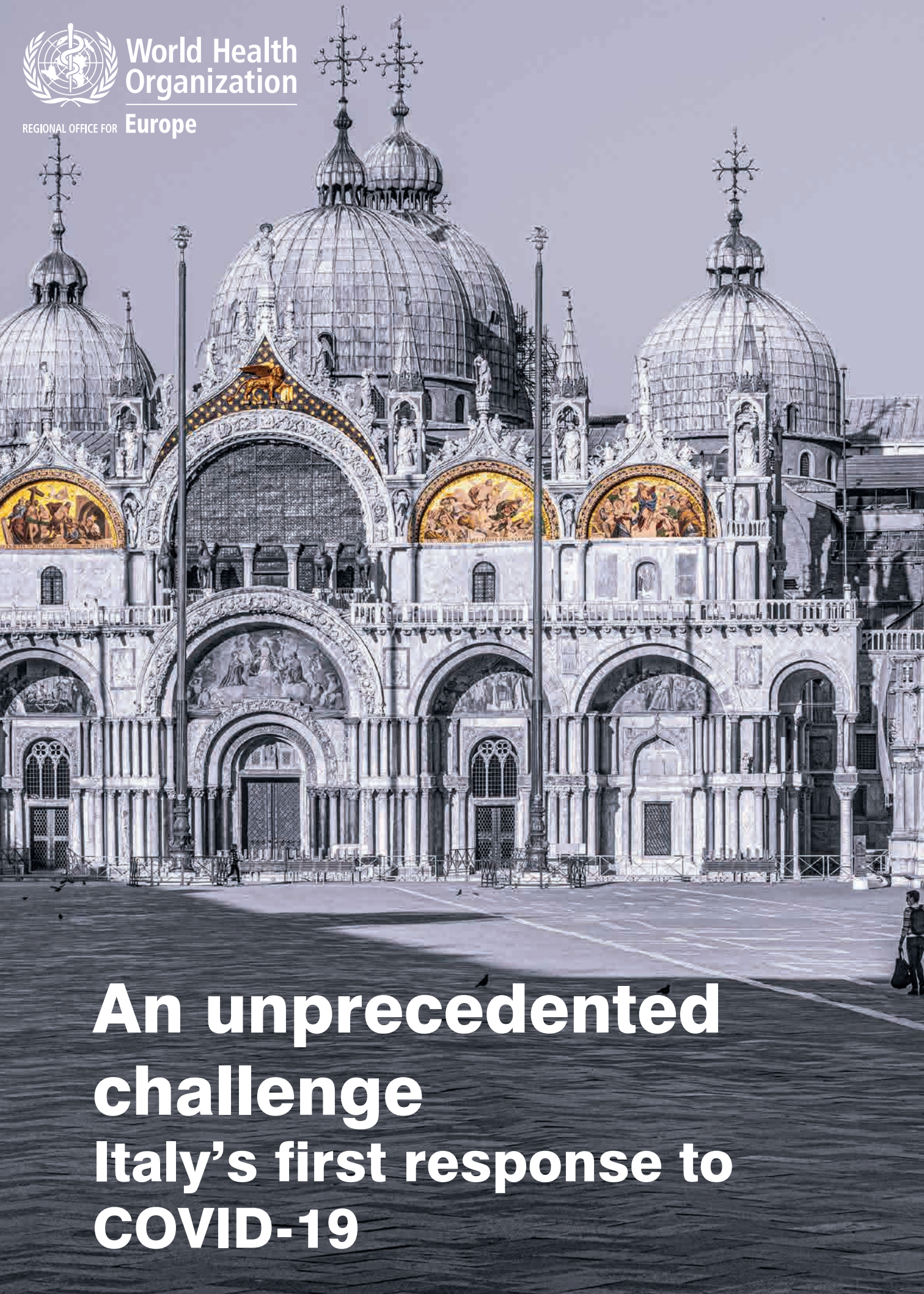

An unprecedented challenge

Italy's first response to COVID-19

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ABSTRACT

This report tells the story of the first phase of Italy's response to the COVID-19 virus, which in many people transformed into the dreaded illness known as COVID-19, leading to unprecedented death tolls across the world. Readers should note that the report is an unfinished story. It was written in the midst of the initial phase of the pandemic in a climate of constant and daily change as the country responded to this unprecedented challenge. While early lessons will surely need to be revisited, this report is a first account of Italy's immediate experience with COVID-19, dealing with different aspects of the response as the first country that experienced widescale community transmission in Europe.

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Foreword

Italy's first response to COVID-19 occurred at a time of unprecedented challenge, but the country quickly stepped up to the plate. The response called for solidarity and a quick exchange of experiences – something that is at the heart of the European programme of work "United Action for Better Health."

This unprecedented challenge is now being faced by countries across the WHO European Region and countries in all WHO regions. Our lives have changed since COVID-19 entered our world, and things will never be the same. We have had to shift our work modalities during lockdown mode, and learn how to greet our friends and dear ones while keeping a safe distance. We have understood that despite physical distancing, we need to stay connected not just for social purposes, but also to be able to learn from one another. This "connection" has been a critical part of Italy's response.

Italy was the first country in Europe to identify the virus in its midst and was for months, the hardest-hit country in Europe in terms of deaths and cases. Italy was also the first country that the world looked at, and is still looking at, in its search for what works in terms of a country response. Evidence is still scarce in this area, but clearly needs to be accumulated.

Italy has one of the strongest health systems, but when COVID-19 came to its doorstep, it brought this system to near collapse. And this made the world panic.

At the end of the first phase and while entering a transition to so-called normality, it is time to reflect on how Italy responded. It was not possible to take the time to do this when Italy was in the thick of it, in complete disarray.

I extend my most heartfelt solidarity to the people and health leaders of Italy and reassure you that as WHO, we are walking with you as you continue to face this unprecedented challenge.

Hans Henri P. Kluge
WHO Regional Director for Europe

Prologue

This report tells the story of the first phase of Italy's response to the COVID-19 virus, which in many people transformed into the dreaded illness known as COVID-19, leading to unprecedented death tolls across the world. Readers should note that the report is an unfinished story. It was written in the midst of the initial phase of the pandemic in a climate of constant and daily change as the country responded to this unprecedented challenge. While early lessons will surely need to be revisited, this report is a first account of Italy's immediate experience with COVID-19, dealing with different aspects of the response as the first country that experienced widescale community transmission in Europe.

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1. Introduction

In early January 2020, Italy watched as a newly identified coronavirus (COVID-19) spread in China. It seemed a slightly worrying, yet distant, phenomenon. On 30 January, the WHO Director-General declared COVID-19 as a Public Health Emergency of International Concern (PHEIC). That same day, two Chinese tourists from Wuhan tested positive for the virus in Rome. Soon after, on 6 February, a third case was detected in an Italian repatriated from Wuhan. COVID-19 was at the country's doorstep. Cases[1] began to be detected in other parts of Italy. Less than two months later, Italy was seeing up to 1000 COVID-19-related deaths per day.

Italy had become the European epicentre of one of the most significant pandemics of our time. It crept up while the world was looking at their smartphones or other devices. COVID-19 personifies globalization. Despite all the advances societies have made in terms of technology, as of 30 April 2020, the virus had reached 210 countries and territories around the world, with 3 175 207 laboratory-confirmed cases of COVID-19 virus and a death toll of 224 172 *(1)*.

This report tells the story of Italy's initial response to the epidemic. It takes stock of lessons learnt from managing the country's response with a primary focus on public health but also taking into account economic, legislative and social issues. It provides the reader with the when – the chronology of the virus's arrival in Italy and actions taken – and the how – Italy's response and efforts to get the epidemic under control. At the time of writing, Italy was barely emerging from the first phase of the epidemic and starting to consider the second, transition phase. The lessons from this first phase are still being accrued, day by day. As the spread of COVID-19 has happened at different moments in time throughout the world, It is hoped that what can be learnt from the events in Italy can be of interest to countries where the epidemic took hold at a later date. The potential of this type of experience, captured during the course of the pandemic, is instrumental in informing early recovery efforts.

The report also presents profiles from all of Italy's regions that summarize data and activity in areas such as epidemiological profiles, hospital capacities and communication. The Annex cites the data sources from which the regional profiles were compiled.

1 The term "cases" is used to indicate people who have developed COVID-19.

2. The epidemic

2.1 Transmission

Italy ~~was not totally unprepared~~ for an epidemic when the first news bulletins came from China (Box 1). In 2006, after the first severe acute respiratory syndrome (SARS) epidemic, the Italian Ministry of Health and regions approved a national pandemic influenza preparedness and response plan *(8–10)*, with guidelines for regional plans. More recently, the H1N1/09 virus in 2009 and the Ebola virus in 2014 drew attention to the risk such phenomena could present. The 2014–2018 National Prevention Plan *(11)*, the leading framework for strategic public health planning and financing, therefore called for greater pandemic preparedness.

Planning, ~~however, remained more theoretical than practical, with little investment or translation of intentions into concrete measures~~ *(12)*. The process nevertheless provided Italy with a legal framework to react when the arrival of the COVID-19 epidemic in Europe took many by surprise.

The first case in Europe was detected in France on 24 January; days later, the first locally acquired cluster of four cases was identified in Germany. Italy followed on 30 January.

Box 1. How it started

COVID-19 was reported in China on 31 December 2019 when the local authorities of Wuhan informed the WHO Country Office about 27 cases of pneumonia of unknown aetiology, apparently linked to a local market *(2)*. There were rumours about SARS *(3)*. As of 3 January 2020, China had reached 44 cases, including 11 with severe symptoms; the Wuhan City Health Committee confirmed that 121 close contacts were under observation. WHO was told that there was no evidence of human-to-human transmission.

The virus rapidly spread to other regions of China, including Hong Kong Special Administrative Region *(4)*. On 7 January, the causative agent was identified by China as a novel strain of coronavirus and the genetic sequence was quickly made available. The new virus was named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2); the disease it causes is referred to as coronavirus disease 2019 (COVID-19). China's first death related to the virus was reported on 13 January.

The first case outside of China was reported on 13 January in Thailand. There was a link to Wuhan, but not to the market in question, suggesting human-to-human transmission. As of 20 January, China had reported 278 cases, including six deaths *(5)*. Before the end of January, cases were being reported from other Asian countries (Japan and the Republic of Korea) but also from outside Asia *(6)*. In February, 13 countries reported local transmission (the United Arab Emirates, Canada, France, Germany, Japan, Malaysia, the Republic of Korea, Singapore, Chinese Taipei, Thailand, the United Kingdom, the United States of America and Viet Nam) *(7)*.

On 31 January, the day after the first cases appeared in Italy, a State of Emergency was declared. The next day, the Civil Protection Department was leading a command-and-control governance structure to coordinate interventions. This structure would make it possible to coordinate the response in a situation where one command/one voice was needed, de facto curtailing regional autonomy over health-care organization in a State of Emergency. The same day, all flights to and

from China were suspended. The temperature of people arriving from extra-Schengen flights was measured to screen for fever. Four days later, this was extended to passengers arriving from all destinations (Davide Bassano, Head of Security, Venice Marco Polo Airport, personal communication).

In the meantime, life in Italy for the public had not changed much, despite the three initial reported cases. The State of Emergency did not affect most people's everyday lives. If they had to travel, they knew they would have to undergo health checks at the airports. Everyone had seen images on the news of people's foreheads being beeped with a temperature gun, but no one thought much of it: this was not very different from the other security checks that had been put in place in previous years. The carnival festivities were starting and preparations were ongoing. Cities were filling up with tourists, children were going to school, people carried on with their everyday lives. Then on 21 February 2020, a few days before the end of the carnival season (a moment

in Italy marked by mass gatherings of people and festivities), everything suddenly changed. A 38-year-old patient with COVID-19 was detected in the town of Codogno, in Lombardy, one of Italy's wealthiest and most productive regions. Another patient appeared in Vo' Euganeo, a town of approximately 3300 inhabitants in the Veneto region.

The virus spread rapidly thereafter. On 24 February, the number of cases was 229. Two days later (26 February), the number rose to 400 then doubled to 888 on 28 February. Just a few days later (1 March), cases were up to 1694, with 34 deaths.

This part of the country went from festivities to closure within 24 hours: the first Red Zones were set up. Eleven municipalities – 10 in Lombardy and one in Veneto – were locked down, sealed off, with entry prohibited from the outside and movement limited within, except for work- or health-related reasons. Public services were suspended, as were events and occasions of any kind in which people would gather. On 23 February, the Government passed a decree calling for schools, cultural venues and non-essential commercial activities to be closed in these areas. Soon, cases appeared elsewhere. The few first clusters of cases (see section 2.2) escalated into region-wide community transmission, an unprecedented situation. Days later, four regions in the north of Italy reported community transmission of COVID-19: Lombardy, Veneto, Emilia Romagna and Piedmont *(13)*.

What was not known in late February, but has been established retrospectively since, is that the virus was already circulating in the community. COVID-19 was in Italy and it was not going to leave in the short term.

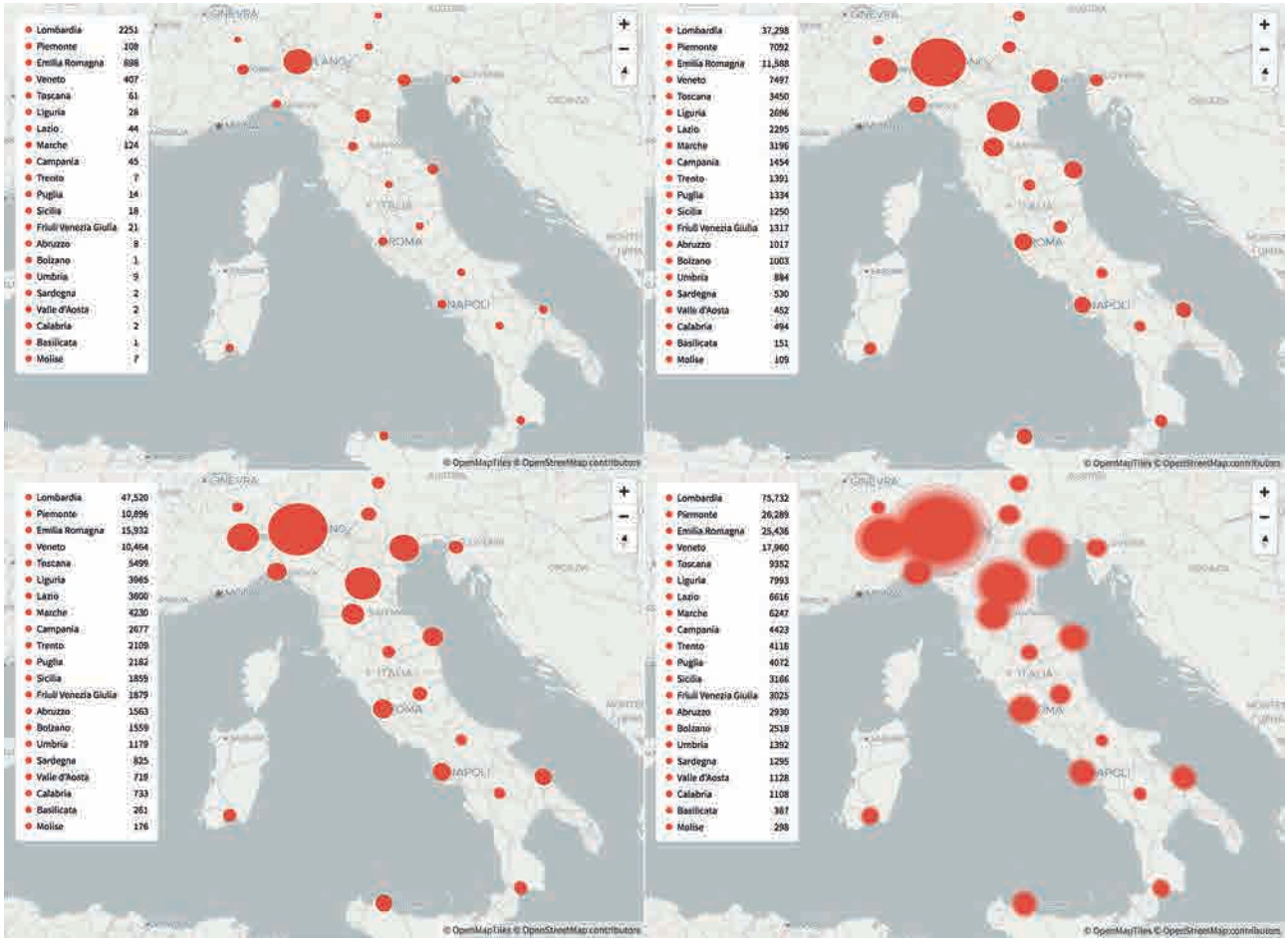
It was no longer referred to as "just a flu". People went about their everyday lives, but now with a touch of fear, wondering if a family member could "catch it", or if the blood test they had taken that morning had somehow put them in danger. COVID-19 was becoming a reality that all Italians were going to have to face, sooner than later.

By 29 February, 15 out of 20 regions in Italy had laboratory-confirmed cases, with an official count of 1128 positive tests nationwide. On the evening of 7 March, a news leak prematurely announced that a new decree would lock down the entire country. Panic ensued, with 25 000 people leaving the affected regions in the north for their family homes in the south. The epidemic spread to the whole country (Fig. 1).

On 9 March, Italy was put under lockdown, with people asked to stay at home and access to and movement within the region prohibited, except for work/health reasons. A week later, more than 21 000 positive tests had been registered *(13)*, mainly in Lombardy (80%), followed by Emilia Romagna, Veneto and Piedmont. COVID-19 was increasing exponentially and spreading to the South (Box 2, Fig. 1).

By 25 March, all "non-essential activities", meaning everything not related to food provision, pharmacies, health services and basic functioning of the country, had been shut down. Italy was recording up to 1000 deaths per day. Cases were reported in all regions, though nowhere as many as in the regions in which the epidemic started. Everyone in Italy – and elsewhere – had seen images on television of people being reeled into hospital intensive care units (ICUs) and of bodies leaving en masse, without ~~a dignified~~ burial. As the spread of COVID-19 continued in the north, it also travelled progressively to the south of the country. By the end of March, awareness of the virus's high contagiousness had grown, giving the south of Italy time to prepare and react more rapidly to contain, so the scenario of the north would not be re-lived in the south. Fig. 2 highlights the legal arsenal of measures put in place by the Italian Government against key moments of case-spread in Italy.

Fig. 1. Cumulative number of laboratory-confirmed people with COVID-19 across Italy on 5 March, 27 March, 3 April and 30 April (the epidemic spread from north to south)



Source: Civil Protection Department *(13)*. © Dipartimento della Protezione Civile, 2019, reproduced under Creative Commons Attribution 4.0 International Public Licence (https://github.com/pcm-dpc/COVID-19/blob/master/LICENSE).

Box 2. The basic reproduction number (R0) of COVID-19 in Italy

The principal metric to describe epidemic transmission patterns is the Basic Reproduction Number (R0). It measures the average number of people infected by a single contagious person. According to the Istituto Superiore di Sanità [National Institute of Health] (ISS), the R0 was in the range of 2.13–3.33 at the start of the epidemic in the earliest affected regions *(14)*. This means each case would on average infect 2.1–3.3 other people, thereby showing exponential growth. In subsequent weeks, this figure ranged between 1.5 and 4.0 (10 March estimate). As measures to limit transmission took hold, it decreased to 0.3–1.5 (25 March) *(13)*. In early April, the R0 was estimated to be between 0.2 and 0.7 *(15)*.

Fig. 2. Timeline of salient events in the course of the epidemic

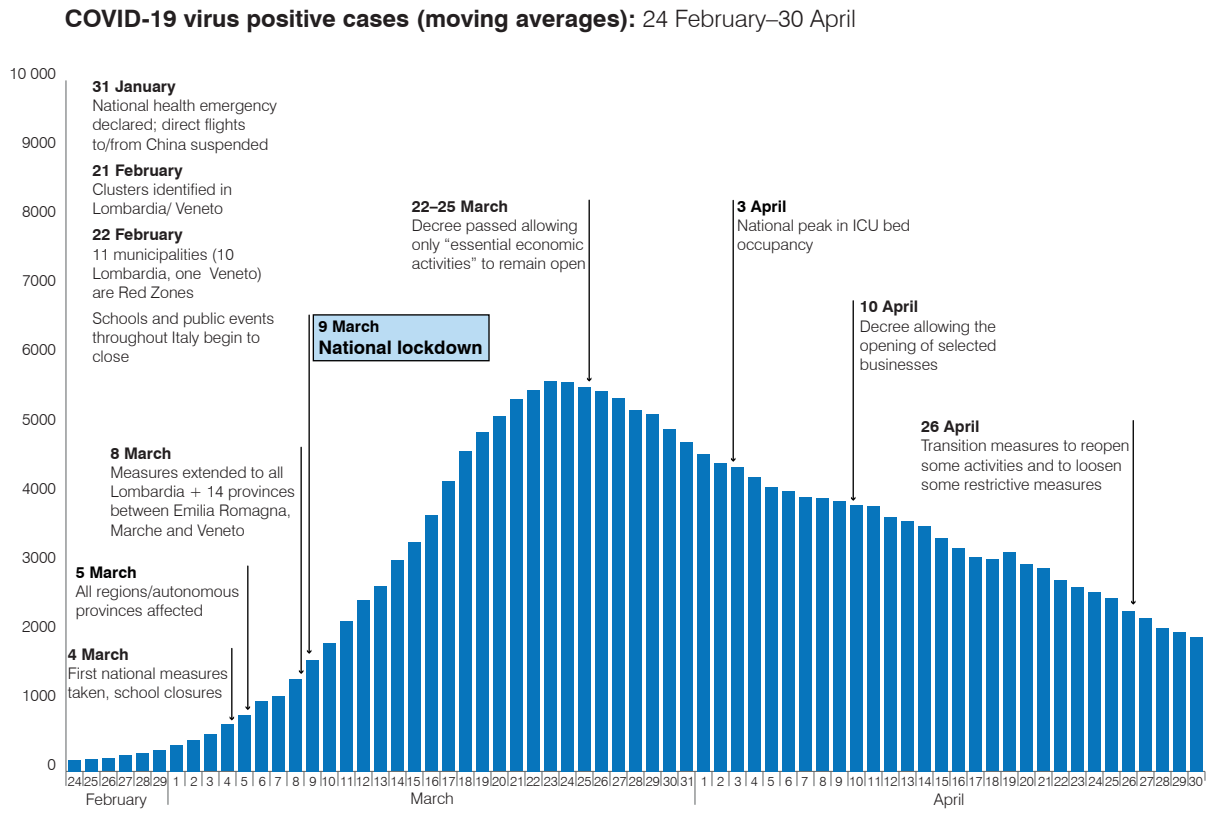
Case spread		Legislative measures and other relevant actions
Two Chinese tourists in Rome identified with COVID-19 onset symptoms; hospitalized on same day	30 January	
	31 January	Italy declares State of Emergency; fights to/from China suspended (health checks at entry points adopted for these flights)
	3 February	First set of important measures mandating Civil Protection Department's urgent interventions, (logistical assistance, emergency procedures and special assistance to affected populations)
	5 February	Civil Protection Department sets up Technical and Scientific Committee to support informed decision-making for COVID-19 management
Case number three is detected in Italy – an Italian citizen repatriated from Wuhan is found positive to coronavirus	6 February	
The National Institute of Public Health (ISS) announces the first locally acquired case in Italy (Lombardy region). COVID-19 clusters found in 11 Italian municipalities (10 in Lombardy and one in Veneto)	21 February	Introduction of quarantine measures for persons having been in contact with confirmed cases
	22 February	Decree passed making 11 municipalities in Lombardy, Veneto and Emilia Romagna regions Red Zones (entry/exit is prohibited and movement limited within, except for work/health-related reasons)
	23–25 February	Schools and public events throughout Italy to close
COVID-19 explodes exponentially in the Red Zone, with Lombardy having 615 cases, Emilia Romagna 217 and Veneto 191	29 February	
COVID-19 cases reported in ALL of Italy's regions	5 March	
	7 March	News leak on country lockdown: massive exodus of people from north to south
	8 March	Restrictive measures extended to all Lombardy and 14 provinces between Emilia Romagna, Marche, Piedmont and Veneto
	9 March	Decree passed resulting in national lockdown
	11 March	Decree passed putting in place increasingly restrictive measures on catering, retail and commercial services
	17 March	"Cura Italia" (Heal Italy) Decree passed, defining wide-ranging economic and social measures
	22 and 25 March	Decree passed allowing only "essential economic activities" to remain open
Day with all-time high in COVID-19 deaths for Italy: 969	27 March	
National peak in occupancy in ICUs by COVID-19 patients	3 April	
	10 April	Decree passed allowing selected businesses to open (clothing for children and babies, stationery stores, bookstores)
	26 April	Transition measures to reopen some activities and loosen some restrictive measures

2.2 The epidemic takes hold

With the spread of the epidemic came a daily tally on each news bulletin: the number of people found positive for COVID-19, the number hospitalized and the number of COVID-19-related deaths in hospitals. Each day the number of people with a positive test (that is, those for whom infection was laboratory-confirmed through a polymerase chain reaction (PCR) test, commonly called a swab test) was higher than the day before. The daily numbers would only start to decrease after 20 March.

Each of the 21 regions[2] had cases, but interregional differences were substantial. The number of positive tests ranged between 60 and 715 per 100 000 inhabitants – a consequence of interregional differences in the intensity of the epidemic, but also of differences in the number of tests completed, which itself was a consequence of differences in the availability of tests and how testing was targeted. Nearly three quarters of the confirmed cases occurred in just four regions in the north of the country: Lombardy, Emilia Romagna, Veneto and Piedmont. Fig. 3 provides an overview of COVID-19 virus-positive cases along with measures put in place over an almost two-month period.

Fig. 3. Milestones in controlling the epidemic, plotted against the daily number of new laboratory-confirmed cases



Confirmed cases were just the tip of the iceberg. The test in itself yields a significant proportion of false negatives. People who were asymptomatic (precisely how many was not clear at the end of April) would probably never get tested. Many symptomatic patients also were also not

2 Italy has 19 regions plus two autonomous provinces. The term "regions" is used throughout the text as shorthand for both.

tested, particularly at the beginning of the epidemic, when tests were scarce. Many who tested positive to the COVID-19 virus never developed the disesase. The earliest documented onset of symptoms in Italy has been traced back to late January, with ever faster-growing numbers until the virus's peak around 13 March.

On 30 April, the active cases were around 101 551, of which 18% were hospitalized, 2% admitted to ICU and 80% in isolation at home. The peak of ICU bed occupancy by COVID-19 patients was reached on 3 April, with 4068 people in ICUs across the country. This dropped on 25 April, when there were only 2009 (fewer than half).

By 30 April, almost 28 000 deaths had been related to COVID-19. The daily death count around the peak of the epidemic was close to 1000. Shocking as these numbers are, they underestimate the real toll of the epidemic: they do not include people who clinically presented as instances of COVID-19 but for whom no test was done or COVID-19 patients who died at home or in long-term-care facilities. A more comprehensive view of the true toll of the epidemic comes from a comparison between total mortality during the months of the epidemic and the mortality expected from previous years. Fig. 4 shows how mortality considerably exceeded the habitual expected ranges, particularly in the north. Excess mortality from all causes painted a far more dramatic picture of the impact of the epidemic than the numbers of hospital deaths of people with laboratory-confirmed COVID-19 infection. At the end of April, the total toll was revised upward, from 28 000 to 38 000, to take deaths outside hospitals into account.

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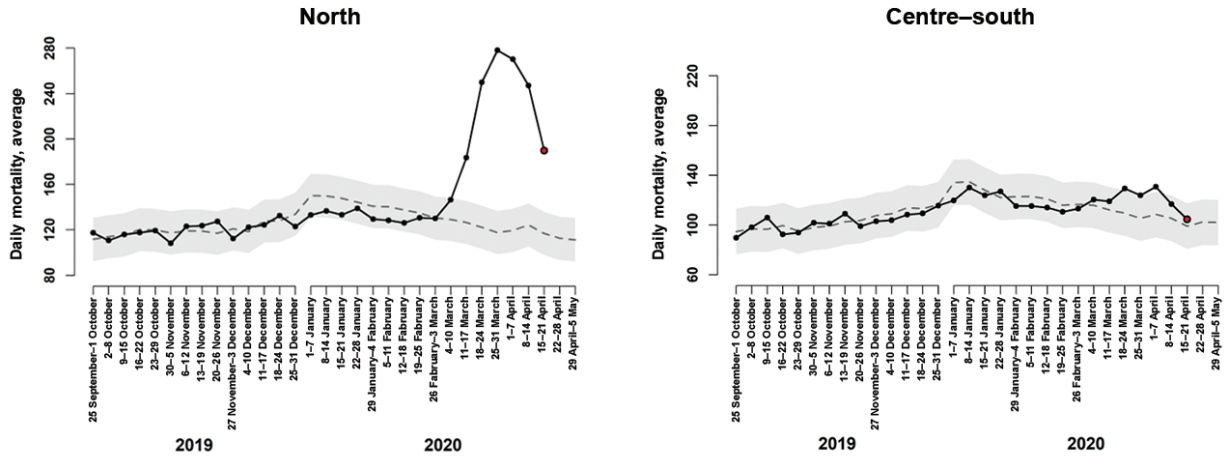
Fig. 4. Daily number of deaths from all causes in 2019–2020 in cities in northern (top) and central and southern (bottom) Italy, plotted against the median (dotted line) and range expected on basis of previous years; the number exceeded expectations as COVID-19 took hold from March onwards, particularly in the north



Source: Davoli et al. *(16)*.

Key issues in tracking the epidemic include the following.

- Hospital deaths of patients with laboratory-confirmed COVID-19 infection provided an underestimate of the death toll of the epidemic.
- The interpretation of the number of positive tests as a metric for the spread of the epidemic depended on differences in targeting and number of tests, making it difficult to interpret.
- Ramping up testing capacity was critical to be able to do enough tests, not just for epidemic control, but also to generate relevant data for tracking up the epicurve.

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3. The taming of COVID-19

Italy deployed an array of instruments to contain and mitigate the epidemic. This included case-detection and contract-tracing, isolation and quarantine,[3] physical distancing and mobility restrictions, a set of new individual behaviours, a massive expansion of health-care infrastructure and equipment, and redeployment of staff. The measures were steered by the legal and regulatory instruments emanating from the national command-and-control structures and from regional and local initiatives.

3.1 Test, trace, isolate

The classical, signature public health instrument to control an epidemic consists of case-finding (that is, identifying symptomatic or asymptomatic contagious individuals – "cases" – with confirmation through swabs for polymerase chain reaction (PCR) testing for the presence of virus) and contact-tracing (finding people – "contacts" – who have been in close contact with a case in a period beginning from two days before the onset of symptoms or from the date of a positive swab), then isolating cases and quarantining contacts for 2–14 days *(17)*. This separates "cases" or people with COVID-19 and "contacts" from the rest of the population, reducing exposure of the public. Intrusive as they may be, these actions, if carried out promptly and systematically, can stop an epidemic from spreading.

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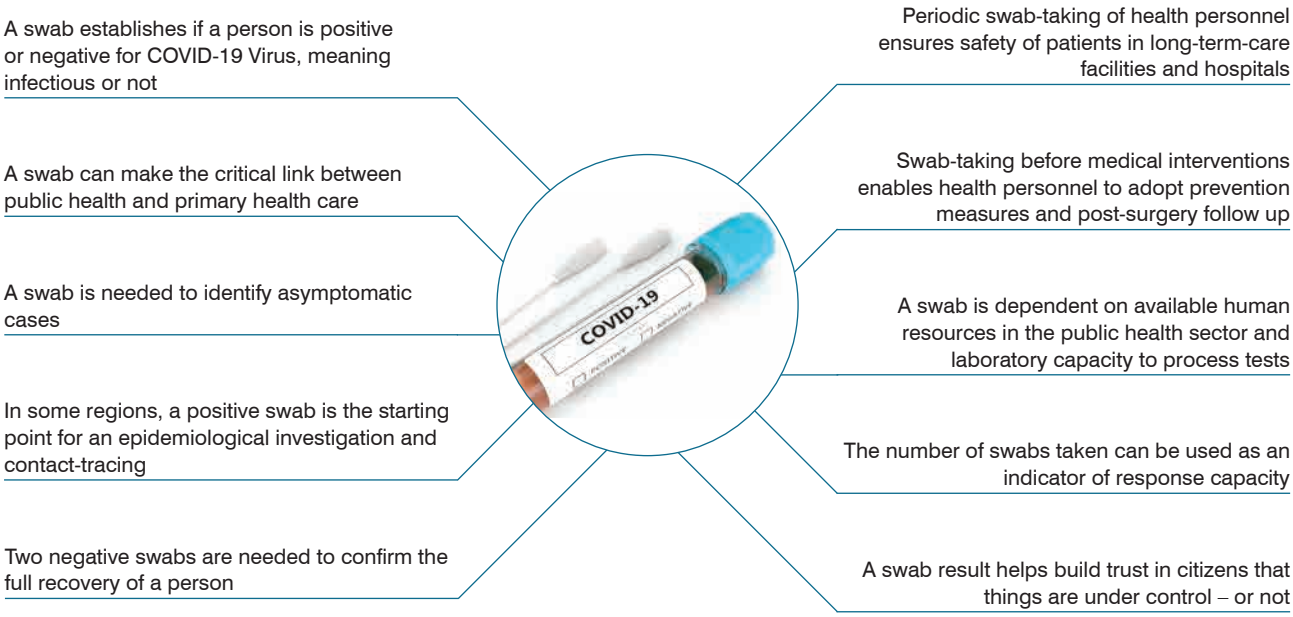
3 The term quarantine comes from the Italian word meaning 40 days, a practice beginning in the 14th century when it was deemed necessary to protect coastal cities from plague epidemics. Ships arriving in Venice from infected ports were required to stay at anchor for 40 days before being allowed to land.

This strategy was put into place at the very start of the epidemic by means of a Ministry of Health circular *(18)*. The aim was to prevent isolated cases or small clusters that would lead to community transmission, with its resulting risks of rapid spread. A ministerial decree was issued on 9 March that ordered a country lockdown had a profound impact on how the public perceived the epidemic threat. People started to realize how many interactions they have in a given day and that if they caught the COVID-19 virus, then people they were in close touch with, from family members to the colleague with whom an office space was shared, could possibly get the virus. The need for such an intervention was well understood, but while the principles and criteria for this test, trace and isolate strategy had been formalized for the whole country in the ~~ministerial~~ decree, each region proceeded to organize implementation in its own way and at its own pace.

3.1.1 Case-finding and testing

A first – important – difference in the way regions implemented the national epidemic control recommendations related to their approaches to case-finding, particularly the use of PCR swab-testing to confirm the presence of virus in suspected cases (Fig. 5).

Fig. 5. The significance of the COVID-19 virus swab test



In the regions that were the first touched by the epidemic – Lombardy and Veneto – community transmission was well established by the time the alarm was raised. The explosive growth of the epidemic quickly overtook testing capacity. In Lombardy, where the system relies on an extensive network of curative services in hospitals, testing followed national policy: it initially was limited to symptomatic cases, all the more since tests were in short supply. Veneto, with a stronger public health network and community outreach capacity, took a more proactive approach to case-finding through extensive testing (extending beyond national guidelines at the time). The region mobilized funds to expand its testing capacity and moved aggressively to find cases in the community, confirm them, trace even the most fleeting contacts, and test all. Cumulatively, Veneto tested twice as many people per 1000 population than Lombardy (21.0 versus 11.7) *(19)*.

These contrasting approaches led to much public controversy and debate in the media and among policy-makers. It left the other regions scrambling to devise their own approach to case-finding at a moment when testing capacity was limited and evidence on the best approach was

scarce. The daily news bulletins with numbers of confirmed cases were particularly difficult to interpret as the indications for testing differed from region to region.

In other regions, particularly in the south, authorities were on the alert. Case-finding started as soon as the first clusters appeared, at an *"earlier stage in the epicurve"*, before the epidemic got to full-blown exponential expansion. More prompt intervention allowed these regions to contain far better than had been the case in the regions in the north, where control efforts started at earlier dates but at a later stage in the development of the epidemic.

3.1.2 Contact-tracing

In principle, the process for contact-tracing was straightforward. New cases were notified to the public health service of the local health unit. Specially trained public health nurses then carried out a so-called epidemiologic interview. In the interview, cases were asked about symptom onset, nature of symptoms, possible sources of infection and close contacts two days prior to symptom onset (or date of swab exam) to follow up on contacts and put them into quarantine and under surveillance. Implementation of contact-tracing varied. In the regions in the north that constituted the initial epicentre of the epidemic, Lombardy, Emilia Romagna, Piedmont and Veneto, the sheer numbers of patients with positive tests, many hospitalized as a matter of emergency, quickly overwhelmed local capacities. Other health workers – safety inspectors, controllers or administrative personnel – were repurposed. Several local health units had to solicit the assistance of retired health workers, doctors and nurses to help make the necessary contact-tracing phone calls. Even so, contact-tracing in the most affected areas quickly exhausted local public health services.

The intensity and effectiveness of contact-tracing was an indicator of each region's capacity to mobilize health workers and find testing material, but also of the way they had organized their health systems. Regions such Veneto and Emilia-Romagna could rely on their dense public

health network for case-finding and testing. Other regions, such as Lombardy, where the health systems were more hospital-centric, struggled more to roll out contact-tracing. Regions in the south had had a heads-up as they had seen the epidemic explode in the north and had time to intervene at an earlier stage in the epicurve. They managed to contain the epidemic before their public health and hospital capacities were overwhelmed.

Key issues in finding cases and tracing contacts include:

- mobilizing funding early to ensure sufficient laboratory capacity, testing material and well-trained staff are ready to test extensively;
- isolating infected people immediately, with protection of family members;
- setting up facilities for quarantine in case patients cannot stay at home;
- organizing medical and mental well-being follow-up and social support for patients in isolation and their families; and
- making provisions for isolation and quarantine that meet the specific circumstances of vulnerable groups.

3.1.3 Isolation and quarantine

People who tested positive for COVID-19 virus and were asymptomatic or presented only moderate symptomatology were isolated at home until considered clinically recovered (two negative swabs taken at 24-hour intervals). As the epidemic progressed in Tuscany and some other regions, people were isolated in hotels or other ad hoc locations, with medical assistance *(20)*. People isolated at home in other regions were checked by health workers through a daily phone call. In some places, such as Trentino, an app was specially designed for this purpose. In regions such as Lombardy, follow-up was less systematic.

Close contacts and household members were put in quarantine for 14 days (28 days in Lombardy). Contacts of cases living in the same household had to be maintained in isolation 14 days after cases had been declared recovered – a rule that was not always adhered to in practice. For many, quarantine was a difficult experience. Social isolation created stress and mental health issues, compounded by unemployment and difficulties in meeting daily needs. Physical activity reduced and the consumption of junk food increased. Relationship problems and domestic violence increased.

Organizing isolation and quarantine arrangements was a real challenge, and not just for people who were homeless, refugees or migrants. There were also the large numbers of people living in institutional settings such as long-term-care facilities (like nursing homes, group homes for people with special needs, orphanages, penitentiary institutions and military structures) (Box 3). At the beginning of the crisis, there were no guidelines on what individuals could and could not do during isolation and quarantine, so people had to use their own judgement.

Isolation and quarantine also had a toll on families in terms of increased violence, depression and distress. To address possible problems of violence, psychological distress or lack of family support for grocery shopping, many initiatives have been taken by municipalities, regions, associations and civil society: promotion and strengthening of already existing telephone hotlines for victims of violence, setting up of new telephone lines against loneliness, especially for older people living alone, and neighbourhood shopping services to allow people at high risk to remain at home and to provide groceries to those not able or allowed to go out. Box 3 illustrates an initiative taken to prepare for COVID-19 in prison settings.

Box 3. Controlling COVID-19 in prison settings

The nature of prison life (closed setting, crowded living conditions) turns them into potential clusters of infection. At the beginning of March, authorities restricted visiting rights to avoid the introduction of the virus. This provoked heavy rioting across 27 jails. Some prisons (such as the prison in Trento, with 300 inmates) were able to keep COVID-19 under control through timely preparation: clear procedures, supply of tests and personal protective equipment (PPE), testing of all guards, health workers and inmates, establishment of a dedicated COVID-19 area following local hospital guidelines, confinement in cells to increase physical distancing and ongoing regular testing of staff and inmates.

3.2 Restricted mobility, physical distancing and safe behaviour

The second set of strategic actions for the control of the epidemic consisted of limiting movement, ensuring physical distancing[4] and promoting safer individual behaviours, particularly frequent handwashing. These reduce the opportunities for transmission from one community to another and from one person to another. Fig. 2 and Fig. 3 show how over time, these measures were intensified and extended to the whole country. Restriction of movement started in February in the north and was extended to the whole country in early March (Table 1). It began with checkpoints, suspension of trains and flights, then extended to international travel and local restrictions.

4 Physical distancing refers to the deliberate increase of the physical space between people to decrease the chances of contagion and thereby limit the spread of illness. It is commonly, but inappropriately, labelled as “social distancing”. People were encouraged to maintain social contacts through social networks and electronic communication on WhatsApp, Facetime, Zoom and phone.

Table 1. A chronology of physical distancing and restriction of movement

Date (2020)	Measures imposed
23 February	Restrictions on entry and exit for all the municipalities in which local outbreaks were observed Schools closed All public events suspended in Lombardy and Veneto
25 February	School closure and suspension of public events extended to Emilia Romagna, Friuli Venezia Giulia, Piemonte and Liguria In the whole of Italy, all school trips suspended and access to schools limited for students who had been sick for more than five days
8 March	Entry and exit restricted for the whole region of Lombardy plus 14 provinces
9 March	National lockdown is declared: people asked to stay at home and refrain from going to work unless absolutely necessary
12 March	All restaurants and shops in the entire country ordered to close
22 March	All non-essential activities are shut down
10 April	A reopening of limited facilities (like bookstores and children's clothes shops) is authorized
26 April	Discussion on transition measures

On 9 March, the Government advised people to stay home. Only necessary movements or trips for work, situations of necessity or health reasons were permitted. People were soon requested to remain within their municipality and carry self-certification with destination and reason for moving whenever they left their home. The police could check the self-certification and could fine people going about without justification.

The country moved step by step to a complete lockdown. In February, restrictive measures were put in place in the so-called Red Zone in 11 municipalities in Lombardy and Veneto. On 9 March, a lockdown for the whole country was declared, with schools and universities, public and sports events, bars and restaurants, cultural venues and museums closed or cancelled. So-called smart work solutions were strongly recommended or enforced.

Restrictions followed upon each other in a fast tempo. Children who were supposed to go back to school after carnival holidays were told to stay home for a few more days. Initial elation at being granted a few more days of vacation, away from tests and structures, soon turned to wondering about when life would go back to normal. Initial reservations about the lockdown nevertheless were quickly replaced by overwhelming consensus and adherence.

Compliance with the restrictions has been remarkably good. The streets emptied and cities became eerily quiet. Geo-localization data of smartphones registered a 50% reduction in trips compared to pre-outbreak averages. Google's "community mobility reports" recorded a drop of more than 80% in visits to places like restaurants, cafes, shopping centres, theme parks, museums, libraries and cinemas in the period from the end of February to mid-April (Fig. 6).

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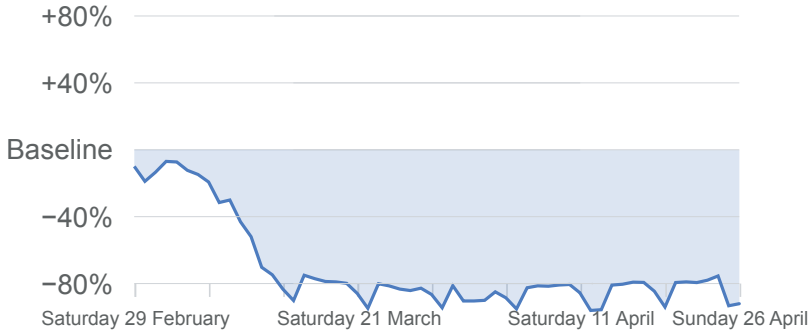
Fig. 6. Visits to retail and recreation facilities compared to pre-COVID baseline: a drop of more than 80%



Source: Google's "community mobility reports".

The hashtag *#iorestoacasa [I stay home]* served as a rallying point for several local and national initiatives, even for older or vulnerable people (Box 4). The Ministry of Cultural Heritage and Activities and Tourism, for instance, began to promote its digital activities in the form of virtual tours, YouTube videos and social campaigns under the umbrella of the *#iorestoacasa* campaign. Schools and universities began to put in place remote learning mechanisms; even if dates for removal of restrictions had been set in decrees, most people knew in the back of their minds that the country was in for the long haul.

Box 4. Stay home, I'll pass by

The *#Resta a casa, passo io [#Stay home, I'll pass by]* was designed to help vulnerable people with shopping needs and provide them with emotional support by phone. It targeted people without family support – over 75-year-olds, people with chronic diseases in self-isolation and people in home isolation or quarantine.

Requests went to an 08:00–20:00 call centre that coordinated the interventions. The network was composed of municipal social workers, valley communities, volunteers and psychologists. In one month, the centre processed 3356 requests, with half of the calls seeking information and/or emotional support. About 17% of callers requested delivery of groceries or medicines and 9% expressed the need for psychological support, provided by professional therapists. The initiative conveyed a much-needed sense of closeness and community and was soon replicated in other regions.

The restrictions were accompanied by recommendations on individual behaviour. National and regional authorities asked people to keep a safe-distance measure of 1 m, again with interregional and local differences (some would recommend 1 m distance between two people in public spaces, others 1.5 m or even 2 m). Importantly, health authorities campaigned for frequent handwashing as a primary prevention of contagion.

While keeping a safe distance and properly and frequently washing hands was deemed by WHO to be the most effective way of protecting individuals from the virus, much of the public debate shifted its focus to the use of masks and gloves.[5] The Government's emergency legislation made medical masks obligatory only for health-care workers or people working in health settings, workers who had frequent contact with the public and those delivering meals to homes. In practice, however, everyone who could get hold of masks, gloves and hand sanitizer did so, with frantic searches in supermarkets, pharmacies and on the Internet. Prices escalated; masks became a common feature of the city landscape.

Regions and municipalities stepped in to extend the obligations on the use of masks, with a fragmented patchwork of different regulations across the country. Most regions enforced the use of masks for wet markets and supermarkets and on public transport; others did so for everywhere, except at home. The use of gloves also increased, with some regions making them compulsory for leaving home. Supermarkets employees would tend to re-use single-use masks daily and wear disposable gloves while touching all surfaces (for example, when giving change or returning credit cards), reducing their effect and adding to a false sense of security.

Fuelled by intense media interest, controversies raged over the types of masks, their effectiveness and their scarcity. Some regions decided to procure masks via the Civil Protection Department and distributed them through pharmacies, supermarkets and by post. The use of masks and, to a lesser extent, gloves clearly captured the imagination of the public as a symbol of the protection sought against the invisible threat of the virus. Its visibility nevertheless contrasted with the attention given to proper and frequent handwashing as a primary way of preventing infection.

5 According to WHO, washing hands offers more protection from COVID-19 than rubber gloves. People can still pick up COVID-19 virus contamination from gloves if they touch their face, hands and mouth after having been in contact with contaminated surfaces *(21)*.

Key issues in promoting physical distancing and restriction of movement include:

- communicating clearly on the criteria and practicalities of the restriction, with positive lists of what is allowed;
- being ready to set up the measures quickly and decisively, with the necessary legal and administrative frameworks;
- setting clear and objective criteria and benchmarks for defining the duration of the restrictions and easing restrictions;
- mitigating the consequences and effects in terms of social isolation and physical activity;
- offering solutions for the continuation of schooling and education activities; and
- managing the public discussion of handwashing, masks and PPE.

3.3 Italy's sudden health-care surge

In the two weeks between the notification of the first imported cases and the moment Patient One attended the Codogno emergency department in a critical condition (Box 5), the virus had spread in the community. To this day, the transmission chain leading to community transmission in Italy is not well understood. What is known is that soon, the number of people requiring emergency intensive care increased exponentially; after a few days, the first-responder hospital had no more beds available and was faced with evacuating patients to ICU units in other hospitals. By 2 March, 2036 cases had already been recorded, with 127 people in intensive care in Lombardy, 16 in Emilia-Romagna and 14 in Veneto. The demand for care soon exceeded capacity. The number of ICU beds in the regions in the north of Italy ranged between 6 and 12 per 100 000 (against a European Union (EU) average of 12 per 100 000: there were 5293 ICU beds in the whole of Italy at the beginning of the epidemic, while at the peak on 3 April, a month and a half after the first patient, there were 4068 COVID-19 patients in ICU (Fig. 7).

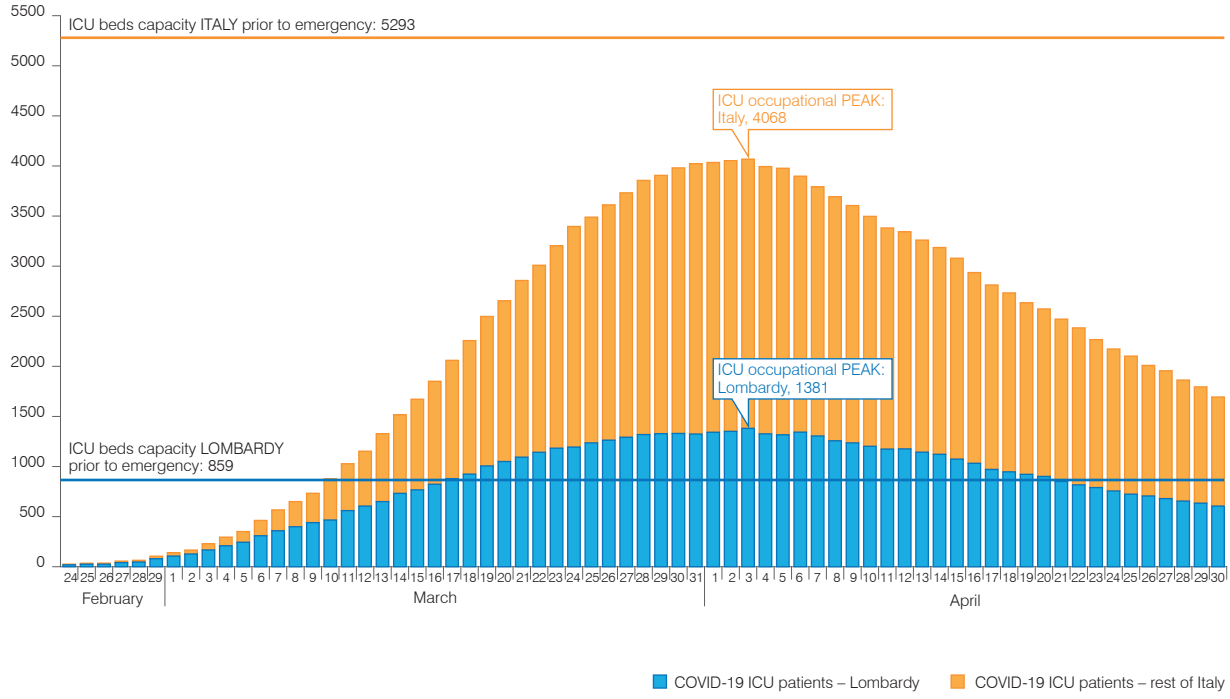
Box 5. Patient One

On 18 February, Patient One went to the emergency department in Codogno, a small town near Milan. He had a cough and common flu symptoms *(22)* but did not fit the COVID-19 profile. He was a young and healthy man, had not returned from China in the past 14 days (as the protocol required *(23)*) and had not been in close contact with confirmed or suspected cases of COVID-19. He did not want to be admitted and was discharged home with antibiotic therapy.

On 19 February, he was back to the emergency department in critical condition and was admitted to the ICU. But something was off: an atypical pneumonia in a young healthy man who had travelled across Italy in the past weeks and did not respond to treatment? The mention of a dinner with a colleague who had come back from China a couple of weeks before alerted the anaesthetist. According to the guidelines, a COVID-19 virus test was not indicated, but it was ordered and came back positive.

This weak link, and a test that went beyond the Ministry of Health's guidelines, unlocked the story. It showed that the case definition in the early detection surveillance system was not sensitive enough to detect this novel coronavirus. Later studies would show that the virus was already circulating in the community at that time, but this had not yet been detected. Within 24 hours the number of reported positive cases rose to 36, all without links to Patient One. A cluster of unknown magnitude was already present in Italy, making additional spread likely *(24–27)*.

Fig. 7. ICU occupancy by COVID-19 patients peaked on 3 April, while the cumulative number of deaths of laboratory-confirmed patients continued to grow



The sudden crisis situation caused some panic and overwhelmed contact-tracing capacities. Hospitals in the affected areas had to scramble to establish triage and screening procedures and safe patient circuits. They had to ramp up their capacity to care for vast numbers of severely ill patients: nearly 20% of admitted patients would need up to two weeks of ICU care *(28)* and 88% assisted ventilation *(29)*. Authorities had to race against time to scale up the number of ICU beds, supply critical equipment and mobilize health workers. ICU bed occupancy reached its peak on 3 April.

3.4 Triage, screening and the involvement of primary care

Unprepared for such a flood of severely ill patients, the initial reaction of the hospitals was improvised, chaotic and creative. It took some time before formal guidance became available. The immediate task was to get control over the flow of patients entering hospitals, knowing that these patients were worryingly contagious.

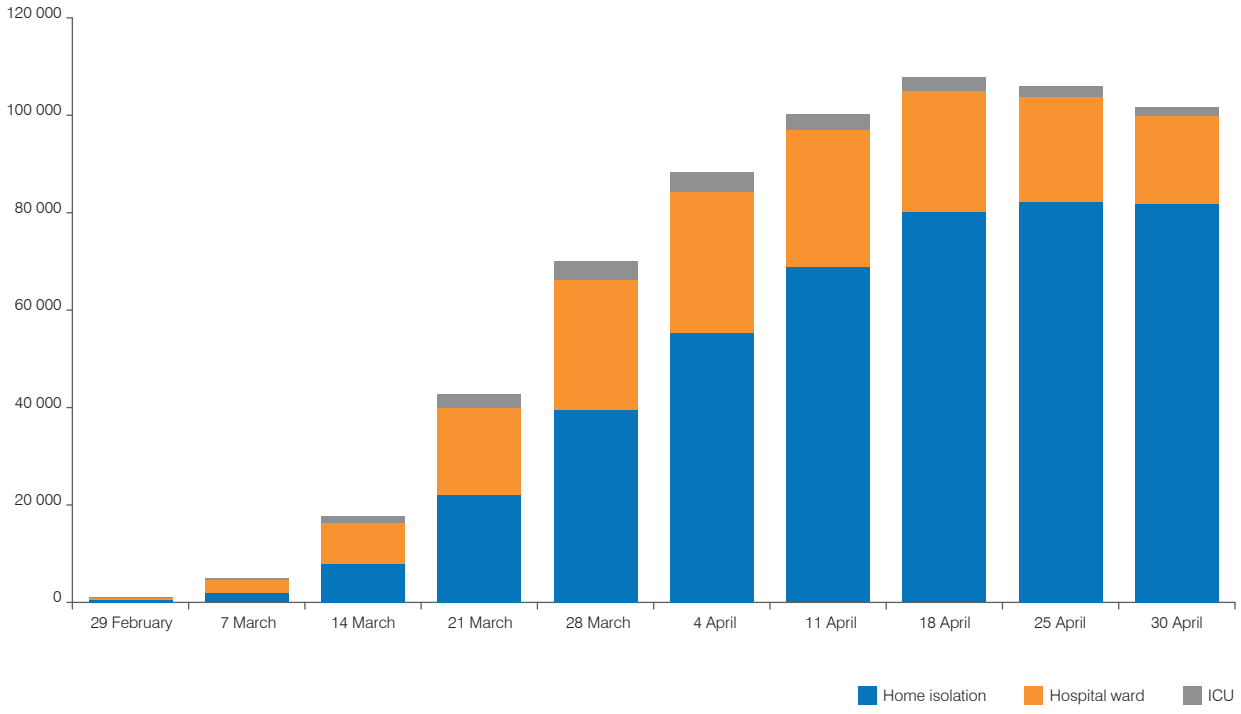
As both the disease and panic took hold of the population, hospitals were flooded by calls. Regional and local authorities activated emergency numbers and free hotlines from which lay people and health professionals answered thousands of calls from the public. Callers were asked about any previous exposure or respiratory infection symptoms, offered advice, referred to their GPs or connected to emergency services for hospitalization. Agreements were made with the Red Cross and other nongovernmental organizations to help out, mobilizing additional staff and vehicles for rapid hospitalization of patients with stroke, chest pain, trauma or obstetric emergencies. This alleviated the stress on hospital staff and reduced waiting times for donning and doffing PPE and sanitizing ambulances after COVID-19 interventions.

As of the first week in the heaviest-hit regions, direct access to hospitals was limited to urgent care only. Pre-triage pathways were set up outside of hospital structures with screening checkpoints in tents and mobile structures. Sick people could be interviewed, thermoscanned and have their

vital signs checked. According to their presumed COVID-19 or non-COVID-19 status and the severity of their symptoms, they were cared for by different teams and could then be routed to home care or to the most appropriate hospital. This reduced the risk of intrahospital contamination as much as possible. Protocols were in place to isolate suspected cases and quickly channel them to the appropriate care setting. After assessment, COVID-19 patients with milder symptoms and non-COVID-19 patients were sent home after establishing links with their GPs and territorial services for active surveillance or hospitals, depending on disease severity.

Implementation of this central guidance varied considerably from region to region. Some regions acted faster to divert patients from the hospital to care at home, managing to some extent to limit the strain on their hospitals. They formally and explicitly involved primary care doctors in the response to COVID-19, allowing them simultaneously to promote the adoption by primary care workers of safety measures like relying on telephone contact to replace face-to-face encounters and adopting safe behaviours such as using PPE where available and handwashing everywhere. This helped to reduce the spread of the infection among primary care health workers and increased the proportion of symptomatic patients that could be cared for at home: in Veneto, for example, by 20 March, 74.1% of sick patients were cared for at home, with 21.4% and 4.5% respectively in hospital and ICUs. This compares well with the averages for the country (Fig. 8) and patterns in the regions that were slower in mobilizing primary care doctors and setting up effective triage and screening.

Fig. 8. Where patients with COVID-19 were treated: as the epidemic progressed, a larger proportion was cared for at home



Other regions concentrated the bulk of their efforts on accommodating all patients in their hospitals. This proved a losing battle and had some unfortunate side-effects. It slowed down the adoption of safe procedures in contacts between the public and primary care providers, many of whom continued to work as before the epidemic. These delays may actually have fuelled local epidemic clusters and facilitated the propagation of the disease among hospital staff and primary care doctors.

On 9 March, a central Government decree put in place a set of measures for a more systematic primary care response across the country *(30)*. Towards the end of March, triage systems and primary care involvement were generalized (albeit unevenly implemented) throughout the country *(30–33)*.

First, emergency measures included direct employment of general practitioner (GP) residents, resident physicians in other disciplines and generic licensed medical doctors. Resident paediatric physicians were also given temporary permission to practise at community level. All this helped to substitute for GPs who had fallen ill or had been put in quarantine, and to cope with the increased out-of-hours workload.

Secondly, a new dedicated structure was created – the Special Units for the Continuity of Care (USCA). These units, each covering 50,000 inhabitants, were staffed with volunteer medical doctors, nurses and administrative staff and were active 12 hours per day, seven days a week. USCAs were tasked with managing the medical follow-up of home care for less severe cases of COVID-19. They played an important role in case-finding and contact-tracing and served as frontline gatekeepers of the Italian health system, proactively managing suspected COVID-19 cases with home health advice and diagnostic tests. The result was that people were able to receive care, thereby averting the flood of patients from GP and paediatrician offices or emergency departments. The first USCAs were established in Emilia Romagna on 16 March, but the roll-out has remained slow and uneven across regions. On a sample of five regions, coverage ranged between 16% and 56% of the population by the end of April *(34)*. In some places (though not everywhere), local initiatives extended the USCA's mandate to cover active surveillance and care in residential facilities.

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The involvement of primary care in the control of COVID-19 established new linkages between primary health care and hospitals that augur well for the future.

Fifteen key issues to consider when responding to the surge in demand for critical clinical care are as follows:

1. set up emergency hotlines to orient patients and provide reassurance;
2. set up pre-triage pathways;
3. involve primary care workers systematically and explicitly in the response to the epidemic, linking them with public health and hospitals;
4. limit non-urgent non-COVID-19 admissions;
5. exploit the full potential of home care with medical follow up;
6. repurpose bed capacity from other departments;
7. create temporary ICU hospitals;
8. create subintensive and postintensive units;
9. create "COVID-19 hotels" where people can pass isolation with some nursing support;
10. quantify gaps in critical equipment and set up emergency supply channels;
11. dedicate hospitals to exclusively COVID-19 or exclusively non-COVID-19 patients;
12. separate COVID-19 and non-COVID-19 patient pathways and circuits;
13. repurpose health workers, draft in retirees and hire extra workforce;
14. train staff for the clinical and technical challenges of caring for COVID-19 patients; and
15. protect health workers against infection and burnout.

3.5 Scaling up hospital capacity for critical care

Hospitals in the north of Italy were faced with a flash flood of severely ill patients entering emergency departments. The effect was chaotic and destabilizing. Suddenly, hospitals were receiving throngs of patients and the challenge became how to address competing demands – saving lives, coping with the ever-growing workload, mobilizing resources, ensuring staff and patient safety, and facing up to the sudden realization that something was happening for which they were not prepared. At the ICU bed occupation peak for COVID-19 patients on 3 April, there were 29 010 COVID-19-related hospital admissions.

The most visible immediate challenge was the rapid saturation of hospital ICU capacity; at the peak on 3 April, there were 4068 patients in ICUs: the 2842 patients in the north of Italy corresponded to 113% of the total number of ICU beds pre-COVID-19. This captured much media attention and prompted immediate mobilization of regional and national authorities. Regional imbalances in ICU beds and medical equipment, or uneven prioritization of calls to tender for medical equipment and supplies, suddenly became vulnerabilities that had not been considered in pandemic preparedness plans. Regions saw huge gaps in demand and supply of ICU beds, a situation none had ever envisaged.

The first affected hospitals managed to redirect some of their patients to other hospitals, but

these soon became overextended. Very early on, hospitals started limiting other non-urgent admissions activities as they rapidly were becoming overstretched and conscious of the risk of contagion. By mid-March, these limitations were sanctioned by national decree *(35,36)*. The number of ICU units and beds was increased nationwide from March, along with bed capacity in medical wards. Other departments and units were repurposed as improvised COVID-19 ICU units, complemented by subintensive and postintensive care units.

Temporary hospitals exclusively dedicated to intensive care for COVID-19 patients were set up in the hardest-hit regions. The largest of these, in Milan, was planned to have up to 205 ICU beds for patients needing respiratory support. At its peak, the number of ICU beds in the country was ramped up from 5293 pre-COVID-19 to 9284. Similar efforts were made to find the necessary equipment by purchasing 3918 systems for assisted ventilation – a logistical challenge of its own. The Civil Protection Department played a major coordination role, using its extraordinary legal powers to requisition public and private property considered necessary for the emergency response.

Alongside scaling up of hospital capacity, radical measures had to be taken to contain the contagion. Entire hospitals were converted into single-purpose COVID-19 hospitals and began to work as hubs in which patients with the same disease could be grouped. This not only freed capacity, but also helped rationalize workflow and limit contagion. At the same time, other hospitals were assigned to deal exclusively with non-COVID-19 patients to ensure continuity of care and remote follow-up for people with other pathologies. They would also continue to take care of specific tasks such as blood collection or dialysis.

Where it was not possible to assign exclusive COVID-19 or non-COVID-19 responsibilities to single hospitals, clear and separate patient pathways and flows inside the structures had to be established – separate entrances, separate wards, separate circuits that would make it impossible for infected and non-infected people to cross paths. While there was much willingness to implement such radical measures, the architectural design of some hospitals made correct implementation impossible. In these mixed-purpose hospitals, patients who did not need specific life-saving treatments were diverted to other hospitals to minimize the risk of hospital-acquired infections.

First reports demonstrate a significant decrease in emergency department visits and hospital admissions for conditions other than COVID-19 *(37)*. Preliminary data on acute coronary syndrome in northern Italy, for example, show a significant decrease in hospital admissions and suggest that a significant increase in mortality during this period could not be explained in full by COVID-19 *(38)*. Substantial decreases have also been observed in paediatric emergency departments.

Regions were faced with tough decisions, such as postponing all non-urgent inpatient and outpatient activities, to ensure they had increased health professional availability in COVID-19 hospital wards and to free up capacity for the most severe cases *(35,36)* (Box 6). The Ministry of Health has made specific recommendations for cancer patients. For those who have completed the therapeutic course (off-therapy patients), follow-up checks have been postponed to limit exposure to the COVID-19 virus as much as possible and reduce workload. Dedicated and protected care flows have been identified for cancer patients with active disease. Despite this, a survey by Codice Viola, an association of pancreatic cancer patients, shows that up to 37% of first cancer visits were cancelled, 40% of follow-up visits were postponed and, most significantly, two thirds of surgeries were postponed to a later date.

Box 6. Difficult decisions: postponing care during COVID-19 times

Italian National Health Service outpatient activities that cannot be postponed:

- specialist visits accordingly to the National Waiting List Management Plan 2019–2021 priority classes:
  - U – urgent: to be performed as soon as possible, within 72 hours
  - B – short-term: to be performed within 10 days.

Italian National Health Service inpatient activities that cannot be postponed:

- urgent hospitalizations
- hospital admissions for cancer patients
- hospital admissions with first (A) class priority

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As the epidemic progressed, it became clear that intrafamily close contact could become a considerable source of infection for an infected person in home isolation or who was discharged without two negative swabs. Hospitalization was not an option, as hospitals already were stretched beyond their limits. These people nevertheless needed the benefits of active surveillance of their symptoms, and their immediate families had to be protected. A number of regions either repurposed intermediate care structures or set up ad hoc "COVID-19 hotels" or "resorts" (in the Marche and in Emilia-Romagna), with 1–2 hours of support provided by nurses.

The surge in hospital admissions made it necessary to repurpose health workers to intensive care, infectious disease and respiratory medicine units, while at the same time providing brief courses on non-invasive ventilation and new therapeutic protocols. This, however, was not enough. Three weeks after the first hospital admission of a COVID-19 patient, extraordinary regulation and funding with €600 million made it possible to recruit an additional 20 000 health workers, among them medical specialists, medical residents enrolled in the last two years of their medical specialization, medical doctors without board certificates and nurses, for a period of six months. Retired medical and nursing staff were encouraged to return to work to help out in low-risk environments. Medical graduates in their last three months of internship before their state exam were allowed to start practising. The Civil Protection Department directly contracted 300 doctors, 500 nurses and 1200 health-care technicians to support regions with rapidly deployable medical teams; the Italian Defence Department made an extraordinary effort to recruit 120 medical officers and 200 nurses from the armed forces *(30,39)*.

Protocols and training activities, mostly delivered via distance learning, were developed for staff by the ISS and scientific societies on management of COVID-19 patients and PPE to ensure the best care and the safety of health professionals (Box 7). These were based on the available evidence and other countries' experience.

Box 7. Exchanging clinical experience in emergency mode

The COVID-19 epidemic was a moving target: clinical strategies had to be developed and refined day by day as knowledge about the disease expanded. To accelerate the ongoing improvement of clinical work and to enable regions not yet confronted with the full force of the epidemic to capitalize on the experience of the first-responding regions, the WHO Office in Venice[1] set up three series of weekly webinars for infectious disease specialists, ICU staff and health-facility managers. This allowed over 250 infectious disease specialists and anaesthetists to meet twice a week to share experiences on issues such as choice of drugs, pronation during assisted ventilation and communicating about death to relatives.

The exchange during the webinars helped to improve clinical care. It also provided inspiration to clinicians who often felt overwhelmed by the challenge of frontline work in crisis-stricken hospitals. The Italian arms of the global solidarity trial of therapeutics for COVID-19, a study of clinical characteristics of COVID-19 patients and another on the sequelae of COVID-19 also received support from the WHO Office in Venice. After a few weeks, the webinars were expanded to a series for COVID-19 responders from 45 regions in other European countries and to 11 small states.

[1] The WHO European Office for Investment for Health and Development.

3.6 Protecting health workers

Health workers were themselves at great risk of infection. They make up 10% of Italy's confirmed COVID-19 cases. A total of 153 medical doctors died from COVID-19-related illness between 11 March and 30 April 2020 *(40)*.

The threat to health workers was most obvious for those working in the COVID-19 wards. Apart from the anguish and suffering experienced by health workers and their families as a consequence of their work in the wards, it also transformed caregivers into potential sources of infection and had direct consequences for the functioning of the hospital. Infected staff had to stay away from work for at least 14 days of isolation, further depleting the exhausted hospital workforce. Legal measures were introduced to exempt health workers from quarantine after having been in contact with a person with COVID-19, something other citizens were systematically obliged to do. Health workers also were to stop working only in case of respiratory symptoms or if they tested positive for COVID-19. Some health workers, particularly in ICUs, would hesitate to take the test because they didn't want to run the risk of having to isolate.

Key issues in reducing risks to staff and their families include:

- procuring, stocking and providing PPE with training in proper use;
- providing hotel accommodation for people working in exposed environments;
- reducing face-to-face interaction;
- promoting teleconsultation;
- providing digital tools to reduce face-to-face interaction while maintaining quality of care; and
- implementing electronic prescriptions.

The lack of adequate PPE played a large (and much debated) role in exposing health workers to exceeding avoidable levels of risk. Hospitals were short of key items of PPE – gloves, medical masks, respirators, goggles, face shields, gowns and aprons. All these were missing or in short supply as stocks rapidly ran out. Complicating the situation even more was the fact that many health workers suddenly found themselves working in unfamiliar wards, had the challenge of communicating while wearing almost airtight masks and were making decisions while standard practice protocols were changing continuously. Together, this increased the risk of errors and unsafe procedures. Some regions offered hotel accommodation to health-care personnel worried about passing on infection to their families. The PPE question soon became a major source of health-worker disquiet, discontent and frustration that was widely echoed in the media. It would only start to be resolved in April *(41–43)*.

If the risks of infection in hospital environments was clear to all, this was much less the case in community settings. During the first weeks of the epidemic, the contagiousness of asymptomatic or pre-symptomatic people was not yet generally recognized. This meant that health workers dealing with the general public (such as those taking swabs, doing contract-tracing interviews or carrying out general outpatient work) did not realize the extent to which they were exposed and needed to be draconian in matters of physical distancing and hand and respiratory hygiene. This was particularly the case for primary care providers in the regions, where their lack of involvement in the COVID-19 response also meant they were less sensitized to the risks. Only quite late would the risks incurred by GPs be recognized: of the 153 medical doctors who died between 11 March and 30 April, 53 were GPs *(44)*.

Where primary care providers were directly and explicitly involved – as would be the case everywhere later on – more measures were taken to protect them. Concern for protecting health workers in community settings focused on the use of PPE (where available, in a context of scarcity in hospitals) and on avoiding direct unprotected face-to-face contact with patients. On 19 March, an ordinance boosted the use of electronic prescriptions *(45)*. An electronic prescription number issued by the GP meant it was now possible to phone the pharmacy to order necessary medicines. The pharmacist would call the patient to come and pick it up when ready, thereby reducing the number of face-to-face interactions and the attendant risks of infection. Patients started to use phones more readily for contacts with their GP, a way of working that was generally well accepted.

Concern for safer work had the unexpected positive side-effect of accelerating reliance on digital technologies, telemedicine and teleconsultations. The Italian Ministry for Technological Innovation and Digitalization fast-tracked a call to public and private entities for technological solutions for contact-tracing and tele-assistance for home care (for COVID-19 pathologies and chronic diseases). On 16 April, a first Bluetooth-based mobile application for digital contact tracing, *Immuni*, was selected for national adoption. Use of telemedicine platforms made it possible to share and display diagnostic images and laboratory analyses and carry out teleconsultations that were useful in monitoring COVID-19 symptomatology and chronic disease in patients at home.

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Italy had apparently covered all the bases with regard to primary health care and hospitals. People and systems had been repurposed, proving that the health system was flexible. While the ride was still bumpy and the death count remained staggering, there was a glimmer of hope that all these changes and all the sacrifice would soon bear fruit. Long-term-care facilities (in this case, homes for older people) soon emerged as a blind spot that nobody had thought about and in which the risk of COVID-19 for residents and caregivers was most underestimated in the first weeks of the epidemic. While the epidemic had been raging in the community and stressing hospitals to breaking point, silent clusters started to appear in these closed communities.

3.7 The long-term care blind spot

The 7400 long-term-care facilities in the country host nearly 0.5 million older people, people affected by mental disorders, and people with disabilities or life-limiting illnesses. Many are fragile and have (or have had) underlying medical conditions, making them particularly vulnerable to COVID-19. Their management is a function of various regional and local policies and regulations.

It is now known that these facilities experienced excess mortality linked to COVID-19 as early as the first two weeks of February *(46)*. It took some time before authorities fully realized the extent of this growing problem. They were scrambling at that time to cope with the sudden and overwhelming influx of patients to hospitals and their attention was focused on the explosive growth of hospital fatalities. The lack of linkages between notification of deaths in hospitals and in long-term-care institutions delayed awareness.

The danger of the epidemic – for residents, staff and families – was not immediately recognized in all its magnitude, and protection, procedures and training came late and in a haphazard fashion. PPE and swab tests were in short supply for hospital staff and were even more difficult to find for personnel in long-term-care institutions, whose influence on supply processes was no match for that of the hospitals and ICUs. The coming and going of visitors and personnel meant that the virus had many opportunities to enter these closed communities of vulnerable people. In March, some long-term-care facilities were even used to host COVID-19 patients who had not been cleared to go home but could no longer stay in overcrowded hospitals where beds had to be freed up. It took until 8 March before the Government prohibited family visits to residents in such institutions. Some 80% had already done so on their own or through local initiatives two weeks earlier, but by then many facilities had been infected. The facilities had become clusters – and sources – of infection.

On 24 March, the ISS launched a survey of the situation in long-term-care facilities to provide a picture of the extent of what had happened in these communities. Between 1 February and 14 April, COVID-19-associated mortality in residenze sanitarie assistenziali [social health residential facilities] (RSAs) was 3.3 deaths per 100 residents countrywide and up to 6.7% in Lombardy; 40.2 % of deaths in the RSAs were associated with COVID-19. Eighty-three per cent of facilities reported a lack of PPE, an absence of health-care professionals and difficulties in transferring COVID-19 residents to hospital facilities. Twenty-six per cent had difficulties in isolating residents affected by COVID-19, and 47% had difficulties in obtaining tests *(46)*.

Since the results of this survey became available, the Ministry of Health has updated guidelines for infection prevention and control in these institutions and there has been a flurry of local initiatives to correct the situation. These have ranged from systematic testing to designation of physical areas in the facilities for COVID-19 and non-COVID-19 residents, teams to follow COVID-19, generalized use of PPE, visiting bans, screening of new residents and structured triage.

4. Steering the response

4.1 Command and control in a decentralized system

Italy is a highly decentralized country. Its constitution makes health protection a shared responsibility of the central Government and the regions. The central Government legislates on the basic principles, but the regions adapt them to local contexts and have the budgets to manage health-care delivery through local health agencies.

The balance between central and regional authorities changed with the State of Emergency. A command-and-control structure was embodied in the Civil Protection Department, an integrated agency supervised by the Prime Minister's Office, to support and orient regional health structures and address issues for which a centralized approach is more efficient or expedient. It coordinated the response to the epidemic, de facto curtailing regional autonomy. The regions set up crisis management units with regional health authorities, directors of local health agencies, and the prefecture as representative of the central state. In the provinces and municipalities, the administrative levels below the region, coordination centres performed local operational planning. Overall leadership of the country's efforts, however, resided with the Civil Protection Department.

A clear command-and-control institutional set-up is a well established gold standard in the field of emergency response, but represented a departure from the existing balance between central and decentralized power and required continuous mediation among national, regional and, at times, municipality levels. In some cases, regional and local authorities sought to enforce their own rules on issues such as mobility, lockdown rules or the organization of economic activity, but they could be challenged by the central administration.

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The legal–constitutional basis for arbitration between the various levels of authority was the subject of contentious and heated debates in which regional and local powers made ample use of social media to promote their positions on autonomy. In a Government–regions–local authorities virtual consultation, regions had the opportunity to express their requests and concerns. The Civil Protection Department was instrumental in cutting through time-consuming negotiations between different administrative levels, particularly for matters related to procurement or major interventions such as setting up emergency hospital facilities.

This de facto system of informally negotiated consensus enjoyed wide support. Consensus on technical matters of epidemic control was facilitated by the creation of various expert committees and ad hoc task forces (Table 2). These provided fora in which Ministry of Health structures and regional and local bodies had sufficient voice in the discussions to create a relationship of trust and cooperation.

Table 2. Task forces supporting the Civil Protection Department

Task force	Formed (2020)
Technical and Scientific Committee	3 February
Schools and Distance-learning Task Force	Late February
Data Task Force for COVID-19	31 March
Monitoring unit to combat the spread of fake news on COVID-19	8 April
Experts' Committee for Economic and Social Recovery	10 April
"Women for a New Renaissance" task force	15 April

Among the task forces supporting the Civil Protection Department, the most prominent was the Technical and Scientific Committee. It played the key role in collating and interpreting expert-led strategic information and shaping communication with the general public. It worked closely with a long-established agency that played an equally critical role, the ISS. As Italy's long-established centre for research, disease control and technical–scientific advice on public health, the ISS built upon its surveillance system and used the networks of reference laboratories to produce daily infographic reports and scientific analysis that transformed it into the recognized authority for information on COVID-19 (Box 8).

Box 8. Epidemic surveillance and monitoring

As early as 22 January, the Ministry of Health tasked the ISS with establishing a surveillance system for COVID-19. A dedicated web platform *(47)* integrated laboratory and epidemiological data from all regions and the COVID-19 virus national reference laboratory of ISS. This generated daily infographics on the spread of the epidemic and the characteristics of reported cases. Twice-weekly bulletins provided more in-depth analysis of the information gathered *(47)*.

It took time before this centralized surveillance system could streamline data collection on contact-tracing. In the interim, local health units had almost immediately put in place a patchwork of data collection on contact-tracing. Initiatives sprung up across the country in a patchwork of improvised systems, using paper and pencil or ad hoc Excel spreadsheets. Criteria and case definitions varied from place to place. It took until mid-March before contact-tracing data were harmonized and collated into web-based platforms.

Key aspects of how Italy steered its response to the first phase of the epidemic include the following.

- The establishment of a central command-and-control structure, with wide powers under the Prime Minister, was vital for organizing the response.
- This structure led to continuous mediation with existing decentralized authorities.
- Although the resulting negotiated consensus was often challenged by regions, it enjoyed widespread support and allowed regional innovation to feed national decision-making.
- The scientific and expert communities were rapidly mobilized and channelled through a set of ad hoc committees in support of the central command-and-control structure.
- The central command-and-control structure struggled to generate timely appropriate strategic information and could not avoid blind spots (on, for example, mortality in long-term-care facilities) that in hindsight proved critical.

4.2 Strategic information for real-time decision-making

The production of strategic information played an absolutely central role in shaping the response to the epidemic. It included topical studies (on issues ranging from resource gaps to clinical management or – belatedly – on the situation in long-term-care facilites), but the basis was the surveillance network of the ISS through which regional data on tests, hospitalizations, hospital mortality and resource gaps were uploaded to a dedicated web platform. This was the basic material for monitoring and modelling the epidemic.

The flow of information was not without its problems. The time for processing and uploading the information varied from region to region, creating some confusion in a context in which decisions on, for example, distribution of reagents for PCR tests had to be taken in real time during an epidemiological situation that changed daily. Collection and transmission of data improved over time, but structural biases remained: the predominant focus on what happened in the hospitals, problems with the notification of deaths at home and in long-term-care institutions, and the dominant focus on results of tests in a context where regions pursued different testing strategies and in which testing capacity was limited.

Steering the response was guided by the Technical Scientific Committee in Rome and an Experts' Committee for Economic and Social Recovery. The academic community mobilized and generated a flood of papers, reflections and studies that contributed to shaping the response, albeit with an overload of fragmented information and confusing viewpoints. This made communication a central issue in managing the epidemic.

4.3 Communicating COVID-19

A member of the Technical and Scientific Committee once commented that communicating about the epidemic was as daunting as managing it. It was extremely challenging, but also vital to mobilize public collaboration. Communication during the epidemic shaped and influenced people's emotions and reactions to the virus in more ways than can be imagined. Information

arrived from all sides, all the time. Never was it easier to "get an update" on what was happening at any given moment as during the COVID-19 crisis: it was in front of people's eyes, or just a click away. The tone was highly charged, with the media both providing information and, sometimes, feeding a sense of uncertainty about what the authorities were deciding while, in the meantime, the epidemic turned daily life upside down.

4.3.1 Communication about responsible behaviour

In January, even before the outbreak had arrived in Italy, data on the number of cases and deaths started to appear in the media along with messages on how to protect yourself against the "novel coronavirus". Advice varied from "use a mask" to "do not use a mask", from "stay away from others, do not hug and kiss" to "this is just a flu" and "have a cup of warm milk and honey and it will go away". Discussions in the media tended to minimize the outbreak even after the first domestic cases had been detected on 21 February. Playing down the risk resonated with people's perceptions: talk about the danger had an unreal feel to it.

When in March the first Red Zones became a reality, the tone and volume of the communication changed. Discussions on social media suddenly switched from minimizing the threat to messages about the importance of handwashing and physical distancing. The Ministry of Health, the ISS and the Civil Protection Department produced a wealth of communication material. At first, they focused on hand hygiene, travel advice, the use of masks, smart working, the psychological impact of COVID-19 and health promotion. These recommendations were echoed in the media. Newspapers and websites gave significant space to ways of coping with the epidemic. Apart from ongoing controversies about masks, messaging in the media was by and large in line with what the authorities recommended.

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The shift to communication on physical distancing (*#ioRestoACasa, #Istayhome*) was more controversial. Interest groups, business associations and politicians launched hashtags and social media campaigns such as *"We do not stop", "We are stronger than the virus", "We will fight the virus"* or *#Milanononsiferma [Milan does not stop]*. Happy hours were organized "against" COVID-19. Perceptions changed very quickly when the epidemic spread and some of these same politicians were infected (Fig. 9). After this, all the attention of the media – and of the public – concentrated on how the epidemic took hold of the country. Communicating about data became fundamental.

Fig. 9. Changes in perception of the epidemic threat, as seen through newspapers

4.3.2 Communicating about data

All the public institutions involved in controlling the epidemic (the Civil Protection Department, the ISS and Ministry of Health) started producing a wealth of materials: infographics, videos, Q&A pages, data dashboards and ask-the-expert corners. They were at pains to make sure to avoid discrepancies in the official data. The Civil Protection Department held daily live-streamed media conferences at which the latest data were shared and discussed. In parallel, the Prime Minister

gave frequent live-streamed prime-time talks that explained the rationale for control measures. These media conferences quickly became not-to-be-missed news events with huge audiences.

As the regional profiles show, the regions too went to great lengths to make data available to the media and the general public. Each region decided independently which data it would share and how. All but two regions had social media accounts dedicated to COVID-19 information, and the majority produced their own communications materials, four also in other languages. Fourteen regions provided more detailed information than could be found on the websites of the Ministry of Health or the Civil Protection Department by, for example, disaggregating data by local health authority or by municipality. Ten regions had a kind of data-room with tables and charts. Data requests to regional and national authorities became so frequent that at the end of March, the Government suspended the Freedom of Information Act[6] with regard to any information for the duration of the epidemic to lessen the burden on public administrations (it was reinstated on 15 April).

Information came not only through institutional sources. In some regions, the personal social media accounts of the president of the region provided more information than the regional administration and could boast more followers. Many posted the daily Civil Protection Department media conference on their site. Newspapers and news websites dedicated whole sections to COVID-19, often cancelling the subscription costs. One news outlet, *Facta (48)*, created a portal to which citizens were able to send documents, news, data or claims made by politicians for verification by journalists. Other newspapers went into in-depth analysis of local data; *Eco di Bergamo*, for example investigated the dramatic situation in that province, sounding the alarm bell about a situation that had spiralled out of control *(49)*. Initiatives such as *Dataninja* and *Open Data Italia* featured analyses, data visualizations and discussions on the (non) relevance of some types of data. Dozens of citizen groups, such as the IoConto [I matter] committee, lobbied for the release of open data. Various media outlets launched interactive dashboards and newsletters to elaborate and explain the data provided by the Civil Protection Department, helping readers to understand and interpret the flood of data. Importantly, they informed the public about the limitations and biases of the data and helped people understand what the data did not say.

This touched upon a real problem. While the flood of data was crucial for building awareness and consensus on the sacrifices the epidemic imposed on the whole of society, it was also a source of a growing infodemic, or an overabundance of information – some accurate and some not – making it a challenge for people to find trustworthy sources and reliable guidance when they needed it *(50)*. The fragmentation of the data, particularly on the regional websites, often obscured the rationale for national and regional decisions.

In the meantime, most newspapers and broadcast stations (especially television, in a country where television is the only source of information for 42% of the population *(51)*) gave ample space to a variety of pundits and so-called opinionists. With real or hyped-up academic or expert competence, they populated ubiquitous talk-shows dedicated to COVID-19, with controversial statements and public controversies played out live before a bemused public. The scenography of spectacular public disagreements and questionable comments of media pundits did much to fuel uncertainty and anxiety in the population. In reaction, the Government set up a task force to counteract false news in the press and on social media.

6 Under the Freedom of Information Act, Italian ordinance recognizes the freedom to access information housed in public administrations as a fundamental citizen right.

The three most visible players in responding to COVID-19 – the Civil Protection Department, the Technical and Scientific Committee and the ISS – had to expend much valuable time and energy in correcting the confusion and controversies sparked by the deluge of sensationalist media attention. They did so by providing level-headed communication about facts and defusing controversies. Despite the burdensome distraction of the talk-show circus, the key messages on how all citizens, individually and collectively, could and should contribute reached the public. Italy got through the first phase of the epidemic in a social consensus that took many by surprise.

Key features of communication on COVID-19 during the first months of the epidemic include the following.

- Official communication on prevention measures was well accepted and echoed in the press and social media.
- The public craved clear and proactive communication on data; the early efforts of various Government sources of information to avoid discrepancies in data helped build confidence.
- There was much appetite not just for aggregated, but also for disaggregated, local data.
- Making data available was not enough: the public had to be helped to interpret them through regular, level-headed, live-streamed media conferences and multiple civil society initiatives.
- Sensational displays of disagreement in talk shows generated anxiety that official communication channels counteracted through self-confident data-openness.

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5. After the peak

Towards the end of April, it became clear that COVID-19 cases were in decline and the initial peak had passed. This shifted the debate to how to transition safely out of the control measures that had brought the country to a standstill. The social consensus about the control measures and, on the whole, the surprisingly disciplined compliance of the public did not mean the consequences were not hurting. After almost seven weeks, people had grown tired of the lockdown. Most recognized that without the measures the epidemic would have been even worse, but their side-effects started to weigh in.

The first phase of the COVID-19 pandemic in Italy and the measures put in place to control it had a profound impact on the Italian economy. Physical distancing and movement restrictions affected one third of Italy's productive sectors, responsible for 27% of the total yearly value added *(52)*. Half of Italy's active workforce and businesses came to a standstill *(53)*. This included the tourism industry, which in 2018 employed 1.6 million people, 25% on temporary or seasonal contracts. Some 200 000 of the 750 000 small- and medium-sized enterprises were at risk of bankruptcy *(54)*. The National Institute of Statistics projected a 4.5% contraction of the value added in the national economy should lockdown measures be kept in place until June, with a 24% reduction for the restaurant and hospitality industries alone *(55)*.

In anticipation of these economic repercussions, the country put a set of financial mitigation mechanisms in place (Box 9) designed to protect the economic fabric of the nation, but also to help individual citizens in their plight. Each region used its budgetary autonomy to allocate funds to alleviate the most striking inequalities. Campania therefore allocated €3 million for migrants in extreme poverty, Veneto €2.2 million for a basic income for citizens facing catastrophic costs, and Sicily €2.5 million for assistance to victims of domestic violence.

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Box 9. Macro instruments to mitigate the observed and expected side-effects of the lockdown

- The Cura Italia [Heal Italy] Decree of 17 March *(56)*, is a €25 billion plan that included items such as extension of family benefits to 7 million families with an unemployed child under 26 *(57)*, €70 million for e-learning enhancements, re-usable vouchers on services not rendered in the tourism industry, €50 million for people in extreme poverty and for food stamps *(58)*, €30 million to safe houses and help centres for gender violence *(58)*, incentives given to factories for production of PPE and other medical devices, and a set of other interventions.
- The Decreto Liquidità [Liquidity Decree] of 8 April is a €400 billion emergency financial plan to provide immediate liquidity to protect 2 million small- and medium-sized enterprises covering 20 million employees by providing state-guaranteed emergency re-funding to banks for issuing low interest-rate loans *(59)*; the plan had consequences for 2 million enterprises and 20 038 000 employees *(53)*.
- Access to EU economic recovery plans, including the reactivated European Stability Mechanism loans fund of almost €300 billion, was approved on 9 April *(58)*.

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Along with the economic slump, effects on the more vulnerable in society, on mental health and on education stood out as areas where proactive mitigation would be necessary. Many regions in Italy devoted part of their regional budget to mitigate these effects, which can range from depression to post-traumatic stress syndrome.

The epidemic affected entire population groups, but also individual citizens in their daily life. The impact was often dramatic for the most vulnerable, laying bare structural inequalities as social networks broke down. During the epidemic, at least 100 000 elderly patients with underlying health conditions were not able to access day centres providing care *(53)*. Medical visits for other pathologies had to be postponed (see Box 6). There was ample anecdotal evidence that poor people, those living in cramped housing and many older people struggled to cater for their basic health-care needs. Undocumented migrants and minorities saw their access to care further reduced *(57)*. The blind spot for the emerging epidemic within long-term-care facilities has shown that attention for the most vulnerable was not systematic. A number of problem areas nevertheless were identified, and though mitigation started rather late, the regions took mitigation initiatives. The major national mitigation mechanisms also incorporated measures to alleviate poverty and financial hardship.

Early warning signs also appeared about the mental well-being of families living in confined spaces and facing catastrophic living expenses, as well as for the mental health consequences of the epidemic for frontline health workers. The Cura Italia Decree earmarked funds for mental health and all regions have announced, in one way or another, their concern for this issue and their intent to invest in mental well-being. Many launched localized initiatives to mitigate the consequences of the lockdown (see Box 4), suggesting that mental health is likely to remain on the agenda. The same goes for the deleterious impact of the lockdown on domestic violence. Access to services providing support for victims of domestic violence became more difficult and some regions had to take emergency measures. Both government and regions increased financial provisions for domestic abuse programmes.

A third area of growing concern was that the lockdown would further exacerbate inequalities due to the digital divide. About 34% of families did not have Internet access, nearly half of whom could not afford it *(59)*. Among people aged over 65 (23% of the national population), only 35% had access to the Internet during the crisis *(60)*. This reduced the possibility of maintaining social contacts, but also access to essential health care, as digital connection became the instrument to cope with the lockdown.

The dominance of digital connection was particularly consequential for education. Closing of schools required a switch to digital learning, but many families lacked the means or capacities to support their children in this new way of working (they in addition found themselves without a source of food and care that is critical for many children). The Internet was seen as a critical resource while the epidemic was in an expanding phase and many regions allocated funds to correct inequalities in access. The Cura Italia Decree assigned €85 million to address this divide and many regions also devoted significant parts of their regional budgets to Internet access, but it is unclear whether this was sufficient to counteract the exacerbation of inequalities consequent to the lockdown.

After this first phase, the country has slowly been moving towards a daunting second, transitioning phase. The consensus on how much the country is willing to change its ways has been shifting; it has become less homogenous than before. The side-effects of epidemic control are starting to weigh more heavily. Pressure from various interests will have to be balanced with the potential consequences for public health. This is likely to render decision-making even more complex and delicate than during the first phase. The experience of data-driven, pragmatic and transparent decision-making of the public response to the first phase of the epidemic gives grounds for hope that this new phase too will be dealt with.

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Regional profiles

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ABRUZZO

Population size	1 311 580	14th position
Population density (inhabitants/km²)	121	14th position

Population above 64 years of age (%)
23,8
22.8 (Italy)

Population 18–69 with economic difficulties (%)
15,4
13.4 (Italy)

Population 18–69 with hypertension (%)
18,4
19.9 (Italy)

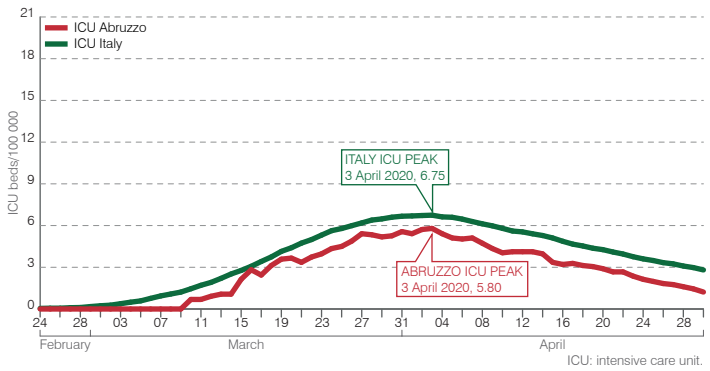
Population > 64 in (perceived) poor health (%)
12,7
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
56,3
60.7 (Italy)

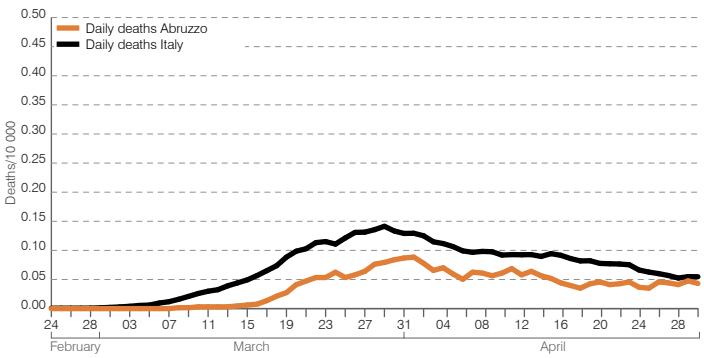
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	28 February 2020	21 February 2020
ICU bed occupancy peak (date)	3 April 2020	3 April 2020
ICU bed occupancy peak (value)	76	4 068
Total positive tests – as of 30 April 2020	2 930	205 463
Swab tests done/10 000 population – as of 30 April 2020	290	328
Swab tests positive/10 000 population – as of 30 April 2020	22	34
Swab tests positive rate (%) – as of 30 April 2020	7.7	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	2.4	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	9.3	12.3
Active cases on ICU bed occupancy peak date	1301	85 388
Admitted to hospital at ICU peak day (%)	27.7	33.7
ICU patients at ICU peak day (%)	5.8	4.8
Home isolation at ICU peak day (%)	66.4	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	305	319
Infectious disease beds/100 000 population prior to emergency	7	5.0
ICU beds/100 000 population prior to emergency	8.3	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	YES	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



Visors printed with 3D technology for health-care workers

Viviamolaq, a collective of students and young professionals of architecture and engineering, has decided to lend their talent and capacities to fight the spread of COVID-19 to produce and distribute protective visors useful to prevent contagion. These visors are intended initially for sociohealth workers and also for other businesses and workers. The visors are printed with 3D technology, and the promoters will try to distribute them throughout the region and beyond.

Among the recipients of the visors are the Pescara and Aquila hospitals, general practitioners from the provinces of L'Aquila and Chieti, and several other organizations. A fundraiser was launched to support the costs of production, packaging and shipping of these protective visors.

Communication effort	
Dedicated website	●
Produce specific communications materials	●
Live press conference/videos also on social media	●
Produce communications materials in other languages	●
Have a data room on their website	●
Published daily bullettin on the website (text as post)	●
Developed app	●
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	13.2	9.9
Employment rate (2019)	58.5	59.2
Families' gross annual average income (2017) in euros	27 411	31 393
Average interest rate (%) on loans to businesses (March 2019)	4.9	3.9

Regional highlights

- The first case was a tourist from Lombardy visiting the Teramo province and positively confirmed on 28 February; local transmission was soon documented.
- On 30 April, the cumulative case rate was 223 cases/100 000 (value for Italy: 341).
- Stabilization in new cases per week has been documented since the week of 29 March–4 April.
- Thanks to a rapid increase of 51% in additional beds in ICUs, the saturation rate was lower than the national average.
- An innovative primary care home-care management project for positive COVID-19 patients has been set up. Each patient is equipped with an oximeter for self-monitoring of the oxygenation levels of the blood, and a pharmacological treatment (a combination of hydroxychloroquine, antiretroviral therapy and azithromycin) administered so far only in hospital settings is started at home.
- Patient monitoring is carried out through collaboration between public health officers, GPs and Special Continuity Care Units (USCA) that are equipped with an electrocardiogram and ultrasound system with a portable wireless system.
- The suspension of outpatient activities (except for urgent cases), which has determined the need to speed up the introduction of telematic procedures for hospital consultations and remote outpatient visits, has been extended to patients with autism and diabetes.
- The Abruzzo region has a dedicated web page on COVID-19 with wide-ranging information, including telephone numbers on COVID-19 assistance for each province and a daily bulletin with data on cases, deaths and aggregated data on intensive care and recovery.

AOSTA VALLEY

Population size	125 666	20th position
Population density (inhabitants/km²)	39	21th position

Population above 64 years of age (%)
23.8
22.8 (Italy)

Population 18–69 with economic difficulties (%)
9.8
13.4 (Italy)

Population 18–69 with hypertension (%)
17.0
19.9 (Italy)

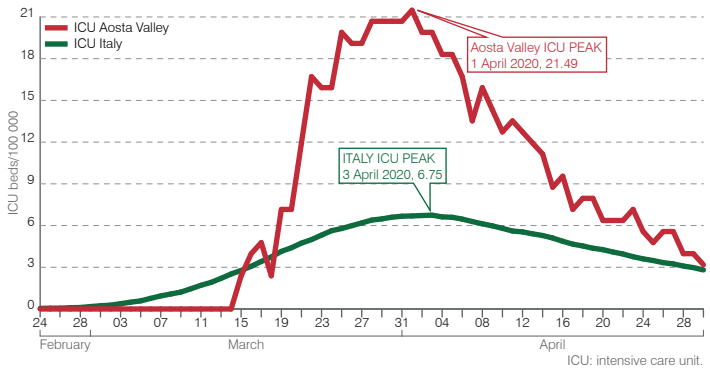
Population > 64 in (perceived) poor health (%)
no data
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
no data
60.7 (Italy)

Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	5 March 2020	21 February 2020
ICU bed occupancy peak (date)	1 April 2020	3 April 2020
ICU bed occupancy peak (value)	23	4 068
Total positive tests – as of 30 April 2020	1128	205 463
Swab tests done/10 000 population – as of 30 April 2020	607.2	328
Swab tests positive/10 000 population – as of 30 April 2020	89.76	34
Swab tests positive rate (%) – as of 30 April 2020	14.78	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	10.90	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	9.4	12.3
Active cases on ICU bed occupancy peak date	540	85 388
Admitted to hospital at ICU peak day (%)	15.7	33.7
ICU patients at ICU peak day (%)	5.0	4.8
Home isolation at ICU peak day (%)	79.3	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	363	319
Infectious disease beds/100 000 population prior to emergency	6	5.0
ICU beds/100 000 population prior to emergency	9.5	8.7
COVID hospitals	NO	YES
COVID non-nosocomial facilities	YES	YES

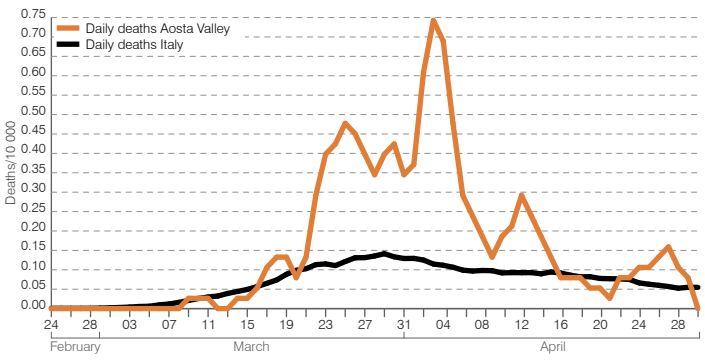
ICU: intensive care unit.

COVID-19 patients in ICUs



ICU: intensive care unit.

Hospital deaths positive to COVID-19 virus



The one-stop shop web portal and hashtag: *#NessunoSaràEscluso*

Socioeconomic measures to tackle the economic consequences of COVID-19 are important, but so is the capacity to communicate effectively and ensure the right information reaches the general public. An effective and simple approach has been used by the Valle d'Aosta region, which gathered all the socioeconomic measures that have been put in place under the hashtag *#NessunoSaràEscluso* [No one will be left behind] on a single web page.

Socioeconomic measures are organized according to the target audience, clearly explaining the measures and eligibility criteria for each. Categories have been set up to reach all social groups and with the following provisions:

- bonuses for people with children: €100 monthly for each child in both March and April;
- a €200 contribution to university students for both March and April;
- a 40% contribution for the payment of rents in March (maximum amount: €500);
- a self-employed and freelance indemnity of
- €400 covering March and April;
- €200 compensation for employees who have been laid off (in addition to unemployment allowance); and
- €400 compensation for temporary workers, atypical workers, domestic workers and trainees, for March and April.

Communication effort	
Dedicated website	●
Produce specific communications materials	●
Live press conference/videos also on social media	●
Produce communications materials in other languages	●
Have a data room on their website	●
Published daily bullettin on the website (text as post)	●
Developed app	●
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	6.3	9.9
Employment rate (2019)	67.3	59.2
Families' gross annual average income (2017) in euros	30 965	31 393
Average interest rate (%) on loans to businesses (March 2019)	5.0	3.9

Regional highlights

- This was the last region reporting a case: the first two, a family cluster, were confirmed on 5 March in the Aosta province, with one of them having visited affected regions previously.
- On 30 April, the cumulative case rate was the highest at regional level, with 898 cases/100 000 (value for Italy: 341).
- Stabilization in new cases per week has been documented only in the second half of April (note that the population in this region is only 125 000).
- The Val d'Aosta region was hit later than others by the epidemic, but the number of cases quickly escalated. Consequently, the availability of beds in intensive care, infectious diseases and pulmonology units has been increased. ICU capacity has been expanded with an additional 30 beds.
- To compensate for the shortage of doctors and the additional need for emergency beds, the burden was partly shifted to private structures.
- Pre-triage screening points were used to identify patients with flu symptoms before they entered a health-care facility. Similar to other regions, limitations on non-urgent outpatient services in hospitals have been established.
- Laboratory capacity for COVID-19 was increased through an agreement with the Experimental Zooprophylactic Institute.
- Home care for COVID-19 patients is provided by Special Continuity Care Units (USCA), comprising a medical doctor and a nurse.
- A risk fund to facilitate access to credit for small- and medium-sized enterprises and freelancers was established, with headquarters or local units located in the Aosta Valley.
- Companies that have incurred documented expenses for the sanitation of environments and work tools can request a tax credit equal to 50% of the expenses incurred, up to a maximum of €20 000.
- Liberal donations in support of the measures to combat the epidemiological emergency have been made tax-deductible from business incomes.
- The Valle d'Aosta region has a web page on COVID-19 on the main regional website and local communication materials (infographics) have been produced in both Italian and French.
- The Region publishes a daily bulletin with the number of tests, cases and isolated cases and the total hospitalized. Daily press conference videos are available on the region's YouTube profile.

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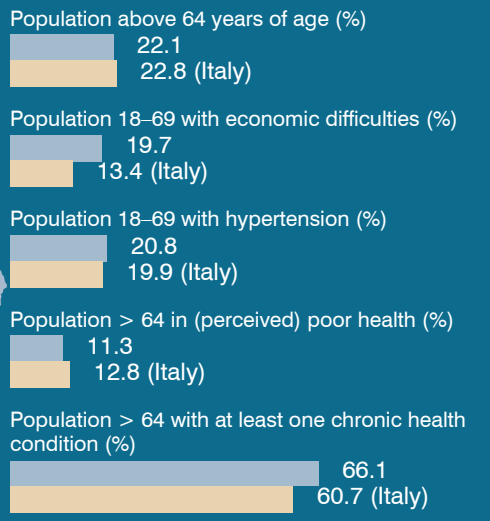
APULIA

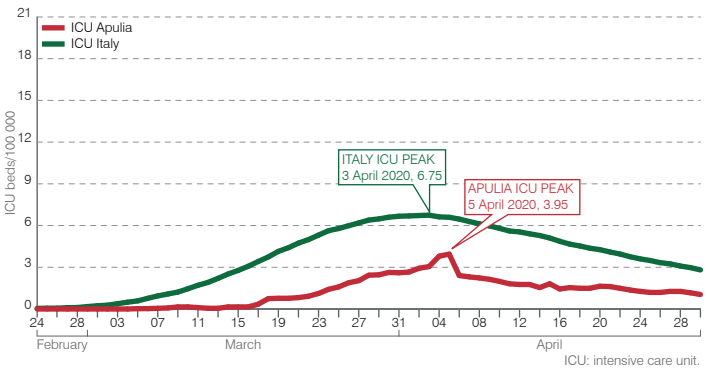
Population size	4 029 053	8th position
Population density (inhabitants/km²)	206	6th position



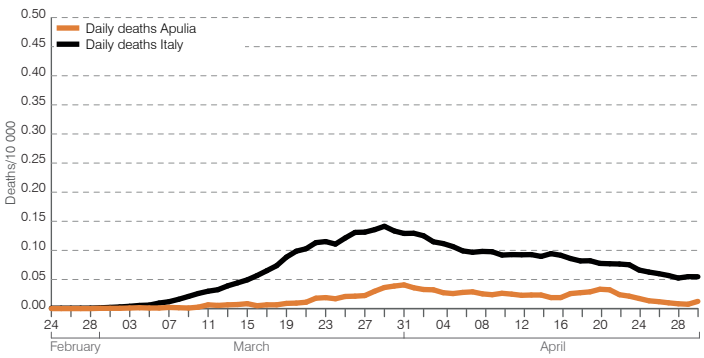
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	26 February 2020	21 February 2020
ICU bed occupancy peak (date)	5 April 2020	3 April 2020
ICU bed occupancy peak (value)	159	4 068
Total positive tests – as of 30 April 2020	4 072	205 463
Swab tests done/10 000 population – as of 30 April 2020	155.0	328
Swab tests positive/10 000 population – as of 30 April 2020	10.11	34
Swab tests positive rate (%) – as of 30 April 2020	6.52	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	1.03	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	7.9	12.3
Active cases on ICU bed occupancy peak date	2 022	85 388
Admitted to hospital at ICU peak day (%)	27.1	33.7
ICU patients at ICU peak day (%)	7.9	4.8
Home isolation at ICU peak day (%)	65	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	29	319
Infectious disease beds/100 000 population prior to emergency	5	5.0
ICU beds/100 000 population prior to emergency	7.5	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	YES	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



Leaving no one behind: the role of communication

The Puglia region has taken its communication role one step further to ensure that prevention and measures relating to hygiene and physical distancing are known by all, including vulnerable groups such as migrants.

The recommendations of the Ministry of Health were described in videos made by the linguistic and intercultural mediators of the ASL of Taranto, Brindisi and Lecce and through the FARI project (Training, Reception, Response, Inclusion). The recommendations to avoid contagion are translated into six languages (English, French, Arabic, Bambara, Pashto and Wolof) aimed at sensitizing the members of the mainly foreign communities in the region to simple ways to protect the health of each individual. Videos include, for instance, ask-the-expert types of advice, a useful glossary on the pandemic and other materials. In addition, a coronavirus call centre is available in 21 languages for support through a toll-free number.

Communication effort	
Dedicated website	●
Produce specific communications materials	●
Live press conference/videos also on social media	●
Produce communications materials in other languages	●
Have a data room on their website	●
Published daily bullettin on the website (text as post)	●
Developed app	●
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	14.6	9.9
Employment rate (2019)	46.1	59.2
Families' gross annual average income (2017) in euros	25 599	31 393
Average interest rate (%) on loans to businesses (March 2019)	5.4	3.9

Regional highlights

- The first case was a resident from Taranto who had visited Lombardy and was confirmed on 27 February.
- On 25 April, the cumulative case rate was around 101 cases/100 000 (value for Italy: 341).
- Stabilization in new cases per week has been documented since mid-April.
- A detailed plan identified the hospitals in the network necessary to treat up to 1000 dedicated COVID-19 patients. Additional bed availability was requested from accredited private organizations.
- Patients are followed up for home care through the Special Continuity Care Units (USCA). Home monitoring is done with the support of an app for early diagnosis and follow-up of positive patients, and a support app for health professionals.
- The region launched the Regional Dignity Income, which complements existing basic income revenue and safety nets, to help the highest possible number of families; other measures provide financial support for e-learning transition, payment of rents for families, and to meet the needs of elderly people.
- Urgent measures to support operators in the sectors of culture, entertainment, cinema and tourism were also quickly rolled out.

BASILICATA

Population size	562 869	18th position
Population density (inhabitants/km^2)	56	20th position

Population above 64 years of age (%)
22.6
22.8 (Italy)

Population 18–69 with economic difficulties (%)
10.7
13.4 (Italy)

Population 18–69 with hypertension (%)
25.9
19.9 (Italy)

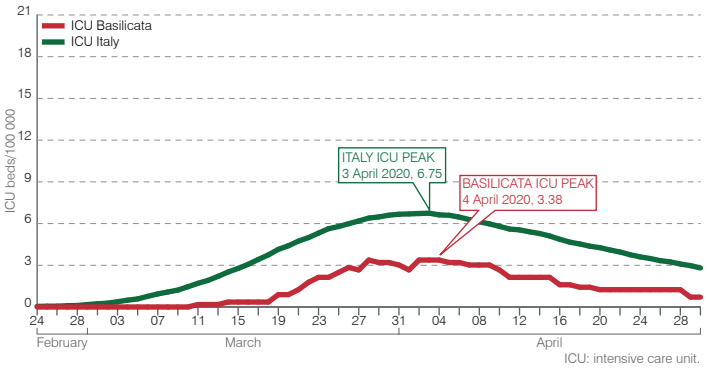
Population > 64 in (perceived) poor health (%)
16.8
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
66.1
60.7 (Italy)

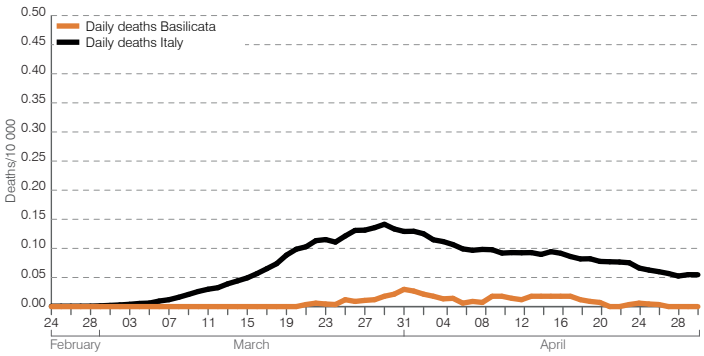
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	2 March 2020	21 February 2020
ICU bed occupancy peak (date)	4 April 2020	3 April 2020
ICU bed occupancy peak (value)	9	4 068
Total positive tests – as of 30 April 2020	367	205 463
Swab tests done/10 000 population – as of 30 April 2020	227	328
Swab tests positive/10 000 population – as of 30 April 2020	7	34
Swab tests positive rate (%) – as of 30 April 2020	2.9	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	0.4	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	4.2	12.3
Active cases on ICU bed occupancy peak date	247	85 388
Admitted to hospital at ICU peak day (%)	18.0	33.7
ICU patients at ICU peak day (%)	7.8	4.8
Home isolation at ICU peak day (%)	74.2	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	299	319
Infectious disease beds/100 000 population prior to emergency	8	5.0
ICU beds/100 000 population prior to emergency	8.7	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	na	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



VID-19 social card: fast-track support for families and people struggling economically

To help citizens struggling to make ends meet and facing catastrophic costs due to the pandemic, the region created a special emergency fund for the establishment of a COVID-19 social card. The support, proportional to household size (from €200 for households with one person up to €800 for households with five or more people) were distributed through vouchers usable for primary goods, groceries or recurring payments.

Approximately 22 000 people in the region who were already in receipt of social service, were eligible to access the fund as of 18 April. The fund could be further increased in the coming months through private donations.

Communication effort	
Dedicated website	●
Produce specific communications materials	●
Live press conference/videos also on social media	●
Produce communications materials in other languages	●
Have a data room on their website	●
Published daily bullettin on the website (text as post)	
Developed app	●
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	9.5	9.9
Employment rate (2019)	51.5	59.2
Families' gross annual average income (2017) in euros	25 544	31 393
Average interest rate (%) on loans to businesses (March 2019)	4.5	3.9

Regional highlights

- The first case was a resident from Potenza province previously treated in a hospital in Lombardy. The case was confirmed on 28 February.
- The region presented on 30 April one of the lowest levels of transmission at regional level, with a cumulative case rate of 65 cases/100 000 (value for Italy: 341).
- Stabilization in new cases per week has been documented since the week of 29 March.
- Due to the low number of cases, the response has been proportionate, mainly through the increase of ICU and infectious disease acute beds.
- A field structure for the medical emergency was designated to Basilicata to manage the emergency phase of the response through increased availability of beds. Given the current trend of the epidemic, it appears it can be used as a support structure to create an additional defence line for hospitals.
- The local health agency of Basilicata has created a mobile app for the management and monitoring of COVID-19 patients in home isolation. Thanks to "SOS COVID-19", patients can contact their general paractitioner or the Special Continuity Care Units (USCA) through video calls and upload information relating to body temperature and oxygen saturation in the blood.
- Basilicata set up an emergency fund to grant loans (to a maximum of €30 000), partly at a zero-interest rate and partly at a very subsidized rate, to micro enterprises. The financing will cover financial needs related to working capital and operating expenses to support companies that have been affected by the COVID-19 emergency.
- The region also established a contribution that covers up to 70% for the purchase and activation price of smart working stations for workers.
- Supporting financial measures with zero interest loans were launched for cooperatives.

BOLZANO AUTONOMOUS PROVINCE

Population size	531 178	16th position
Population density (inhabitants/km^2)	79	17th position

Population above 64 years of age (%)
19.6
22.8 (Italy)

Population 18–69 with economic difficulties (%)
3.7
13.4 (Italy)

Population 18–69 with hypertension (%)
13.7
19.9 (Italy)

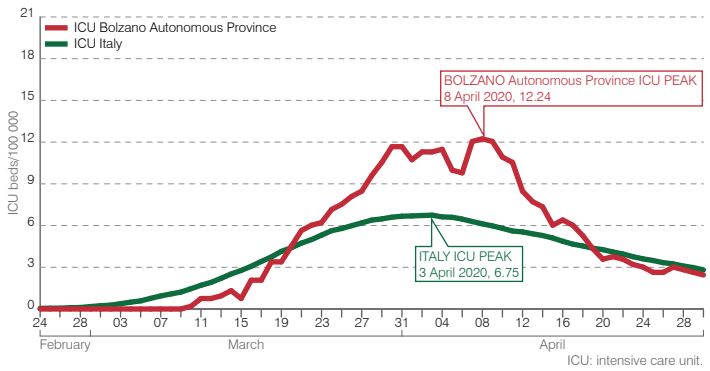
Population > 64 in (perceived) poor health (%)
6.3
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
51.2
60.7 (Italy)

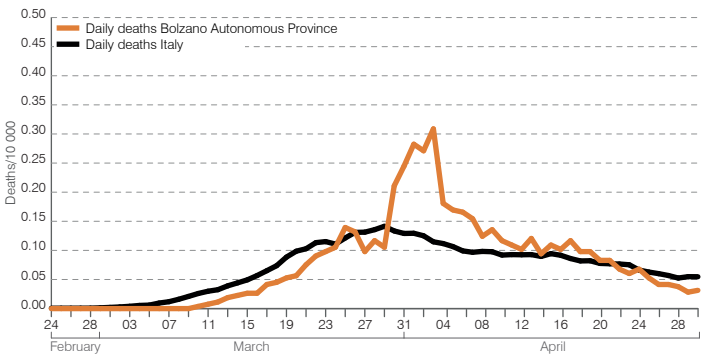
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	24 February 2020	21 February 2020
ICU bed occupancy peak (date)	8 April 2020	3 April 2020
ICU bed occupancy peak (value)	65	4 068
Total positive tests – as of 30 April 2020	2 518	205 463
Swab tests done/10 000 population – as of 30 April 2020	777.5	328
Swab tests positive/10 000 population – as of 30 April 2020	47.40	34
Swab tests positive rate (%) – as of 30 April 2020	6.10	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	5.18	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	10.0	12.3
Active cases on ICU bed occupancy peak date	1281	85 388
Admitted to hospital at ICU peak day (%)	20.9	33.7
ICU patients at ICU peak day (%)	5.1	4.8
Home isolation at ICU peak day (%)	74.0	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	365	319
Infectious disease beds/100 000 population prior to emergency	3	5.0
ICU beds/100 000 population prior to emergency	7.5	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	YES	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



Targeted support for homeless people

Lockdown measures are especially complex to follow for those without a home, an issue that becomes even more dramatic due to the inevitable closure of many shelters run by third sector organizations during quarantine.

The Provincial Council of Bolzano proposed to repurpose a building at the city's convention centre to accommodate 100 people in single rooms. The centre was built by the Civil Protection Agency in collaboration with regional volunteer organizations (the White Cross and the Red Cross) with the technical support of Fiera Bolzano, and was available from 9 April. It gave homeless people a chance to respect the limitations and physical distancing rules due to the COVID-19 epidemic.

The structure is used by the provincial social division and organizations that deal with helping homeless people, such as Volontarius, Binario 7, San Vincenzo, SOS Bolzano, Caritas and local social services.

Communication effort	
Dedicated website	●
Produce specific communications materials	●
Live press conference/videos also on social media	●
Produce communications materials in other languages	●
Have a data room on their website	●
Published daily bullettin on the website (text as post)	●
Developed app	○
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	2.5	9.9
Employment rate (2019)	73.6	59.2
Families' gross annual average income (2017) in euros	34 604	31 393
Average interest rate (%) on loans to businesses (March 2019)	3.2	3.9

Regional highlights

- The first detected case was a resident from the Bolzano province who was confirmed on 26 February. The person had previously visited one of the most affected areas in Lombardy.
- The province presented on 30 April a cumulative case rate of 474 cases/100 000 (value for Italy: 341).
- Stabilization in new cases per week has been documented since the end of March.
- The provincial health system based its response on the rapid triage procedures performed outside hospitals, separated COVID paths, the widespread execution of swabs (also in drive-thru modality) and, in a second phase, the identification of the Bolzano Hospital as the ICU COVID Hub for all patients.
- An international collaboration has allowed 11 patients from the province of Bolzano to be transferred and cared for in Austria and Germany.
- The Province of Bolzano has adopted an ambitious plan to address urgent needs for families and businesses. It is based on three pillars: generating liquidity for families and businesses that face difficult situations; securing jobs; and boosting the economy. So far, the measures already adopted relate to unemployment benefits and job placement projects, low-rate loans with simplified procedures, postponed mortgage repayments and rental deadlines. A specific anti-crisis fund for businesses and small- and medium-sized enterprises has been set up.
- The Autonomous Province of Bolzano has a specific web page on COVID19. It also publishes an OPEN DATA document in Excel with daily positive cases by municipality and health authority. In addition, the President's virtual press conference is broadcast live every day.

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CALABRIA

Population size	1 947 131	10th position
Population density (inhabitants/km^2)	128	13th position

Population above 64 years of age (%)
21.6
22.8 (Italy)

Population 18–69 with economic difficulties (%)
26.9
13.4 (Italy)

Population 18–69 with hypertension (%)
23.5
19.9 (Italy)

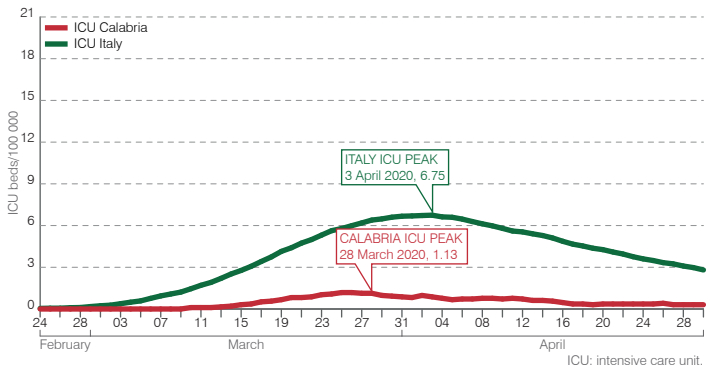
Population > 64 in (perceived) poor health (%)
19.2
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
63.5
60.7 (Italy)

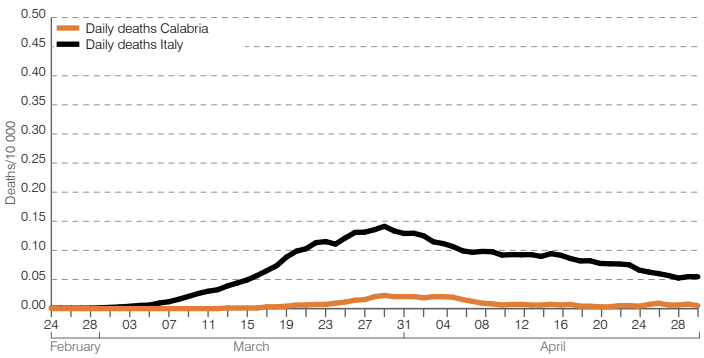
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	29 February 2020	21 February 2020
ICU bed occupancy peak (date)	28 March 2020	3 April 2020
ICU bed occupancy peak (value)	22	4 068
Total positive tests – as of 30 April 2020	1108	205 463
Swab tests done/10 000 population – as of 30 April 2020	184	328
Swab tests positive/10 000 population – as of 30 April 2020	6	34
Swab tests positive rate (%) – as of 30 April 2020	3.1	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	0.4	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	3.8%	12.3
Active cases on ICU bed occupancy peak date	523	85 388
Admitted to hospital at ICU peak day (%)	20.5	33.7
ICU patients at ICU peak day (%)	4.2	4.8
Home isolation at ICU peak day (%)	75.3	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	252	319
Infectious disease beds/100 000 population prior to emergency	4	5.0
ICU beds/100 000 population prior to emergency	7.9	8.7
COVID hospitals	na	YES
COVID non-nosocomial facilities	na	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



“Riparti Calabria”: ensuring continuity for economic activities in a time of crisis

The Calabria region has launched a plan to restart its economy, which has been compromized by the epidemic. The plan, called “Riparti Calabria”, allocates €150 million for wide-ranging measures, with a focus on ensuring a fast restart of the economic and productive sector while supporting the continuity of entrepreneurial activities. One of the concerns is to avoid the risk that entrepreneurs may end up vulnerable to taking out high-interest loans and see criminal groups taking over their businesses.

“Riparti Calabria” includes repayable loans at zero interest rate through simplified applications and with the calculation of the financial support based on the operating income and turnover of the last two years. Part of the fund will be paid to small businesses (for example, street vendors, bars and artisans) with a one-off subsidy as compensation for losses suffered. Professionals have also been guaranteed access to liquidity through through a microcredit fund endowed with €20 million.

Communication effort	
Dedicated website	●
Produce specific communications materials	●
Live press conference/videos also on social media	●
Produce communications materials in other languages	●
Have a data room on their website	●
Published daily bullettin on the website (text as post)	●
Developed app	●

Social media presence -

Economic indicators	Regional value	National value
Unemployment rate (2019)	20.1	9.9
Employment rate (2019)	44.1	59.2
Families’ gross annual average income (2017) in euros	24 065	31 393
Average interest rate (%) on loans to businesses (March 2019)	7.1	3.9

Regional highlights

- The first case was a resident from the Cosenza province confirmed on 29 February who had previously travelled by bus from one of the first affected areas in Lombardy; all other passengers were monitored.
- The region presented on 30 April the lowest regional level of transmission, with a cumulative case rate of 57 cases/100 000 (value for Italy: 341).
- Stabilization in new cases per week has been documented since late March.
- A profound process of reorganization of the regional hospitals network has been put in place, with the identification of hospital facilities with beds for COVID-19 patients and the activation of additional beds in intensive and subintensive care.
- A specific regional plan was made available in early March for the identification of currently abandoned hospitals to be used as quarantine areas.
- Indications were given to the prevention departments and to health-care professionals on how to manage the flow of cases and patients and limit access to health-care facilities through home care provided by the Special Continuity Care Units (USCA).
- The Calabria region established quarantine for all individuals who, from 24 February, entered the region in the previous 14 days from areas at risk of COVID-19.
- The Calabria region has established a COVID-19 emergency portal, RCOVID19, that provides citizens with important information and updates on the progress of the epidemic in the region.
- The region has developed a dedicated web page for COVID19 which publishes a daily newsletter with information on swabs carried out, new cases, hospitalizations and intensive therapies by province.

CAMPANIA

Population size	581 692	3th position
Population density (inhabitants/km^2)	424	1st position

Population above 64 years of age (%)
18.8
22.8 (Italy)

Population 18–69 with economic difficulties (%)
21.9
13.4 (Italy)

Population 18–69 with hypertension (%)
21.8
19.9 (Italy)

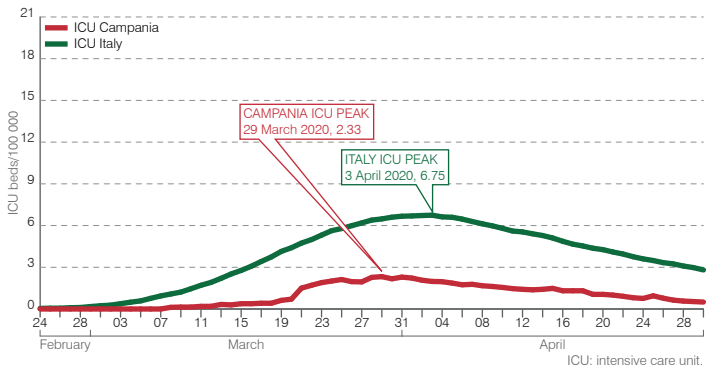
Population > 64 in (perceived) poor health (%)
15.6
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
71.7
60.7 (Italy)

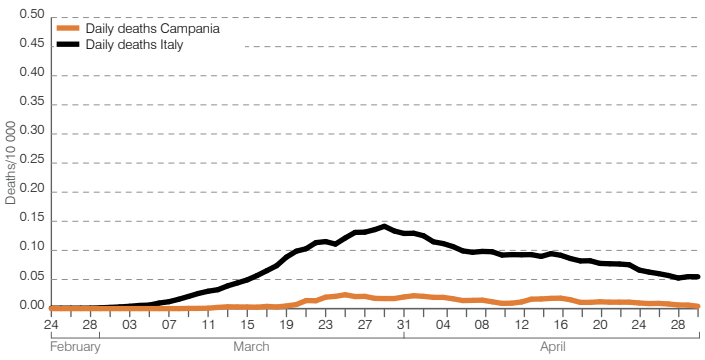
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	26 February 2020	21 February 2020
ICU bed occupancy peak (date)	29 March 2020	3 April 2020
ICU bed occupancy peak (value)	135	4 068
Total positive tests – as of 30 April 2020	4 424	205 463
Swab tests done/10 000 population – as of 30 April 2020	131	328
Swab tests positive/10 000 population – as of 30 April 2020	8	34
Swab tests positive rate (%) – as of 30 April 2020	5.8	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	0.62	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	6.7	12.3
Active cases on ICU bed occupancy peak date	1556	85 388
Admitted to hospital at ICU peak day (%)	30.6	33.7
ICU patients at ICU peak day (%)	8.7	4.8
Home isolation at ICU peak day (%)	60.7	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	259	319
Infectious disease beds/100 000 population prior to emergency	5	5.0
ICU beds/100 000 population prior to emergency	8.7	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	na	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



Protecting health-care workforce as a priority: the example of the Cotugno Hospital

Having learned very quickly from the northern regions that were first hit by the virus, the Campania region started early to prepare itself, particularly its hospitals and health-care workers. One prominent example has been the Cotugno Hospital of Naples, which has cured more than 200 COVID-19 patients per day and has managed to do so with almost no positive cases within its health workforce.

Cotugno Hospital benefited from vast experience acquired over more than a decade in dealing with other epidemics and infectious diseases, such as cholera, HIV, SARS and Ebola, and non-epidemic infectious diseases like meningitis. The key to success was the fast implementation of a mix of measures, including:

- a rapid surge in health-care capacity, with 150 nurses and 25 doctors hired in one month;
- an emphasis on training nurses and social and health workers on infection prevention and control;
- setting up surveillance guards in all departments and corridors, and defining a specific separate disinfection path; and
- providing PPE for health-care staff from the start of the epidemic.

Communication effort	
Dedicated website	●
Produce specific communications materials	●
Live press conference/videos also on social media	●
Produce communications materials in other languages	●
Have a data room on their website	●
Published daily bullettin on the website (text as post)	●
Developed app	●
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	20.4	9.9
Employment rate (2019)	41.2	59.2
Families' gross annual average income (2017) in euros	27 553	31 393
Average interest rate (%) on loans to businesses (March 2019)	5.0	3.9

Regional highlights

- The first case was a tourist from Lombardy visiting the Salerno province, confirmed on 26 February. After a few sporadic cases, the same province experienced a larger cluster.
- Despite this initial spread, the region on 30 April had one of the lowest regional levels of transmission, with a cumulative case rate of 76 cases/100 000 (value for Italy: 341).
- Stabilization in new cases per week has been documented since late March.
- The Campania region promptly established quarantine for all individuals who, from 24 February, entered the region in the previous 14 days, coming from areas at risk of COVID-19.
- The strengthening of the hospital network was followed by the activation of intermediate care COVID-19 sociohealth facilities for positive patients in the discharge phase.
- Bed management of the COVID-19 regional hospital network has been facilitated by a smartphone app, used by general directors of local health agencies and the regional task force for COVID-19 to monitor the use of intensive, subintensive and ordinary beds for COVID-19 patients.
- Home care for COVID-19 patients was provided by the Special Continuity Care Units (USCA) distributed throughout the region. Local health agencies have strengthened home-care services to ensure assistance for people with disability and older and non-independent adults.
- Home monitoring is done with the support of an app for early diagnosis and follow up of positive patients (LazioDoctor for COVID-19).
- Predatory prices on primary goods were recognized early as a critical problem by the region. Campania established an observatory to track down and sanction illicit vendors in the midst of a supply shortage of masks and hand sanitizers, but also of groceries. Financial authorities and a national representative were included in the dedicated task force.

EMILIA-ROMAGNA

Population size	4 459 477	6th position
Population density (inhabitants/km^2)	199	7th position

Population above 64 years of age (%)
23.9
22.8 (Italy)

Population 18–69 with economic difficulties (%)
8.3
13.4 (Italy)

Population 18–69 with hypertension (%)
18.9
19.9 (Italy)

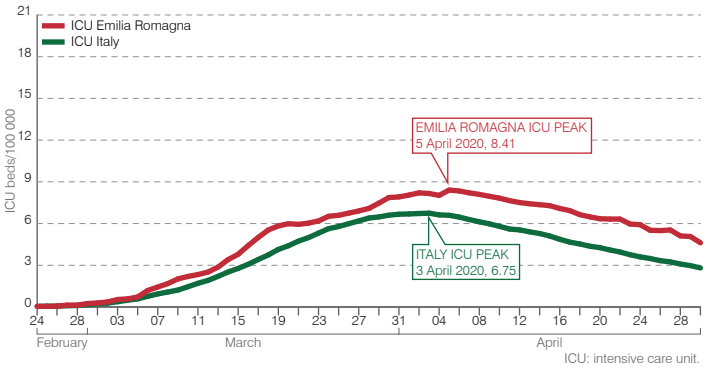
Population > 64 in (perceived) poor health (%)
11.1
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
60.9
60.7 (Italy)

Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	22 February 2020	21 February 2020
ICU bed occupancy peak (date)	5 April 2020	3 April 2020
ICU bed occupancy peak (value)	375	4 068
Total positive tests – as of 30 April 2020	25 435	205 463
Swab tests done/10 000 population – as of 30 April 2020	410	328
Swab tests positive/10 000 population – as of 30 April 2020	57	34
Swab tests positive rate (%) – as of 30 April 2020	13.91	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	7.96	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	12.0	12.3
Active cases on ICU bed occupancy peak date	12 837	85 388
Admitted to hospital at ICU peak day (%)	29.9	33.7
ICU patients at ICU peak day (%)	2.9	4.8
Home isolation at ICU peak day (%)	67.2	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	377	319
Infectious disease beds/100 000 population prior to emergency	4.93	5.0
ICU beds/100 000 population prior to emergency	10.1	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	YES	YES

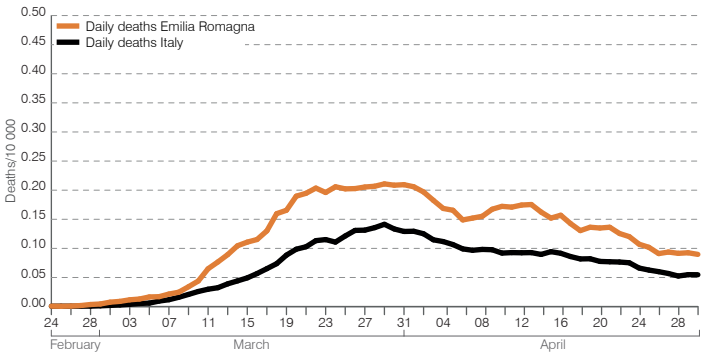
ICU: intensive care unit.

COVID-19 patients in ICUs



ICU: intensive care unit.

Hospital deaths positive to COVID-19 virus



A national hub for intensive care

With an investment of over €26 million, the Emilia-Romagna region has created an intensive care network with 146 beds to support patients who have fallen ill or may have contracted coronavirus. The network can, in addition to supporting the response to the COVID-19 emergency, be available in the future during health crises that require the use of intensive and subintensive therapies.

The hub will support Covid-19 patients through a network of complementary services that will enable it to cope with all expected situations.

The network will make a permanent and ongoing contribution to intensive care services in the regional health system and has the potential to serve the entire country in times of crisis.

The health-care units in the network are the Maggiore Hospital of Parma, the Policlinico Sant'Orsola and the Maggiore Hospital in Bologna, the Policlinico and the Baggiovara Civil Hospital in Modena and the Infermi Hospitalin Rimini.

Communication effort	
Dedicated website	●
Produce specific communications materials	●
Live press conference/videos also on social media	●
Produce communications materials in other languages	○
Have a data room on their website	○
Published daily bullettin on the website (text as post)	●
Developed app	○
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	5.9	9.9
Employment rate (2019)	70.4	59.2
Families' gross annual average income (2017) in euros	32 945	31 393
Average interest rate (%) on loans to businesses (March 2019)	3.5	3.9

Regional highlights

- The first detected case was of a Lombardy resident who sought health care in Piacenza and was confirmed positive on 22 February. The region quickly became the most affected in the country soon after Lombardy (12% of total).
- On 30 April, the region had a cumulative case rate of 570 cases/100 000 (value for Italy: 341).
- Stabilization in new cases per week has been observed since late March.
- The regional response has been characterized by a rapid increase in additional hospital capacity through strong coordination among regional hospitals. Dynamic adjustments have made it possible to reallocate patients from the most affected provinces to other hospitals in the network, preventing the collapse of the health system in specific areas.
- The effective organization of primary health-care services, which have a strong presence at local level, has supported public health functions through 33 territorial triage points and the timely activation of the Special Unit for Continuity of Care (USCA). USCA carries out full assessments of COVID-19 patients using a multidimensional framework, in strong coordination with general practitioners and social services at community level.
- The Region has provided a €1000 bonus to each health worker in the region, granted 13 weeks of paid layoff from work and earmarked considerable resources to develop e-learning facilities for children.
- The Region portal has a dedicated page for COVID-19 on which daily press releases, information materials and videos (including endorsements from VIPs) are published. It includes data by province on factors such as numbers of cases, hospitalizations and people deceased.

FRIULI-VENEZIA GIULIA

Population size	1 215 220	15th position
Population density (inhabitants/km²)	153	14th position

Population above 64 years of age (%)
26.2
22.8 (Italy)

Population 18–69 with economic difficulties (%)
7.3
13.4 (Italy)

Population 18–69 with hypertension (%)
19.0
19.9 (Italy)

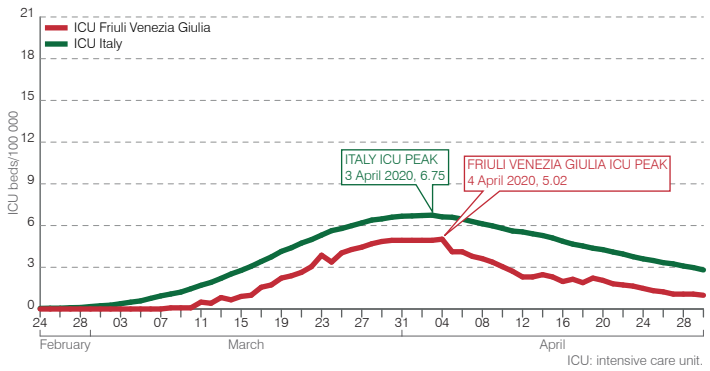
Population > 64 in (perceived) poor health (%)
9.5
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
59.5
60.7 (Italy)

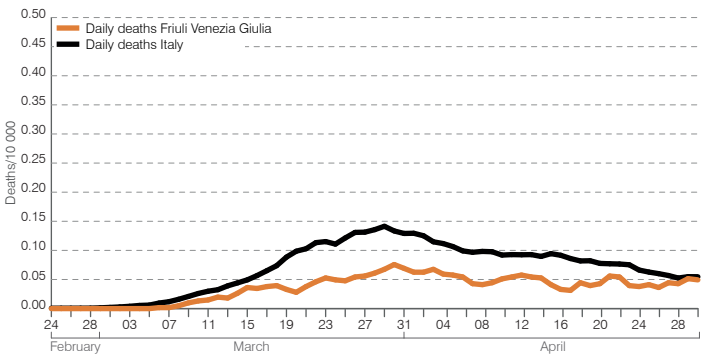
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	26 February 2020	21 February 2020
ICU bed occupancy peak (date)	3 April 2020	3 April 2020
ICU bed occupancy peak (value)	61	4 068
Total positive tests – as of 30 April 2020	3 025	205 463
Swab tests done/10 000 population – as of 30 April 2020	559	328
Swab tests positive/10 000 population – as of 30 April 2020	25	34
Swab tests positive rate (%) – as of 30 April 2020	4.45	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	2.38	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	6.7	12.3
Active cases on ICU bed occupancy peak date	1324	85 388
Admitted to hospital at ICU peak day (%)	15.2	33.7
ICU patients at ICU peak day (%)	4.6	4.8
Home isolation at ICU peak day (%)	80.2	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	326	319
Infectious disease beds/100 000 population prior to emergency	2	5.0
ICU beds/100 000 population prior to emergency	10.5	8.7
COVID hospitals	na	YES
COVID non-nosocomial facilities	YES	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



The advantages of early containment measures

The region took a bold decision on 23 February to close down schools of all grades, museums and cultural venues and events, sport facilities and nightclubs, and establish control over people coming from affected countries at the early stages of the crisis. Through this and other decisions, the region has become a good example of the success that early containment strategies based on physical distancing may have. At the time these decisions were adopted, Friuli Venezia Giulia had not yet detected cases of COVID-19, and Italy's only clusters had been detected in Lombardy and Veneto. It slowed down the arrival of the virus and the authorities earned precious time to prepare.

This proactive approach continued over the course of the emergency: intensive contact-tracing and a significant number of swab tests were conducted, a strong organization of civil protection volunteers was mobilized, and additional containment measures swiftly adopted (for instance, Friuli Venezia Giulia decided on 3 March that disposable masks and gloves were mandatory in grocery stores and outdoor markets). The cumulative case rate in the total regional population is the lowest of all the other northern regions.

Communication effort	
Dedicated website	✓
Produce specific communications materials	✓
Live press conference/videos also on social media	✗
Produce communications materials in other languages	✗
Have a data room on their website	✓
Published daily bullettin on the website (text as post)	✓
Developed app	✗
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	6.4	9.9
Employment rate (2019)	67.1	59.2
Families' gross annual average income (2017) in euros	35 431	31 393
Average interest rate (%) on loans to businesses (March 2019)	3.8	3.9

Regional highlights

- The first case was a resident from Gorizia who had previously visited a hospital in Veneto and was confirmed on 29 February.
- The region was the latest affected in the north and on 30 April its cumulative case rate was low compared with the neighbouring regions, with around 250 cases/100 000 (value for Italy: 341).
- Stabilization in new cases per week has been documented since end March.
- Friuli Venezia Giulia quickly increased its hospital capacity up to 155 ICU beds and set up dedicated streams for COVID-19 patients into the hospitals.
- Pre-triage screening tents were set up with the support of the civil protection volunteers outside the emergency rooms of the main regional hospitals to limit the spread of the epidemic and protect the facilities.
- In the second phase, some hospitals have been designated as COVID-free. These will be the hospitals where normal elective general and urological surgery activity will be restored first.
- Since mid-April, Special Continuity Care Units (USCA) have taken care of COVID-19 positive people, including in long-term-care facilities.
- The region has allocated €37.6 million for the productive sectors with the aim of responding quickly to the needs of businesses. The most substantial interventions will be the enlargement and introduction of specific forms of subsidized financing for small enterprises, artisans, companies working in the field of tourism and services.
- While not livestreaming on social media, the region has a high presence on social media (Facebook, Twitter and Instagram) and uses these tools to inform the population. The support of influencers has been secured to support the *#IoRestoacasa* campaign. The portal of the Civil Protection Friuli Venezia Giulia includes an interactive map of cases by municipality (positive, healed and deaths).

LAZIO

Population size	5 879 082	2nd position
Population density (inhabitants/km^2)	341	3rd position

Population above 64 years of age (%)
21.7
22.8 (Italy)

Population 18–69 with economic difficulties (%)
12.3
13.4 (Italy)

Population 18–69 with hypertension (%)
19.9
19.9 (Italy)

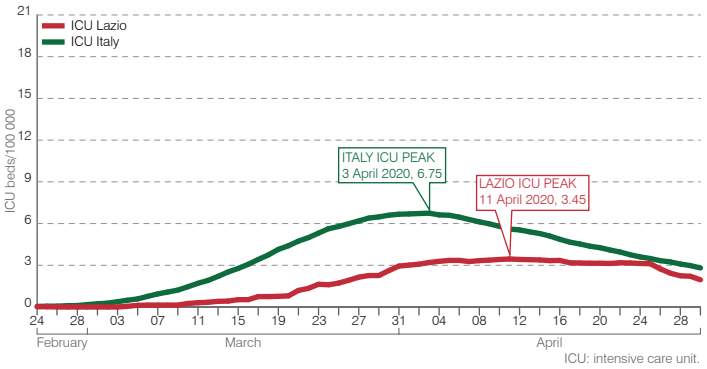
Population > 64 in (perceived) poor health (%)
14.6
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
61.8
60.7 (Italy)

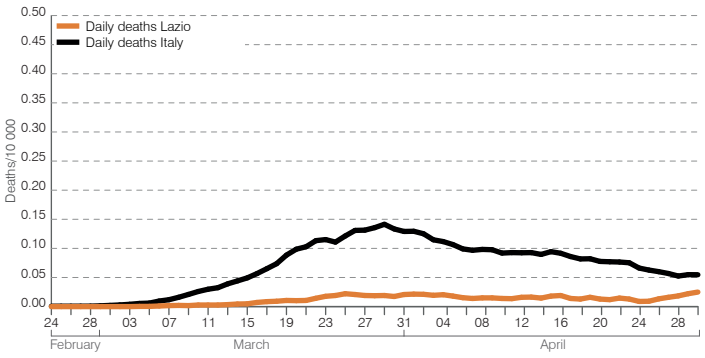
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	28 February 2020	21 February 2020
ICU bed occupancy peak (date)	11 April 2020	3 April 2020
ICU bed occupancy peak (value)	203	4 068
Total positive tests – as of 30 April 2020	6 616	205 463
Swab tests done/10 000 population – as of 30 April 2020	234	328
Swab tests positive/10 000 population – as of 30 April 2020	11.25	34
Swab tests positive rate (%) – as of 30 April 2020	4.81%	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	0.75	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	6.7%	12.3
Active cases on ICU bed occupancy peak date	3 730	85 388
Admitted to hospital at ICU peak day (%)	33.9%	33.7
ICU patients at ICU peak day (%)	5.4%	4.8
Home isolation at ICU peak day (%)	60.7%	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	350	319
Infectious disease beds/100 000 population prior to emergency	6	5.0
ICU beds/100 000 population prior to emergency	9.5	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	YES	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



Supporting women victims of abuse during COVID-19

Not everyone is safe at home, and while lockdown is essential in blocking the spread of the virus, it can pose serious risks to the well-being of women and children in abusive households.

With concerns being raised over rising violence against women during the epidemic, Lazio quickly reacted by extending and expanding both the methods of access and the eligibility to a social relief fund to help women victims of abuse. In particular, €5000 was given to women leaving care centres for abuse (so-called safe houses) to enable them to live independently during the lockdown and not have to return home to abusive partners. It will be possible to use this so-called freedom contribution for new needs that were not previously eligible, such as to purchase food and for ICT tools and services, which are very important, particularly for women with young children.

Communication effort	
Dedicated website	✓
Produce specific communications materials	✓
Live press conference/videos also on social media	✓
Produce communications materials in other languages	✗
Have a data room on their website	✓
Published daily bullettin on the website (text as post)	✓
Developed app	✓
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	10.1	9.9
Employment rate (2019)	61.0	59.2
Families' gross annual average income (2017) in euros	26 089	31 393
Average interest rate (%) on loans to businesses (March 2019)	4.0	3.9

Regional highlights

- After the cases identified in Rome (two Chinese tourists and an Italian repatriated from Wuhan), the region reported the first case in a resident on 28 February in the Rome province. The person had visited Lombardy with the family.
- On 30 April, the cumulative case rate was 113 cases/100 000 (value for Italy: 341).
- Stabilization in new cases per week has been documented since end March.
- The Lazio region was able to involve all accredited public and private facilities within the regional hospital network, promoting strong coordination for COVID-19 emergency management. Intervention hospitals with ICU and infectious disease beds have been put in place to centralize the management of COVID-19-positive patients.
- The Lazio region has developed ICT solutions to the COVID-19 emergency. The Special Continuity Care Units (USCA), GPs, paediatricians and medical on-call services are working together to strengthen home care, which is achieved with the support of an app for early diagnosis and follow-up of positive patients (LazioDoctor for COVID-19) and a telemedicine platform for tele-consultation, tele-surveillance, early diagnosis and follow up of positive patients
- A regional portal dedicated to COVID-19 with links to news, frequently asked questions, information material (including regional infographics) and psychological support has been developed by the Lazio region. The Regional Epidemiological Department has developed an interactive map for each municipality.

LIGURIA

Population size	1 550 640	12th position
Population density (inhabitants/km²)	286	4th position

Population above 64 years of age (%)
28.5
22.8 (Italy)

Population 18–69 with economic difficulties (%)
8.3
13.4 (Italy)

Population 18–69 with hypertension (%)
18.5
19.9 (Italy)

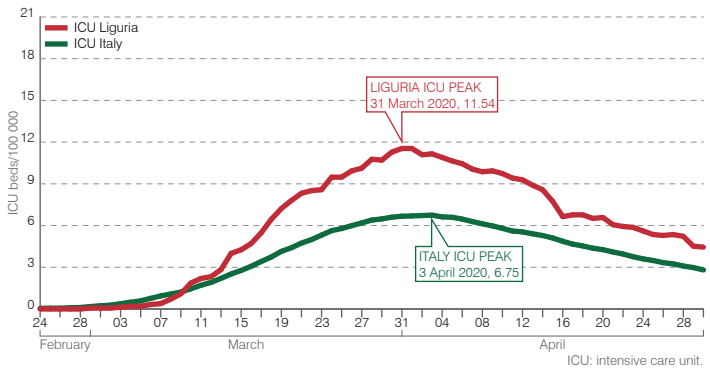
Population > 64 in (perceived) poor health (%)
12.1
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
56.5
60.7 (Italy)

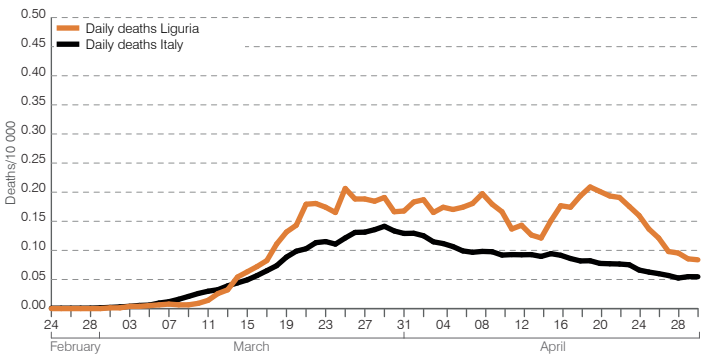
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	25 February 2020	21 February 2020
ICU bed occupancy peak (date)	31 March 2020	3 April 2020
ICU bed occupancy peak (value)	179	4 068
Total positive tests – as of 30 April 2020	7 993	205 463
Swab tests done/10 000 population – as of 30 April 2020	314.5	328
Swab tests positive/10 000 population – as of 30 April 2020	51.55	34
Swab tests positive rate (%) – as of 30 April 2020	16.39	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	7.53	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	12.5	12.3
Active cases on ICU bed occupancy peak date	2 508	85 388
Admitted to hospital at ICU peak day (%)	46.0	33.7
ICU patients at ICU peak day (%)	7.1	4.8
Home isolation at ICU peak day (%)	46.9	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	338	319
Infectious disease beds/100 000 population prior to emergency	9	5.0
ICU beds/100 000 population prior to emergency	12.0	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	YES	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



Giving an economic boost to small and medium inland enterprises

Liguria has a complex economic structure, being one of the most important ports in Europe, as well as having a rich diversification of outputs of goods from inland. With most of its cities and touristic hubs located on its coast, a general intervention would not be able to address the specific needs of landlocked cities in the hilly inland areas, which face the risk of being left behind. It was therefore crucial to develop an economic stimulus plan that would not overlook the vast diversification of activities that is typical of the Liguria territory. For this reason, the regional government developed a specific emergency fund for small and medium-sized enterprises in inland areas. This consisted of financial support to strengthen e-commerce and help smaller shops and artisans. Given the cultural and economic importance of itinerating commercial practices in the region, and their inevitable losses due to movement restrictions, specific support was earmarked to ensure their survival during the lockdown. Another programme was launched to activate a guarantee fund for bank loans aimed at financing the working capital of micro and small businesses in the commerce, tourism and craft sectors that were strongly affected by the COVID-19 epidemic.

Communication effort	
Dedicated website	✓
Produce specific communications materials	✗
Live press conference/videos also on social media	✓
Produce communications materials in other languages	✗
Have a data room on their website	✗
Published daily bullettin on the website (text as post)	✓
Developed app	✗
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	8.9	9.9
Employment rate (2019)	63.0	59.2
Families' gross annual average income (2017) in euros	31 721	31 393
Average interest rate (%) on loans to businesses (March 2019)	3.5	3.9

Regional highlights

- The first case, confirmed on 26 February, was a tourist coming from one of the most affected areas in Lombardy. The person was visiting the Savona province with a group of people who promptly were monitored.
- On 30 April, the cumulative case rate was 515 cases/100 000 (value for Italy: 341).
- Stabilization in new cases per week has been documented since early April.
- One hospital in each province has been designated as the COVID-Hospital to ease the burden on Genova, which has high population density.
- "Nave Ospedale", a hospital ship moored in the port of Genoa, was set up to host 52 COVID-19 patients
- Structured territorial assistance groups supported the public health function by carrying out swabbing in the final phase of the COVID-19 disease for people without significant symptoms who were in home isolation.
- The region has earmarked €500 for families with children younger than 15 years and earning less than €50 000 yearly.
- The regional website has a daily bulletin with data on positive cases, people in quarantine and hospitalizations, which are also disseminated daily on Facebook and Twitter.
- On social media, the hashtag *#CoronavirusLiguria* became very popular. Regional infographics with tips for citizens are also shared on Facebook, Twitter and Instagram.

LOMBARDY

Population size	10 060 574	1st position
Population density (inhabitants/km^2)	422	2nd position

Population above 64 years of age (%)
22.6
22.8 (Italy)

Population 18–69 with economic difficulties (%)
7.7
13.4 (Italy)

Population 18–69 with hypertension (%)
17.8
19.9 (Italy)

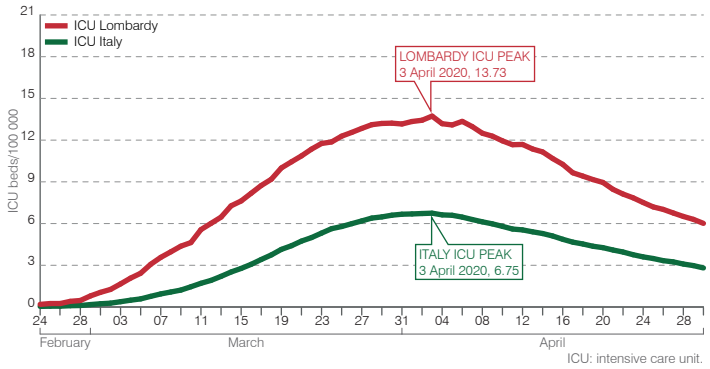
Population > 64 in (perceived) poor health (%)
no data
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
no data
60.7 (Italy)

Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	21 February 2020	21 February 2020
ICU bed occupancy peak (date)	3 April 2020	3 April 2020
ICU bed occupancy peak (value)	1381	4 068
Total positive tests – as of 30 April 2020	75 732	205 463
Swab tests done/10 000 population – as of 30 April 2020	374.7	328
Swab tests positive/10 000 population – as of 30 April 2020	75.28	34
Swab tests positive rate (%) – as of 30 April 2020	20.09	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	13.69	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	6.7	12.3
Active cases on ICU bed occupancy peak date	26 89	85 388
Admitted to hospital at ICU peak day (%)	45.1	33.7
ICU patients at ICU peak day (%)	5.3	4.8
Home isolation at ICU peak day (%)	49.7	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	352	319
Infectious disease beds/100 000 population prior to emergency	4	5.0
ICU beds/100 000 population prior to emergency	8.5	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	YES	YES

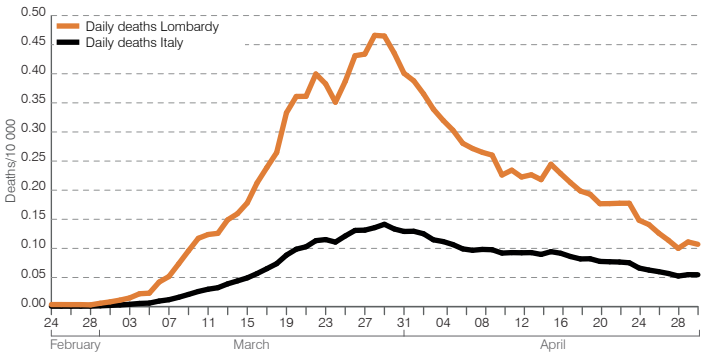
ICU: intensive care unit.

COVID-19 patients in ICUs



ICU: intensive care unit.

Hospital deaths positive to COVID-19 virus



The AllertaLOM Mobile App: big data for virus containment

Lombardy has been the epicentre of the epidemic and has paid a huge toll in terms of human losses and economic consequences. The region has dedicated considerable resources to be able to tame the spread of the virus, and communication with the public has been key to getting the situation under control.

The AllertaLOM Mobile App, launched by the Region, has had huge success, with more than 1 million people downloading it. Users are asked to fill in a questionnaire on a regular basis with information relating to their state of health. Among other things, they are asked to provide information on habits during the lockdown (journey to the office or smart working?) and possible symptoms (loss of taste and/or smell, etc.) to be filled in and updated daily.

This information is useful for the regional crisis unit and epidemiologists. Citizens do not receive any indication or response based on the information they have entered, but they help to clarify the spread of COVID-19 and draw a map of the risk of contagion which, thanks to the intersection with other databases, will allow experts to develop forecasting models to contain the epidemic.

Communication effort	
Dedicated website	●
Produce specific communications materials	●
Live press conference/videos also on social media	●
Produce communications materials in other languages	●
Have a data room on their website	●
Published daily bullettin on the website (text as post)	●
Developed app	●
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	6.0	9.9
Employment rate (2019)	68.5	59.2
Families' gross annual average income (2017) in euros	36 101	31 393
Average interest rate (%) on loans to businesses (March 2019)	4.7	3.9

Regional highlights

- Lombardy is the most affected region countrywide, with almost 50% of all cases and half the fatalities in the country. The first cases were detected on 21 February and were also the first confirmed in Italy, but the exact chain of infection could not be traced.
- On 30 April, the cumulative case rate was about 750 cases/100 000 (value for Italy: 341).
- Initial efforts by the regional health system focused on: collection of data to conduct modelling; strategies to increase diagnostic capacity; and structural reorganization for hospital-based assistance for cases through a patient-centred approach. The already existing strong regional ICU network was potentiated.
- Patients are followed up for home care through the Special Continuity Care Units (USCA). Home monitoring is also done through an app for early diagnosis and patient follow up. The Lombardy region has activated a new COVID Integrated Home Care programme (ADI Covid), bringing together medical, nursing and sociohealth staff for COVID-19-positive or suspect patients who need multiprofessional monitoring and low intensity care.
- Given the immense stress that health-care workers are under, Lombardy established a special hotline for psychological support.
- The region implemented socioeconomic measures to help its citizens through measures such as exemptions on all regional taxes, support to people with an executive eviction procedure underway and the payment of rent for families in economic vulnerability. It has also rolled out a home delivery service of goods and groceries.
- A website section is dedicated to COVID-19 with a ChatBot on the coronavirus and a "Listen to the experts" section.

MOLISE

Population size	305 617	19th position
Population density (inhabitants/km²)	69	18th position

Population above 64 years of age (%)
24.6
22.8 (Italy)

Population 18–69 with economic difficulties (%)
9.4
13.4 (Italy)

Population 18–69 with hypertension (%)
21.3
19.9 (Italy)

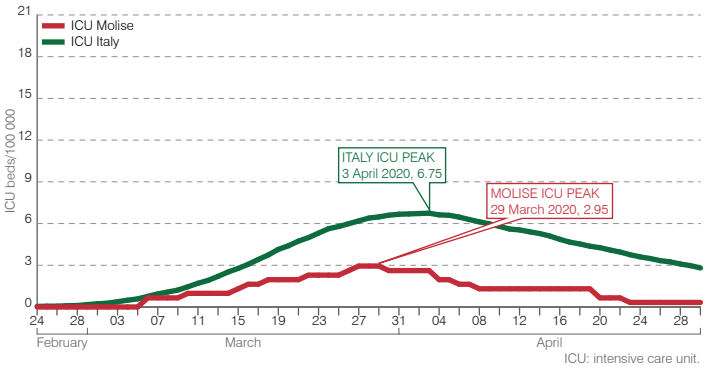
Population > 64 in (perceived) poor health (%)
no data
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
35.3
60.7 (Italy)

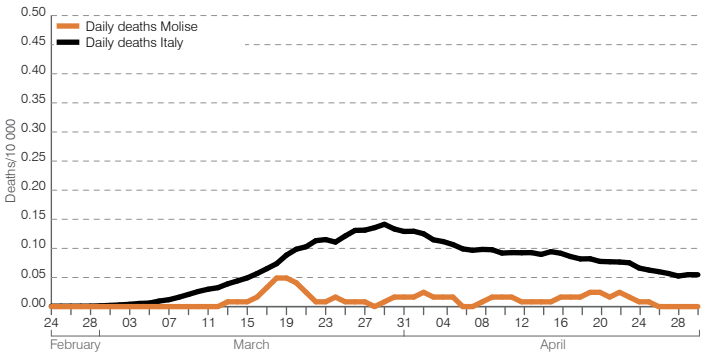
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	2 March 2020	21 February 2020
ICU bed occupancy peak (date)	29 March 2020	3 April 2020
ICU bed occupancy peak (value)	9	4 068
Total positive tests – as of 30 April 2020	298	205 463
Swab tests done/10 000 population – as of 30 April 2020	210.9	328
Swab tests positive/10 000 population – as of 30 April 2020	9.75	34
Swab tests positive rate (%) – as of 30 April 2020	4.62	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	0.69	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	7.1	12.3
Active cases on ICU bed occupancy peak date	100	85 388
Admitted to hospital at ICU peak day (%)	25.0	33.7
ICU patients at ICU peak day (%)	9.0	4.8
Home isolation at ICU peak day (%)	66.0	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	337	319
Infectious disease beds/100 000 population prior to emergency	6	5.0
ICU beds/100 000 population prior to emergency	10.1	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	na	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



Targeting small business owners for an effective reaction

Molise has been the region with the lowest number of positive cases in the whole of Italy, with only a few hundred cases among its 300 000 inhabitants.

However, while the health situation has not been dramatic, the economic consequences have been felt as strongly as in the rest of the country.

Small businesses represent the backbone of the local productive economy. Accordingly, the region decided to act quickly with tangible actions by giving small- and medium-sized enterprises, artisans and small business owners the possibility of accessing micro-credit loans of up to €5000 euros at zero rate, with minimum red tape and compliance costs (such as guarantees and management costs) through a one-stop-shop procedure.

The targeted support aims to reach the most vulnerable section of the Molise production system and, specifically, those activities that were directly affected by the restrictions imposed by the COVID-19 epidemic. Molise chose to directly inject liquidity into the local economic system and to stimulate its recovery.

Communication effort	
Dedicated website	●
Produce specific communications materials	●
Live press conference/videos also on social media	●
Produce communications materials in other languages	○
Have a data room on their website	○
Published daily bullettin on the website (text as post)	●
Developed app	○
Social media presence	f

Economic indicators	Regional value	National value
Unemployment rate (2019)	10.4	9.9
Employment rate (2019)	56.6	59.2
Families' gross annual average income (2017) in euros	24 732	31 393
Average interest rate (%) on loans to businesses (March 2019)	5.6	3.9

Regional highlights

- The first case was a resident from the Campobasso province who was confirmed on 2 March and had a potential link to Campania.
- The region presented on 30 April the lowest count of confirmed cases at n level (0.1% of total), with a cumulative case rate of around 100 cases/100 000 (value for Italy: 341).
- Stabilization in new cases per week has been documented since mid-April.
- The small number of inhabitants, the absence of initial outbreaks and control over imported clusters have helped control the epidemic.
- Like other regions, Molise has ordered the suspension of all outpatient and hospitalization activities, except those that cannot be deferred.
- The region has provided for the expansion of spaces and beds in infectious disease and intensive care units.
- A hub hospital has been identified in which COVID-19-positive patients have been hospitalized, with a network of spoke hospitals. The clinical-care pathways and the flow of the patients are clearly separated.
- Three Special Continuity Care Units (USCA) for COVID-19 patients are active in the districts of Campobasso, Termoli and Isernia.
- The Molise region website opened a specific web page on COVID19 with links to all the decrees and updates on the pandemic. The region publishes a note every day that includes data on hospitalizations and intensive care. Information material on good practices is also produced.

PIEDMONT

Population size	4 356 406	7th position
Population density (inhabitants/km^2)	172	9th position

Population above 64 years of age (%)
25.5
22.8 (Italy)

Population 18–69 with economic difficulties (%)
8.6
13.4 (Italy)

Population 18–69 with hypertension (%)
19.4
19.9 (Italy)

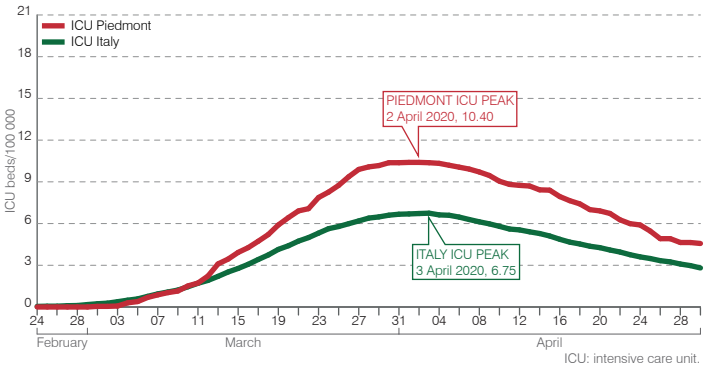
Population > 64 in (perceived) poor health (%)
7.1
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
49.3
60.7 (Italy)

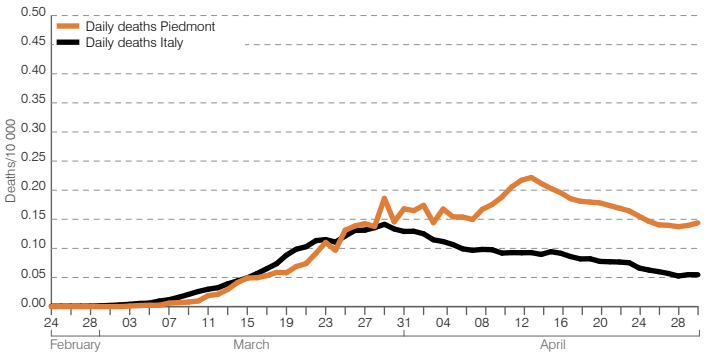
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	22 February 2020	21 February 2020
ICU bed occupancy peak (date)	2 April 2020	3 April 2020
ICU bed occupancy peak (value)	453	4 068
Total positive tests – as of 30 April 2020	26 289	205 463
Swab tests done/10 000 population – as of 30 April 2020	359.3	328
Swab tests positive/10 000 population – as of 30 April 2020	60.35	34
Swab tests positive rate (%) – as of 30 April 2020	16.79	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	7.04	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	11.1	12.3
Active cases on ICU bed occupancy peak date	8 799	85 388
Admitted to hospital at ICU peak day (%)	38.0	33.7
ICU patients at ICU peak day (%)	5.1	4.8
Home isolation at ICU peak day (%)	56.9	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	350	319
Infectious disease beds/100 000 population prior to emergency	4	5.0
ICU beds/100 000 population prior to emergency	7.3	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	YES	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



Turin's top art venue becomes a temporary 92-bed COVID-19 hospital

The Officine Grandi Riparazioni (OGR) is an old industrial complex transformed into one of Turin's top art venues. An important part of Turin's industrial heritage, it has been partly converted to act as a temporary hospital for subintensive therapy for 92 COVID-19 patients. The facility, built in just 12 days, has 90 beds, plus two dedicated to intensive care and stabilization of critically ill patients before transfer to other city hospitals.

This hospital acts as a buffer for ICUs in the region. While critically ill patients are centralized within the regional hospital's ICUs, the available beds in the OGR will be reserved for patients with mild and medium-level symptoms who need continuous medical assistance. The structure will remain in place for the duration of the emergency phase of the epidemic.

Among the doctors working in the temporary hospital is a team of 38 health workers who have arrived from Cuba to support the region's hospitals.

Communication effort	
Dedicated website	✓
Produce specific communications materials	✗
Live press conference/videos also on social media	✓
Produce communications materials in other languages	✗
Have a data room on their website	✓
Published daily bullettin on the website (text as post)	✓
Developed app	✗
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	7.1	9.9
Employment rate (2019)	66.6	59.2
Families' gross annual average income (2017) in euros	31 068	31 393
Average interest rate (%) on loans to businesses (March 2019)	3.8	3.9

Regional highlights

- The first case in Piedmont, a resident of Turin who visited Lombardy, was confirmed on 22 February. The region has been one of the worst affected, with almost 13% of the total positive cases recorded in Italy.
- Stabilization in the number of new cases detected has been slower than in most regions.
- On 30 April, the region presented one of the highest cumulative case rates, with around 600 cases/100 000 people (value for Italy: 341).
- To address the COVID-19 emergency, two regional task forces have been set up to reorganize and improve hospital and primary health care and increase the level of integration between the two care settings. The task forces currently are working to restore all health service functions while maintaining specific care services for COVID-19 patients.
- Patients are followed up for home care through the Special Continuity Care Units (USCA). A regional COVID-19 Piedmont Region Platform has been activated to track and monitor all activities that concern COVID-19 patients. Its main functions are activating care pathways for patients, requesting swabs, managing patients discharge and transfer, and managing quarantines.
- Regional economic support initiatives have included support on rent payments for people earning less than €26 000 yearly. Provisions have been adopted to defer payment of the principal portions of loan instalments and block the payment of mortgages for 1000 companies in the Region, a measure that has a total value of €110 million.
- The Piedmont region has opened a specific web page on COVID-19 with updated data for each province and useful information regarding economic measures and "Phase 2" updates amongst other. It is active on social media platforms (Facebook, Twitter and YouTube).

SARDINIA

Population size	1 639 591	11th position
Population density (inhabitants/km^2)	68	19th position

Population above 64 years of age (%)
23.8
22.8 (Italy)

Population 18–69 with economic difficulties (%)
19.4
13.4 (Italy)

Population 18–69 with hypertension (%)
20.7
19.9 (Italy)

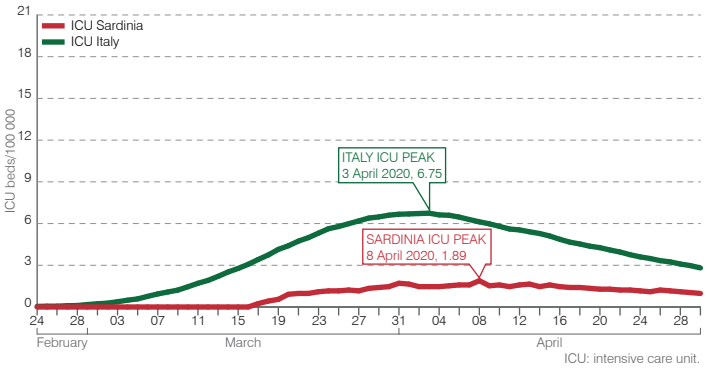
Population > 64 in (perceived) poor health (%)
19.3
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
59.4
60.7 (Italy)

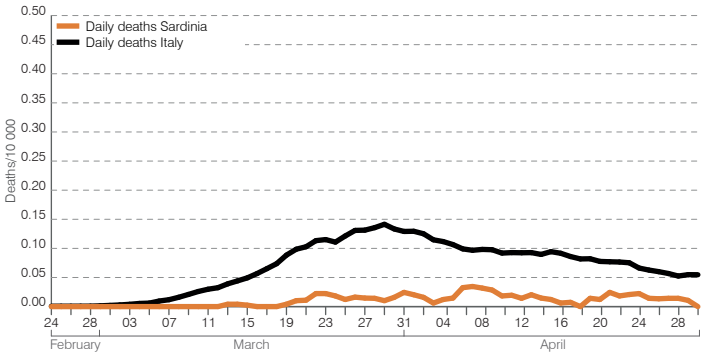
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	2 March 2020	21 February 2020
ICU bed occupancy peak (date)	8 April 2020	3 April 2020
ICU bed occupancy peak (value)	31	4 068
Total positive tests – as of 30 April 2020	1295	205 463
Swab tests done/10 000 population – as of 30 April 2020	151.0	328
Swab tests positive/10 000 population – as of 30 April 2020	7.90	34
Swab tests positive rate (%) – as of 30 April 2020	5.23	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	0.71	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	6.1	12.3
Active cases on ICU bed occupancy peak date	840	85 388
Admitted to hospital at ICU peak day (%)	13.3	33.7
ICU patients at ICU peak day (%)	3.7	4.8
Home isolation at ICU peak day (%)	83.0	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	303	319
Infectious disease beds/100 000 population prior to emergency	5	5.0
ICU beds/100 000 population prior to emergency	7.5	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	YES	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



Safeguarding employment and livelihoods in the tourism sector

The Sardinia region has adopted urgent measures aimed at contrasting and containing the serious economic and employment crisis affecting the entrepreneurial system of the tourism supply chain.

The tourism sector is of vital importance to employment and revenues in the region, which has therefore designed measures targeting a wide range of activities, including maritime and coastal transport services, hotels and tourist villages, restaurants and bars, rental of cars and vehicles, travel agencies, tourist assistance and museum activities, theme parks and bathing establishments. The regional administration has granted loans with zero interest rates in favour of micro and small businesses in the tourism sector regional tourist supply chain, and provides financial instruments to facilitate access to credit for small- and medium-sized enterprises.

Communication effort	
Dedicated website	✓
Produce specific communications materials	✓
Live press conference/videos also on social media	✓
Produce communications materials in other languages	✗
Have a data room on their website	✗
Published daily bullettin on the website (text as post)	✓
Developed app	✓
Social media presence	f

Economic indicators	Regional value	National value
Unemployment rate (2019)	15.4	9.9
Employment rate (2019)	53.3	59.2
Families' gross annual average income (2017) in euros	27 748	31 393
Average interest rate (%) on loans to businesses (March 2019)	5.6	3.9

Regional highlights

- The first case was a resident from Cagliari confirmed on 2 March who had contracted the virus while visiting Emilia Romagna.
- On 30 April, the cumulative case rate was around 79 cases/100 000 (value for Italy: 341), one of the lowest in the country.
- Stabilization in new cases per week has been documented since early April.
- From 4 April, the Sardinia region established 14 days of quarantine for all individuals who entered the region.
- The region responded to the COVID-19 emergency through a progressive reorganization of regional hospital facilities, identifying public and private hospitals dedicated to COVID-19 patients and progressively increasing ICU beds.
- Health surveillance and home care were enhanced for COVID-19 patients and patients with chronic diseases or frail conditions.
- In addition to the establishment of the Special Continuity Care Units (USCA), COVID integrated home care has been activated to provide multiprofessional assistance to COVID-19 patients in coordination between public health and social services.
- Hotel facilities have been made available to accommodate patients who must stay in compulsory home isolation and do not have a home for exclusive use.
- To mitigate the dramatic effects of the crisis, regional authorities have put in place several measures to a total value of €120 million, including a €800 allowance to households that is also available to self-employed workers whose activities were suspended due to the emergency.
- A web page on COVID-19 on the regional website includes a daily newsletter with all the data on cases and hospitalizations. The region also publishes a document called "Open data room" that includes charts on people who have travelled from the island to Italy.

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SICILY

Population size	4 999 891	4th position
Population density (inhabitants/km^2)	194	8th position

Population above 64 years of age (%)
21.2
22.8 (Italy)

Population 18–69 with economic difficulties (%)
20.0
13.4 (Italy)

Population 18–69 with hypertension (%)
20.9
19.9 (Italy)

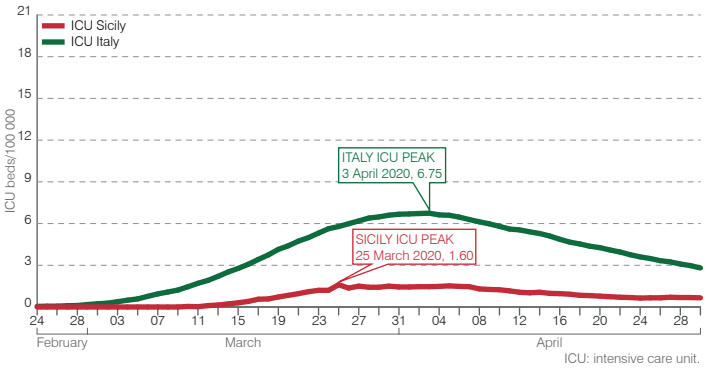
Population > 64 in (perceived) poor health (%)
16.4
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
58.3
60.7 (Italy)

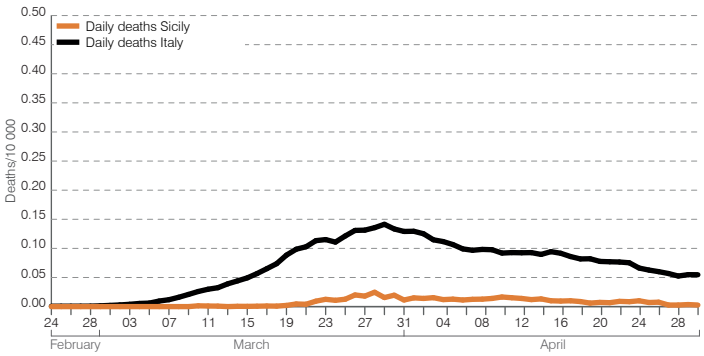
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	25 February 2020	21 February 2020
ICU bed occupancy peak (date)	25 March 2020	3 April 2020
ICU bed occupancy peak (value)	80	4 068
Total positive tests – as of 30 April 2020	3 166	205 463
Swab tests done/10 000 population – as of 30 April 2020	159.3	328
Swab tests positive/10 000 population – as of 30 April 2020	6.33	34
Swab tests positive rate (%) – as of 30 April 2020	3.97	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	0.47	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	2.5	12.3
Active cases on ICU bed occupancy peak date	936	85 388
Admitted to hospital at ICU peak day (%)	27.7	33.7
ICU patients at ICU peak day (%)	8.5	4.8
Home isolation at ICU peak day (%)	63.8	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	274	319
Infectious disease beds/100 000 population prior to emergency	5	5.0
ICU beds/100 000 population prior to emergency	7.8	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	YES	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



“Sicilia si cura”: an online platform for people returning from other regions

One of the problems that Sicily faced in the early stages of the outbreak was the many people who came back to the island from affected areas from northern regions just before the 9 March lockdown and in the following days. In response, the local authorities published a regional decree on 20 March requiring people entering Sicily after 14 March to declare their presence through registration on a dedicated online portal (www.siciliacoronavirus.it). The people involved were mainly residents who were either on holiday or working in other regions in Italy and had entered Sicily after the national lockdown.

In addition to compulsory registration throughthe portal, returning residents had the option to use an app to support monitoring of their health status once in Sicily called “Sicilia si cura” (a wordplay meaning both “Safe Sicily” and “Sicily takes care of itself”). The decree requested them to contact local health authorities and self-quarantine at home. All of those who registered, including those who did not develop any symptoms at the end of the quarantine, were supposed to be tested.

More than 40 000 people followed the procedures and registered, and half of them used the app to report their health status. As yet, no official data are available publicly on the outcomes of the testing activities performed.

Communication effort	
Dedicated website	●
Produce specific communications materials	●
Live press conference/videos also on social media	●
Produce communications materials in other languages	●
Have a data room on their website	●
Published daily bullettin on the website (text as post)	●
Developed app	●
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	18.9	9.9
Employment rate (2019)	42.0	59.2
Families’ gross annual average income (2017) in euros	22 745	31 393
Average interest rate (%) on loans to businesses (March 2019)	5.6	3.9

Regional highlights

- The first case was a tourist from Lombardy visiting Palermo, confirmed on 25 February. As the person was travelling with a larger group, all members of the party were closely monitored and quarantined.
- On 30 April, the cumulative case rate was 63 cases/100 000 (value for Italy: 341), one of the lowest.
- Stabilization in new cases per week has been documented since early April.
- The hospital’s response included an increase in ICU beds and medical equipment, laboratory capacity expansion and the designation of COVID-19 departments.
- Private structures have been asked to grant support and have been identified as: No COVID, COVID-Hospital and COVID Centres.
- Availability of beds in hotels, residences and other facilities in the region has been ensured for the 14 days’ isolation of non-symptomatic patients who do not have adequate domestic conditions.
- Special Continuity Care Units (USCA) have been activated in some local health agencies. Similar to other regions, the USCA will care for people in home isolation who do not need hospitalization, those in quarantine and patients discharged from hospital wards.
- Given the negative impact of quarantine and isolation on domestic and gender violence, the region has launched two calls for the benefit of associations and social cooperatives managing hospitality structures for women victims of abuse. Eligible activities for funding include measures aimed at implementing new services that ensure physical distancing.
- A considerable financial effort is dedicated to supporting deprived Sicilian families: €100 million have been allocated to various municipalities to support the payment of food vouchers for families. The resources will be assigned to the municipalities in several instalments and will be diverted to Sicilian families with no income.
- The Region uses the “Building Health” portal to share data and information with citizens.

THE MARCHES

Population size	1 525 271	13th position
Population density (inhabitants/km^2)	162	11th position

Population above 64 years of age (%)
24.8
22.8 (Italy)

Population 18–69 with economic difficulties (%)
6.5
13.4 (Italy)

Population 18–69 with hypertension (%)
20.6
19.9 (Italy)

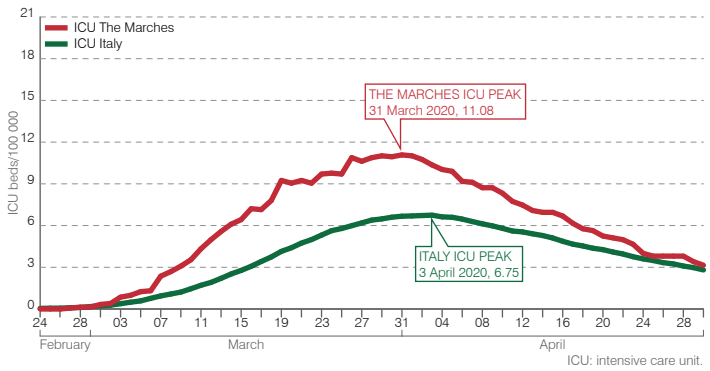
Population > 64 in (perceived) poor health (%)
13.3
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
60.3
60.7 (Italy)

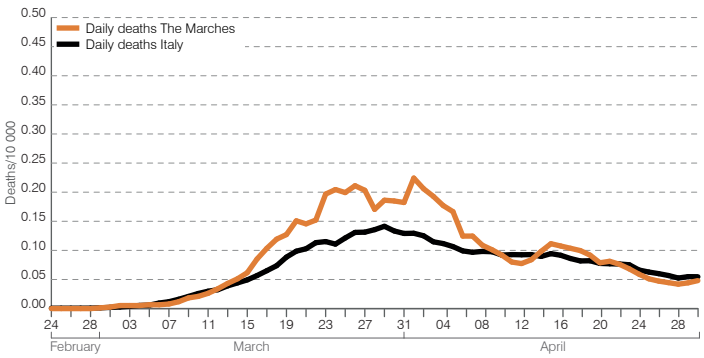
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	26 February 2020	21 February 2020
ICU bed occupancy peak (date)	31 March 2020	3 April 2020
ICU bed occupancy peak (value)	169	4 068
Total positive tests – as of 30 April 2020	6 247	205 463
Swab tests done/10 000 population – as of 30 April 2020	390.0	328
Swab tests positive/10 000 population – as of 30 April 2020	40.96	34
Swab tests positive rate (%) – as of 30 April 2020	10.50	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	5.94	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	14.4	12.3
Active cases on ICU bed occupancy peak date	3 352	85 388
Admitted to hospital at ICU peak day (%)	28.2	33.7
ICU patients at ICU peak day (%)	5.0	4.8
Home isolation at ICU peak day (%)	66.7	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	310	319
Infectious disease beds/100 000 population prior to emergency	4	5.0
ICU beds/100 000 population prior to emergency	9.7	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	YES	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



Mental health in times of quarantine

Mental well-being of citizens and workers during the pandemic is an essential aspect when developing a welfare package, and one left largely in the hands of the regions to handle. Marche developed a strong regional plan that included providing relief to people on the frontline and at home. A team of 150 psychologists was established to provide important relief for solitude, stress and anxiety. The mental health plan ensures continued access to services for patients with Alzheimer's disease and relief from quarantine measures for people living with mental health problems and those on the autism spectrum. The measures also aim to ease the work of caregivers, who are allowed to continue with their work. The region recognized the burnout risk health-care workers face in this unprecedented crisis and established a mental help hotline dedicated to those fighting on the frontlines and in need of support.

Communication effort	
Dedicated website	✓
Produce specific communications materials	✓
Live press conference/videos also on social media	✓
Produce communications materials in other languages	✗
Have a data room on their website	✓
Published daily bullettin on the website (text as post)	✓
Developed app	✗
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	8.6	9.9
Employment rate (2019)	65.2	59.2
Families' gross annual average income (2017) in euros	32 297	31 393
Average interest rate (%) on loans to businesses (March 2019)	4.5	3.9

Regional highlights

- The first case was a resident from Pesaro-Urbino province who had been in one of the first affected areas of Lombardy and was confirmed on 26 February.
- The region was the most affected in the centre of Italy and on 30 April had a cumulative case rate of almost 410 cases/100 000 (value for Italy: 341).
- Stabilization in new cases per week has been documented since the second half of March.
- Over 400 beds, including intensive care, semi-intensive care, specialist and post-critical therapies, have been made available. Post-critical facilities have been established for the care of COVID-19 patients who have left ICU.
- Since early April, the region has promoted the activation of serological screening for all health-care professionals.
- Primary care assistance for COVID-19 patients is provided by the Special Continuity Care Units (USCA). These can perform swabs for COVID-19 at home. This solution, integrated with drive-thru testing sites, allows prompt monitoring of the trend of positives in the population.
- A COVID-19 regional emergency fund has been set up for subsidized loans, reduction of interest costs and guarantees for access to credit for businesses and self-employed workers. Specific allocations have been earmarked for farming and agritourism activities.
- Some exemptions to lockdown measures have been granted to parents with children on the autism spectrum or whose conditions worsened because of containment policies; a platform for mental well-being is available to citizens.
- The region shares through the Regional Operational Group for Emergency Health complete data on the number of cases, tests, hospitalizations and intensive care admissions by province, local health agencies and hospital on a daily basis.

TRENTO AUTONOMOUS PROVINCE

Population size	541 098	16th position
Population density (inhabitants/km^2)	89	16th position

Population above 64 years of age (%)
22.1
22.8 (Italy)

Population 18–69 with economic difficulties (%)
5.0
13.4 (Italy)

Population 18–69 with hypertension (%)
18.6
19.9 (Italy)

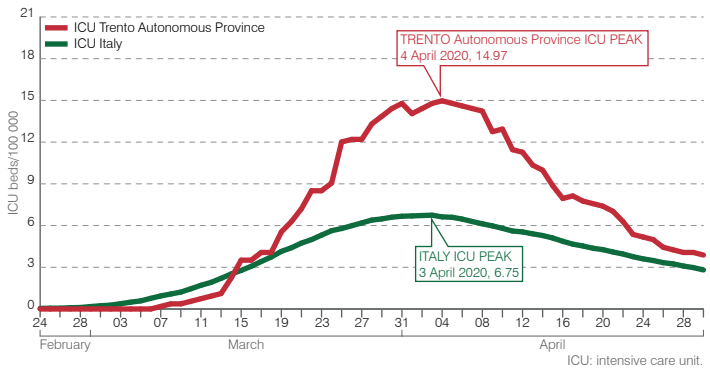
Population > 64 in (perceived) poor health (%)
7.3
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
56.2
60.7 (Italy)

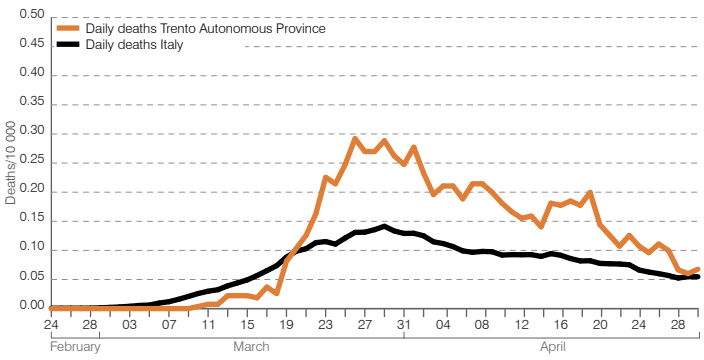
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	2 March 2020	21 February 2020
ICU bed occupancy peak (date)	4 April 2020	3 April 2020
ICU bed occupancy peak (value)	81	4 068
Total positive tests – as of 30 April 2020	4 116	205 463
Swab tests done/10 000 population – as of 30 April 2020	675.2	328
Swab tests positive/10 000 population – as of 30 April 2020	76.07	34
Swab tests positive rate (%) – as of 30 April 2020	11.27	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	7.73	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	9.5	12.3
Active cases on ICU bed occupancy peak date	1753	85 388
Admitted to hospital at ICU peak day (%)	20.1	33.7
ICU patients at ICU peak day (%)	4.6	4.8
Home isolation at ICU peak day (%)	75.2	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	364	319
Infectious disease beds/100 000 population prior to emergency	5	5.0
ICU beds/100 000 population prior to emergency	5.9	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	YES	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



Covid-19: psychological support for health-care professionals, patients and families

The Mental Health Department of the Local Health Unit (APSS) implemented the "Support COVID-19" service (reachable by email or phone). The service provides psychological support to: a) health-care professionals under emotional stress; b) COVID-19 units for support on issues such as team work, or on how to communicate the death of a parent to family members (a task some of the repurposed health workers never have been confronted with); and c) patients and family members.

An email address has been provided to health workers for the submissions of stories related to their day-to-day experiences with COVID-19. Replies are given to every submission and some of the stories have been posted on the heath unit social media account.

Last but not least, the "Support COVID-19" service, in collaboration with Trentino Civil Protection, has made some rooms available to health workers in Trento and Rovereto who feel that it is safer not to stay at home to protect their relatives from potential transmission.

Communication effort	
Dedicated website	●
Produce specific communications materials	●
Live press conference/videos also on social media	●
Produce communications materials in other languages	●
Have a data room on their website	●
Published daily bullettin on the website (text as post)	●
Developed app	●
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	3.5	9.9
Employment rate (2019)	71.2	59.2
Families' gross annual average income (2017) in euros	37 892	31 393
Average interest rate (%) on loans to businesses (March 2019)	3.3	3.9

Regional highlights

- The first cases in Trentino were three tourists from Lombardy (Fai della Paganella, 23 February); the first case of a resident in Trentino was an 83-year-old woman on 2 March in Trento, confirming local transmission of the disease.
- The province was presenting on 30 April a cumulative case rate of 761 cases/100 000, one of the highest at regional level (value for Italy: 341).
- Stabilization in new cases per week has been documented since the end of March.
- The rapid increase of ICU beds (+120%, 0.6 per 10 000 pre-COVID-19 ICU beds), together with the early conversion of existing structures into COVID-Hospitals, were the main keys to allowing the system to cope with the high incidence of cases.
- For the coordination of the community-level response on a territory with a low population density, an app, TreCovid19, helped with specific functions for patient self-monitoring and remote monitoring during home isolation. Specific quarantine exemptions for family and children with disabilities were provided.
- Among the economic measures, financing lines for small-and medium-sized enterprises and self-employed workers were activated from the provincial platform, "Plafond Ripresa Trentino", and tenders' regulations have been eased to stimulate the local economy.

TUSCANY

Population size	3 729 641	13th position
Population density (inhabitants/km²)	162	14th position

Population above 64 years of age (%)
25.4
22.8 (Italy)

Population 18–69 with economic difficulties (%)
7.6
13.4 (Italy)

Population 18–69 with hypertension (%)
16.8
19.9 (Italy)

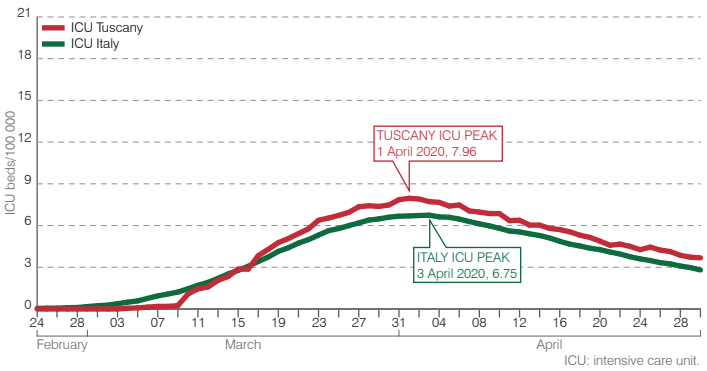
Population > 64 in (perceived) poor health (%)
9.2
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
63.4
60.7 (Italy)

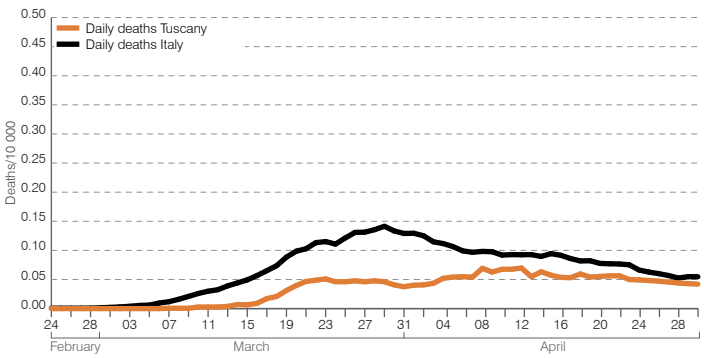
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	25 February 2020	21 February 2020
ICU bed occupancy peak (date)	1 April 2020	3 April 2020
ICU bed occupancy peak (value)	297	4 068
Total positive tests – as of 30 April 2020	9 352	205 463
Swab tests done/10 000 population – as of 30 April 2020	380.3	328
Swab tests positive/10 000 population – as of 30 April 2020	25.07	34
Swab tests positive rate (%) – as of 30 April 2020	6.59	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	2.26	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	5.2	12.3
Active cases on ICU bed occupancy peak date	4 432	85 388
Admitted to hospital at ICU peak day (%)	25.3	33.7
ICU patients at ICU peak day (%)	6.7	4.8
Home isolation at ICU peak day (%)	68.0	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	283	319
Infectious disease beds/100 000 population prior to emergency	6	5.0
ICU beds/100 000 population prior to emergency	10.1	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	YES	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



COVID-19 hotels help break the household transmission chain

Tuscany has entered into agreements with hotel premises distributed throughout the territory for the establishment of health-care hotels. These facilities can accommodate not only asymptomatic COVID-19-positive patients or those with mild symptoms (therefore not requiring hospitalization), but also patients discharged from hospitals.

So far, 14 residential premises with a total of about 300 beds where COVID-19-positive patients can be isolated until they are healthy to go home in total safety have been set up. In these COVID-19 hotels, a nurse monitors patients' general conditions, temperature, oxygen saturation and symptoms once a day. Standardized admission protocols for patients coming from home or being discharged from hospitals ensure linkage and continuity of information flows between GPs, hospitals and families. These health-care hotels provide very important solutions to guarantee isolation and avoid intrafamily infection, as well as to lighten the burden on hospitals and guarantee an intermediate level of care for coronavirus patients in safety and isolation.

Communication effort	
Dedicated website	●
Produce specific communications materials	●
Live press conference/videos also on social media	●
Produce communications materials in other languages	●
Have a data room on their website	●
Published daily bullettin on the website (text as post)	●
Developed app	●
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	6.2	9.9
Employment rate (2019)	66.6	59.2
Families' gross annual average income (2017) in euros	33 228	31 393
Average interest rate (%) on loans to businesses (March 2019)	4.0	3.9

Regional highlights

- The first case was a resident from Firenze who was confirmed on 25 February. The case reported traveling to some countries in Asia in early January, but the transmission could have occurred locally.
- On 30 April, the cumulative case rate was around 251 cases/100 000 (value for Italy: 341).
- Stabilization in new cases per week has been documented since early April.
- Regional hospitals have been reorganized to provide specialized care for COVID-19 patients, with the establishment of separate and sealed areas and by increasing ICU beds. To protect hospitals, pre-triage stations for patients with respiratory symptoms have been set up outside all emergency rooms, and separate pathways have been organized for suspected COVID-19 patients.
- Long-term and intermediate-care pathways have been activated for patients in hospital discharge. Home care for COVID-19 patients is provided by the Special Continuity Care Units (USCA) distributed throughout the region. Home care is supported by an information system consisting of a web platform and guidance to patients in self-measurement of vital signs. The app allows the patient's medical history and access to GPs, outpatients clinics and hospitals to be recorded.
- A mental health well-being centre for helping citizens going through the lockdown was established.
- A huge initiative on serological tests has been carried out with the involvement of the affiliated private laboratories of the region. All data from the epidemiological study will be studied to analyse the spread of the virus.
- The region has also sought to adopt a leading role in proposing and steering methodologies for educational continuity for children up to the age 6 through the creation of web spaces, support for the adoption of remote technological tools, promotion of video calls for children and educators, definition of weekly routines and identification of potential cases of exclusion.
- The regional health agency, ARS Toscana, has published an interactive dashboard on COVID-19 cases.

UMBRIA

Population size	882 015	17th position
Population density (inhabitants/km^2)	104	15th position

Population above 64 years of age (%)
25.6
22.8 (Italy)

Population 18–69 with economic difficulties (%)
8.9
13.4 (Italy)

Population 18–69 with hypertension (%)
21.2
19.9 (Italy)

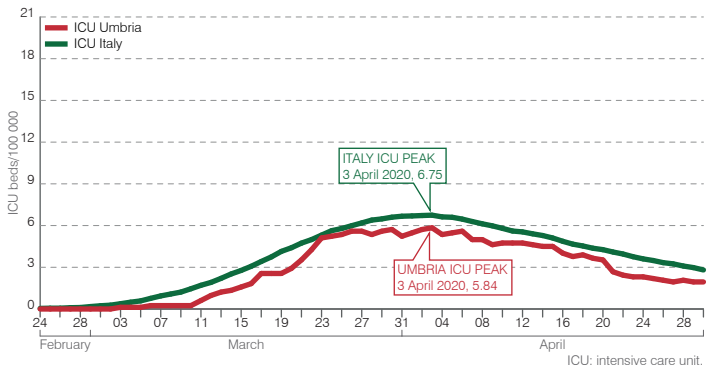
Population > 64 in (perceived) poor health (%)
17.4
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
61.0
60.7 (Italy)

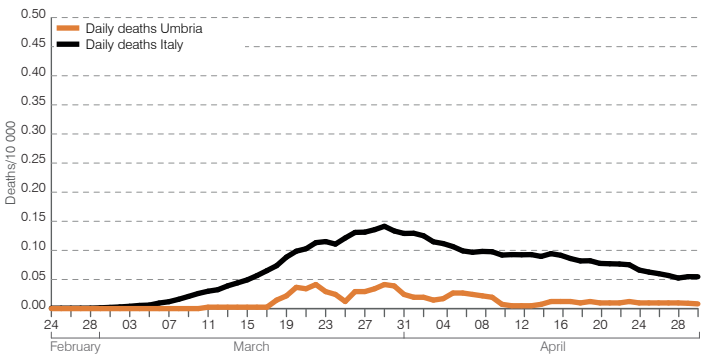
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	28 February 2020	21 February 2020
ICU bed occupancy peak (date)	03 April 2020	3 April 2020
ICU bed occupancy peak (value)	48	4 068
Total positive tests – as of 30 April 2020	1392	205 463
Swab tests done/10 000 population – as of 30 April 2020	443.5	328
Swab tests positive/10 000 population – as of 30 April 2020	16.93	34
Swab tests positive rate (%) – as of 30 April 2020	3.82	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	0.82	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	3.3	12.3
Active cases on ICU bed occupancy peak date	920	85 388
Admitted to hospital at ICU peak day (%)	17.9	33.7
ICU patients at ICU peak day (%)	5.2	4.8
Home isolation at ICU peak day (%)	22.5	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	323	319
Infectious disease beds/100 000 population prior to emergency	4	5.0
ICU beds/100 000 population prior to emergency	8.5	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	YES	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



The *#daCasaPuoi* hashtag helps people go digital

The Umbria region has used its online portal, the DigiPASS Umbria project, to inform its citizens and disseminate information on initiatives under the *#daCasaPuoi* campaign [From home you can]. The general objective of the DigiPASS is to encourage the growth of citizens' and businesses' digital skills through knowledge and dissemination and use of digital services and tools. To this effect, the web portal was instrumental in supporting initiatives helping people during the lockdown period. It made the public aware of digital citizenship and practical ways to seize the opportunities offered by innovation.

The portal has developed a huge array of live meetings and analyses of various topics, using YouTube and other social channels: for example, a marathon of online events to celebrate Labour Day in the framework of the COVID-19 epidemic was organized, including online events on digital schools and free software for distance education, to showcase the variety of tools available for online teaching and learning.

The portal offers other practical information on digital solutions on, for instance, how to obtain electronic prescriptions from doctors without having to leave homes and therefore risk infection.

Communication effort	
Dedicated website	●
Produce specific communications materials	●
Live press conference/videos also on social media	●
Produce communications materials in other languages	●
Have a data room on their website	●
Published daily bullettin on the website (text as post)	●
Developed app	●
Social media presence	f

Economic indicators	Regional value	National value
Unemployment rate (2019)	7.9	9.9
Employment rate (2019)	65.8	59.2
Families' gross annual average income (2017) in euros	33 165	31 393
Average interest rate (%) on loans to businesses (March 2019)	4.1	3.9

Regional highlights

- The first two cases were confirmed on 1 March in Perugia and Terni provinces: both had links with other affected regions (Emilia-Romagna and Lombardy).
- On 30 April, the cumulative case rate was around 170 cases/100 000 (value for Italy: 341).
- Stabilization in new cases per week has been documented since late March.
- Umbria is the Italian region with the lowest death rate for COVID-19.
- Hospital capacity was guaranteed at all times thanks to a timely reorganization and implementation of so-called grey wardens for patients suspected to be infected by the COVID-19 virus.
- During the month of March, several new COVID-19 focal points have opened in addition to the existing hospitals. Coordination centres have been established n several municipalities.
- The regional government signed an agreement with privately owned health-care facilities to guarantee the transfer of non-COVID-19 patients from hospitals or emergency departments.
- In Umbria, it is possible to reach out to the entire population thanks to mobile clinics, a service that is important specially for elderly people and those with disabilities.
- A special plan to identify people at high risk for frailty caused by COVID-19 has been set up by the regional government.
- Umbria has implemented wide-ranging measures to support people in distress and those with lower incomes, who are most likely to feel the burden of the economic consequences of the epidemic. Interventions therefore have been launched in support of families, local businesses and industries of the region and the agricultural sector. Funding has been put in place for municipalities that are helping citizens at risk of eviction and health costs for patients have been reduced.

VENETO

Population size	4 905 854	5th position
Population density (inhabitants/km^2)	267	5th position

Population above 64 years of age (%)
22.9
22.8 (Italy)

Population 18–69 with economic difficulties (%)
7.8
13.4 (Italy)

Population 18–69 with hypertension (%)
19.8
19.9 (Italy)

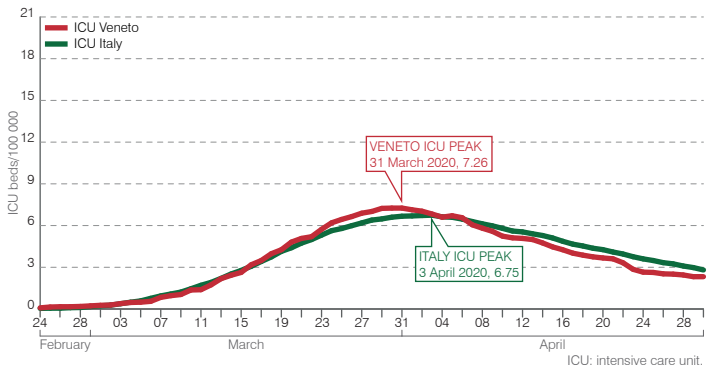
Population > 64 in (perceived) poor health (%)
9.8
12.8 (Italy)

Population > 64 with at least one chronic health condition (%)
23.8
60.7 (Italy)

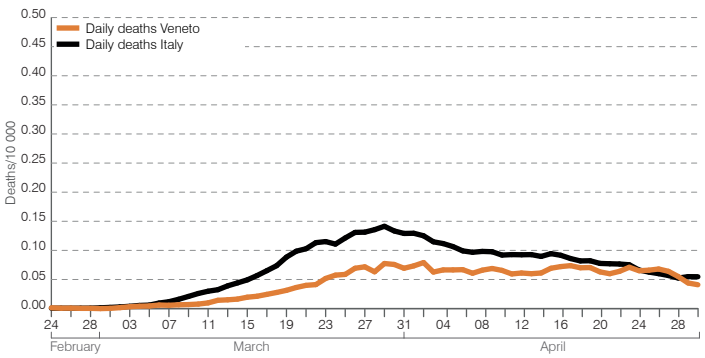
Epidemiological profile COVID-19	Regional value	National value
First confirmed case (date)	21 February 2020	21 February 2020
ICU bed occupancy peak (date)	31 March 2020	3 April 2020
ICU bed occupancy peak (value)	356	4 068
Total positive tests – as of 30 April 2020	17 960	205 463
Swab tests done/10 000 population – as of 30 April 2020	711.9	328
Swab tests positive/10 000 population – as of 30 April 2020	36.61	34
Swab tests positive rate (%) – as of 30 April 2020	5.14	10.4
Deaths with positive swab/10 000 population – as of 30 April 2020	2.97	4.6
Estimated case fatality rate at ICU bed occupancy peak (%)	5.2	12.3
Active cases on ICU bed occupancy peak date	7 850	85 388
Admitted to hospital at ICU peak day (%)	21.4	33.7
ICU patients at ICU peak day (%)	4.5	4.8
Home isolation at ICU peak day (%)	74.1	61.6
Hospital capacities	**Regional value**	**National value**
Hospital beds/100 000 population	330	319
Infectious disease beds/100 000 population prior to emergency	3	5.0
ICU beds/100 000 population prior to emergency	9.9	8.7
COVID hospitals	YES	YES
COVID non-nosocomial facilities	YES	YES

ICU: intensive care unit.

COVID-19 patients in ICUs



Hospital deaths positive to COVID-19 virus



Vo' Euganeo: a containment success story

The first fatality from COVID in Italy happened in the small town Vo' Euganeo (3300 inhabitants) in Veneto. A cluster had developed undetected, but the region's quick reaction and management has since turned this difficult situation into a success story of isolation and containment practices.

The region immediately decided to isolate the whole municipality and conduct mass testing of the entire population, including those who did not have symptoms. By identifying and isolating clusters of infected asymptomatic people, COVID-19 was wiped out from Vò in under 14 days. This innovative and aggressive approach to testing and ambitious use of swabs to contain and stop the chain of transmissions has already been the subject of studies by international scientific publications. The experience has informed the general approach of the region, whose response has been praised for its effectiveness in flattening the curve of disease spread.

Communication effort	
Dedicated website	●
Produce specific communications materials	●
Live press conference/videos also on social media	●
Produce communications materials in other languages	●
Have a data room on their website	●
Published daily bullettin on the website (text as post)	●
Developed app	●
Social media presence	

Economic indicators	Regional value	National value
Unemployment rate (2019)	5.7	9.9
Employment rate (2019)	67.4	59.2
Families' gross annual average income (2017) in euros	34 143	31 393
Average interest rate (%) on loans to businesses (March 2019)	3.7	3.9

Regional highlights

- The first two cases were confirmed on 21 February in Padova province and were among the first reported nationwide. The two were from the same village (Vo') and had no clear contact with cases from other affected countries; one of them was the first COVID-19 death nationwide.
- On 30 April, the cumulative case rate was 366 cases/100 000 (value for Italy: 341). Stabilization in new cases per week has been documented since late March.
- A broad community-based strategy, territorial management of surveillance and testing were implemented in Veneto, based on a public health network with strong outreach capacity and rooted in Veneto's locally integrated health facilities.
- Some important measures implemented included the identification of all suspected cases, extensive contact-tracing, screening of all employees of the regional health system, GPs, paediatricians, pharmacists and professionals working in long-term-care facilities.
- Community-level response has been coordinated by the public health services and the territorial operational centres (COT). Special Continuity Care Units (USCA) have been among the first to provide experimental drugs (such as hydroxychloroquine) against COVID-19 that have been authorized for administration at home by the Italian Medicine Agency.
- Financial funds have been put in place to support a universal basic income for citizens living in extreme poverty, support students with lower socioeconomic status and finance the third sector's extended working hours.
- A regional website section includes dedicated communication materials on COVID-19. Special sections are dedicated to health promotion, with examples of good practices during an emergency (including physical activity and nutrition, mental well-being and home entertainment with children). Videos have been made for health-care professionals on how to intubate and how to treat patients.

Annex

Data sources for regional profiles

Population indicators	Source
Population size	National Institute of Statistics (ISTAT) (2019)
Population density (inhabitants/km^2)	ISTAT (2019)
Population > 64 years of age (%)	ISTAT (2019)
Population 18–69 with economic difficulties (%)	Italian Behavioural Risk Factor System (PASSI) (2015–2018)
Population 18–69 with hypertension (%)	PASSI (2015–2018)
Population > 64 in (perceived) poor health (%)	Passi d'Argento (2016–2018)
Population > 64 with at least one chronic health	Passi d'Argento (2016–2018)
condition (%)	**Source**
First confirmed case (date)	National Institute of Public Health (ISS) Media reports quoting local health authorities
ICU bed occupancy peak by COVID-19 patients (date) ICU bed occupancy peak by COVID-19 patients (value) Total positive tests – as of 30 April 2020 Swab tests done/10 000 population – as of 30 April 2020 Swab tests positive/10 000 population – as of 30 April 2020 Swab tests positive rate (%) – as of 30 April 2020 Deaths with positive swab/10 000 population – as of 30 April 2020 Estimated case fatality rate at ICU bed occupancy peak (%) Active cases on ICU bed occupancy peak date Admitted to hospital on ICU peak day (%) ICU patients at ICU peak day (%) Home isolation at ICU peak day (%)	Civil Protection Department
Hospital capacities	**Source**
Hospital beds/100 000 population	Eurostat (2019)
Infectious disease beds/100 000 population prior to emergency	ISTAT (2020)
ICU beds/100 000 population prior to emergency	ISTAT (2020)
COVID hospitals	Official health authorities
COVID non-nosocomial facilities	Media reports quoting local health authorities
Graphs	**Official health authorities**
Graph 1: COVID-19 patients in ICUs	Civil Protection Department ISTAT *Moving averages*

Graph 2: PCR-positive COVID-19 virus hospital deaths	*Moving averages* *At the beginning of the epidemic, mortality data included deaths occurring in hospitals only; subsequently, it also included deaths at home and in long-term-care facilities*
Economic indicators	**Source**
Unemployment rate (2019)	ISTAT
Employment rate (2019)	ISTAT
Families' gross annual average income (2017) in euros	ISTAT
Average interest rate (%) on loans to businesses (March 2019)	Banca d'Italia
Communication effort	**Source**
Dedicated website	Official regional webpages (COVID-19 dedicated webpage, when available); health authority webpages
Produce specific communications materials	Official regional webpages (COVID-19 dedicated webpage, when available); health authority webpages
Live press conference/videos also on social media	Official regional social media accounts/official regional governor social media accounts (Facebook, Twitter, Instagram, YouTube)
Produce communications materials in other languages	Official regional webpages (COVID-19 dedicated webpage, when available); health authority webpages
Have a data room on their website	Official regional webpages (COVID-19 dedicated webpage, when available); health authority webpages; regional civil protection webpages
Published daily bulletin on the website (text as post)	Official regional webpages (COVID-19 dedicated webpage, when available); health authority webpages; regional civil protection webpages; official regional social media accounts/ official regional governor social media accounts (Facebook, Twitter, Instagram, YouTube)
Developed app	Official regional webpages (COVID-19 dedicated webpage, when available); health authority webpages
Narrative sections: "Boxes" and "Regional Highlights"	Official regional web pages Review of regional media sources

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