Italy physical distancing policies and epidemiology from January 2020 – September 2022: A case report

Policy Frameworks and Epidemiology of COVID-19 Working Group

September 2023

HEALTH SCIENCES
Health Research Methods, Evidence, and Impact
McMaster University
CONVERGE
NHERI
University of Colorado Boulder

Report title Italy physical distancing policies and epidemiology from January 2020 – September 2022: A case report

Publication date September 2023

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Funding

The authors acknowledge the support of the National Science Foundation-funded Social Science Extreme Events Research (SSEER) Network and the CONVERGE facility at the Natural Hazards Center at the University of Colorado Boulder (NSF Award # 1841338).

Conflicts of Interest

No conflicts of interest were reported.

Acknowledgments

The authors wish to thank CONVERGE for providing a platform to build this team and the Working Group members for their input throughout the project. The cover and footer images are from PNGHut.com. Sana Mohammad created Table 4 in the report. Thank you to Mrs. Grieco, Dr. Boccaloni and colleagues, as well as other key informants for sharing their insights.

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To cite this report:

Sorbara S, Alvarez E. (2023). Italy physical distancing policies and epidemiology from January 2020 - September 2022: A case report. Policy Frameworks and Epidemiology of COVID-19 Working Group. https://covid19-policies.healthsci.mcmaster.ca/research/publications/

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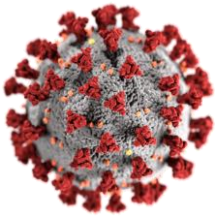
I. Introduction and project description

A new disease that spread around the world

On December 31, 2019, the World Health Organization (WHO) was notified of a cluster of individuals with pneumonia of unknown cause in Wuhan, China. (1) On January 12, 2020, China shared the genetic sequence of the novel coronavirus with other countries to help develop diagnostic tests. (1) Thailand reported the first known case of the novel coronavirus outside of China on January 13, 2020. WHO declared the novel coronavirus (2019-nCoV) outbreak a Public Health Emergency of International Concern on January 30, 2020 with 7,711 confirmed cases, 12,167 suspected cases, and 170 deaths in China and 83 cases in 18 countries outside of China. (1,2) The disease was later named COVID-19 for coronavirus disease 2019 and the virus referred to as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). (1) WHO declared COVID-19 a pandemic on March 11, 2020. (1)



Physical distancing policies and knowledge gaps

As an emerging infectious disease, there were originally no effective vaccines or preventive treatments for SARS-CoV-2. Therefore, governments have had to rely on the use of public policies to combat the spread of the virus. (1–4) Creating policies has been difficult due to the large amount of information and ongoing uncertainty around the characteristics of the virus and who it affects. (4) One of the most commonly used policies to mitigate (slow) the spread of the virus that causes COVID-19 centres on physical or social distancing, which relies on separating people to reduce the transmission of the virus. (5) However, it is still unclear when is the best time to institute such policies and what happens when distancing policies are eased in which contexts. There are many aspects of distancing, such as recommendations for maintaining a physical distance in public, banning group gatherings, or complete lockdowns, that complicate their assessment. (5) There are also many factors that have been attributed to people acquiring or having a worse outcome from COVID-19. (6–11) However, there was no harmonized database available with all the policies, epidemiology and contextual information that were needed in order to perform comparative analyses useful to informing policy making.

About this project

The Policy Frameworks and Epidemiology of COVID-19 Working Group was developed after a "CONVERGE Virtual Forum: COVID-19 Working Groups for Public Health and Social Sciences Research." A group of international researchers convened to explore what physical distancing policies countries implemented and their effects on the epidemiology of COVID-19. The Working Group was further supported through an award from CONVERGE and the Social Science Extreme Events Research (SSEER) Network. CONVERGE is a National Science Foundation-funded initiative headquartered at the Natural Hazards Center at the University of Colorado Boulder.

This project is registered in:

Alvarez, Elizabeth. (2020) **"Physical distancing policies and their effect on the epidemiology of COVID-19: A multi-national comparative study"**. *World Pandemic Research Network* . WPRN-457852, 2020-06-09 at 04h05 (GMT): https://wprn.org/item/457852

Elizabeth Alvarez, Stephanie E. Hopkins, Ellen Amster, Lisa Schwartz, Katharine Boothe, Mark Loeb, Emma Apatu, Ahmed Belal, Donna Goldstein, Jean Slick, Edris Alam, Neil Abernethy. (2020). **Policy Frameworks and Impacts on the Epidemiology of COVID-19.** CONVERGE COVID-19 Working Groups for Public Health and Social Sciences Research. Boulder, CO: Natural Hazards Center, University of Colorado Boulder. https://converge.colorado.edu/resources/covid-19/working-groups/issues-impacts-recovery/policy-frameworks-and-impacts-on-the-epidemiology-of-covid-19

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II. Methods

Research design

A qualitative embedded multiple case study research design was used to compare countries (or subnational jurisdictions, such as provinces, states or territories). The suite of public policies and resulting changes in the epidemiology of COVID-19 are examined within their specific country setting. Our cases start in January 2020. (Please see full study proposal). Research ethics approval was obtained by the Hamilton Integrated Research Ethics Board (HIREB) (Project # 11243).

Data Collection

For each country, the setting, such as health systems, political systems and demographics were described to help with interpretation of findings and potential transferability, or the degree to which findings are applicable to other sites or future research.

Publicly available data were first collected on the jurisdiction following a standardized data collection form. Epidemiological data were drawn from publicly available data. WHO, World Bank, Central Intelligence Agency and other publicly available sources were used for timelines and country characteristics, where possible. Other sources of information included governmental and non-governmental websites, news articles, government reports, and peer-reviewed journals.

Next, key informant interviews were conducted to fill in gaps, verify information found through the documentary searches, and identify further participants and documentary sources of relevant information. (See informed consent and interview guide) Key informant interviews were conducted with policymakers, health workers, researchers and other stakeholders as appropriate to fill in knowledge gaps.

Data Analysis and Presentation

Our COVID-19 policies and epidemiology databases harmonize data on setting characteristics, policies, demographic characteristics and epidemiological risk factors and outcome metrics. These will further be described in single country or jurisdiction case reports. Comparisons will be selected based on both literal and theoretical replication. Countries that have similarities in either policies or epidemiological trends can be considered literal comparisons, whereas countries that differ will be used as theoretical comparisons. These comparisons will be submitted to peer-reviewed journals for publication.

III. Findings

A. Setting characteristics

Geographic, environmental, social, and economic contextual factors

Italy is a country in the WHO European Region. (12) In 2020, Italy had a population of 59,438,851, a land area of 294,140 km², and a population density of 206.12 people per km². (13–15) The population is distributed quite evenly throughout most of the country, with the coastal areas, the Po River Valley, and urban centres (including Rome, Milan, and Naples) attracting larger population densities. (16) As of 2020, 70.9% of Italy's population lived in urban areas. (17)

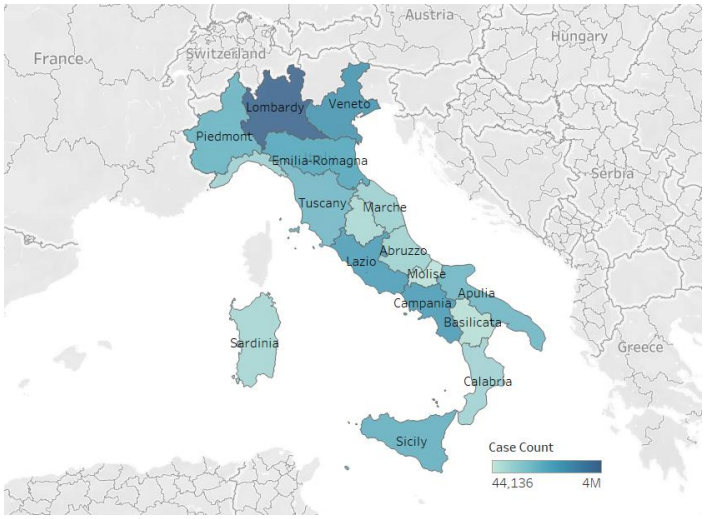


Figure 1. Heat map of total COVID-19 cases in Italy as of September 30, 2022 (18)

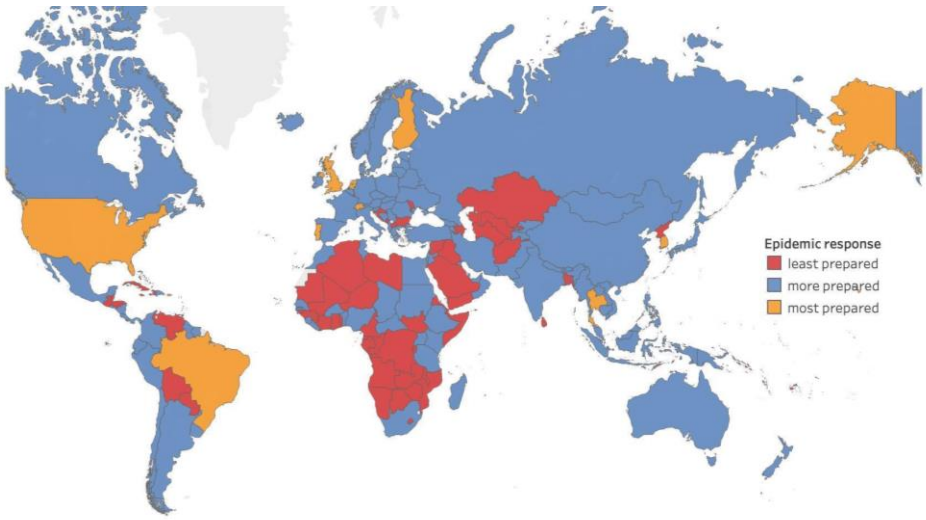


Figure 2. Global Health Security Index Epidemic Preparedness Rank Category (19)

Table 1. COVID-19 relevant contextual factors for Italy

Global Health Security Index, 2019 (Overall Index Score out of 100 and category) (19)	56.2—More Prepared
Global Health Security Index, 2019 (Epidemic Preparedness Index Score out of 100 and category) (19)	47.5—More Prepared
Particulate matter (PM2.5) air pollution, mean annual exposure, 2017 (micrograms per cubic meter) (20)	16.75
PM2.5 air pollution, population exposed to levels exceeding WHO guideline value, 2017 (% of total) (21)	94.78
International migrant stock, 2015 (% of population) (22)	9.68
Trust in national government, 2018 (% of population) (23)	33.78
Mobile cellular subscriptions, 2019 (per 100 people) (24)	133.08
Individuals using the internet, 2018 (% of population) (25)	74.39
Index of economic freedom, 2020 (Score and category) (26)	63.8—Moderately Free
World Bank classification, 2020 (27)	High
Gini Index, 2017 (28)	35.9
GDP per capita, PPP, 2019 (Current international $) (29)	44,196.69
GNI per capita, PPP, 2019 (Current international $) (30)	44,580
Current health expenditure, 2020 (%) (31)	9.63
Vulnerable employment, total, 2020 (% of total employment) (32)	16.87
Vulnerable employment, female, 2020 (% of female employment) (32)	13.38
Vulnerable employment, male, 2020 (% of male employment) (32)	19.41
Homelessness, 2014 (%) (33)	0.08
Adult literacy rate, 2018 (%) (34)	99.16
Literacy rate, adult female, 2018 (% of females 15 and above) (35)	98.97
Literacy rate, adult male, 2018 (% of males 15 and above) (36)	99.35
Primary school enrolment, 2017 (% net) (37)	95.66

GDP - gross domestic product; **GNI** - gross national income; **PPP** - purchasing power parity

Population health characteristics

Life expectancy at birth in Italy was reported to be 83.35 years in 2018. (38) For males, life expectancy at birth was 81.20 years, and for females it was 85.60 years in 2018. (39,40) Non-communicable diseases are believed to play a role in who develops severe symptoms of COVID-19. In Italy, the proportional mortality from cardiovascular diseases was 36%, cancers 27%, chronic respiratory diseases 6%, and diabetes 3%. (41) (See Figure 3.) The probability of dying between ages 30-70 from cardiovascular disease, cancer, diabetes, or chronic respiratory disease was 9.5% for all adults, and 12% and 7.2% for males and females, respectively. (42)

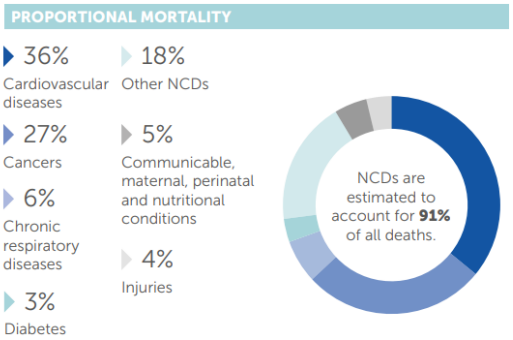


Figure 3. Proportional mortality from non-communicable diseases (NCDs)- Italy, 2016 (41)

Table 2. Age and health characteristics for Italy

	Male	Female	Total
Population ages 0-14, total, 2019 (% of total population) (43–46)	4,086,967 (6.78)	3,852,150 (6.39)	7,939,152 (13.17)
Population ages 15-64, total, 2019 (% of total population) (47–50)	19,217,638 (31.87)	19,264,808 (31.95)	38,482,525 (63.82)
Population ages 65 and above, total, 2019 (% of total population) (51–54)	6,033,479 (10.01)	7,842,354 (13.01)	13,875,719 (23.01)
Current tobacco use prevalence, total, 2018 (%) (55)	27.1	19.6	23.4
Raised blood pressure (Systolic blood pressure ≥140 or Diastolic Blood Pressure ≥90), ages 18+, 2015 (%) (56)	31.8	27.8	29.7
Raised fasting blood glucose (>7.0mmol/L or on medication), ages 18+, 2014 (%) (57)	9.6	7.4	8.5
Prevalence of obesity among adults (Body Mass Index ≥30), 2016 (%) (58)	22.5	23.3	22.9
Prevalence of Human Immunodeficiency Virus (HIV), 2019 (% of population ages 15-49) (59)			0.2
Bacillus Calmette-Guérin (BCG) Immunization coverage estimates, 2019 (%) (60)			--
Prevalence of undernourishment, 2018 (% of population) (61)			2.5

Governance and health systems

Italy's government is formed as a unitary parliamentary republic, a system that entrusts power to a parliament that has been elected by its electorate. (62) This is a form of democratic republic government, which was established in Italy in 1946. (63) However, in recent years, the country's government has been known to be formed by short-lived coalitions as a result of political tensions and affairs. (63)

The head of state, or the President, is responsible for appointing and approving (or declining) a given Prime Minister. (63) Since the Prime Minister is elected, the President cannot withhold appointment for extended periods of time. In the case of a Prime Minister resigning, the President has the power to appoint an interim Prime Minister that will subsequently need to be approved by the Italian parliament. (63)

The Prime Minister is also known as the head of government or the President of the Council of Ministers of the Italian Republic. (64) The Prime Minister is directly in charge of the government and its operations and can only continue their term if they have the full confidence of the Italian parliament. The Prime Minister is almost completely independent of the President, besides appointment, explaining why the governing party is overseen by the Prime Minister and why the President may remain without a direct party. (64)

The current President of Italy is Sergio Mattarella, who has been in the role since 2015. (65) Sergio Mattarella started his political career in the Democratic Christian Party – however, when he was inaugurated as president, the party had already been dissolved. Since Italy has been forming coalition governments in the recent decade, Mattarella has not been associated with a leading party. He stands by left-wing beliefs, while the majority seats of the coalition governments formed recently have been occupied by right-wing ministers/parties. (65)

At the start of 2020 and beginning of the COVID-19 pandemic, the Prime Minister of Italy was Giuseppe Conte, who had a turbulent time in the role in the past years. (66) In 2021, a year into the pandemic, Conte's efforts to keep Italy afloat economically and socially were received poorly by his cabinet. Many attempts to reform the parliament on Mattarella's order ended in dissolution, which initiated the President to promote Mario Draghi to form a new, technocratic government. (66)

Technocracy has a strong history in Italy, a system in which the President enlists non-government authority figures, typically in times of crisis, to form a new government. (67) Because of Italy's near constant economic crises, the style of government has often been seen to cycle between elected and technocratic. (67) Mario Draghi was enlisted by Mattarella in February 2021 – Draghi had previously been known as the man who "saved the euro" and was the President of the European Central Bank. (68) He formed a unitary government, having all political parties represented in his cabinet, and was overall well liked for his single year in office. However, technocracy has often been deemed undemocratic, because of its separation of traditional government voting systems, putting the emphasis on political power figures, like

the President, to decide who creates the new government. Draghi was eventually removed as Prime Minister after a year of service, a process led by previous Prime Minister Giuseppe Conte, on the grounds of a decree on economic aid. (66)

The healthcare system in Italy is funded both publicly and privately, however, private health insurance has a limited role. (69) The Ministry of Health is the country's central health authority, which oversees national healthcare operations including the National Health Service (NHS). Established in 1978, the NHS automatically covers all legal residents and is funded by both corporate and tax-payer revenues. (69) As healthcare is a regional responsibility, funding is distributed to regional governments by the Ministry of Health based on their relative and prospective needs. (70) Currently, 19 regions and two autonomous provinces provide care through 100 local health units, each with a general manager appointed by the regional or provincial governor. (71) Health units deliver primary care, hospital care, outpatient specialist care, and general public health services to different degrees depending on both funding and needs. Regions have high autonomy regarding the overarching themes of the healthcare services that they provide, however, they must adhere to (or strengthen measures outlined in) baseline national decrees established by the Ministry of Health. (70)

Table 3. Political and health system indicators for Italy

Fragile States Index score, 2020 (maximum 120, higher is worse) (72)	42.4
Fragile States Index rank, 2020 (out of 178 countries, higher is better) (72)	143
Global Freedom score and status, 2020 (73)	89—Free
Internet Freedom score and status, 2020 (74)	76—Free
World press freedom index, 2020, global score (0-100, lower is better) and rank (out of 180 countries, lower is better) (75)	23.69—41
Physician density, 2018 (physician/1,000 pop) (76)	3.98
Hospital bed density, 2012 (beds/1,000 pop) (77)	3.4

Pandemic experience and preparedness

The Global Health Security, Emergency Preparedness, Index for Italy is 47.5, a "more prepared" score. (78) This is a measure of the capacities of said countries to prepare for epidemics and pandemics relative to one another. (78) Italy has experience with several infectious diseases that influenced both this ranking and their approach to the COVID-19 pandemic.

In 2006, Italy developed a National Pandemic Preparedness and Response Plan (NPPRP) to outline regional expectations for the epidemiological surveillance, containment, and mitigation of future influenza pandemics. (79) The 2009 influenza pandemic (H1N1 Influenza A) was the first experienced by Italy with a national outline in place. (80) The first 200 confirmed Italian cases were quickly investigated by local health authorities using new online epidemiological investigation software, and all cases were followed-up after a 12-day period of advised social distancing. Although adherence to the plan was strong across Italian regions, the length and high spread of the pandemic highlighted unaddressed challenges, including poor centralized communication strategies and surveillance measures. (80) The Ministry of Health refined the NPPRP in 2010 to meet these shortcomings. (81)

The National Plan for Epidemic Emergencies (NPEE) was the second national-level plan to address public health emergencies developed by Italy in 2014. (81) The NPEE has a stronger focus on socioeconomic relief strategies and broader decision-making approaches. (81)

Prior to the COVID-19 pandemic, the last report of a disease outbreak in Italy occurred in September of 2017, when the Ministry of Health reported an outbreak of Chikungunya. (82) On September 28th, the Ministry of Health issued recommendations to further strengthen surveillance and disinfestation strategies, soon adopted by the NPPRP and the NPEE. (82) In 2021, amidst the COVID-19 pandemic, the NPPRP was converted to the National Strategic Operational Plan for Preparation and Response to a Flu Pandemic (PanFlu). (83) Updates central to this conversion addressed the absence of testing mandates and scaling testing activity within both previous national-level plans. (83)

In Italy, the laboratory landscape is highly decentralized as a result of regional healthcare control. (84) Throughout most regions, both public and private laboratory systems exist within hospitals, academic centres, and designated clinics. (84) To synthesize regional efforts and make laboratory testing more accessible, on February 24, 2020, the Ministry of Health announced that it had engaged 31 laboratories throughout the country to carry out the analysis of COVID-19 swabs. (85) Labs recruited by the Ministry of Health and those that carried out swab analysis were required to send collected data to the Ministry of Health for case tracking purposes. (85) In early March of 2020, approximately 45 tests per million people were carried out daily, increasing to a peak of over 5,000 per million in October later that year. (86) A key informant confirmed that the Ministry of Health remains engaged with several laboratories for case surveillance.

B. Policies and epidemiology

Cases, vaccinations, and physical distancing policies

On January 29, 2020, the first two cases of COVID-19 in Italy were recorded. A national state of emergency was declared 2 days later on January 31, 2020. (87) As of September 30, 2022, a total of 22,345,122 cases and 179,314 deaths had been recorded. (88) COVID-19 vaccines first became available on December 27, 2020, and by September 30, 2022, 81% of the population had been fully vaccinated. (89) Figure 4 shows the number of daily cases and deaths in Italy, cumulative vaccination rates and dates for selected physical distancing policies implemented from January 2020 to September 30, 2022.

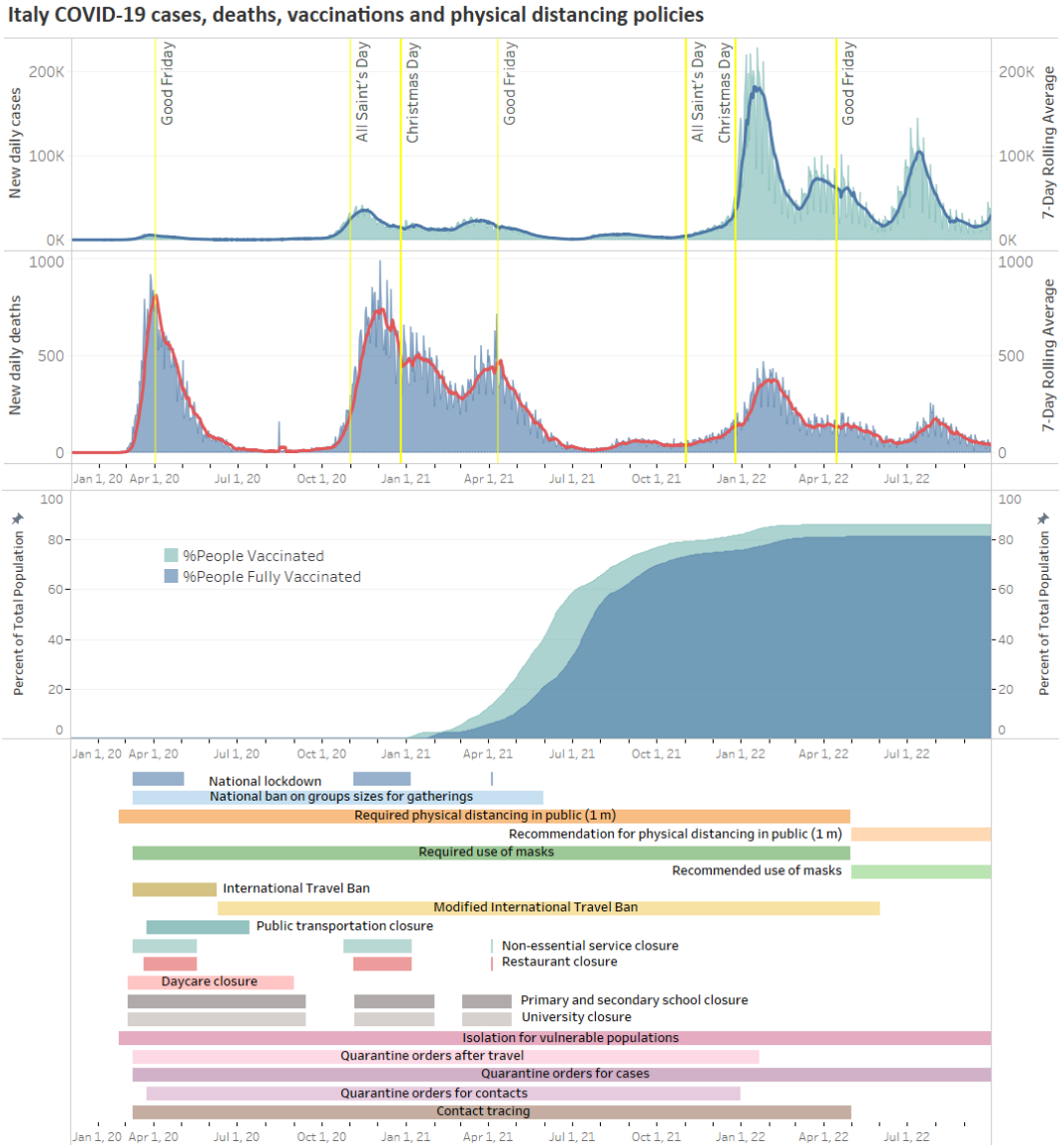


Figure 4. Number of daily reported COVID-19 cases and deaths in Italy with cumulative vaccination rates and select policies from January 2020 to September 30, 2022

Description of events in Italy

The primary spokesperson for the COVID-19 response in Italy was Roberto Speranza, the national Health Minister appointed on September 5, 2019. (90) Speranza was in charge of giving updates to the public via news outlets, interviews and government broadcasts. He was also the face of most major COVID-19 health policy implementations, including announcing lockdowns and mask mandates. (91) The Ministry of Health also provided daily information on their official website regarding current travel restrictions and case counts beginning in January 2020. (92) As for international affairs, Walter Ricciardi, a previous president of the Italian National Institute of Health, was appointed by Speranza in February 2020 as the advisor of relations between Italy and international health organizations, including the WHO. (93)

Prior to the confirmation of any cases in Italy, Italy did not implement any COVID-19 preparedness measures. (92)

On January 29, 2020, two Chinese tourists traveling from Wuhan, the epicenter of the virus, arrived in Rome. (81) After developing fevers and other flu-like symptoms, they were taken to the Lazzaro Spallanzani National Institute for Infectious Diseases and tested positive for COVID-19 that same day. A team of scientists from the institute isolated the genomic sequence of the virus from these samples, allowing the Ministry of Health to develop a microbiological and epidemiological surveillance system on February 2, 2020. The system consisted of the collection and analysis of all COVID-19 infections within the nation confirmed by molecular diagnosis (as supported by sequencing) within Italian regional laboratories. (81) By February 24, 2020, the Ministry of Health engaged 31 laboratories to carry out swab testing to do so. (85) The system, formerly untitled, was then named the National Surveillance System, and a web portal was developed to facilitate data collection on February 27. (85)

On January 31, 2020, prior to the system's creation, Speranza first announced the confirmation of the first two cases to the country and the declaration of a state of emergency. (87) This declaration gave the responsibility of emergency coordination and intervention execution to the Italian Department of Civil Protection (DPC), which most commonly deals with natural disasters. As such, several responsibilities, including epidemiological surveillance, were quickly entrusted by the DPC to the Ministry of Health. Flights to and from China were also suspended on this day. (87)

The first non-imported COVID-19 case in Italy was reported in the northern town of Codogno on February 21, 2020. (94) On the same date, the first death attributable to COVID-19 was also reported. Two days later, the number of reported cases reached 100. (89) Also on February 23, 2020, the federal government, with guidance from the DPC and the Ministry of Health, enacted a decree entitled "Urgent measures regarding containment and emergency management of the epidemiological emergency from COVID-19." (95) Although Italy often declared their strategy to be containment as done in the decree's title, a key informant involved in the policy making process described the approach as mitigative. One of the mitigation measures within the

decree was a social distancing policy outlining that all citizens, not living within the same household, had to maintain a distance of 1 m from other citizens in public spaces or outside of the household. (95)

The decree also set forth one of Italy's main public policies used throughout the COVID-19 pandemic, or the zone-quarantine system. (95) In this system, geographic regions were characterized by their case density into a coloured zone. This initial decree only outlined "Red Zones," which consisted of 11 northern municipalities (including Codogno) with the nation's highest reported cases. (96) Red Zones were put into lockdown, where residents were instructed to stay at home except for necessary travel and quarantined within the region. (95) Schools and most businesses were required to close in Red Zones, and non-residents were banned from entry unless they were delivering emergency supplies or recruited health workers. Residents leaving, and non-residents entering, faced variable financial fines, monitored and delivered by the national police force. If a region were declared a Red Zone, it had to remain as such for at least 15 days. (95)

At this point, case reporting had not been mandated on a national level. (95) However, most regions independently mandated both case reporting and quarantine orders for cases. (97) Regions recruited employees of their local health units to contact cases during their isolation periods to monitor symptoms and policy adherence throughout the month of February. (97)

Alongside measures mandated within the decree, the Ministry of Health announced several recommendations for regions to control viral spread. The first recommendation was isolation for vulnerable populations, including citizens above the age of 65 and those with pre-existing medical conditions. (98) The Ministry of Health also suggested that healthcare facilities, including hospitals and long-term care homes, should, as best as possible, separate cases from other patients. (99)

On March 1, 2020, a secondary decree was approved by the Council of Ministers which further developed the zone-quarantine system. (100) This time, the national territory was divided into three areas, each denoted a colour (either red, yellow, or white) according to the severity of cases and therefore rules applicable. Prime Minister Conte announced that "[this measure] is a prudent decision to contain the virus because [Italy has] a health-care system at risk of being overloaded." (100)

An additional 4 municipalities were labeled Red Zones, which alongside quarantine and movement bans, also had to adhere to an additional curfew put in place from 11 PM every night until 5 AM. (100) In Yellow Zones, schools, clubs, theaters, alongside social and sporting events were closed. Movement both in and out of Yellow Zones was not prohibited. The rest of the territory, or White Zones, had less severe policies focused on education and hygiene implemented, including advertisements of hygienic practices and sanitization measures for public transportation systems. Regions and autonomous provinces could adopt additional

restrictive provisions if necessary, however, they had to adhere to the baseline measures of the zone-quarantine system and any other nationally imposed measures. (100)

Regional responses remained mostly uncoordinated based on restrictive provisions that could be adopted beyond the zone-quarantine system. (101) For example, Lombardy, a Northern, high-case density region, did not mandate that citizens entering the region (when nationally permitted) quarantine, whereas the less affected Southern region of Apulia did. (101)

Over the next few days, case counts rapidly rose with approximately 500 confirmed on March 4, 2020. (89) All daycares, primary and secondary schools, as well as universities were closed on this day for at least two weeks in order to limit viral spread. (102)

With the announcement of school closures, the national government also encouraged citizens to get tested and assessed if they experienced flu-like symptoms. (103) At least 100 assessment centers were established across all regions within the month – some offering free testing and symptom assessment with the help of support from the Red Cross, Universities, and even other nations. (104)

Wave 1

By March 9, 2020, there were over 15,000 confirmed cases of COVID-19 and over 1,200 deaths reported in Italy. (89) At this point, healthcare facilities in several Northern regions faced heavy burdens. Lombardy, for example, reported 1,006 COVID-19 patients requiring advanced respiratory support, however, at standard capacity, only 724 beds for intensive care were available. (105)

To prevent further cases, deaths, and healthcare system exhaustion, Prime Minister Conte announced a two-week national lockdown. (106) All regions, regardless of respective case counts, were required to adhere to Red Zone regulations. This decision was called “necessary” by Giovanni Rezza, the director of the Department of Infectious Diseases for the Ministry of Health. (107) Rezza claimed that Italy had two courses of action to choose from, the first being a “Wuhan-style lockdown,” indicating complete isolation, or the strategy that the government settled upon, which he described as restriction of unnecessary movement to reduce case counts. (107) Italy was the first European country to impose nationwide limits on travel and activity. (101)

As for movement restrictions, inter-regional travel was banned, and citizens would need to contact the National Surveillance System for special permission if necessary for health, work, or other extenuating circumstances. (106) A key informant confirmed that requests to the National Surveillance System were overwhelming, and on average, requesting citizens had to wait several days for a response. The national and regional police forces were engaged to monitor borders, where proof of request acceptance was necessary to cross. Regarding international travel, non-essential trips, defined as not for health or work purposes, both into

and out of the country were banned. Any person entering the country for an approved emergency had to quarantine for 14 days. (106)

The lockdown also called for the closure of most commercial activities, except for shops, bars, pubs, and restaurants, which had a new curfew of 6 PM. Sporting events and other outdoor social events were banned. (108) Within the curfewed locations mentioned and any outdoor activity, only members of the same household were allowed to breach the social distancing policy of 1 m. No group gatherings of any size were permitted for citizens of different households, which extended to wedding and funeral events. Churches and other sites of worship were also closed. As a 74% Catholic nation, several religious leaders including the Pope quickly encouraged practicing citizens to stay home and to instead join virtual masses or ceremonies. (109) With these new closures, the government also announced that all schools would remain closed until at least April 3, 2020. (108)

New social distancing policies emerged for prisons as well. (110) Visitations, even with immediate family members, and day-release programs for inmates were banned for the duration of the lockdown. Within 3 days, riots took place in 27 prisons across Italy, causing the death of 7 inmates in a Modena detention center. (110)

With the suspension of most non-essential services, millions of Italians were left unable to work. (111) On March 11, 2020, the list of suspended activities was broadened, many now related to in-office work that did not allow for proper sanitation or distancing measures. The government encouraged companies to use “agile working” and to avail of paid rest periods and holiday leave. Act. No. 81 of 2017, Italian law passed a regulation regarding agile working - defined as an employer and employee contract containing the following features; 1) an absence of rigid working time or location limitations, 2) performance of work both in and out of the premises of the employer, and 3) the probable use of technological devices. (111)

Until the pandemic, agile working was quite rare in private sectors, and almost completely ignored in the public sector. (112) However, it became necessary when lockdowns, in-person business closures, and social distancing policies were enforced. For Red Zones, the government authorised the use of agile work even in the absence of a pre-made contractual agreement for it. (111) Also, the second feature, entailing a balance of work done in and out of the employer’s premises, was often unfeasible in early stages. Therefore, in the same authorisation, the term “agile working” was centred around simply “home-working,” instead of its proper legal meaning. This allowed virtual work to occur in the education, business, and even healthcare sectors. (111)

With the announcement of the lockdown, the Ministry of Health also suggested that elective medical and dental procedures be regionally suspended to free up resources for COVID-19 management. (113) In Lombardy and Piedmont, Piedmont being a region nearing the case counts of Lombardy, there were regional suspensions of all elective surgery activity imposed

the same day. Some less affected regions delayed suspensions, occurring for all elective procedures on March 10, 2020 in Puglia, and April 6, 2020 in Sicily. (113)

At this point, although all regions had independently mandated quarantine orders for cases, the national government developed a consistent, 14-day quarantine for "any person who tests positive for COVID-19, symptomatic or not, or has symptoms." (114) Individuals were instructed to report to their local healthcare units such that data could be reported to the National Surveillance System. Local healthcare units were responsible for checking on cases, via a phone call or email, at least once during their quarantine to ensure isolation, monitor symptoms, and provide health advice. Failure to quarantine would result in a fine of €300. (114)

Similarly, though mask usage and sanitation policies were already widely adopted, these health safeguards were made mandatory for public administrations to continue providing essential services alongside the announcement of the lockdown. (114) All citizens, except children under the age of 6 and those with proven medical conditions, had to comply with mandatory masking and physical distancing obligations if receiving said services or interacting with any non-member of their household. The government encouraged people to stay home regardless of this policy to save masks and PPE for healthcare workers. (114) Italy did not receive PPE from the WHO, despite facing massive shortages. (115) A key informant confirmed that healthcare workers across several facilities were initially forced to use "extreme conservation measures," including the re-wearing and repurposing of single-use PPE materials.

To control the spread of the virus, contact tracing in hospitals for healthcare workers and cases was strongly recommended by the Ministry of Health, a policy that all regions adopted within the next two days. (117) Recommendations extended to all government-supported workplaces, including schools, and citizens were also encouraged to keep track of their own contacts and to notify contacts if they were symptomatic or tested positive. (117)

On March 12, 2020, Italy launched a formal request for information to major merchant platforms, including Amazon and eBay, investigating price increases and misleading claims concerning face masks and hand sanitizer. (116) Over 5,000 new cases were confirmed since the announcement of the lockdown and sales for PPE were the highest recorded. (99, 115) A lack of supply and national demand led to retailers increasing prices. The government also recommended that citizens do not continue to "panic-buy." (118)

On March 15, 2020, the government began tackling the medical equipment and staff shortages. (105) The Italian Ministry of Civil Protection allocated €500 million to secure nearly 4,000 ventilators, 30 million medical-grade face masks, and 100,000 COVID-19 tests to distribute to engaged laboratories. At this time, laboratory testing cost citizens approximately €50, with some assessment sites offering free testing as offered by the Red Cross. An additional €600 million was allocated to the recruitment of at least 20,000 more healthcare workers, specifically in Northern regions. (105)

Alongside healthcare exhaustion, the COVID-19 pandemic was predicted to have detrimental effects on Italy's economy and civilian population, and therefore was the next primary target of Italy's response. (119) In March of 2020, absolute poverty rates were the highest in 15 years, increasing from 7.7% to 9.4% of the population from the start of 2019. Absolute poverty is defined as a financial state below the threshold essential to achieve "a minimally acceptable standard of living." This rate coincided with an increase in unemployment– during the COVID-19 pandemic, about 1 million Italian citizens lost their jobs as businesses were required to close. (119)

The national government introduced a series of fiscal and social security measures to support Italian families during this time to mitigate inevitable losses. (120) On March 17, 2020, the "Cure Italy" decree was enacted, a 25-billion-euro package (1.1% GDP) with four main goals: to strengthen national healthcare, to preserve employment levels and familial incomes, increase liquidity for businesses, and suspend tax payments for workers and businesses. In reference to the second goal, many sub-measures were enacted to protect the economy at the household level. First, for the following 60 days, employers, regardless of their number of employees, could not terminate workers' contracts for a justified business reason. Furloughs, however, were still permitted, with several social security nets created to support these employees. The decree extended access to Wage Guarantee Fund (WGF) as provided by the Italian National Institute of Social Security, a benefit intended to supplement workers in times of unemployment. Each month, employees could receive 80% of their salaries, even in companies with under 5 workers (previously not permitted by WGF). Those not covered by the WGF, including self-employed individuals and seasonal employees, were eligible instead for a 600 Euro monthly allowance. Finally, considering school and daycare closures, a large population of working parents that still had in-person duties to attend to also required support. Typically, grandparents support the role of childcare in these conditions, which was not an option considering social distancing rules, leaving parents, especially mothers in paid labor, to work less hours or leave work entirely. (121) The decree enacted a babysitting bonus, or a voucher of €600 for childcare services in 2020. Funds were also allocated by the decree for digital learning. (120)

In Italian culture, homes are typically passed down through generations of the family, and the need for mortgage support was not as great as the need for tenancy support. (122) The Cure Italy decree also allowed families to apply for a suspension of their mortgage payments – with proof of pandemic-related business shutdowns threatening their livelihoods. (120) It also prohibited the eviction of tenants from privately rented properties for reasons including rent arrears. Though rent deferrals were never instated in law, the eviction moratorium served as an indirect method of rent suspension. Also, tax credits of up to 60% of rent paid were given to tenants each month until December of 2020. (120)

To protect businesses, the decree also offered economic relief policies centered primarily around tax credits, loan deferrals, and grants. (120) For the next 60 days, tax, loans, and social security payments were suspended for most businesses and self-employed workers. Also, a

50% tax credit for all sanitation measures purchased, including expenses for protection of workers and containment of the virus in line with mandated sanitation policies, was produced. (120)

Despite the national lockdown, by March 21, 2020, over 50,000 cases of COVID-19 had been cumulatively reported. (89) With economic relief policies in place, the Ministry of Health justified new extensions to non-essential service closures, including the shops, bars, pubs, and restaurants that previously remained open. (123) Similarly, all non-essential factories, excluding pharmaceutical and food production plants, were closed. Citizens were again urged to stay at home with Speranza reminding the nation of healthcare worker burnout and the disproportionately affected population of long-term care residents. He shared that the right decision was to isolate, protecting both the "vulnerable and the brave." (123)

On March 24, 2020, national lockdown was extended for another 14 days. (103) Several new movement restrictions were introduced. Precautionary quarantine periods of at least 10 days were ordered for close contacts (either not wearing a mask or breaching physical distancing obligations in the presence of a case). Either proof of a negative swab on the 10th day was required or an extension of 4 days (with no swab results) were required to end quarantine. A fine of €200 was imposed, monitored by workers of local health units to whom cases were expected to report their contacts. (103) A key informant confirmed that the lack of obligatory contact tracing led to a predicted underreporting of contacts to health units, rendering this policy mostly ineffective. The government also announced the closure of all public transport systems including buses, taxis, and streetcars. (103)

On March 30, 2020, 1,236 deaths were reported, which remains the highest daily death count throughout all six waves faced by Italy throughout the pandemic. (89)

With the arrival of ordered and donated COVID-19 tests, the small town of Alessandria, Piedmont held a trial of a drive-through testing system to ease the strain on overwhelmed healthcare facilities beginning April 1, 2020. (124) Select workers from these facilities wore appropriate PPE to provide PCR swab tests to citizens from their cars. The system was inspired by the efficacy of existing drive-through testing centers in South Korea. Alessandria also received the first supply of Italy-produced DiaSorin's Liaison Sars-Cov-2 Antigen assays, which provided results with comparable sensitivity and specificity to PCR testing within 15 to 30 minutes. (125) DiaSorin is an Italian biotechnology company that was funded by the Ministry of Health to produce both rapid antigen and antibody tests as well as molecular or PCR tests. These tests became available to other countries later in the year, once supply was able to meet local Italian demands. (125)

On April 6, 2020, the "Liquidity" decree was enacted, outlining an extra €200 billion in loans for businesses and the extension of tax and loan payment suspensions. (126) Non-essential companies suffered in their closures, and small protests throughout the country arose in demand of economic reopening. (126)

Lockdown was extended for the third time on April 8, 2020, for another 14 days. (127) The government announced that daycares, schools, and universities would remain closed until September, or the start of the next school year. There were approximately 4,000 confirmed cases on this day, a significant daily case count decrease since the first wave's peak in late March. (89)

On April 13, 2020, the Ministry of Health released the "Interim indications for telemedicine assistance services during the COVID-19 health emergency" report. (128) Over-the-phone and digital prescriptions in Italy were permitted prior to the pandemic, initiated when telemedicine was recognized on July 10, 2012, under strict conditions. This policy was updated several times up until the recent report, which reinforced that virtually all prescriptions had the potential to be digital—and encouraged healthcare workers to prescribe remotely whilst remaining responsible when possible. Although the utility of telehealth services was recognized for those directly affected by the contagion, the national government did not produce any new legislation for the telehealth care of non-COVID-19 patients. As such, regional governments and specific healthcare institutions and workers within them had to individually decide how telehealth methods would be tested and used on a wider scale for all citizens. (128)

The number of daily cases continued to fall, with approximately 3,000 confirmed on April 22, 2020. (89) On this day, lockdown was extended one final time until May 3, 2020, and the government announced a phasing system that would be used to ease the policies in place and prevent case rebounds. (127) To increase test accessibility, the Italian Competition Authority launched price monitoring of diagnostic testing, specifically for a list of clinics charging an amount "disproportionally" above the Ministry of Health's recommended price. (129)

On May 3, 2020, with the phasing system soon to begin, the Ministry of Health recommended extensions for the quarantine periods of vulnerable populations. (103) For vulnerable cases, it was suggested that alongside the mandated 14-day quarantine that an additional 10 days be added to ensure recovery. For vulnerable non-cases, self-isolation remained a recommendation by the Ministry of Health during heavy incidence peaks. (103)

On May 4, 2020, with approximately 1,000 cases confirmed that day, lockdown officially began to be phased out with several policy alterations. (89,130) The government proposed that if any regions experienced "concerning" increases in cases, that they would again become a Red Zone and return to individual lockdown. Nationally, all regions returned to Yellow Zone regulations with some new exceptions, as inter-regional travel was still banned. Manufacturing and construction sectors completely reopened. Restaurants and bars reopened as well, but only for takeout and delivery. (130)

As for group sizes, the government announced that "big" gatherings were not permitted with no definite number, and that visiting relatives was allowed so long as masks were worn. (130) Public transport in specified regions reopened, requiring face mask use, strict sanitation

procedures, and capacity limits. Funerals could resume with a maximum of 15 people and mask wearing. Masses and Church gatherings, however, remained banned. (130)

The “Relaunch” decree was enacted on May 15, 2020, which allocated over €25 billion to support decent living conditions for Italian households and €16 billion to the Wage Guarantee Fund and tools for income support. (131) An “Emergency Income” was also established for families in the most financial difficulty (up to €600, depending on assessment of application). (131)

On May 18, 2020, approximately 450 cases were reported. (89) With this steady decline, the government decided to ease more initial policies. (132) Bars, restaurants, hairdressers, and many other non-essential services reopened with capacity limits and plastic shielding where applicable. Catholic Church masses also resumed, so long as physical distancing and masking could be maintained. (132) On May 25, 2020, sporting centers and activities slowly reopened under similar conditions. Lombardy was reclassified as a Red Zone and therefore reverted to previous lockdown policies. (132)

Borders unilaterally opened to European travelers, limited to residents in Europe's visa-free Schengen, on June 3, 2020. (132) This decision was made in accordance with the "safe countries" list for travel established by the European Union. Travelers were required to inform their arrival to the appropriate local health unit, quarantine for 14 days upon arrival and provide a negative test at the end of the 14-day period. (132)

On June 9, 2020, “Immuni” was launched, a digital contact tracing app that allows users who have tested positive, through Bluetooth technology, to anonymously notify other users to whom they have been in close geographic contact with. (133) The use of Immuni was voluntary and only about 11% of citizens downloaded it by the end of the year, rendering it an ineffective source of contact tracing. Skepticism about its efficacy, data privacy concerns, and for some, the inability to download it were potential factors at the forefront of its low reach. (134)

On June 10, 2020, a system was established and coordinated by the Italian Ministry of Travel, whereby all countries were placed into List A – E, E being entry (by travellers to Italy or Italian residents to the respective country) allowed only for essential purposes and A being unrestricted travel. (135) Countries were continually cycled through these lists, and the list requirements continually changed throughout the year and onwards. People traveling for any reason into Italy were required to inform their respective health unit of their arrival and were subject to health surveillance and mandated isolation for 14 days. This was done through a standardized “Digital Passenger Locator Form,” outlining that the traveller was aware that they required a negative test at the end of their quarantine period. The Ministry of Health shared that travel modifications were appropriate given lowered case rates and would provide some economic relief through tourism. Inter-regional travel was also revived in Yellow Zones, and with a negative test, Italian citizens could now board international flights in accordance with the safe countries list or for emergency reasons. (135)

Italian theaters and cinemas reopened on June 15, 2020, with capacities of no larger than 200. Certain night clubs were allowed to reopen with capacity limits the next day. (132) By the end of June 2020, there were 3.5 million beneficiaries receiving WGF or self-employed non-WGF government funding. (120)

On July 14, 2020, the government announced the re-opening of national public transport at 50% capacity with facemask obligations for employees and transport users. (132) Like economic resources, telehealth services were also in high demand during the first wave. (136) By the end of July 2020, governments of some regions, like Lombardy, reported an overall ten-fold increase in the use of telehealth visits across a variety of specialties. (136)

The "August" decree was enacted on August 26, 2020, which was the third and final major decree supporting families and businesses. (137) This time, €1 billion allocated to schools to support reopening in the new year. The number of daily cases increased steadily throughout the month, with around 1,500 reported on August 31, 2020. (137)

Wave 2

On September 1, 2020, childcare facilities and daycares reopened under strict conditions, including the wearing of face masks by employees and routine sanitation measures. (138) Under national mandate, closure of these facilities was only required during periods of regional or national lockdown - and therefore, their state (ie. open, closed, or new running model) was at the discretion of the region for most of the following pandemic period. (138)

At the start of September, Fiumicino Airport in Rome also became the first to offer free rapid tests to those boarding flights if they did not have proof of a negative test within the last 48 hours or simply would like to retest. (139) Passengers that tested positive could not board the flight and instead must quarantine for the 14-day period, after which they could retest and take another flight (with a voucher given by the airport upon the positive result). (139)

On September 7, 2020, Italy approved the travel ban exemption for separated international couples – the change came after thousands of unmarried couples joined the "Love is not tourism" movement, demanding that countries including Italy relax coronavirus rules and allow couples to reunite. (140) Partners living abroad, in any list-A to E country, could now enter Italy to reach "the person with whom they have a stable emotional relationship, even if not cohabiting." International travelers were required to quarantine for 14 days, regardless of their country or region of origin. (140)

Schools and universities were set to reopen on September 14, 2020 as suggested by the Ministry of Health, however, some provinces delayed or accelerated the school year's start. (138) Since the central government is only responsible for allotting the number of days in a school year and not exactly when they start, regions may decide their specific calendars. (102) One specific autonomous province, Bolzano, chose to open on the 7th of September, while

most regions opened on the 14th or later. Two weeks later, Bolzano had the highest relative increase in incidence of COVID-19 cases of all Italian regions. (102)

In accordance with national guidelines, school staff or students who acquired COVID-19 outside the school environment had to promptly inform the school management, which had to coordinate with the Local Health Unit to carry out secondary screening among staff and students (or impose a 14-day quarantine with a swab before reintegration into school). (138)

Daily case counts increased throughout September, with nearly 2,000 cases reported on September 30, 2020. (89) On October 1, 2020, the Ministry of Health announced the potential of a second wave, urging citizens to stay home, maintain physical distancing obligations, and continue avoiding “big” gatherings. (141)

On October 7, 2020, the Ministry of Health made masks mandatory in all outdoor public spaces, except for when they can guarantee complete isolation from non-household members. (141) The mandate was contained in a decree that also extended the state of emergency until January 31, 2021, allowing the national government higher decision-making powers in health policy. Residents under the age of 6 and with medical conditions incompatible with the use of a mask were exempted from this mandate. Fines between €400 and €1,000 were put in place for non-compliance. (141)

On October 12, 2020, several updates were released in relation to quarantine mandates and isolation recommendations in accordance with the European Union. (103) Asymptomatic people testing positive were subjected to a minimum 10-day quarantine (reduced from 14) after the positive test. Symptomatic people testing positive were also subjected to a minimum 10-day quarantine from the onset of symptoms. Both groups required a negative test following the 10 days to end isolation. Persistently positive patients, namely the cases who continued to test positive for at least three weeks, could end their quarantine period after 21 days if they were free from symptoms for the final week. Asymptomatic and symptomatic close contacts were required to quarantine for 10 days after exposure followed by a negative test. (103)

On October 25, 2020, 4 Northern regions were classified as Red Zones, and the population was advised to avoid public transport and to stay in their communities if possible. (141) Some non-essential services, like cinemas and gyms were nationally closed, and restaurants and pubs were again required to close at 6 PM. Nearly 20,000 cases and 200 deaths were confirmed that day– a sharp rise from the beginning of the month. (141)

On November 1, 2020, there were over 30,000 cases reported, causing the government to consider a modified lockdown. (89,141) Conte announced the refinement of the zone-quarantine system on November 4, 2020. (127) The system now included Orange Zones– regulated much like Red Zones but with less business closures to protect the economy. 14 regions were either Orange or Red Zones, and regardless of a region’s declared zone, a curfew was put into place from 10 PM to 5 AM and all inter-regional travel was banned. National

school and university closures were called for. (102) As for primary and secondary schools, most regions independently decided to switch to virtual learning in late October. Select universities remained virtual since closures of the last academic year. Public transportation systems remained open at varying capacities. At this point, nearly every airport offered free testing to travellers. (102)

The modified lockdown policies were extended in intervals of 14 days, and cases steadily decreased to an average of around 13,000 each day in the third week of December 2020. (89,127) During the first week, on December 3rd, rapid antigen tests were approved for use by Europeans traveling into Italy. To ensure cases did not rise, Conte called for an “absolute lockdown,” where all regions were considered Red Zones between December 25 and January 6, 2021. These dates coincide with Christmas, New Years, and the Feast of the Epiphany, and lockdown was intended to prevent holiday travels and therefore resurgence. (142) A slight rise in cases was noted over the first week of January, however, it was considered “the start of the end of the second wave” by Speranza. (141)

During this lockdown, on December 27, Italy’s centralized vaccination campaign, led by the Ministry of Health, began. (143) Vaccination would be the primary focus of Italy’s response from this day. The Ministry of Health divided citizens into priority groups, and when an adequate portion of each group had been vaccinated, as monitored by the Ministry, the next group could apply. The first priority group or phase included healthcare workers, citizens above 80 years of age, and citizens with chronic illnesses above 60. The second phase consisted of law enforcement, educational staff, and pharmacists. The third phase included people with comorbidities under 60, and the remaining eligible population (at the time, most COVID-19 vaccines were approved for above 18 years of age). (143)

With the announcement of the campaign, religious leaders stepped in to encourage vaccination. (144) In a television interview on December 27, Pope Francis declared "[vaccination] is an ethical choice because you are playing with health, life, but you are also playing with the lives of others." (144)

To further promote immunization, vaccines were made free of cost for citizens as covered by the NHS, and a network of accessible units were employed to administer doses. (145) Hospitals, long-term care homes, gyms, schools, and pop-up sites produced by local health units were quickly engaged or produced to vaccinate citizens. 263 clinics were established in the last week of December 2020 (143)

Pfizer vaccines were approved in Italy on December 21, 2020. (146) On the 27th, Italy received 9,750 doses which were all used for healthcare workers. (145)

Moderna vaccines were approved by the European Medicines Agency (EMA) for individuals above 18 years old on January 6, 2021. (146) The next day, 1,000,000 doses of Pfizer doses were received, and nearly 400,000 people had been vaccinated. (143)

Lockdown ended on January 7, 2021, and the refined zone-quarantine system was readopted, with the majority of regions defined as Orange and Yellow Zones. (142) Schools and universities remained closed. (138)

Vaccine rollout for second doses began on January 18, 2021, targeted first towards vulnerable populations including healthcare workers, the population above 80 years old, and immunocompromised individuals. (147) At this point, phase 2 of first-dose vaccine rollout began, whereby teachers and law enforcement staff could sign up to be vaccinated. Fully vaccinated, in Italy, implies completion of a vaccine cycle (1-2 doses, depending on vaccine) valid for 9 months, or completion of a booster (third or fourth dose) after validity expires (boosters were also valid for 9 months). (147)

On January 26, 2021, Prime Minister Giuseppe Conte handed in his resignation to the President, Sergio Mattarella. (68) Conte ran a centrist coalition government which was highly respected throughout the first wave of the pandemic. However, a crisis struck when debates over economic management arose. Conte planned to manage the €209 billion of recovery funds allotted by the EU centrally. Matteo Renzi, leader of the small, liberal Italia Viva party, withdrew Italia Viva from the coalition over disagreements with Conte's plans. Renzi claimed funds should be invested in different sectors and wanted regional leaders to decide on allocations instead. The withdrawal of his party produced a minority coalition for Conte, who believed government business in this condition would be too restricted. His resignation left Italy, surpassing a death toll of 80,000 and in economic turmoil, without a leader. (68)

AstraZeneca vaccines were authorized in Italy on January 29, 2021, and an order of 300,000 doses was placed. (146)

On February 1, 2021, in-person learning was permitted for schools and universities. (138) The Ministry of Education suggested a hybrid model for school, whereby partial in-person and virtual attendance could support the learning of students as well as their protection. (138)

On February 11, face masks were no longer mandated in all outdoor public spaces, except for "busy" public spaces, which the Ministry of Health defined as markets, stadiums, and institutions at high-traffic hours. (148)

After a week of political debates following Conte's resignation, politicians, including Conte, failed to agree on a new coalition. (149) President Mattarella then stepped in and asked Mario Draghi, former President of the European Central Bank known as the man who "saved the euro" to lead a new government. This appointment style is technocratic, which is a common switch from elections in Italy during economic crises. Draghi was sworn in as Prime Minister on February 13, 2021, forming a unitary government in which all political parties were represented in his cabinet. (149)

On February 26, 2021, just under 3% of the population had received a single dose of a COVID-19 vaccine, and the number of vaccination clinics increased to 1,400 across the country. (89) The EMA also authorized Pfizer for youth aged 16 to 17, adding this demographic to the phase 3 priority group, with bookings for the group becoming available in the first week of March. (146)

Wave 3

On March 1, 2021, over 13,000 new cases were confirmed. (89) Numbers began to rise in the last week of February despite November policies remaining instated. (89)

Schools and universities were closed again on March 3, 2021, to prevent further spread. Also on March 3, 200 drive through test centers had been formed across the nation. (150) Healthcare workers, volunteers, and armed forces had been recruited in all regions to perform tests. On this day, the commissioner for Italy's fight against Covid-19, Francesco Paolo Figliuolo, announced a plan to convert all drive-through sites to vaccination centers to advance the national vaccination campaign. (150)

President Mattarella was vaccinated on March 9, 2021, which was broadcasted on television. He encouraged viewers to book a first dose. (147)

As of March 11, 2021, Italy had administered more than 6 million vaccine doses, with over one and a half million people having received a complete vaccination cycle. (89) 200 more vaccination clinics had been established by this day. Johnson and Johnson vaccines were also authorized for Italians above the age of 18. (146)

On March 14, 2021, when cases in the third wave peaked, the zone-quarantine system was refined. (151) Yellow Zones were required to follow stricter rules, including suspension of any stadium or large social event. Inter-regional travel was banned across the country regardless of a region's zone. (151) Cases began slowly falling, and by the end of March, 12.3% of the population had received at least one vaccine dose, and 5% had received a full round of vaccination. (89)

On April 1, 2021, Italy made COVID-19 vaccinations compulsory for healthcare workers– the first European country to do so. (152) A status of fully vaccinated was required in the following 4 weeks for workers to continue their practice. (152)

For the Easter weekend (April 3 to April 6, 2021), Draghi called for a final national lockdown to prevent case resurgence. (153) Schools were already projected to be closed for the holiday as per annual Easter school closures. On April 6, 2021, the Ministry of Health announced that the modified zone-quarantine system would begin phase-out later in the month. At that time, however, 11 regions remained assigned as Red Zones. (153)

Phasing out of the modified zone-quarantine system began on April 26, 2021, with less than 10,000 cases confirmed that day. (153) 11 regions were redefined as the lowest risk Yellow Zones, where non-essential services were open with fewer restrictions, equivalent to the initial system's structure. Gatherings in a maximum group of 6 were allowed in indoor public places where masking could be maintained. All other gatherings, indoor and outdoor, were permitted if social distancing was possible, however masks were still required in "busy" outdoor settings. Proof of immunity, whether it be a negative test result or vaccination, was required to visit non-essential services and most workplaces. (153)

For the second and third waves, no economic relief system like the Cure Italy or August decrees were nationally established. (154) Regional governments took greater control of the businesses within them. However, Italy's "less developed regions" that required more economic support included the southern states of Calabria, Campania, and Sicily. On April 28, 2021, Draghi approved the National Plan of Recovery and Resilience (PNRR), a strategy funded largely by the European Union, focused on continued financial support towards businesses in these regions. (154)

The Brescia vaccination center was firebombed on May 2, 2021, by two citizens protesting the COVID-19 vaccine campaign. (155) Speranza said that this highlighted an unwillingness to protect oneself and one's country. (155)

On May 16, 2021, travelers were permitted from the UK, the EU/Schengen countries, and Israel (now defined as A-tier countries) to enter Italy with only a negative COVID-19 test result and proof of vaccination. (135) Quarantine was required for 5 days, and another negative test was required on the fifth day. (135)

With easing distancing and traveling policies, confirmed cases continued to decline throughout May. (89) On May 31, 2021, approximately 2,000 cases were reported. At this point, 40% of the population received at least one dose of a COVID vaccine, and 20% were fully vaccinated. (89) The Ministry of Health lifted the 6-person maximum for group size gatherings, so long as mask usage or physical distancing could be maintained, imposed nationally. (153) As a potential viral variant preventive measure, until mid-June, all international countries were allowed entry into Italy for non-essential reasons, except India, Bangladesh, Brazil, and Sri Lanka. 5-day quarantine and testing policies remained imposed. (135)

June 2021 marked the end of the third wave, with confirmed cases just under 1,000 on June 13, 2021. (89) Also on this day, vaccination rollout for Italians aged 12-15 began after the EMA approved the Pfizer vaccine for the demographic. (146) By the end of June 2021, nearly half a million Italian households received Emergency Income of up to €600 each month. (120)
As for employee layoff suspensions first introduced by the Cure Italy decree, on July 1, 2021, most companies were no longer limited by the suspension ban unless they continued to furlough employees using the social security allowance granted by the government, in which

the ban still applied until December 31st. (156) For service companies (retail, entertainment, beauty), the ban remained in place with no exceptions. (156)

The EU Digital COVID Certificate, made by the European Commission, was a digital form system released also on July 1, 2021. (157) National authorities were responsible for issuing certificates of vaccination status, test results, and proof of recovery. A unique QR code was present on each certificate, and certificates were valid across all EU countries. Italy's "Green Pass" was an extension of the EU certificate, whereby citizens that had been immunized against COVID-19 through vaccination or natural infection, or those who had tested negative by PCR or antigenic testing, could obtain a COVID-19-free pass, valid for differing periods of time. (158) A certificate of vaccination was valid for 1 year, recovery for 180 days, and a negative test for 48 hours. Italy announced that following month, a Green Pass would be required for entry to public events, restaurants and bars, beauty services, sport competitions, gymnasiums, museums and parks for all citizens aged 12 and above. (158)

On July 22, 2021, the Italian Constitutional Court rejected the second extension of mortgage moratoriums, and homeowners would now need to resume payments to avoid eviction. (156)

On July 31, 2021, Italy announced that they would recognise the COVID-19 certificates issued by five countries outside the European Union. (158) Recognized certificates held the same validity as a Green Pass, so travelers from the United States of America, Canada, Israel, Japan, and the United Kingdom, could engage in public events so long as they presented a valid, accepted certificate. If entering Italy with a valid, equivalent certificate, quarantine periods for travelers could be reduced. The government also extended Italy's national state of emergency until December 31, 2021. At this time, around 65% of the population had received one dose of the vaccine, and 50% had been fully vaccinated. (89)

The requirement of a Green Pass for entry to public events came into effect on August 6, 2021. (158) Added to the previously declared list of Green-Pass-requiring activities included the use of long-distance public transport, such as trains and ferries. The announcement of the Green Pass was followed quickly by political controversy. (159) Several center-right leaders accused the Green Pass of stripping freedoms away from Italian citizens and further damaging the economy. Georgia Meloni, leader of the Brothers of Italy Party, claimed it was an ineffective, "economy-killing" measure intended to "damage tourism." In the Italian political opinion polls, Meloni's party was rated second at the time. (159)

From August 30, 2021, travelers from the European Union arriving in Italy were no longer required to provide two tests or undergo a 5-day quarantine period, if a Green Pass or equivalent certificate could be provided. (135)

With the start of the school year, the Green Pass was made obligatory for all educational faculty and staff as well as university students on September 1, 2021. (158) The use of facemasks and sanitation procedures remained mandated. Also on September 1, all incoming travelers were

required to have a Green Pass or equivalent certificate, regardless of entry reason. Depending on the country of origin, quarantine periods were also adjusted. For example, travelers from the United States of America, labeled a B-list country at the time, had to quarantine for 5 days upon entry. Citizens from C and D list countries, like Brazil and India, were required to quarantine for a 10-day period with supervision from local health units. India's Covishield vaccine was recognized by Italy on September 24, 2021, and Indians vaccinated with Covishield were then able to use it as certificate proof. (135)

Vaccine rollout for booster or third doses began on September 20, 2021, following the same priority order as the first dose rollout. (147) At this point, approximately 75% of the population had one vaccine dose and 65% were fully vaccinated. (89)

Waves 4, 5, and 6

On October 1, 2021, service companies were no longer limited by the suspension ban initiated by the Cure Italy decree. (156) Retail, entertainment, and beauty sector workers could again be laid off, even if regions were still considered Red Zones. Nearly 140 million doses of COVID-19 vaccines had been administered. (89)

On October 15, 2021, the Italian government made the Green Pass compulsory in all workplaces. (158) Every employee in the public and private sectors was obligated to use the Green Pass for employment, regardless of the company's wishes. At this point, a Green Pass proved that the owner had received at least one vaccine dose, recently recovered from infection, or recently tested negative for the virus. By introducing this mandate, nearly every Italian except retirees and the unemployed had to show proof of immunity or being free of infection. Employees and employers faced fines for non-compliance. Unvaccinated employees were required to pay for their own tests, as this responsibility was not mandated to employers. Employees without a valid Green Pass were not allowed into the workplace, and this reason was not considered justifiable for missing work. Therefore, no compensation was owed, and after a certain number of days, depending on whether the work sector was public or private, termination on these grounds was legal. This policy was announced to be in effect through December 31, 2021. (158)

Considering a slight rise in cases from October, on November 15, 2021, the Ministry of Health announced new health safeguards in place for public transport, including that taxis have been limited to a maximum of two non-household members and only the back seats can be occupied in order to protect drivers. (160)

On December 1, 2021, second doses became available to everyone over the age of 18. (143) Speranza announced that healthcare workers were also obliged to receive a third dose throughout the month of December if they had yet to do so. He also shared that compulsory COVID-19 vaccination would extend to teachers, law enforcement, and military staff by December 15, 2021. By the 15th, a "Super Green Pass" would be available for this purpose,

displaying only proof of natural or vaccine-provided immunity. Also by the 15th, youth between the ages of 5 and 11 could book a first dose. (152)

With the Omicron variant, several changes were made to international travel regulations. (156) On December 14, 2021, any European traveler entering Italy required a pre-departure, negative COVID-19 test even if vaccinated or recently recovered as confirmed by a Green Pass. Several countries, including Singapore, were placed on the E-list, meaning travelers from these countries could only enter Italy for essential purposes. Despite travel restrictions, cases began to rapidly rise, with over 16,000 cases reported on December 20, 2021. (89) However, only 127 deaths were reported, which, in relativity to the number of cases, was the lowest death to case ratio reported in Italy thus far. Approximately 80% of the population had received one dose and 76% had received a full round, with the potential of a booster as in the case of healthcare workers. On the same day, Novavax vaccines were authorized and available to those over the age of 16. (89) Second doses became available to the population aged 16 to 17 on December 24, 2021. (143)

As of December 25, 2021, with the rise of the Omicron variant, the Ministry of Health announced a decree that mandated the random testing of all travelers arriving in Italy at airports and land terminals until at least January 14, 2022. (161) Individuals that tested positive were required to quarantine for 10 days at their own cost. (161)

Several mandates were reinstated or refined on December 31, 2021. (156) The state of emergency was extended until March 31, 2022. A new decree provided that preventative quarantine no longer applied to close contacts if they completed a primary vaccination course or recovered from the virus. (162) FFP2 medical grade masks were to be worn in areas requiring masking for 10 days after exposure. If symptoms developed, contacts were required to carry out a rapid or PCR test. For fully vaccinated cases, quarantine was cut from 10 to 7 days. The final extension of the WGF for employers “severely” affected by the pandemic ended. (156) The Italian Constitutional Court also rejected the extension of the eviction moratorium. Tax credits offered to tenants and businesses from the August decree of 2020 expired. The Ministry of Finance announced several supports for the repayment of resumed taxes and social security costs, including flexible repayment schedules, bank negotiations, and further external support for businesses. (156)

On January 1, 2022, there were over 140,000 cases reported. 82% of the population had received at least one dose, and 76% were fully vaccinated. (89) 111 deaths were also confirmed this day, adding to the cumulative 137,000 COVID-19 related deaths in Italy since 2020. (89)

There were more cases in January 2022 than any other month, however, the death to case ratio was also the lowest of any month. (89) On January 10, 2022, over 200,000 cases were confirmed, which is the largest recorded number of daily cases throughout the period of study. Super Green Passes were made mandatory on January 10, 2022, in bars and restaurants, hotels, cinemas and theaters, gyms, malls, and sporting events. (158) This meant that unvaccinated

individuals could only access essential services and few non-essential services. Following this peak in cases, in which 9 regions were classified as Red Zones, cases decreased substantially into February. (162)

On February 1, 2022, the 9-month validity for two doses or natural immunity on the Green Pass was reduced to 6, and booster doses were deemed unlimitedly valid. (158) Mask mandates were also reinstated. (162) These guidelines were set until at least March 31, 2022. For EU travelers, the testing and quarantine requirements were suspended, with only a Green Pass or equivalent being required for entry into the country. (135)

Booster dose eligibility was extended to everyone above the age of 16 on February 5, 2022, as was second dose eligibility for citizens aged 5 to 15 and fourth dose eligibility for healthcare workers or the immunocompromised. (143) From February 15, 2022, vaccination was made compulsory for all public and private workers over the age of 50. Super Green Passes were required for this cohort to enter their workplaces. A regular Green Pass remained required for workers under the age of 50. (158)

On February 28, 2022, approximately 18,000 cases were confirmed– a steep decline from the peak in mid-January. (89) Cases, however, began rising again in early March 2022 yielding a fifth wave. Despite this, on March 1, 2022, travel restrictions for all non-E-list countries, if they had not traveled to an E-list country in the last 14 days, were eased to match those applied to EU travelers. (135) By March 1, 2022, 80% of Italians were fully vaccinated. (89)

On March 31, 2022, the state of emergency, first declared on January 31, 2020, ended. (87) Speranza claimed that though cases were rising, vaccination served to greatly reduce death rates and other restrictions could be eased. Super Green Passes were no longer required by workers over the age of 50, however, would remain a requirement of healthcare workers (at least one booster after a primary round) until the end of 2022. A weekly plan was set out to gradually reduce Green Pass requirements for non-essential services, beginning on April 1, 2022, with the suspension of its use in museums, cinemas, and theaters. The zone-quarantine system, considering that all regions were considered Yellow Zones or less than, in terms of risk (not solely case counts), was dismantled. All symptomatic citizens, if testing negative, were also recommended to isolate for a 10-day period and no longer required to quarantine. Mask requirements remained in place. (87)

As of April 1, 2022, random airport entry testing was no longer mandated, however tests were still offered for passengers to and from Italy that booked one in advance. (135) After a peak of over 30,000 confirmed cases on March 28, 2022, cases gradually fell throughout April. (89) As of April 15, 2022, a Green Pass was no longer required in workplaces, universities (by staff and students), and other non-essential services including salons, bars, restaurants, and sporting events. (158) The Ministry of Health also announced that fourth doses were available to the entire population above 60 years of age, and third doses were available to the population aged 5 to 15. (143)

On May 1, 2022, all domestic Green Pass requirements, other than by healthcare workers and visitors of certain healthcare facilities, were suspended. (158) Face mask mandates were also lifted for many indoor public places, including bars, restaurants, grocery stores and shopping malls, public offices, and personal service shops. (163) Contact tracing remained a recommendation of the Ministry of Health to regional governments until May 1, 2022. (162) On May 10, 2022, fourth doses became available to the entire eligible population considering the abundant vaccine supply. (143) At this time, nearly 86% of the population had received at least one dose and 81% had been fully vaccinated. On May 30, 2022, just under 8,000 cases were reported, marking the lowest number of daily cases between wave 5, occurring in April 2022, and wave 6, peaking in July 2022. (89,162)

On June 1, 2022, Italy abolished all COVID-19 entry restrictions for travelers in non E-list countries, as no Digital Passenger Locator Form or Green Pass were required. (135) The Ministry of Health announced that restrictions for high-risk countries would continue to be produced until at least 2023. Although cases continued to rise, on June 15, 2022, face mask requirements were lifted for airlines, cinemas and theaters, and schools (with some universities, at the institution's discretion). (164) The requirement remained in place for all other forms of public transport and healthcare facilities. (164)

The Ministry of Health announced, in their COVID-19 report for the week of July 10, 2022, that with over 80,000 cases were confirmed on the 10th and a steady decline in the following days, a defined 6th wave had been marked. (162)

On July 13th, Giuseppe Conte, leader of the Five Star Movement (M5S) and former prime minister, revoked support for the Draghi government, triggered by ongoing disagreement on economic policy in relation to COVID-19. (165) With the M5S being the majority party, this caused political turmoil in the parliament. Draghi responded by tendering his resignation to Mattarella on July 14th, which was promptly refused. (166) Mattarella invited Draghi to explain the depth of the political unrest on July 20th. Following the conversation, the government failed to form a new majority, which ultimately led Mattarella to concede and accept Draghi's resignation. An early election was called for on September 25, 2022. (167)

On September 1, 2022, the Ministry of Health announced that until 2023, vaccinated cases who have been asymptomatic for at least 2 days can end quarantine with a negative test, and isolation can be interrupted at the end of the 14th day, for vaccinated and unvaccinated citizens regardless of test results. (162)

Giorgia Meloni received 44% of votes in the national election on September 25, 2022, leading the Brothers of Italy party to victory. (168) Meloni shared her plans to suspend compulsory vaccinations for healthcare workers, which would allow unvaccinated doctors and nurses to work again. (169) She also said fines distributed for vaccination noncompliance in the workplace throughout 2021 and 2022 would be reimbursed. Meloni also planned to

redistribute COVID-19 vaccination funds to economic repair funds, criticizing Draghi for failing to do so during his time in office. (169)

As of September 30, 2022, Italy dropped the requirement of face masks on public transport. (170) Masks were only required in healthcare facilities, alongside a valid Green Pass for employees and select facility visitors. As for international travel, no countries remained on the E-list, however, negative tests were required for Chinese travelers and masks were highly recommended. (135) 81% of the population had been fully vaccinated, and a cumulative 22,345,122 cases and 179,314 deaths had been reported in Italy. (88,89)

Disproportionately affected populations

Long-term care (LTC) home staff and residents were disproportionately affected by COVID-19 in Italy. In Lombardy, the long-term care home mortality rate for COVID-19 was the highest of all European cities and states. (171) Price escalations because of the pandemic also caused 15 LTC homes across Italy to file for bankruptcy. (172) Despite the population of Italy being one of the oldest in the world, across most regions, based on quantity and intensity of care assessments for each age cohort by the Ministry of Health, elderly care (including LTC) is disproportionately underfunded. Considering the regional control of healthcare, a strong lack of homogeneity exists in public protection of this population as well, which Speranza claimed to be a leading factor of COVID-19 outcomes in LTC. (173)

Healthcare workers across LTC homes and other healthcare facilities were also disproportionately affected by the pandemic. At first, a lack of PPE and overwhelmed facilities left healthcare workers unprotected and overworked. (174,175) Internationally, deaths and cases for this population were relatively high– a study conducted in 2021 found that of 31 countries, Italy had the third highest number of healthcare worker deaths, after Mexico and Azerbaijan, per 100,000 citizens. (176)

The homeless population in Italy was also considered especially vulnerable, yet no specific programs were initiated to reduce infection risk. (177) In comparison to other groups, fewer public health measures were dedicated to homeless individuals. (177)

Successes and Challenges in Italy's Pandemic Response

There were several successes and challenges in Italy's response to the COVID-19 pandemic. All key informants identified the success of national lockdowns to centralize the approach. However, two key informants commented on issues with the zone-quarantine system, including confusion amongst citizens with frequent policy changes and said policy changes being associated with cyclical increases and decreases in regional cases. The closure of schools and non-essential services was commended, as was the economic response to support households and businesses.

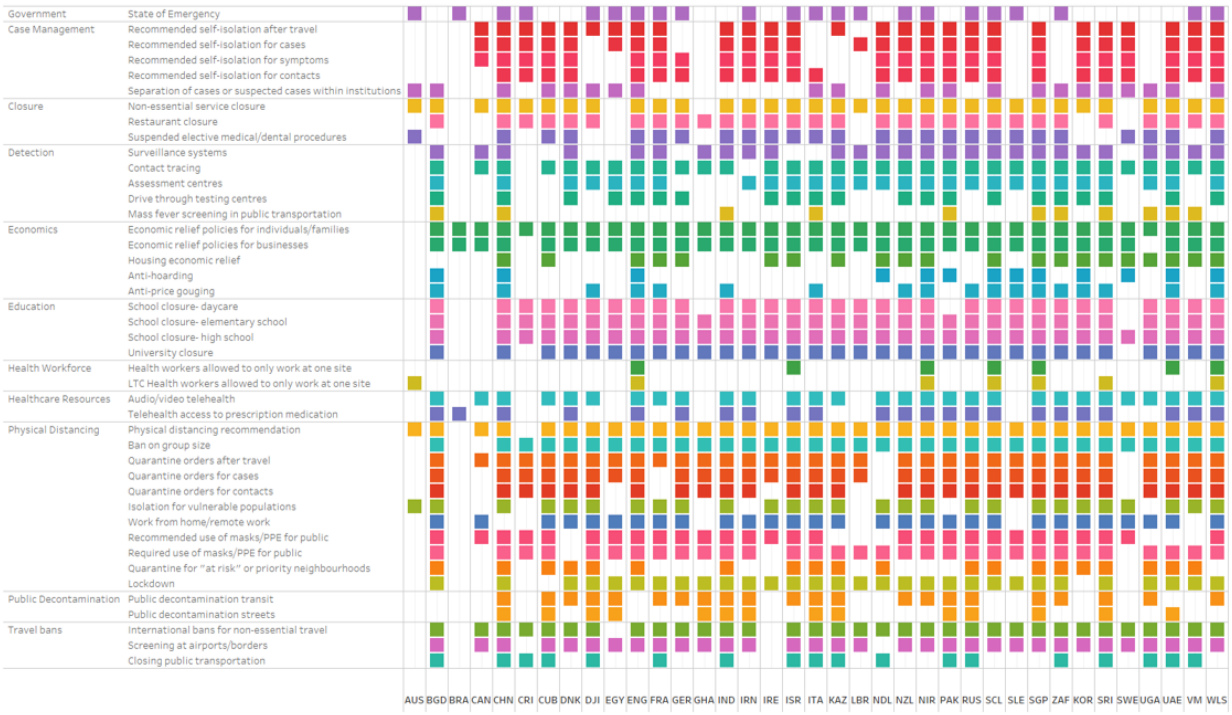
One key informant commented on the shifting views of Italian communities throughout the pandemic. At the start, there was wide support for the more left-leaning Prime Minister, Giusseppe Conte. The election of right-wing Giorgia Meloni, who frequently commented on her disapproval of vaccination requirements and COVID-19 resource funding, reflected a shift in the political and COVID-19-related ideologies of Italians over the study period. The key informant also commented on how political turmoil within the central government took both time and resources away from the COVID-19 response.

All key informants identified the decentralized healthcare system as a primary challenge, considering the variability in policies and views throughout the country. Between municipal, regional, and national leaders, citizens received a lot of mismatched information until central communication systems, like the Ministry of Health's COVID-19 website, were established. Differential information and conspiracy theories, propagated by powerful figures, fostered confusion and government mistrust. Policy-wise, key informants commented on how variable fund distribution and use amongst regions negatively affected healthcare workers, as no standard was set for PPE resources and worker protection.

A success commented on by all key informants was the vaccination campaign, notably its speed and reach. Over 80% of the population was fully vaccinated by March of 2022. Compulsory vaccinations for healthcare workers, teachers, and workers over 50 served to protect the vulnerable and increase vaccination rates. However, one key informant noted that with the existing deficit of healthcare workers, the suspension of unvaccinated workers increased the burden on the healthcare system.

Comparison with other country responses

There are many concerns in trying to compare countries' responses to COVID-19. This is shaped by limitations of the data itself and differences in contextual factors. A separate paper by this working group describes limitations of COVID-19 data. (178) Table 4 presents a list of countries included in our work and their use of different physical distancing policies.



AUS–Australia, **BGD**–Bangladesh, **BRA**–Brazil, **CAN**–Canada, **CHN**- China, **CRI**- Costa Rica, **CUB**-Cuba, **DNK**–Denmark, **DJI**–Djibouti, **EGY**-Egypt, **ENG**-England, **FRA**-France, **GER**- Germany, **GHA**-Ghana, **IND**-India, **IRN**-Iran, **IRE**-Ireland, **ISR**- Israel, **ITA**- Italy, **KAZ**-Kazakhstan, **LBR**- Liberia, **NDL**-Netherlands, **NZL**- New Zealand, **NIR**-Northern Ireland, **PAK**-Pakistan, **RUS**-Russia, **SCL**-Scotland, **SLE**-Sierra Leone, **SGP**-Singapore, **ZAF**-South Africa, **KOR**-South Korea, **SRI**-Sri Lanka, **SWE**- Sweden, **UGA**- Uganda, **UAE**-United Arab Emirates, **VM**-Vietnam, **WLS**-Wales

Table 4. Comparative national-level responses to COVID-19 by country as of August 2020 (filled in means policy was implemented)

IV. Discussion of main findings, limitations, and next steps

Italy has an estimated population of 59,438,851 with 22,345,122 cases and 179,314 deaths from COVID-19 as of September 30, 2022. Initially, Italy restricted movement into the country by closing its borders and tried to mitigate spread in highly affected locations through regional lockdowns.

On March 9, 2020, Italy employed its first national lockdown, and other policies, including physical distancing, masking, and closures of schools and non-essential services, were also introduced. As cases fell in April, easing the burden on the healthcare system, the lockdown was lifted in phases. The phase system was intended to reopen the economy whilst preventing case resurgence. In October 2020, cases began to rise again, creating a second wave. In November, stricter policies were called for, and a modified national lockdown was put in place until the end of December, replaced thereafter by an absolute lockdown intended to prevent holiday travels.

At the end of December 2020, the vaccination campaign began, in which vulnerable populations and healthcare workers were first targeted. A third wave and final lockdown occurred in April 2020, and shortly after, the Green Pass, or proof of immunity, was introduced and made compulsory for many workplaces and services to encourage vaccination. By March of 2022, over 80% of the population had been fully vaccinated. Despite higher case counts during this time than ever recorded, corresponding recorded deaths were inversely lower than in any of the previous waves. Most mitigative policies introduced at the beginning of the pandemic were phased out by September 30, 2022.

Limitations to this report may exist because findings rely on the accuracy of government and news sources. Announcements for the start and end dates of certain policies as well as rates of their use, including the use of fines to enforce quarantine and lockdown, were inconsistent across sources or unavailable. Also, informational discrepancies may exist in this report where policies were not enforced according to announced plans.

Conclusions

Italy implemented a mitigation strategy with a variety of changing policies in their COVID-19 response, including lockdowns, physical distancing mandates, and a vaccination campaign. Shortcomings included an initially decentralized approach, political turmoil, and inadequate healthcare resources, which will be imperative for Italy to consider in preparation for future epidemics.

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