

COronavirus Vulnerabilities and INFOrmation dynamics Research and Modelling



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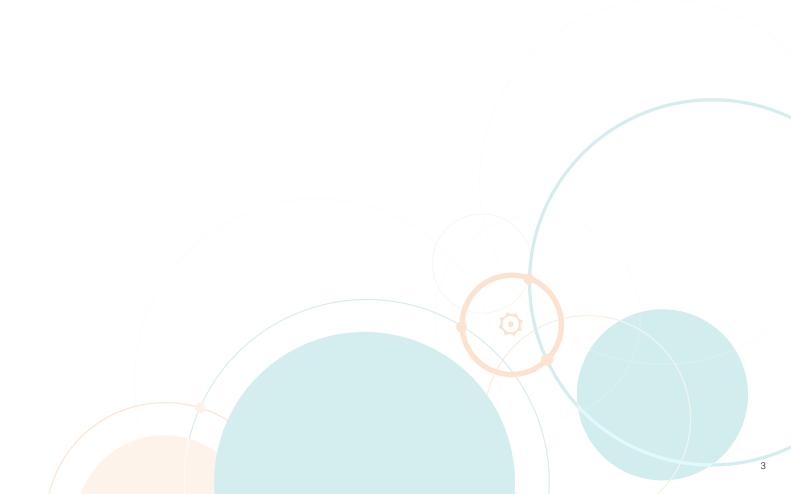
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## 1. Health System Analysis



Greece is an EU member state country with a population of approximately 10,423,054 people in 2020 mid-year, according to UN data. The health care system in Greece is highly centralized and regulated and encompassing both elements of public and private health care sectors<sup>1</sup>. Regarding the public health care sector, the National Health System (ESY) is the public provider of health care in Greece, whereas since 2016 all residents who have a national insurance number have access to the health care facilities for free, whereas people who do not have a national insurance number or visa but belong to vulnerable groups can apply for a national insurance number and have free access to the health care system<sup>2</sup> which provides full coverage. More precisely, the Ministry of Health (<a href="https://www.moh.gov.gr/">https://www.moh.gov.gr/</a>) is the principal national health authority that generates and manages the national strategy and policies in health context. The National Health System (ESY) includes 125 hospitals some of which are general and other specialized whereas there are also university as well as military hospitals. Additionally, there are 201 health centres, 1,487 regional health centres in rural areas, 200 health centres and 127 primary care units in urban areas.

The Ministry of Health is responsible for the decisions and the management of all activities related to the health care system in Greece and funding is coming through taxes and the state budget as well. The first case of COVID-19 in Greece was confirmed on February 26,2020. The following days the confirmed cases increased mainly from travellers coming back from abroad and countries such as Italy or Israel. The government took immediate actions such as cancelling major events, providing guidelines, and informing people regarding the pandemic and protocols of hygiene, social distancing etc. However, on March 23 the first lockdown was issued where non-essential movements were restricted.

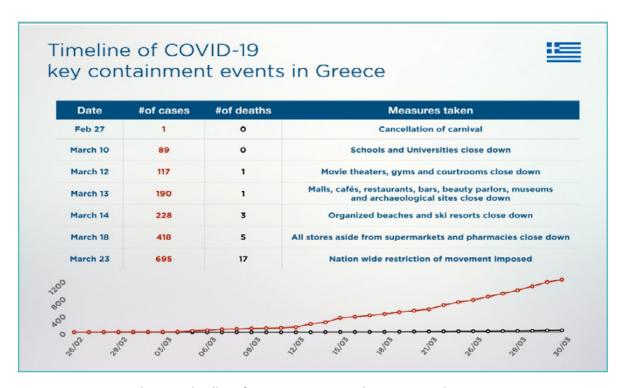


Figure 1: Timeline of COVID-19, Key Containment events in Greece Source: Click here

The Ministry of Health in collaboration with the National Public Health Organization (EODY)<sup>3</sup> and the General Secretariat for Civil Protection<sup>4</sup> (GSCP), were the leading entities in Greece's response to the pandemic. In addition, the pandemic demanded a scientific approach for optimum results in the fastest timeframe thus, specialized ad hoc governmental bodies were created such as the Public Health Emergency Committee for Infectious Diseases, comprising of 31 scientists who examined daily the new data and provided advice. Further, the National Committee for Public Health, consisting of 11 public health executives and scientists, was also meeting daily for the analysis of COVID-19 new data, and also proposed all the necessary measures that were implemented during the pandemic<sup>5</sup>. Moreover the Hellenic Ministry of Health was in continuous cooperation and direct exchange of information, epidemiological data and of know-how with all competed health authorities and leading public health organizations at a European and an international level. During the first COVID-19 wave and due to the restriction measures, that were early adopted, infections were delayed and thus, Greece managed to respond to the first wave effectively performing relatively well compared to other European countries.<sup>6</sup> Additionally, according to Li and Wang, 2020, the measures adopted by the Greek government during the first wave, contributed substantially to decrease the epidemic evolution and control the pandemic response across the nation.<sup>7</sup>



## 2. Public Health Responses



Since the beginning of the pandemic a wide range of preventive health measures were promptly adopted by the competed authorities in Greece. In that context, on the 28th of January 2020 the Ministry of Health and the National Health Organization (EODY) announced a COVID-19 pandemic preparedness and response Action Plan<sup>8</sup> with immediate effect. The plan entailed the designation of 7 basic COVID-19 reference hospitals and 8 alternates, across the country (enveloping both primary and secondary healthcare services), all with special isolation units and sufficient reserve in personal protective equipment (PPE) for all involved health personnel. In parallel, the National Health Organization (EODY) following ECDC and WHO published guidelines, issued all the relevant definitions concerning the detection of COVID-19 cases (confirmed and suspected) on the basis of the evolving epidemiological situation and the relevant produced data. The response at this initial phase included rapid identification of COVID-19 cases, thorough and exhaustive contact tracing and imposition of quarantine to confirmed cases aiming to prevent further transmission of the infection9. For this reason, a joint emergency mechanism for case investigation, epidemiological surveillance and contact tracing supervised by both National Health Organization and General Secretariat of Civil Protection was enacted by relevant legislation<sup>10</sup>.

A series of restructuring measures were adopted aiming not only to meet the unprecedented increase for health services caused by the pandemic but also ensure the efficiency of the existing infrastructure within the health system<sup>11</sup>. In that context two public hospitals in Attica Region ("Pammakaristos" Athens General Hospital, Western Attica General Hospital "Agia Barbara") were converted into one-disease healthcare units exclusively for the hospitalization of COVID-19 cases. Furthermore, by March the 27th and for a period of 4 months the Army Share Fund Nursing Institution (N.I.M.T.S.) was concessed in order to cover emergency public health needs. This concession was repeated in early March 2021 due to the deterioration of the epidemiological situation in the country.

In reference to hospital beds and due to the limited capacity of National Health System to hospitalize appropriately patients with highly infectious diseases, in terms of availability in negative pressure isolation chambers and unoccupied single rooms, since there were also other diseases demanding and occupy these rooms and chambers, a coordinated effort was launched by the Hellenic Ministry of Health and the healthcare units administrations to secure, until the end of April 2020, approximately 4000 hospital beds in referral hospitals, selected general hospitals and designated medical wards or clinics, exclusively for the hospitalization of COVID-19 cases.

<sup>&</sup>lt;sup>8</sup> Hellenic Ministry of Health, National Health Organization (28 January 2020) COVID-19 pandemic preparedness and response Action Plan, <u>available here</u> [accessed June 25 2021]

<sup>&</sup>lt;sup>9</sup> Maltezou, H.C., et al. (2021), Coronavirus disease 2019 pandemic in Greece, February 26 - May 3, 2020: The first wave, Travel Med Infect Dis., May-Jun; 41:102051. doi: 10.1016/j.tmaid.2021.102051.Epub 2021 Apr 2.

<sup>&</sup>lt;sup>10</sup> Emergency Act of Legislative Content (2020 April 14), Urgent measures to address need of limiting the spread of COVID-19 coronavirus, (Governmental Gazette A' 64), enacting an emergency mechanism for case investigation, epidemiological surveillance and contact tracing in the context of COVID-19 pandemic, available here [accessed June 25 2021]

<sup>&</sup>lt;sup>11</sup> Economou, C., Kaitelidou, D., Konstantakopoulou, O., and Vildiridi, L. (2021) Policy responses for Greece - Health Communication, COVID-19 Health System Response Monitor, available here [accessed June 25 2021]

ICU treatment capacity was also limited, reaching in total the number of 565 ICU beds on February 2020 with no availability of treating COVID-19 cases. With targeted and concentrated actions, such as addition of new ICU beds in public hospitals (through state funding and donations of private, non-profit and public sector, establishment of public-private partnerships to purchase ICU services from the private sector, and designated collaborations with military hospitals for ICU beds utilization) was managed to increase the number of ICU beds to 870 within a month reaching gradually the total of 1017 (HSRM) at the peak of the first wave of the pandemic (April 2020). A number that was slightly decreased (917) in June 2020 during the de-escalation of the first wave, as a minor part of the additional ICU beds returned to their pre- pandemic use, to be

reached again during the second pandemic wave at the beginning of November 2020.

Having to operate in a highly challenging context due to the excessive demand for healthcare services, Greek authorities have decided to postpone all elective surgeries in both public and private hospitals with only the oncology and emergency services remaining operational<sup>12</sup>. In an attempt to reduce the number of visits to healthcare services, all morning and afternoon outpatient appointments were suspended while in addition, the process of issuing and filling prescriptions, including regular prescriptions, was made available by phone (via text message) or e-mail, introducing this way new e-prescriptions procedures<sup>13</sup>.

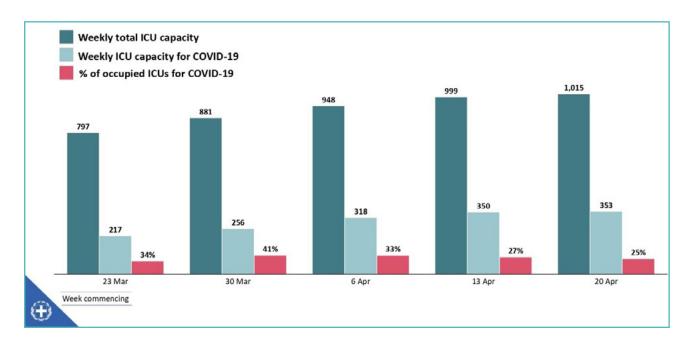


Figure 2: Evolution of ICU capacity in Greece during the first epidemic wave Source: click here

<sup>&</sup>lt;sup>12</sup> Jakab, M., Limaro Nathan, N., Pastorino, G., Evetovits, T., Garner, S., Langins, M., Scotter, C. and Azzopardi-Muscat, N. (2020) Managing health systems on a seesaw. balancing the delivery of essential health services whilst responding to COVID-19, Eurohealth 2020; 26(2), available here [accessed June 25 2021]

<sup>&</sup>lt;sup>13</sup> Hellenic Republic, introducing e-prescriptions procedures, <u>available here</u> [accessed June 27 2021]

Furthermore, taking into account that Greece has entered the COVID-19 crisis with pre-existing workforce shortages and geographical imbalances in the distribution of health care professionals<sup>14</sup>, Greek authorities implemented multiple strategies to maintain, enhance and expand the surge capacity and flexibility of the health workforce that has been fundamental to delivering an effective COVID-19 response<sup>15</sup>. The first step taken to that direction was to officially suspend and revoke all leave of absences for public health sector employees while subsequently a variety of measures were implemented including mobilising the existing workforce where health workers were mandatory repositioned to work to different disciplines, most notably reinforcing intensive care units (ICUs) and emergency departments to regions or cities with greater care needs. Other implemented measures included launching emergency recruitment procedures to hire new health workers, bringing inactive or retired health professionals back to the workforce, mobilising non-governmental and private sector workforce capacity and calling on volunteers. In Greece, more than 8,000 volunteers applied to offer their services supporting the COVID-19 response through a designated digital platform (https://ethelontes.gov.gr) created by the Ministry of Health<sup>16</sup>. We should note that many of these reforms were introduced for the first time in Greece and for thus necessitated the adoption of emergency legislation.

From mid November 2020 onwards and up to the escalation of the third epidemic wave between March and April 2021<sup>17</sup>, the number of new COVID-19 cases but also the number of daily hospital admissions and the respective number

of intubated patients, increased dramatically putting unprecedented strain on the country's health system<sup>18</sup>. Responding to this situation the Hellenic Ministry of Health activated an additional Emergency Action Plan which entailed the requisition of clinics and personal services of the private sector, the compulsory acquisition of military hospitals without any further procedures and the amplification of public hospitals solely dedicated to COVID-19 cases treatment.

In the context of this Emergency Plan the Greek government proceeded with the requisition of two private clinics in Thessaloniki (facilities, services, staff, equipment and pharmaceutical products) and of personal services of private sector doctors specializing in Pulmonology, Pathology and General Medicine, for the treatment of the COVID-19 patients in public hospitals while 4 additional public hospitals ("Sotiria" Thoracic Diseases Hospital of Athens, "Amalia Fleming" Athens General Hospital, "Sismanogleio" Athens General Hospital, "Korgialeneio -Benakio/Hellenic Red Cross" Athens General Hospital) were converted into a one disease Hospital exclusively for COVID-19 cases in Athens. In addition to that, the "Eric Dunant" Athens General Private Hospital and 6 more private clinics in Attica Region offered voluntarily their facilities and services for the treatment of non-COVID-19 patients.

<sup>14</sup> OECD, European Observatory on Health Systems and Policies (2019). Greece: Country Health Profile 2019. State of Health in the EU. Paris, OECD/Brussels, European Observatory on Health Systems and Policies, available here [accessed June 30 2021]

<sup>15</sup> Williams, G.A., B.Maier, C., Scarpetti, G., Giulio de Belvis, A., Fattore, G., Morsella, A., Pastorino, G., Poscia, A., Ricciardi, W and Silenzi, A. (2020), What strategies are countries using to expand health workforce surge capacity during the COVID-19 pandemic? available here [accessed June 25 2021]

<sup>&</sup>lt;sup>16</sup> Hellenic Ministry of Health, Volunteers Programme Recruiting in the context of the COVID-19 response(ethelontes.gov.gr) <u>available here</u> [accessed June 27 2021]

<sup>&</sup>lt;sup>17</sup> Penny Bouloutza, P. (2021 March 31), Covid's third wave showing its full force. New records set in daily infections and intubations as gradual return to normalcy considered, available here [accessed June 30 2021]

<sup>&</sup>lt;sup>18</sup> Siettos, C., Anastassopoulou, C., Tsiamis, C., Vrioni, G. and Tsakris, A. (2021), A bulletin from Greece: a health system under the pressure of the second COVID-19 wave, Pathog. Glob Health. May; 115(3):133-134. doi: 10.1080/20477724.2021.1881372. Epub 2021 Feb 3.

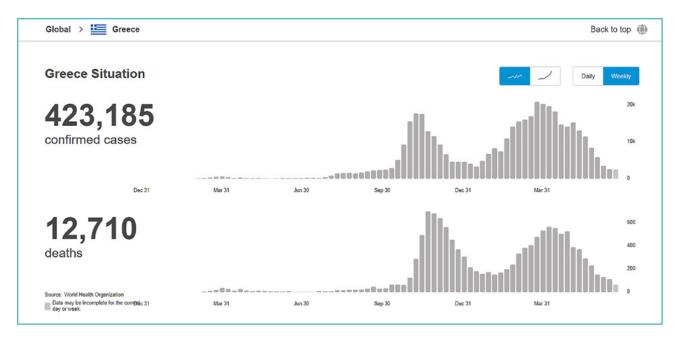


Figure 3: The current COVID-19 situation in Greece (Data reported to WHO up to July 2 2020)

Source: WHO, COVID-19 Situation dashboard, <u>click here</u>

On account of the de-escalation of the third epidemic wave, all healthcare units both at private and public sector were gradually relieved from their previous commitments and designated COVID-19 beds and clinics returned to their pre- pandemic use (with the exception of referral hospitals). Non-emergency operations, morning and afternoon outpatient appointments resumed gradually.

## 2.1 Addressing Vulnerability



The majority of the implemented public health measures aimed to balance an effective response to COVID-19 with the continuity in essential health services delivery. A core issue remained the protection of vulnerable populations and marginalized groups and to do so, Greek authorities introduced or expanded initiatives to provide care at home, particularly for vulnerable groups<sup>19</sup>, launched special programmes to mitigate the psychological impact of the COVID-19 pandemic and issued interim and targeted guidelines.

In this context a special 24-hour helpline (10306) commenced operation on April 4 for the provision of psychological support to all people in need due to the consequences of the pandemic<sup>20</sup>. This support programme has been a joint initiative of the Hellenic Ministry of Health and the psychiatric clinic of the National and Kapodistrian University of Athens' Medical School, in collaboration with the ARGO federation of mental health and psychosocial support groups. Furthermore, the Hellenic Ministry of Health launched, at early February 2021, a psychosocial support Program<sup>21</sup> for COVID-19 patients and their families, healthcare professionals and chronic patients, providing targeted services through a network of specialized mental health units. In addition to that, a series of Special Guides and Guidelines for the Psychological Management of the Pandemic were issued in the respective period<sup>22</sup>, addressed to the general population, children and families, the elderly, health personnel for the prevention of burnout syndrome, concerning perinatal mental health, management of mental anguish from hospitalization or loss and also entailing psychosocial interventions on the refugee issue.

Other targeted actions involved the delivery of preventive measures in elderly care units, centers for the chronically ill, structures and hostels for vulnerable groups (e.g., homeless, refugees etc.) such as suspension of visitation and implementation of certain health protocols in order to avoid further transmission of the infection to those closed communities. In this context, local community authorities were authorized to establish and operate temporary accommodation structures and dedicated dormitories for the homeless and other vulnerable groups (e.g., drug addicts) under emergency procedures and licensing. In addition health authorities issued and updated regularly, a series of circulars and operational guidance<sup>23</sup> concerning case management of COVID-19 and other protective measures against the occurrence and spread of the infection, in reception and identification centers of asylum seekers and immigrants, hostels of unaccompanied minors, mental healthcare units and nursing homes.

<sup>&</sup>lt;sup>19</sup> Hellenic Republic, Formation of 500 Mobile Health Units for home nursing care services, sampling of biological material and immediate rapid test execution of throughout the country, <u>available here</u> [accessed June 27 2021]

<sup>&</sup>lt;sup>20</sup> Hellenic National Public Health Organization (EODY), Psychosocial Support Hotline 10306 for the coronavirus, <u>available here</u> [accessed June 27 2021]

<sup>&</sup>lt;sup>21</sup> Hellenic Ministry of Health, (2021,February 1), Psychological Support Program, <u>available here</u> [accessed June 27 2021]

<sup>&</sup>lt;sup>22</sup> Hellenic Ministry of Health (2020, December 10), Interim Guidance for the Psychological Management of the Pandemic available here [accessed June 27 2021]

<sup>23</sup> see here

# 3. Communication and Vaccination Campaigns



Communication in times of emergency such as the COVID-19 pandemic is crucial. Currently, people have access to multiple channels of communication, both online and offline. The communication governmental strategy dedicated to informing citizens regarding the pandemic as well as for the specific measures that were adopted in each COVID-19 wave and to further educate them on how to protect themselves from the virus. In addition, the campaign, aims to eliminate disinformation and misinformation. In Greece, the Ministry of Health launched a COVID-19 campaign quite early in an effort to inform people about hygiene protocols, social distancing and on how to limit and delay the spread of COVID-19. To motivate the public to stay at home, TV advertisements with well-known Greek actors were created. During the first lockdown a new campaign was launched adopting a slogan which was calling people to stay at home "We stay at

home" (Menoume Spiti)24. The campaign was communicated through all available media, TV stations, billboards, radio and print as well as through social media since the campaign had its own social channels. The creation of a #hashtag was also generated and the logo of the campaign with the slogan appeared almost everywhere during the first COVID-19 wave, encouraging people to stay at home. Even telecommunication companies adopted the #hashtag replacing the provider's label in smartphones with the specific hashtag. The ''Menoume Spiti'' campaign was not limited to a slogan motivating people to stay at home. A dedicated webpage was also created providing general information, a phone number for psychological support and one for general questions, multiple videos and useful links and other necessary information and guidelines regarding COVID-19.



Figure 4: COVID 19 Communication Campaigns Logos ("We Stay at home", & "Stay Safe" respectively)

Source: click here

<sup>&</sup>lt;sup>24</sup> see here

With the ease of the first lockdown, the campaign was a bit altered since the new slogan was "Stay Safe" (Menoume Asfaleis) and emphasis was given on following a three-guide rule: hands-distanceface masks. Regarding face masks their use was initially recommended and mandatory only inside beauty salons, transportation means and whereas social distancing could not be achieved. The following period and since mid-July, face masks became mandatory in all inside spaces (stores, supermarkets, restaurants etc.) as well as transportation means including private hired taxis. Since people were not familiar with the correct use of face masks, the government created TV spots explaining the proper use of a face mask (either medical or fabric). Thus, the creation of a TV spot again with a well-known actress was launched, to inform people on how to easily make face masks with fabric (to avoid the cost of medical masks) and how to properly use them. In the following period and with the increase of face masks use, more advertises were generated informing people in the correct use of face masks.

In the governmental communication campaign except from the holistic COVID-19 campaign, citizens were being informed, especially during the first wave, through daily TV briefings every afternoon where Dr. Sotiris Tsiordas the official representative of the Ministry of Health, alongside with Mr Nikos Hardalias, Deputy Minister for Civil Protection, were announcing the new infections, deaths, and hospitalizations as well as the new measures and the overall evolution of the pandemic in Greece. The daily briefings ended in May when the daily infections were decreased substantially. Finally, the government created a website, which includes all information and advice related to COVID-19, along with the policies and decisions, the measures that are in place each time, answers to frequently questions and all necessary information and is accessible on covid19.gov.gr.<sup>25</sup>



#### 3.1 Vaccination in Greece



Greece managed to receive a sufficient number of vaccines through the EU joint purchasing mechanism<sup>26</sup>. The first vaccinations took place on December 27th whereas the first to get the vaccine were a nurse (as a symbolic move), the Prime Minister and the President of the Hellenic Republic. The Ministry of Health prepared a National COVID-19 Vaccination Operational Plan where vaccines distribution across the country as well as prioritization of population groups were the principal aspects. The vaccination plan was called "Freedom" program (Sxedio Eleutheria). The prioritization of population was divided in three phases. In phase one health workers, workers and residents in care facilities and governmental personnel working on essential functions were the

first groups to be vaccinated. In the second phase there was the age group starting from 80 years old and over, but gradually vaccines were available for all population of 60 years old and over as well as for groups of population over 18 years old with health issues or in high risk of COVID-19 infection. In the last phase, all population over 18 years have access to vaccines<sup>27</sup>. Vaccines are being administered in approximately 1018 public vaccination centres established for this purpose. The Covid-19 vaccine is free of cost but people do not have the option of selecting the vaccine they receive out of the available ones. According to the most recent data 8.084.788 million doses of the COVID-19 vaccine (figure 5) have been administered.



Figure 5: COVID-19 Situation dashboard- Greece (Data reported to WHO up to July 2, 2020) Source: WHO, COVID-19 Situation dashboard, click here

<sup>&</sup>lt;sup>26</sup> see here | <sup>27</sup> see here

The ''freedom program'' was also accompanied by a communication campaign in an effort to inform the public regarding the importance of vaccination and all types of vaccines. A holistic campaign was launched whereas TV spots with well-known actors staring as well as radio spots, print advertisements, outdoor and digital media were implemented for the dissemination of the new campaign. In addition, a new official website<sup>28</sup> was created which includes the platform for the vaccine booking as well as data, statistics and all necessary information and FAQs regarding the new COVID-19 vaccine.

Although the COVID-19 pandemic revealed pre-existing weaknesses of the national health system, Greece was compelled to swiftly adjust to what often called "the new normal" delivering a dynamic response. During this unprecedented crisis Greek authorities exploited the opportunity to introduce new innovative measures and procedures capitalizing the counties capacity for the application of information and communication technologies. Furthermore, significant progress and growth has been achieved in various areas and indicators of the health sector as for example the increase in total numbers on ICU beds reaching the European average<sup>29</sup>. As S. Tsiodras, 2021 underlines "the COVID-19 response in Greece has been swift and flexible, adapting to the evolving pandemic and creating unique opportunities for science and research"<sup>30</sup>.



<sup>&</sup>lt;sup>28</sup> see here

<sup>&</sup>lt;sup>29</sup> Fouda,A., Mahmoudi,N., Moyc,N. and Paolucci,F. (2020), The COVID-19 pandemic in Greece, Iceland, New Zealand, and Singapore: Health policies and lessons learned, Health Policy Technol,Dec2020;9(4):510-524. doi: 10.1016/j.hlpt.2020.08.015. Epub 2020 Aug 28

<sup>&</sup>lt;sup>30</sup> Tsiodras, S. (2021), COVID-19 research and science in the service of public health: the example of Greece, Nat Immunol., 22, 531–532, <a href="https://doi.org/10.1038/s41590-021-00919-z">https://doi.org/10.1038/s41590-021-00919-z</a>.

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