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Physicians' Trade-offs Between Impact on Medical Services and Societal Effects of COVID-19 Measures: A Discrete Choice Experiment

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Highlights

- Previous research has summarized public preferences for policy responses to the COVID-19 pandemic, but has not specifically focused on physicians' preferences.
- This study summarizes physicians' preferences for COVID-19 policy responses and finds that Dutch physicians support relatively strict and lengthy lockdown measures in order to avoid adverse health effects, while also countering negative economic consequences and avoiding "phase 3" hospital admission policy.
- Physicians' preferences regarding lockdown measures are relevant to inform policy decisions. When policy does not correspond with physicians' preferences, governments should be aware that since physicians are crucial to the frontline of dealing with the consequences of the pandemic their support is crucial.

Abstract

Objectives

To elicit physicians' preferences for COVID-19 lockdown measures, their societal impact, and health effects including impact on medical services.

Methods

In a discrete choice experiment (DCE) among Dutch physicians 15 choice tasks consisting of two hypothetical lockdown scenarios each, described by five attributes, namely lockdown type, lockdown length, hospital admission policy, excess deaths and job losses, were presented to respondents. A mixed logit model was used to analyze the choice data.

Results

A total of 175 Dutch physicians completed the online survey in May and June, 2021. All COVID-19 policy response attributes were judged unfavorable and significantly influenced respondents' trade-offs ($p < 0.001$). Physicians considered excess deaths the most important attribute, followed by job losses, hospital admission policy and lockdown type respectively. Lockdown length was regarded the least important attribute. All attribute levels showed significant standard deviations ($p < 0.001$), indicating heterogeneity in preferences among physicians.

Conclusions

Physicians prefer policy responses to the COVID-19 pandemic that prioritize avoidance of excess deaths, job losses and severe hospital admission policies over lockdown type and length.

Keywords: physicians, discrete choice experiment, preferences, COVID-19 measures, societal effects, health effects, COVID-19, SARS-CoV-2.

Introduction

Since December 2019, governments have imposed various lockdown measures to limit the spread of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). These measures aim to ease the pressure on healthcare systems by reducing infection rates and to limit associated mortality but come at the expense of negative societal effects including social, economic and public health consequences.^[1-4] Around the world, policy responses to the COVID-19 pandemic are under debate and governments struggle with trade-offs between positive and negative effects of COVID-19 policy responses.^[5-7]

Policy makers need information about preferences for lockdown measures to make informed decisions. Some work to investigate the extent to which the general public supports COVID-19 policy responses has been done using stated preference studies. When making trade-offs between duration and strictness of measures, the general public gives relatively much weight to the duration of the restrictive measures.^[8] The type of measures is also considered important: reopening nonessential businesses and schools is prioritized.^[8] Apart from short-term consequences, also long-term consequences are taken into account when making trade-offs: both adverse health effects and negative economic effects determine preferences.^[9-11] Thus, previous research shows that the general public, when making trade-offs regarding COVID-19 policy responses, values lockdown characteristics and health and economic consequences as important aspects, with heterogeneity in these public preferences.

Trade-offs have been investigated among the general public, but to date no studies are available in physicians and until now physicians' preferences have not explicitly been taken into account when making COVID-19 policy decisions. However, COVID-19 policy responses have important medical consequences and directly influence physicians' working conditions. Sufficient support base for pandemic policy responses among physicians is essential since they are crucial to the frontline of dealing with the consequences of the pandemic, such as a worst case scenario for hospital admission policy.^[12] Since physicians also have practical experience and expert knowledge about medical and public health matters, preference studies among physicians are particularly valuable to assist governments and their advisors in making policy decisions during spikes of the COVID-19 pandemic and possible other healthcare crises in the future. The objective of the current study is to quantitatively elicit physicians' preferences for lockdown measures by investigating the trade-offs that physicians make between the health effects including impact on medical services and the societal effects of lockdown measures.

Methods

To explore preferences for COVID-19 policy responses the Discrete Choice Experiment (DCE) method is appropriate since in a DCE, preferences for policies, in this case responses to the COVID-19 pandemic, can be established by deconstructing these responses into a number of characteristics (referred to as attributes), with several variants (referred to as levels).^[13] For example, the attribute “lockdown length” comprises the levels “3”, “9” and “16” weeks and “excess deaths” comprises “1”, “7” and “13” per 10.000 people. The basic assumption in a DCE is that each scenario consists of a combination of levels and that the respondents’ valuation depends on the combination of these levels.^[14] Respondents are asked to complete a number of choice tasks in which they select their preferred alternative out of two or more hypothetical scenarios, thus making trade-offs. After data collection, statistical regression techniques can be used to analyze the choice data, in order to obtain numeric values expressing the relative preference weights of the attribute levels.^[15]

Attribute & level selection

Table 1 displays the attributes and levels that were selected to describe various policy scenarios considered as possible responses to the COVID-19 pandemic. The selection of attributes was based on previous and current government responses to the COVID-19 pandemic globally^[5, 16] and previous research on preferences for lockdown measures.^[8-11, 17-20] To investigate whether all important attributes were included and clearly described, and to better understand participants’ responses, think-aloud interviews with physicians (n=4) and interns (n=2) were conducted and reiterated until saturation was reached and no additional major changes were necessary. This was considered to be the case when no further information emerged from the think-aloud interviews. Five attributes were selected to capture three aspects of policy responses to the COVID-19 pandemic: (1) lockdown characteristics: lockdown type, lockdown length and hospital admission policy; (2) likely health consequences: excess deaths and (3) likely economic consequences: job losses. The selection of attributes is mainly in accordance with the DCE instrument of Genie et al., which is proposed to elicit public preferences.^[17] Most of the aspects of COVID-19 policy responses that are relevant for physicians are also included in their instrument. In addition, for the purpose of the current study the attribute hospital admission policy was specifically developed to investigate how physicians address impact on their work when making the trade-offs. The attribute excess deaths comprises both COVID and non-COVID related mortality, compared to historical averages. The levels of the attributes lockdown type and hospital admission policy are further explained in appendix A.

Survey development

An online survey instrument was implemented in Lighthouse Studio. First, several questions were included to obtain relevant respondents’ characteristics, namely age, gender, years of practicing as a physician, career phase, medical specialty and work setting. Subsequently, several DCE warm-up tasks were used to familiarize respondents with the attributes, levels and format of the choice tasks. The last warm-up task was also used to test internal validity, using a dominance test with one of the policy scenarios being clearly superior over the other given the prior assumptions on preferences for attribute levels.^[21, 22] Then, the actual set of 15 DCE choice tasks was presented in three separate blocks of five choice tasks to limit the cognitive burden and to mitigate the repetitive nature of the DCE. Each choice task consisted of two hypothetical policy scenarios without an opt-out. To improve comprehension, color coding and visual aids inspired by Genie et al. were used.^[17] Additionally, level overlap between scenarios was applied for two levels in each choice task.^[23] An example choice task is provided in figure 1. Finally, several cognitive debriefing and survey satisfaction questions were included using a 7-point Likert scale.

DCE design

A heterogeneous Bayesian D-efficient DCE design with initially 10 and eventually 100 subdesigns was used.^[24] All designs were generated while adhering to the imposed overlap constraints using an algorithm implemented in the C++ programming language. The design of the DCE was based on main effects only, meaning that no interactions were included. Initially, best-guess priors were used. These were subsequently updated after 45 and 97 respondents to improve reflection of previously observed

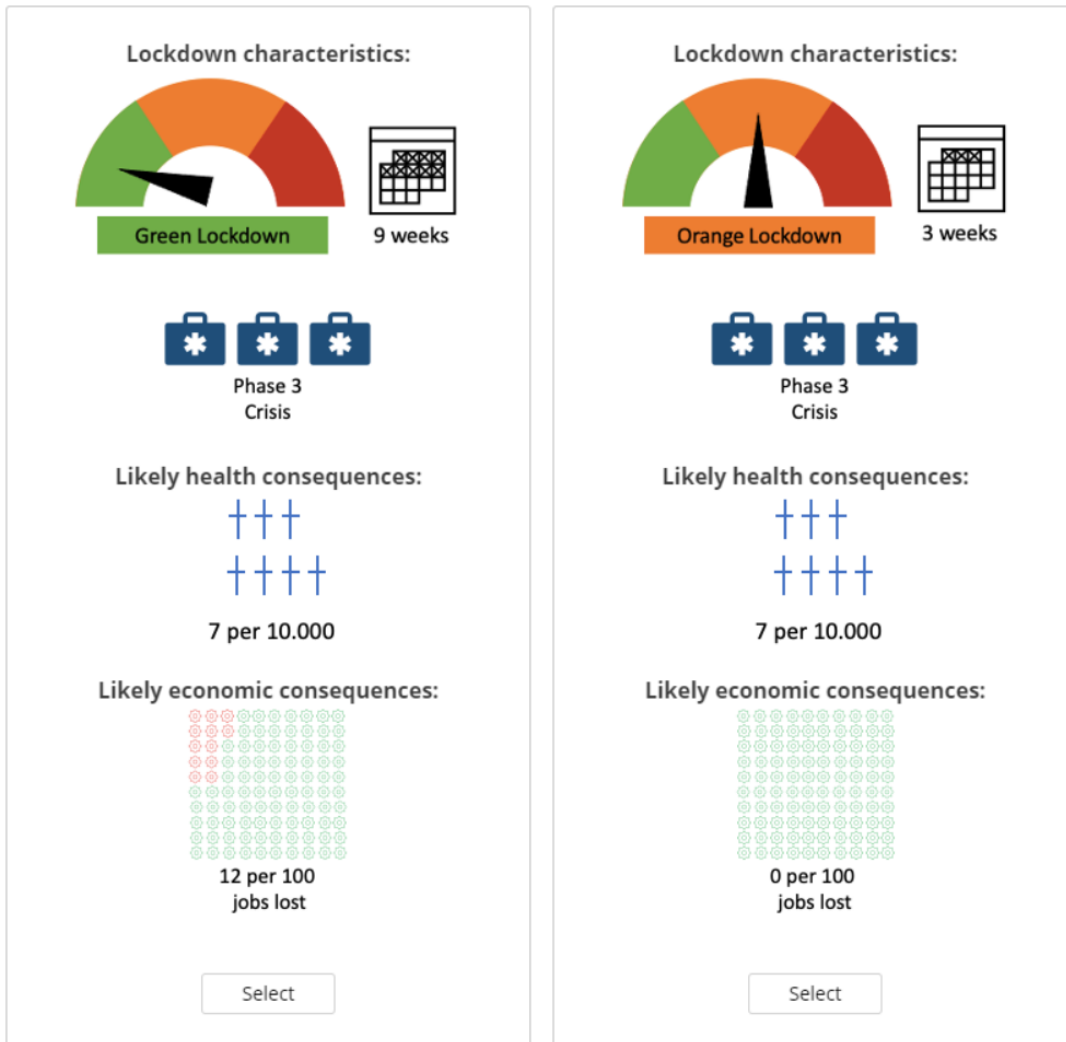
preferences and thereby enhance statistical efficiency. Optimizing the DCE design was done using Bayesian priors obtained from a mixed logit (MIXL) model.

Table 1. Overview of the attributes and their levels.

Attribute	Level 1	Level 2	Level 3
Lockdown type	Green	Orange	Red
Lockdown length (weeks)	3 weeks	9 weeks	16 weeks
Hospital admission policy	Phase 1	Phase 2	Phase 3
Excess deaths (per 10.000 people)	1 per 10.000	7 per 10.000	13 per 10.000
Job losses (per 100 people)	0 per 100	12 per 100	25 per 100

Figure 1. Example choice task.

If these were your only options, which scenario would you choose?



Data Collection

The survey was conducted among Dutch physicians, between May 8 and July 6, 2021. Apart from licensed physicians, also interns, i.e. medical students in the last phase of medical school, were included. The group of respondents as a whole is referred to as physicians. Physicians not having practiced hands-on patient care in the Netherlands during the past 3 years, other healthcare professionals and medical students other than interns were excluded from participation. Respondents were invited to participate via posts on social media explaining the nature of the study. Additionally, participants were recruited by direct messages. The study protocol was approved by the Research Internal Review Board of the Erasmus School of Health Policy and Management. There was no external funding for the study.

Statistical Analysis

A MIXL model with correlated random parameters was used to estimate population- and individual-level preferences, using simulated maximum likelihood methods.^[25] These estimations were performed using 2000 Halton Draws, to assure stability of coefficients.^[26] In this model, the observed choices for policy scenarios are used as the dependent variable and the attribute levels of the policy scenarios are used as the independent variables. The MIXL model takes into account heterogeneity between respondents' preferences for policy scenarios by estimating a distribution around each mean utility estimate. Thus, the mean parameters capture the average preferences in the sample and the standard deviations reflect the degree of heterogeneity in the corresponding parameter. To address the relative attribute importance, utility ranges between the different levels of the attribute were calculated.

A sensitivity analysis addressing the MIXL model was performed excluding 15/175 participants who did not choose the preferable alternative in the dominance test.^[21] The results of the sensitivity analysis are included in appendix B. All analyses were performed using Stata Version 16.1 (Stata Corp., College Station, TX).

Results

Study population

A total of 175 respondents met the inclusion criteria and completed the survey. Characteristics of the study sample are provided in table 2. Of the 175 participants, 63% (n=110) were women and 51% (n=89) aged 23 to 29 years old. Respondents of all career phases were represented in the study sample, with 39% fully registered medical specialists. The majority of respondents (n=121, 69%) reported a hospital as primary work setting.

DCE results

The utility estimates the respondents derived from the attribute levels of the COVID-19 policy scenarios are presented in table 3. These utility estimates are visualized in figure 2 to enhance their interpretation. All attributes significantly ($p < 0.001$) influenced respondents' trade-offs with signs as expected: physicians disliked more strict and longer lockdown measures, more severe phases of hospital admission policy, higher mortality rates and more job losses. Thus, on the basis of the data, according to physicians the most preferred policy scenario would be a "green" lockdown of 3 weeks, with a nearly conventional ("phase 1") hospital admission policy and no jobs lost and excess deaths.

On average, physicians considered excess deaths the most important attribute reflected by a coefficient of -5.66 for the highest level of 13 excess deaths per 10,000 people. The amount of job losses was perceived almost as important with a coefficient of -5.16 for "25 per 100" jobs lost. Both excess deaths and job losses were considered approximately twice as important as the type of lockdown when making trade-offs: the most severe lockdown type, displayed as "red" (involving closing of schools and all nonessential businesses) showed a coefficient of -2.79. Lockdown length was regarded the least important attribute: with a coefficient of -1.96 for the most lengthy lockdown of 16 weeks it was less important than lockdown type. Notably, according to the responding physicians, for the attribute hospital admission policy especially "phase 3" should be avoided as reflected by the coefficient of -4.32. A "phase 2" hospital admission policy was considered relatively acceptable, with a coefficient of merely -0.64.

All attribute levels showed quite large and statistically significant standard deviations, indicating substantial heterogeneity in preferences among responding physicians. For the levels of the attributes lockdown type, lockdown length and hospital admission policy, the standard deviations were almost as large as the mean estimates or even larger, reflecting a wide variety in preferences for the lockdown characteristics. For excess deaths, the standard deviations were slightly smaller compared to the mean estimate, but still substantial. Although there was also a distribution of preferences for the levels of the attribute job losses, the standard deviations were slightly smaller meaning that there was relatively little heterogeneity in preferences with regards to this attribute.

Table 2. Characteristics of the study sample (n=175)

Characteristics	Survey respondents, n (%)
Gender	
Female	110 (63)
Male	65 (37)
Age (years)	
23-29	89 (51)
30-45	42 (24)
46-69	44 (25)
Career phase	
Intern ^a	33 (19)
Non-resident physician ^b	54 (31)
Resident physician ^c	19 (11)
Specialist ^d	69 (39)
Work setting	
Hospital based	121 (69)
Non-hospital based	21 (12)
Not applicable or unknown	33 (19)

^a Interns: medical students in the final rotation of the last year of the Masters program (the so-called 'transitional' year)

^b Non-resident physicians: junior house officers

^c Resident physicians: medical specialty trainee physicians

^d Specialists: fully licensed medical specialists

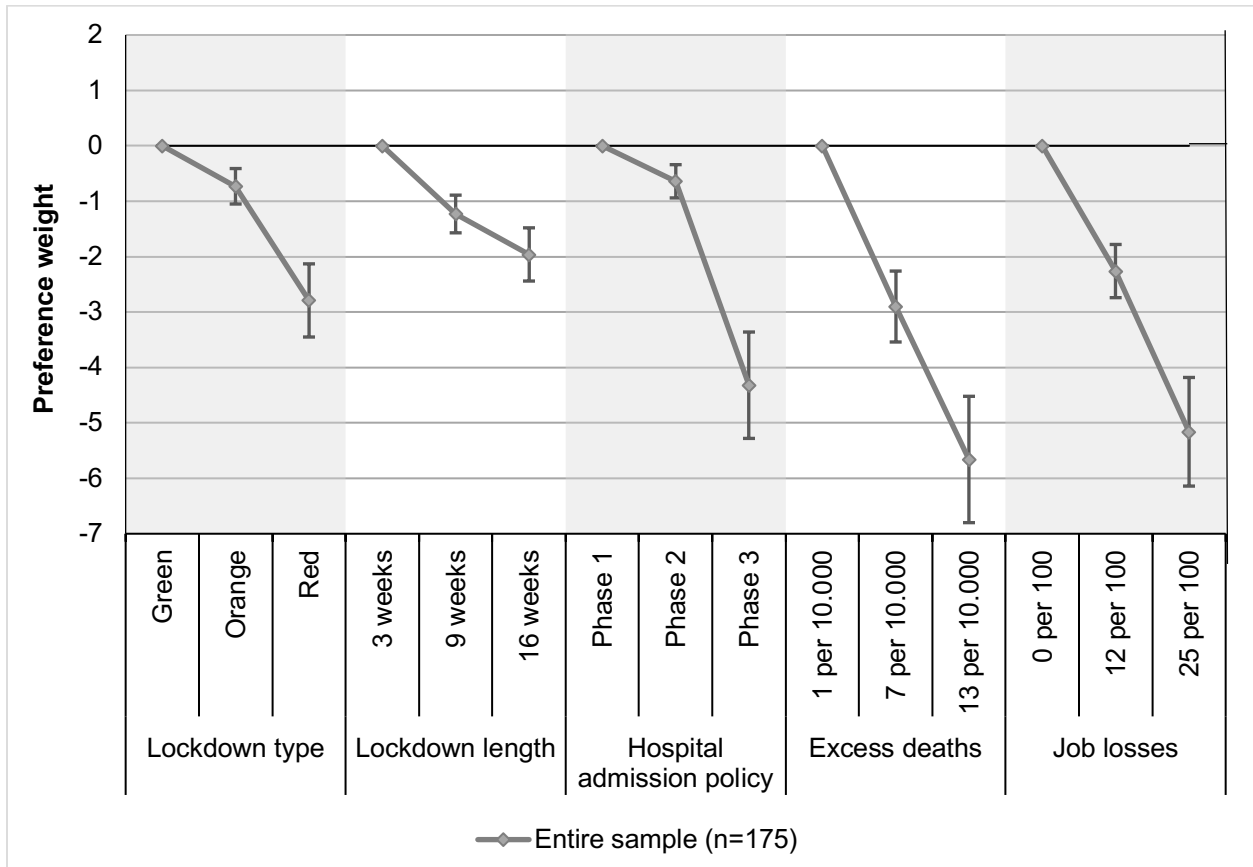
Table 3. Mixed logit estimation results

Attributes	Mean (SE)	SD (SE)
Lockdown type		
Green (reference)	0	0
Orange	- 0.73 (0.16)**	1.22 (0.20)**
Red	- 2.79 (0.33)**	2.31 (0.30)**
Lockdown length		
3 weeks (reference)	0	0
9 weeks	- 1.23 (0.17)**	1.11 (0.19)**
16 weeks	- 1.96 (0.24)**	1.75 (0.24)**
Hospital admission policy		
Phase 1 (reference)	0	0
Phase 2	- 0.64 (0.15)**	1.07 (0.20)**
Phase 3	- 4.32 (0.48)**	3.94 (0.46)**
Excess deaths		
1 per 10.000 (reference)	0	0
7 per 10.000	- 2.90 (0.32)**	2.08 (0.35)**
13 per 10.000	- 5.66 (0.57)**	3.78 (0.55)**
Job losses		
0 per 100 (reference)	0	0
12 per 100	- 2.26 (0.24)**	1.45 (0.22)**
25 per 100	- 5.16 (0.49)**	2.71 (0.39)**

SE, Standard Error; SD, Standard Deviation.

*p<0.01 **p<0.001

Figure 2. Mixed logit population means for attribute levels describing COVID-19 policy responses



Conclusions and Discussion

Summary of results

The objective of this study was to quantitatively elicit physicians' preferences for lockdown measures to fight the COVID-19 pandemic. The trade-offs that physicians make between the health effects, including impact on medical services, on the one hand and the societal effects of lockdown measures on the other hand were investigated. The results reported here show that when making these trade-offs physicians on average gave most weight to excess deaths. They considered job losses nearly as important, followed by hospital admission policy. They specifically preferred avoidance of the most severe "phase 3" hospital admission policy, while a "phase 2" situation was considered relatively acceptable. In this study, lockdown characteristics in terms of strictness and length were considered less important although still relevant.

As expected, all aspects of the trade-offs were judged unfavorable compared to the base-case. On average, physicians prioritized avoiding health consequences over all other aspects. The preference of physicians to ensure health consequences is possibly explained by their strong ethical sense in accordance with the oath of Hippocrates, and their education, practical experience and by societal expectations. Interestingly, physicians valued job losses almost as important as the direct health consequences in terms of excess deaths. Perhaps physicians also identify health consequences that are not explicitly stated, namely adverse health effects of socioeconomic distress resulting from job loss, social isolation and financial problems.^[27] Consequently, we speculate that, when assessing economic consequences of lockdown measures in terms of job losses, physicians possibly implicitly take into account these adverse health effects. Health consequences comprise excess deaths in the first place, but when a hospital admission policy leads to reduced quality of care, postponed usual care or even involves triage this obviously will result in health consequences too. When looking at the lockdown characteristics, i.e. type and length, it is interesting that physicians consider the more strict and lengthy measures relatively acceptable despite the indirect health consequences lockdown measures may have. This may be explained by the positive health effects that lockdown measures aim for.

Physicians consider a "phase 2" hospital admission policy quite acceptable while, with 120-200% of Intensive Care Unit (ICU) capacity and minimally decreased quality of care, this situation still directly changes their working circumstances adversely. The more severe "phase 3", with extreme working circumstances, decreased quality of care, the potential need for triage and usage of unconventional rooms as ICU, was considered highly unfavorable. This is likely explained by the importance physicians attach to avoid triage for hospital admission and intensive care admission, that arises in a "phase 3" situation. This comes with ethical dilemmas physicians understandably would prefer to avoid.^[28]

The large significant standard deviations of the mean utility estimates demonstrate a substantial variety in preferences for COVID-19 policy responses among respondents. For most attribute levels the standard deviations were almost as large as the mean estimates or even larger. Therefore, it would be expected that at least some individual-level parameters showed sign reversals, meaning that these respondents had positive attitudes towards aspects that are generally considered negative. However, when considering the respondents' individual-level parameters not many sign reversals are observed and the observed sign reversals were primarily seen in the less severe attribute levels. Thus, the large standard deviations can be explained primarily by differences in the degree to which respondents negatively value a certain level.

Comparison to Other Studies

To date, there are no other studies available in physicians that investigate the trade-offs researched in this study. Therefore, the results of this study can only be compared with previous studies in the general public. Our study shows that physicians give most weight to excess deaths, which is consistent with a US-study that reports that the majority of the public values minimizing health risks as more important than fast reopening of nonessential businesses.^[11] Our finding that hospital admission policy is important for physicians' trade-offs is in accordance with a Dutch study showing that increased working pressure in the healthcare sector is valued negatively by the general public.^[9, 10] In contrast with a French study that reports that the general public prioritizes lockdown duration in the trade-off with several types of lockdown measures, we found that Dutch physicians consider the strictness and type of measures more important than the duration of the lockdown.^[8] We stipulate that this disparity could be

explained by a difference in patience and endurance between physicians and the general public, in accordance with professional training and required attitudes of physicians.

Strengths & limitations

A major strength of this study includes its timing since data collection took place at a time point when the trade-offs presented in the survey were actually realistic. Physicians were invited to participate in the study during the actual pandemic when infection rates in the Netherlands were still classified as very severe, with corresponding levels of hospital admission rates. During the time frame the survey was online COVID-19 policy responses were a topical issue globally and policy decisions had actually to be made. Second, it is noteworthy that the answers to the cognitive debriefing and survey satisfaction questions demonstrate that our survey was set up properly (appendix C). The majority of the respondents indicated that the choice tasks were (very) clear ($n=135$, 77%) and relevant ($n=118$, 67%). Notably, 81% ($n=142$) of the respondents valued the subject of the survey as (very) interesting.

Physicians were included regardless of their specialty, since also physicians who not directly treat COVID-19 patients themselves often deal with the consequences of the pandemic in their work e.g. because they are deployed at a different hospital ward, because regular care is postponed and due to the public health consequences of the pandemic. Apart from licensed physicians also interns in their final rotation were eligible for inclusion in this study. This is supported by previous research stating that physicians' conduct can be accurately predicted from data about medical students.^[29]

The presented results also appear to be robust. A sensitivity analysis excluding respondents who chose the inferior policy scenario in the dominance test resulted in similar mean estimates as the main results: signs of all coefficients were still negative, relative attribute importance was the same and significance levels were similar (appendix B). Since excluding these respondents from the analyses had a negligible impact on the results, the results for the whole sample of 175 respondents are reported.

The results and conclusions of this study are subject to some limitations. First, the sample is not perfectly representative for the population of Dutch physicians. Recruiting respondents via social media potentially results in selection bias by selecting respondents who use social media in the first place. In addition, it seems likely that especially physicians and interns with a specific interest in the subject have responded; this is in accordance with the large proportion ($n=142$, 81%) of respondents that actually valued the subject as (very) interesting. There were more women ($n=110$, 63%) than men in the sample corresponding with the real population of physicians containing more females too (57%).^[30] With a mean age of approximately 37 years participants were generally younger than a study population consisting of licensed physicians only would have been. This is explained because also interns, who obviously are generally younger than licensed physicians were deliberately included.

Second, as every stated preference study, the nature of this DCE is hypothetical. Although physicians might address trade-offs differently in real life, these studies can provide insights in respondents' preferences. As explained above, the timing of the data collection contributed to the realism of the trade-offs that were investigated.

Third, although the results of this study may not be fully generalizable to other countries they are of interest to policy makers in other countries as well. Physicians are educated to promote health and to be involved in public health; thus, their attitudes in these respects are expected to be largely similar across countries.^[31, 32] The trade-offs of physicians reported here imply policy recommendations that come from professionals with highly relevant knowledge and experience regarding dilemmas that are relevant in many countries, especially countries with comparable healthcare resources. Thus, policy makers in these countries can benefit from the trade-offs of these experts to reflect on their current and pending policy decisions and to take them into account in the future. Especially in such a new and critical situation as the COVID-19 pandemic, learning from other countries is very useful and should be promoted.

Future research

It is of interest to investigate physicians' preferences for lockdown measures to fight the COVID-19 pandemic in other countries. This could give insights into the generalizability of our study and the differences between physicians' preferences across countries, e.g. related to differences in culture, the availability of healthcare resources and the socioeconomic situation of countries. Also, repeating this study in a different time period could give new insights since context factors may influence physicians'

attitudes towards the different aspects of lockdown measures. Finally, qualitative research on physicians' preferences, e.g. using in-depth interviews, could be useful to further explore underlying considerations of physicians when making trade-offs.

Policy recommendations

During the COVID-19 pandemic, governments worldwide have needed to make difficult decisions on the strictness and length of lockdown measures. Which policy was chosen had and continues to have far-reaching socioeconomic and medical consequences. The findings of this study are relevant now, during the COVID-19 pandemic, but also in possible future healthcare crises. Because physicians have practical experiences and expert knowledge about medical and public health matters, physicians' preferences regarding lockdown measures and their effects are valuable to inform policy decisions. However, actual policy choices should not only take into account physicians' preferences but also the expert advisors' preferences, public preferences and estimation models. Thus, policy makers have to make trade-offs between preferences of these stakeholders.

It is important that governments are aware whether imposed policies correspond with physicians' preferences, since physicians are crucial to the frontline of dealing with the consequences of the pandemic. Until now, in the Netherlands the main target of the measures imposed is the prevention of overburdening hospital capacity. Our study shows that physicians prioritize preventing excess deaths. While there is overlap between these goals, at least from an ethical perspective these are not the same. When imposed policies markedly differ from policies preferred by physicians this might have consequences for the support base among healthcare personnel, although the effects thereof are not easy to predict.

In summary, physicians are willing to accept relatively strict and lengthy lockdown measures in order to avoid adverse health effects and negative economic consequences. They even consider a very strict lockdown of 16 weeks acceptable, including the obligation to stay at home without visitors, prohibition of gatherings beyond the own household, prohibition of non-essential traveling, shutting down schools and sports up till age 18, closing of non-essential businesses and a strict curfew from 6 pm till 6 am. Thus, physicians prefer policy responses to the COVID-19 pandemic that prioritize avoidance of excess deaths, job losses and severe hospital admission policies over lockdown type and length.

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Appendices

Appendix A: Description of the levels of the attributes lockdown type and hospital admission policy

Figure. Description of the levels of the attribute lockdown type, as shown in the survey

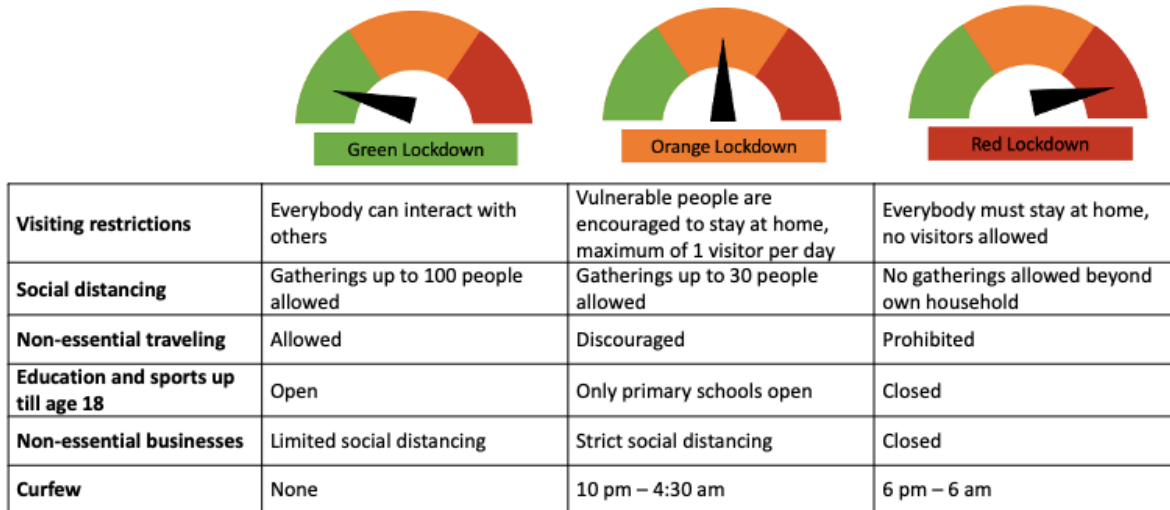
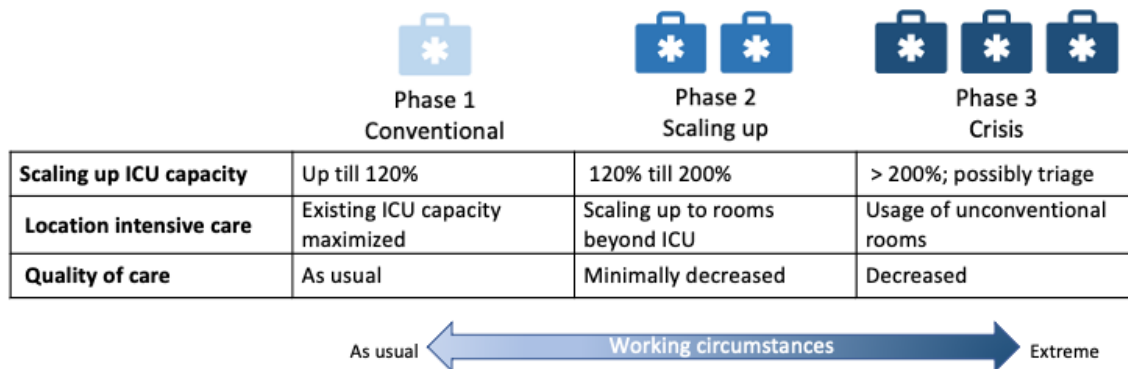


Figure. Description of the levels of the attribute hospital admission policy, as shown in the survey



Appendix B: Sensitivity analysis for dominance test

Table. Mixed logit estimation results excluding respondents who did not choose the preferable alternative in the dominance test (n=160)

Attributes	Mean (SE)	SD (SE)
Lockdown type		
Green (reference)	0	0
Orange	- 0.90 (0.17)**	1.10 (0.19)**
Red	- 3.03 (0.34)**	2.23 (0.33)**
Lockdown length		
3 weeks (reference)	0	0
9 weeks	- 1.35 (0.18)**	1.09 (0.20)**
16 weeks	- 2.11 (0.26)**	1.83 (0.25)**
Hospital admission policy		
Phase 1 (reference)	0	0
Phase 2	- 0.66 (0.16)**	1.12 (0.22)**
Phase 3	- 4.43 (0.49)**	4.05 (0.50)**
Excess deaths		
1 per 10.000 (reference)	0	0
7 per 10.000	- 2.95 (0.37)**	2.25 (0.35)**
13 per 10.000	- 5.78 (0.69)**	4.06 (0.55)**
Job losses		
0 per 100 (reference)	0	0
12 per 100	- 2.34 (0.27)**	1.42 (0.23)**
25 per 100	- 5.35 (0.53)**	2.65 (0.42)**

SE, Standard Error; SD, Standard Deviation.

*p<0.01 **p<0.001

Appendix C: Survey evaluation

Statement	n (%)
I can easily identify the differences between the scenarios	
Agree	118 (67.4)
Disagree	23 (13.1)
I took all characteristics of the different scenarios into account when making choices	
Agree	138 (78.9)
Disagree	24 (13.7)
I can easily choose between the different scenarios	
Agree	78 (45.1)
Disagree	59 (33.7)
The choice tasks were clear	
Agree	135 (77.1)
Disagree	15 (8.6)
I could easily have answered more choice tasks	
Agree	52 (29.7)
Disagree	61 (34.9)
All important characteristics of COVID-19 measures were included in the description of the scenarios	
Agree	83 (47.4)
Disagree	62 (35.4)
The choice tasks were relevant	
Agree	118 (67.4)
Disagree	29 (16.6)
There were too many choice tasks	
Agree	31 (17.7)
Disagree	67 (38.3)
The subject of the survey is interesting	
Agree	142 (81.1)
Disagree	10 (5.7)

Reported on respondents who completely agreed or agreed (i.e., indicated a score of 5-7 on the 7-point Likert scale) and who completely disagreed or disagreed (i.e., indicated a score of 1-3). Since respondents who answered “neutral” (i.e., indicated a score of 4) are not included in this table, the percentages do not count up to 100%.