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Stay home, stay safe: Why are people in Chile not complying with stay-at-home recommendations and restrictions?

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Title: Stay home, stay safe: Why are people in Chile not complying with stay-at-home recommendations and restrictions?

Running Head: Staying home during the COVID-19 pandemic

Abstract

In the context of the COVID-19 pandemic, social distancing measures and lockdowns have been adopted as a cornerstone to limit the spread of the disease. Yet, the effectiveness of stay-at-home recommendations and restrictions depend on people's levels of adherence. In this paper, we apply social-psychological research to the study of compliance with stay-at-home recommendations and restrictions during the COVID-19 pandemic in Chile. Chile is a particularly interesting case because lockdown implementations have shown lower effectiveness in reducing mobility than in other countries. We consider three possible models underlying lockdown adherence: a) sociodemographic and socioeconomic factors, b) instrumental factors and c) normative factors. We draw on data from a cross-sectional representative sample (Study 1, n = 1,078) and a longitudinal non-representative panel study (Study 2, n = 32,304) to explore the impact of these different factors on lockdown compliance. Findings show the strongest support for the role of a normative model, in that people who adhere to lockdown report to a greater extent than relatives and friends stay at home too. Findings on the role of risk perceptions are mixed. We finish by proposing policy recommendations to generate effective strategies to contain the spread of the virus.

Keywords: Lockdown; COVID-19; Stay-at-home; compliance; social norms; risk perception

Stay home, stay safe: Why are people in Chile not complying with lockdown recommendations and restrictions?

During the COVID-19 pandemic, social distancing, stay-at-home recommendations, and compulsory lockdowns have been adopted to limit the spread of the virus across the world. Yet, the effectiveness of these measures depends on people's levels of adherence. Chile is a particularly interesting case because: (a) it is a highly unequal country with stratified access to the health care system (Goic, 2015) and to practical possibilities of staying home during the COVID-19 pandemic; (b) previous to the pandemic (since October 2019), Chile went through a period of political unrest in which protesters took to the streets to demand structural changes to the political and economic systems, a process in which there has been strong police repression and a significant decrease in the legitimacy of authorities, namely the government and the President; and (c) lockdown recommendations (such as stay-at-home measures) and restrictions (i.e. compulsory lockdown) have shown lower effectiveness in reducing mobility than in other countries (Olivares et al., 2020). As such, despite the high trust that Chilean authorities expressed in their approach to deal with the pandemic, Chile is now considered one of the countries with the worst outcomes in terms of the number of cases and mortality per population due to COVID-19 (Undurraga, 2020).

In this paper, we apply social-psychological research to the study of lockdown compliance during the COVID-19 pandemic in Chile, by comparing three models of lockdown compliance. First, we look at sociodemographic and socioeconomic factors that might facilitate lockdown compliance for some people more than others. Second, we consider instrumental factors according to which people comply to maximize personal benefits and reduce the risk of contagion. The perceived risk

of COVID-19 for health as well as the risk of being punished for not complying might encourage people to stay at home. Finally, we evaluate the role of normative factors, focusing on people's perceptions that they should adhere to these recommendations because it is the right thing to do. The focus here is on the conformity with and the internalization of social norms. We consider the role of perceived social norms (i.e. whether friends and family stay at home too) and perceived legitimacy of authorities (as legitimacy fosters the belief that the right thing to do is to follow the authorities' lockdown guidelines). Understanding the motivations underlying compliance is relevant not the least because it can inform policy recommendations and the implementation of interventions to encourage lockdown compliance. Analyzing the predictors of lockdown compliance in an unequal country such as Chile, in turn, might shed light on specific socioeconomic conditions that can affect the successful implementation of interventions, hereby avoiding perpetuating social inequalities in the consequences of the pandemic (Templeton et al., 2020).

We first describe Chile's health system and the strategies adopted during the COVID-19 pandemic. Second, we discuss three perspectives that can help understanding lockdown compliance from a social-psychological perspective. We then present findings from two studies conducted in Chile during the year 2020: a cross-sectional representative study (Study 1, n = 1,078) and a longitudinal non-representative panel study (Study 2, n = *32,304*). We finish by discussing the findings and presenting possible avenues for policy recommendations.

Chile: Health system and adopted strategies during the COVID-19 pandemic

Since the arrival of SARS-COV-2 in March, several measures have been adopted to reduce the virus spread and to improve the healthcare system capacity in Chile (Canals et al., 2020). First, in mid-March, schools and universities were closed, and a national catastrophe state started (for a detailed description of public health interventions see Figure 1). Then, between March 16th and 26th, a national overnight curfew was adopted, as well as restrictions on public gatherings, quarantine of contacts of COVID-19 cases, quarantine of older adults and a 14-day quarantine to returning travellers. In the beginning, most COVID-19 cases were reported in richer neighbourhoods of the city of Santiago. Such cases were mostly related to international travel and the return of people from higher social classes. In this line, the government started implementing small-area lockdowns, called "dynamic quarantines", according to the number of infections by neighbourhoods within the country's capital, Santiago, and in other cities in the country. By April 21st, the government introduced the concept of "New Normality", calling on the population to return to normal activities. Over the following month, there was a sharp increase in the number of cases and occupation of ICU beds, followed by larger and stricter lockdown restrictions in the whole capital city and other territories. Since July a phased reopening has been taking place.

- FIGURE 1 AROUND HERE -

Despite the high trust Chilean authorities expressed in their approach to dealing with the pandemic, lockdown implementation has shown lower effectiveness in reducing mobility than in other countries. Overall, stay at home requirements have shown a sharp decrease in mobility across

countries (Warren & Skillman,, 2020). For instance, in France, the lockdown reduced by 65% the countrywide number of trips (Pullano, Valdano, Scarpa, Rubrichi, & Colizza, 2020), while in Santander (Spain), the overall mobility decreased by 76% (Aloi et al., 2020). Nevertheless, in Chile, lockdowns did not show the expected size of the effect: mobility data shows that the lockdown in Santigo reduced mobility by 35.8% compared to pre-pandemic mobility (Olivares et al., 2020).

Understanding lockdown compliance from a social-psychological perspective

Sociodemographic and socioeconomic antecedents of lockdown compliance

There are different sociodemographic and economic variables that may lead to reduced lockdown compliance among different people. Previous studies have found that younger people are less likely to implement safe health practices in different aspects of life (Underwood, 2019), putting themselves at greater risk. The same might be expected for COVID-19, especially because younger people may perceive their group to have lower associated health risks. Moreover, Mohammadpour and colleagues (2020) showed that women are more likely to follow social distancing measures than men. This might be because women must care for other family members and are therefore more focused on protecting others and themselves. Health risks and security might also be relevant predictors of lockdown compliance. People with medical conditions (e.g. cardiovascular diseases or diabetes) associated with worse outcomes in case of COVID-19 infection (Williamson et al., 2020) might be more likely to follow lockdown measures. People who have health-insurance related insecurity might also comply more with lockdown measures. In Chile, the health system is

divided between public and private health systems, with people from higher socioeconomic groups adhering to private health insurances that provide better care and people from lower socioeconomic status relying on the public health system, which is underfunded and overcrowded (Goic, 2015). Thus, people from lower socioeconomic status are more exposed to risks related to a COVID-19 infection and may, therefore, comply more with lockdown measures. Paradoxically, this may, of course, interact with other factors that may put people with lower socioeconomic status at greater risk of contracting COVID-19.

In a different line, lockdown compliance during the pandemic is also affected by several socioeconomic factors that go beyond the willingness to comply. Previous research has shown that lockdown compliance in the United States and the United Kingdom was associated with people's intrinsic motivation to comply but also with their capacity to obey the rules (Kooistra et al., 2020; Van Rooij et al. 2020), showing that people will follow more the rules when they have the possibility to do it. This is in accordance with research showing that people with lower socioeconomic status comply less with shelter-in-place policies within different counties in the United States (Wright, Sonin, Driscoll, & Wilson, 2020). Given that Chile is one of the most unequal countries in the world, we hypothesize that lockdown compliance will also be affected by income insecurity. Thus, people of lower socioeconomic status and educational levels might have more difficulties staying at home because this would mean risking their means of subsistence.

Instrumental factors underlying lockdown compliance

Research on compliance with rules and laws, highlights two different motivations underlying people's adherence: instrumental and normative motives (e.g., Jackson et al., 2012; Murphy,

Williamson, Sargeant & McCarthy, 2020; Tyler, 2006). From an instrumental perspective, people -conceived as rational actors- are expected to act in ways that maximize benefits and reduce losses at a personal level. When deciding whether to comply with a specific law, people analyze the risks of getting caught and assess whether these outweigh the benefits of non-compliance. In relation to COVID-19, non-compliance involves at least two risks: the risk of viral infection and the risk of punishment for violating lockdown. One could expect those who tend to perceive higher health-related risks and those who have faced controls by law enforcement agencies leaving home to a lesser degree. Consistently, Murphy et al. (2020) found that among Australian respondents, the risk of sanction and the risk of others getting sick increased compliance with COVID-19 distancing measures. Surprisingly, the perceived risk of people getting sick themselves was not related. Interestingly, the role of group processes should also be considered for COVID-19 related risk taking. It has been shown that when the threat comes from an in-group member, individuals perceive less risks and might engage to a greater extent in taking risk behavior, than threats that emerge from an out-group member (Cruwys, Greenaway et al., 2020). Based on this, in the pandemic context, we could expect that individuals will engage in higher risk taking behavior when they interact with in-group members because we tend to share more time with those who belong to our groups.

Normative factors underlying lockdown compliance

While instrumental factors may play a role, research has shown that individuals often act in ways that are not motivated by self-interest. From a normative point of view, people conform to social norms and expectations, internalizing norms as obligations and complying because it ‘is the right thing to do’ (Tyler, 2006). Compliance can be fostered when authorities are perceived as legitimate

and the adherence to their guidelines is considered the right thing to do. In this paper we explore two normative factors that might play a role in increasing lockdown compliance: social norms and legitimacy of authorities.

Social norms provide relevant information regarding how to behave (e.g., Schultz et al., 2007), based on other´s behavior, opinions and evaluations. They guide individual's behavior and are in general positively associated with compliance (e.g., Benneker, Gërxhani, & Steinmetz, 2020). Interestingly, under threatening conditions, groups engineer stronger norms, and show higher adherence levels and higher punishment for those who deviate from the norm (Roos et al., 2015). Presumably, in hazardous circumstances, such as ecological disasters or territorial threats, the need to coordinate is critical in order to survive (see Gelfand et al., 2011) and, therefore, we could expect that under the COVID pandemic, compliance with social norms -captured in this study as perceptions about family and friends following lockdown measures- might reach higher levels, given the health, social, and economic difficulties faced.

Second, research on legitimacy of authorities - i.e. the belief that authorities have the right to prescribe appropriate behavior - concludes that recognizing an institution or authority as legitimate fosters a perceived duty to obey and comply with the authorities' mandates (Jackson et al., 2012; Tyler, 2006). Research shows that perceived legitimacy of authorities predicts compliance even controlling for people's risk perceptions and their personal preferences on a particular behavior (e.g., Tyler & Jackson, 2014). As such, one relevant factor in predicting people's compliance with lockdown measures might be whether they perceive authorities to be legitimate actors. In this study, we expect perceived legitimacy of the authorities in charge of COVID-19 lockdown

measures in Chile (i.e. The President and the Minister of Health) to predict lockdown compliance. Research conducted in Australia has found that perceived duty to obey authorities predicted compliance with COVID-19 restrictions. However, trust in authorities (a proxy for legitimacy) did not.

This Research

According to the existing literature on lockdown compliance and associated variables, we expect that:

H_1: Women, older people, people with higher educational levels, people with COVID-19 associated health risks, people without health insurance, people who do not need to work out of their homes and those who do not fear losing their income during the pandemic will comply more with lockdown recommendations and restrictions.

H_2: People who perceive the virus to be more threatening and those who have been controlled by police for potential non-compliance will show more lockdown compliance.

H_3 People who feel normatively compelled to comply (either because of social norms that indicate the right behavior or because of legitimizing those authorities that communicate lockdown recommendations) will comply more with lockdown recommendations and restrictions.

To test these hypotheses we present two studies conducted in Chile during the COVID-19 pandemic. In Study 1 we present the results of a representative telephone survey study (Social Thermometer, 2020) in which Chilean participants were asked about different sociodemographic and socioeconomic, instrumental and normative factors, as well as their level of compliance with lockdown recommendations and restrictions put forth during the pandemic. In Study 2 we present data from a longitudinal online study (MOVID-19, 2020) that has sought to analyze symptoms and social practices in relation to the pandemic among Chilean people across time. Here, we analyse five waves of data collection with 19,339 responses on average every week.

Study 1: Social Thermometer

Method

Research design

Study 1 consists of a telephone survey conducted between May 30 and June 10 2020 in Chile with a sample of people 18 years or older living in private homes in urban and rural areas in Chile. The study was conducted by Centro Microdatos from the Universidad de Chile.

Sample

A sampling frame was previously constructed through a multi-stage geographically stratified sampling procedure. A random sample was then extracted from the previously mentioned sampling frame, yielding a sample of 1,078 complete responses. 51.1% of the sample were women, 36.7% were between 18 and 35 years old, 40.9% were between 36 and 60 years old and 22.3% were 60 years or older.

Measures

Respondents were asked whether they had stayed home during the last 24 hours. Responses were recoded to estimate a logistic regression model predicting odds of leaving home during the last 24 hours (1= left home, 0= did not leave home). Overall, 144 respondents reported having left home the day before (13.5%).

Sociodemographic and socioeconomic factors. Respondents were asked to report their sex (0=Woman, 1=Men), their age and their education level (recoded in three categories: High school or less (reference category), Technical qualification and University degree). Household income was first asked directly ('Could you tell me last month's household income?'). Those who did not report their household income (n = 140) were then asked to select their household income from 10 income ranges. For these people, the range midpoint was used instead. Occupation was measured asking respondents 'Which of the following best describes your main activity during last month?'. Out of 13 categories, 8 were coded as working (employer, independent worker, work in public sector, work in private sector, studying and working, live-in domestic service, live-out domestic service and work in law enforcement agencies) and the remaining 5 as non-working. Health risk-factor was established asking respondents whether they were currently diagnosed with a list of eight illnesses and health conditions: arterial hypertension, obesity, diabetes, chronic respiratory diseases (asthma, emphysema or other), cardiovascular diseases, active cancer, chronic kidney disease or immunodeficiencies. Respondents who either presented one of these conditions or were 60 years or older were classified as presenting a health risk-factor. Respondents were also asked which health insurance they had (public, private, other, none). Finally, they were also asked

whether -in case of compulsory lockdown- their household members would have to face a lack of income for having to stop working (0=No, 1=Yes). County of residency was used to assess whether people lived in areas under mandatory lockdown when answering the survey.

Instrumental factors. Instrumental factors were captured through two variables. First, respondents were asked to estimate their perceived risk of COVID-19 through the question 'How dangerous do you think Coronavirus is for the health of people in Chile?' (1=Not at all dangerous, 2=Somewhat dangerous, 3=Pretty dangerous, 4=Very dangerous, 5=Extremely dangerous). Second, participants were asked about having been controlled by legal enforcement agencies while going out: 'Have you or someone from your household been controlled by a law enforcement officer while being out to the supermarket, pharmacy or walk a pet?' (0 = No, 1= Yes).

Normative factors. Perceived social norms were captured asking respondents 'How many of your friends and/or family members have followed the recommendation of staying home due to coronavirus?' (1=None, 2=A few, 3=Some, 4=Most, 5=All). Since few respondents reported that none (0,8%), a few (5,6%) or some (10,4%) of their friends and/or family members had followed the recommendation, these three options were collapsed into the category "low social norms" while categories "most" and "all" were collapsed into the category "high social norms". Participants were asked to rate on a scale from 1 (very low trust) to 5 (high trust) the level of trust they had in the way in which the President and the Minister of Health had handled the coronavirus crisis in Chile. While these measures do not capture legitimacy directly, they have been included as proxies.

Analysis

Logistic regression models were estimated using R version 4.0.1 to predict the likelihood of leaving home during lockdown (i.e. non-compliance). Model 1 included sociodemographic and socioeconomic antecedents (sex, age, education level, family income and occupation), health-related variables (health risk factor and health insurance) and possible lack of income for staying home. Models 2-4 continued to control for the previous antecedents. Model 2 included instrumental factors (perceived risk and law enforcement agencies control), Model 3 included normative factors (perceived social norms and trust in authorities. Finally, Model 4 included all covariates.

Results

Across all models, men (*OR* = 1.76, *p* = 0.01), younger people (*OR* = 0.98, *p* = 0.01) and those who work (*OR* = 1.69, *p* = 0.04) were significantly more likely to leave home than women, older people and those who do not work. People holding a university degree were less likely to leave home than people with high-school or less, but this effect disappeared after controlling for normative factors. Family income, having a health risk-factor and health insurance did not predict the odds of leaving home in any of the models ($p > 0.05$). Interestingly, people who mentioned a lack of income as a consequence of being in lockdown were not significantly more likely to have left home the day before, controlling for all other sociodemographic and socioeconomic variables (p=0.14). As would be expected, people living in an area under lockdown were 59% less likely to leave their house than people living in areas with no formal lockdown restrictions (*OR* = 0.41, $p<0.01$). Perceived risk of COVID-19 had no significant effect on the odds of leaving, while having been controlled by law enforcement agencies had a counterintuitive effect of increasing the

odds of leaving the house in Model 2 (probably due to the fact that people who leave the house more often will also be more likely to have been controlled). However, this effect became non-significant after controlling for normative factors (p = 0.08). Perceived social norms were a relevant predictor of leaving home: people who perceived that friends and family members had complied with lockdown measures were 45% less likely to leave home, even after controlling for perceived risk (OR = 0.55, p = 0.02). Neither trust in the Chilean President nor Trust in the Minister of Health significantly predicted the odds of leaving home (p > 0.05*)*. Figure 2 illustrates the estimated probabilities of leaving home by sex, age, occupation, lockdown and perceived social norms.

- TABLE 1 AROUND HERE -

- FIGURE 2 AROUND HERE -

Study 2: MOVID-19

Method

Research design

Study 2 consists of an online longitudinal survey conducted between July 27 and August 30 2020 in Chile, including a sample of people 18 years and older. Data was collected by Universidad de Chile, the Chilean Medical College with the support of other Chilean universities.

Sample

The study considered a non-probabilistic sample with participants invited through social media, massive mailings and press. Data used for this analysis include 32,304 individuals and 96,695

observations for 5 waves of follow-up with, on average, 19,339 responses per week. 69.1% of the sample are women, 19.9% are between 18 and 35 years old, 54.5% are between 36 and 60 years old, and 25.6% are 60 years or older.

Measures

Respondents were asked the frequency of out-of-home activities during the past week (e.g. going to work, recreational activities, visiting other persons). Responses were recoded into those that left home for at least two activities during the last week (1=left home at least two times in the previous, 0= did not leave home at least two times in the previous week). Overall, 35.3% respondents reported having left home at least twice during the last week at the beginning of the data collection, while 47.4% did so the last week of follow-up.

Sociodemographic and socioeconomic factors. Respondents were asked to report their sex (0=woman, 1=men), age and education level (recoded in three categories: High school or less, Technical qualification and University degree). Occupation was defined as 1 for those who work and 0 otherwise. Health risk-factor was established asking respondents whether they were currently diagnosed with a list of eight illnesses and health conditions: arterial hypertension, obesity, diabetes, chronic respiratory diseases (asthma, emphysema or other), cardiovascular diseases, active cancer, chronic kidney disease or immunodeficiencies. Respondents were also asked which health insurance they had (public, private, other, none). County of residency was used to assess whether people lived in areas under mandatory lockdown when completing the survey.

Instrumental factors. Perceived risk of COVID-19 was captured through the question 'How dangerous do you think Coronavirus is for the health of people in Chile?' (1=Not at all dangerous, 2=Somewhat dangerous, 3=Pretty dangerous, 4=Very dangerous, 5=Extremely dangerous).

Normative factors. Perceived social norms were captured asking respondents 'How many of your friends and/or family members have followed the recommendation of staying home due to coronavirus?' (1=None, 2=A few, 3=Some, 4=A fair amount 5=Most, 6=All). Since few respondents reported that none (0.05%), a few (0.2%), some (1.14%) or a fair amount (6.59%) of their friends and/or family members had followed the recommendation, these four options were collapsed into the category "low social norms" while categories "most" and "all" were collapsed into the category "high social norms".

Analysis

Logistic multilevel regression models nested by repeated measures for each individual over time were estimated to predict the likelihood of leaving home at least two times per week (i.e. non-compliance with stay-at-home recommendations), mimicking the strategy followed on models under the study 1. Model 1 included socio-demographics and socio-economic antecedents (sex, age, education level and occupation), health-related variables (health risk factor and health insurance), living in an area under mandatory lockdown and time fixed effects. Models 2-4 continued to control for the previous antecedents. Model 2 included instrumental factors (perceived risk), Model 3 included perceived social norms and Model 4 included all previous covariates. All models were estimated using R version 4.0.1.

Results

Consistent with findings of Study 1, across models, we found that males (OR = 3.26, $p < 0.01$), younger persons (OR = 0.98, $p < 0.01$) and active workers (OR = 3.98, $p < 0.01$) were more likely to go out during the last week (Table 2). People with a university degree were less likely to leave home than people with high school or less education (OR = 0.72, $p < 0.01$). Persons living in areas under mandatory lockdown showed decreased odds of getting out-of-home two or more times a week (OR = 0.38; $p < 0.01$). Interestingly, in MOVID-19 reporting a health-risk factor for COVID-19 decreased the probability of going out (OR = 0.82, $p < 0.01$). Moreover, over time the probability of reporting more than two out-of-home activities increased (OR =1.21, $p < 0.01$).

Both instrumental and normative factors were important predictors of the decision to stay-at-home. A high perceived risk reduced the probability of leaving home across all models. For each point increase in the perceived threat of COVID-19, the odds of leaving home at least twice a week decreased in 36% (OR = 0.64, $p < 0.01$). Interestingly, the effect of perceived social norms on compliance had an effect as big as the implementation of mandatory lockdown in an area, reducing in 57% the odds of leaving-home at least twice in a week (OR = 0.43, $p < 0.001$). Figure 3 illustrates the estimated probabilities of leaving home at least twice for relevant explanatory variables.

- TABLE 2 AROUND HERE -

- FIGURE 3 AROUND HERE -

Discussion and Conclusions

Summary of findings

Our findings are consistent with previous research indicating that women, older people, people with higher educational levels and those who do not work are more likely to comply with stay-at-home recommendations and restrictions (H_1). Additionally, we found some indicative evidence that people with COVID-19 associated health risks are less prone to leave home, which is concordant with an increased perceived threat of the virus. Instrumental factors showed conflicting results. While in Study 1 neither perceived risk of COVID-19 nor having been controlled by law enforcement agencies predicted leaving home, in Study 2 perceived risk was a significant predictor (H_2). A more robust measure of perceived risk, which distinguishes between risk for the self and risk for others, should be used to further understand whether risk is a relevant predictor of lockdown compliance (see Murphy et al., 2020). In both studies high perceived social norms predicted lower odds of leaving home (H_3). The magnitude of the effect of social norms was as strong as the effect of living in areas under lockdown. This is in line with other research on how social norms predict compliance (Benneker et al., 2020). Perceived legitimacy of authorities, however, did not predict lockdown compliance. The latter might be because trust in authorities does not directly measure legitimacy. Recall that Murphy et al (2020) found a significant effect of perceived duty to obey but not trust in authorities on compliance with COVID-19 social distancing measures. Future research should replicate these analyses applying a more robust measure of legitimacy of authorities.

Another important finding from our longitudinal data is that the percentage of people leaving home increases over time, even accounting for the implementation of mandatory lockdowns in certain areas. Briscese, Lacetera, Macis, & Tonin (2020) found that Italian participants were less likely to comply with social distancing measures when these were extended for longer periods of time than they expected. This of course has consequences for the way in which public and health authorities deal with people's expectations when communicating extensions of the measures implemented. Our longitudinal data for this analysis was collected in an advanced phase of the COVID-19 pandemic, therefore being prone to a phenomena of compliance exhaustion from the population.

Limitations and further research

While our research provides an important contribution by presenting findings from a representative sample and a five-waves longitudinal study, some limitations should be mentioned. First, variables analyzed in both studies are single-item measures and this may pose a threat to construct validity or low reliability. Further studies must develop more consistent measures that capture the constructs put forth in this manuscript. Second, a self-selection bias is likely to occur in Study 2, in which people who are more concerned with COVID-19 are also more likely to respond to the different study waves. Third, we have considered different predictors but there might, of course, be other relevant variables to consider when analyzing compliance with COVID-19 prevention efforts. Other studies may include multi-level variables, such as structural factors like the health system's capacity to deal with increases in infection cases or other attitudinal and cognitive factors, such as conspiratorial thinking and fake news in the shaping of compliance behaviors.

Policy recommendations

As long as no vaccine is available for COVID-19, countries will have to adapt to living with COVID-19. In this context, many countries may need to reinstall lockdowns to contain the spread of the disease and policymakers should understand the factors that condition people to stay home and maximize the efficiency of these measures. The current studies draw on social-psychological research to propose avenues to promote people's compliance with stay-at-home measures.

Results highlight once again the crucial role of norms in shaping social reality. Perceived social norms are a relevant factor for people to stay home during lockdowns. Interventions to build, maintain and consolidate norms that accept lockdown measures are therefore necessary. It is important to note that just promoting positive and undoubtedly desirable behaviors will not be effective if this behavior is not normative (Kawamura & Kusumi, 2020). Well-designed interventions should first consider whether changing social norms relates to changes in behaviors or beliefs (see Wallen & Romulo, 2017). It is also important that individuals perceive that social norms they are supposed to follow are carried out by similar people or those living in similar circumstances (Goldstein, Cialdini, & Griskevicius, 2008). This should also be combined with messages issued by identifying community influencers and influential leaders (World Health Organization, 2020) that serve as role models, changing the opinion of social referents and other group members' beliefs (Prentice & Paluck, 2020). In this line, authorities should teach by example, as if they undertake actions that are inconsistent with official messages, this may support the construction of a wrong social norm. Further, we argue that compliance behaviors are dynamic and change across time. Therefore, authorities must take this dynamic process in consideration when designing effective interventions.

The current research also reinforces the importance of enhancing risk communication strategies by authorities to reduce infections. Risk communication is a cornerstone in the response to public health emergencies (Dickmann, 2020). Thus, authorities should undertake efforts to implement a risk communication strategy ensuring that individuals and communities follow the necessary measures (World Health Organization, 2020). Importantly, in order to be effective, risk communication needs to meet certain criteria. First, given that risk perception is not merely cognitive, motivational and emotional factors should be also taken into account and authorities should pay attention to the emotional tone and logical vocabulary used, given that these aspects are relevant to persuade and encourage people to take action (Hilton, 2008). Second, numeracy and probability are not enough to understand risk and authorities should spread qualitative and meaningful messages (Reyna, 2020), susceptible to be understood by the whole population. For instance, explaining how risk perceptions might influence our behaviour might be more useful than transmitting the percentage of COVID-19 contagions. Third, following the WHO (2020) recommendations for COVID-19 risk communication strategies, it is necessary to establish methods for reaching key audiences, targeting their knowledge and behavior. In light of our results, authorities should target specifically young people and men.

Finally, policymakers should take into account the fact that both risk perception and social norms are affected by intra-group processes and take place in a given context (Prentice & Paluck, 2020). The implementation of interventions that do not consider the idiosyncrasy of the target groups and their socioeconomic conditions will not be successful and might perpetuate social inequality (see Templeton et al., 2020). In this line, we highlight that lockdown compliance is partly shaped by sociodemographic and economic factors. In a country such as Chile, with high levels of inequality,

access to health care and possibilities to stay at home during lockdown are highly stratified. If people who work and those with lower educational levels find it more difficult to stay home, then interventions need to focus on providing means of subsistence outside of employment and securing jobs to make lockdown measures viable for everyone. To be successful, interventions need to be designed considering the realities of specific countries and the living conditions of specific groups of people.

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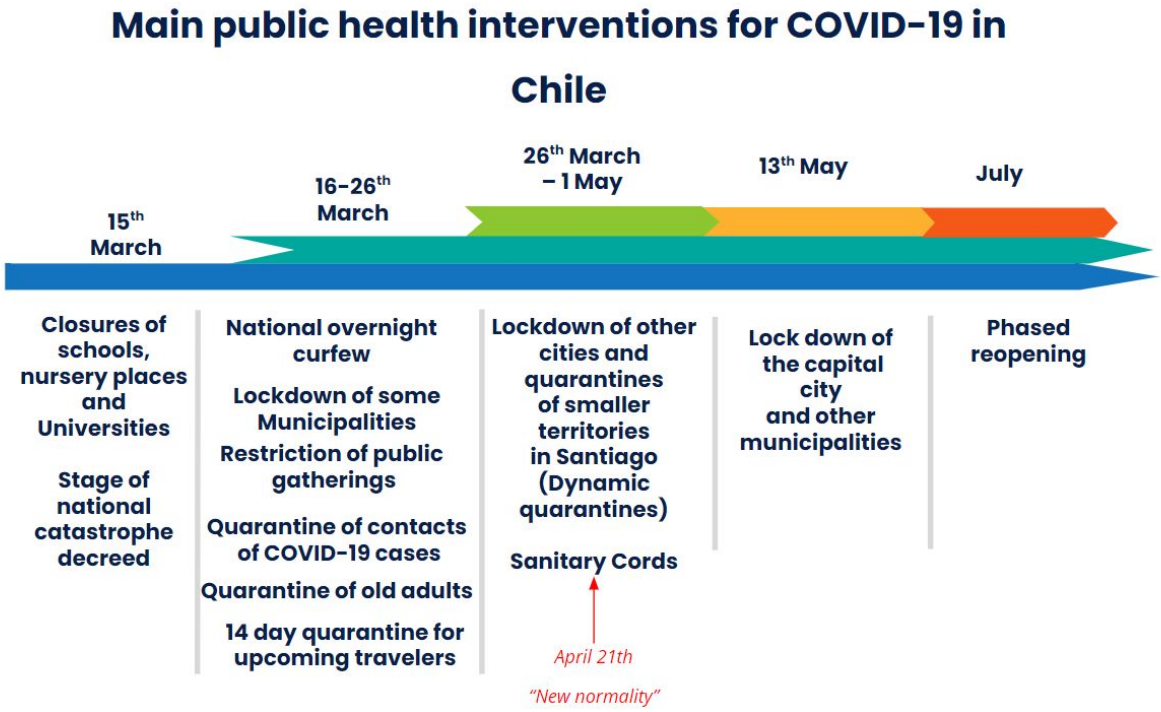


Figure 1. Timeline of main public health interventions for COVID-19 (Chile). Source: Author's contribution based on Canals et al. (2020).

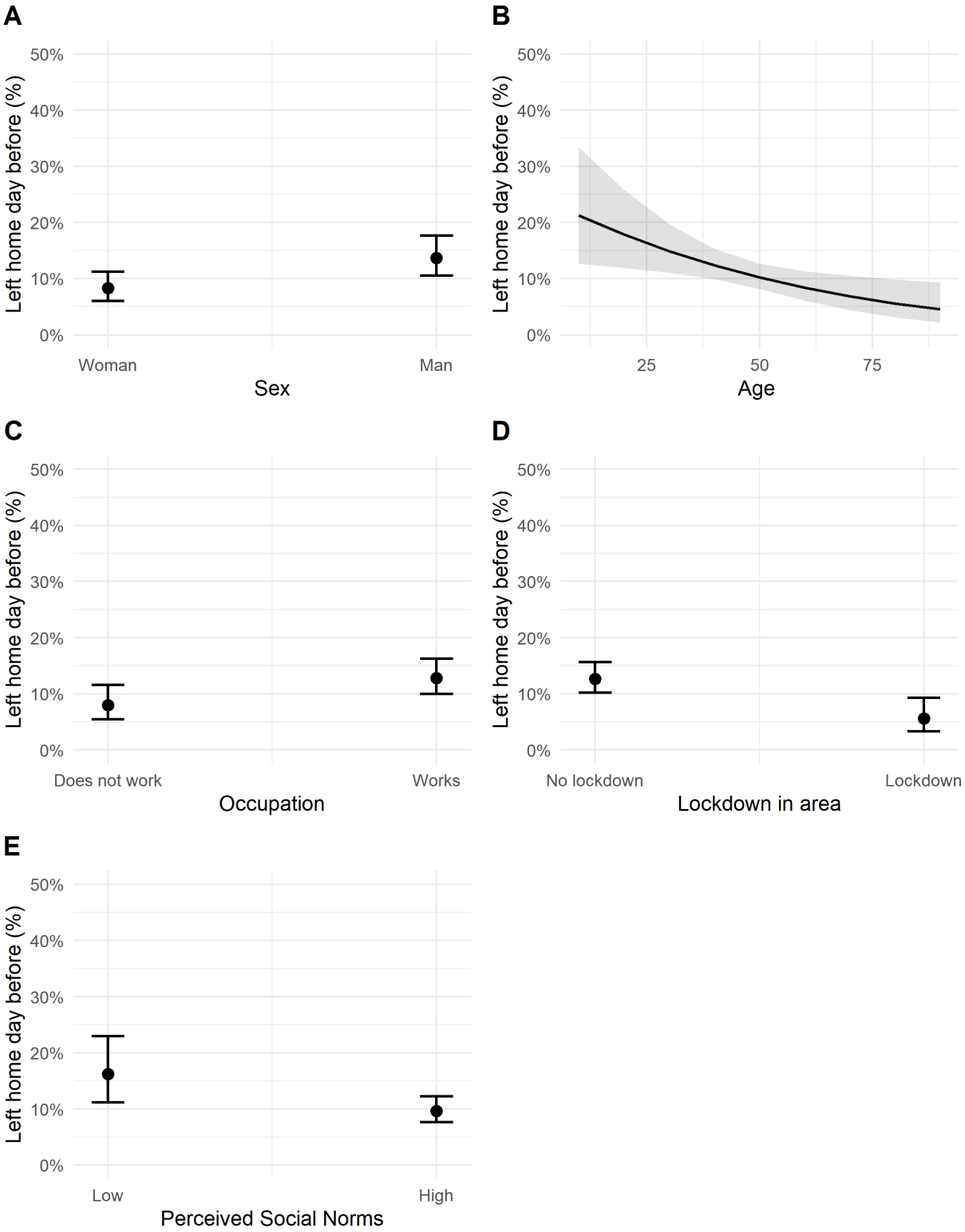


Figure 2. Estimated probabilities of leaving home according to sex, age, occupation, lockdown in area and perceived social norms (n = 1,078)

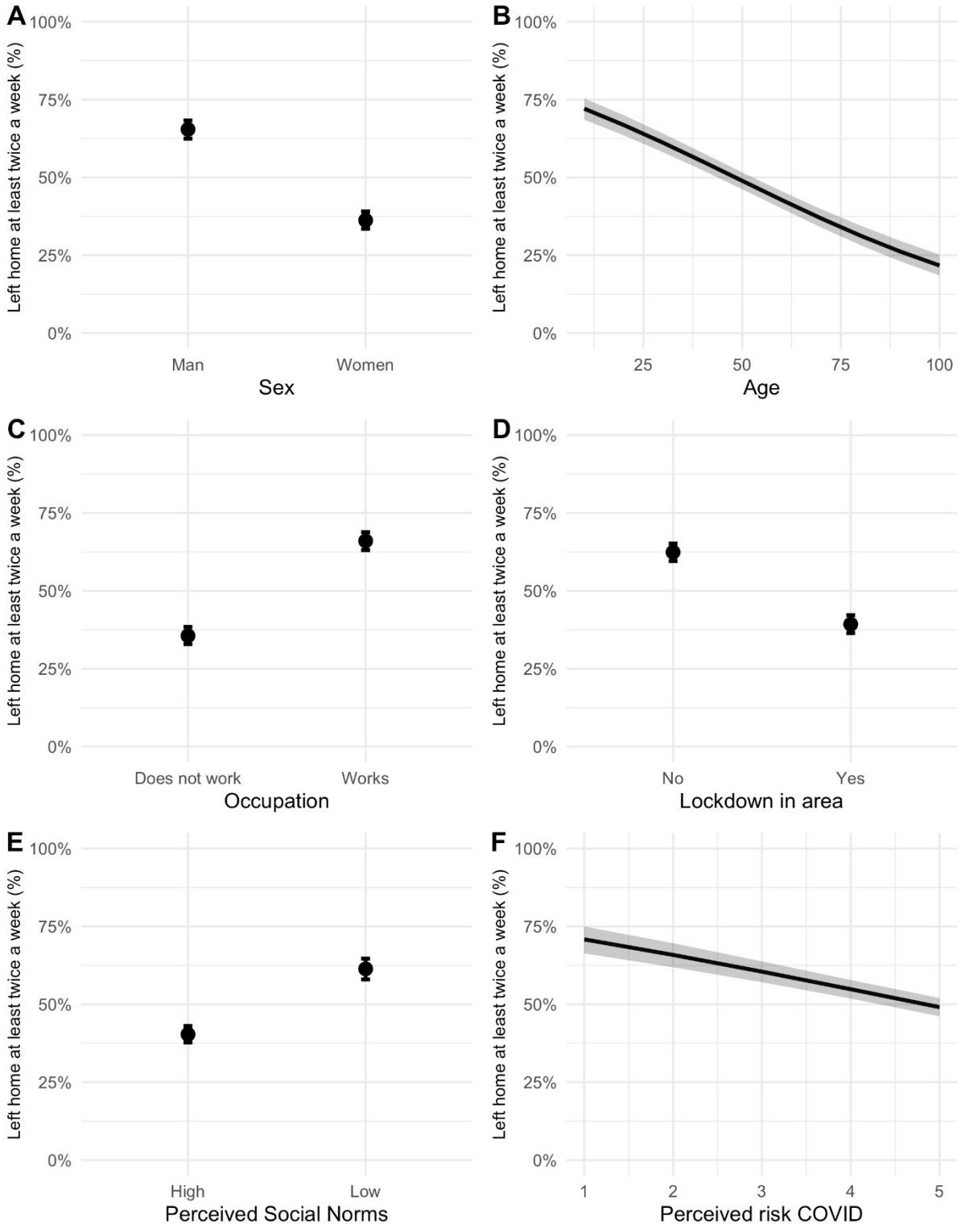


Figure 3. Estimated probabilities of leaving home at least twice in week dependent on relevant explanatory factors (*n = 32,304*)

Table 1.

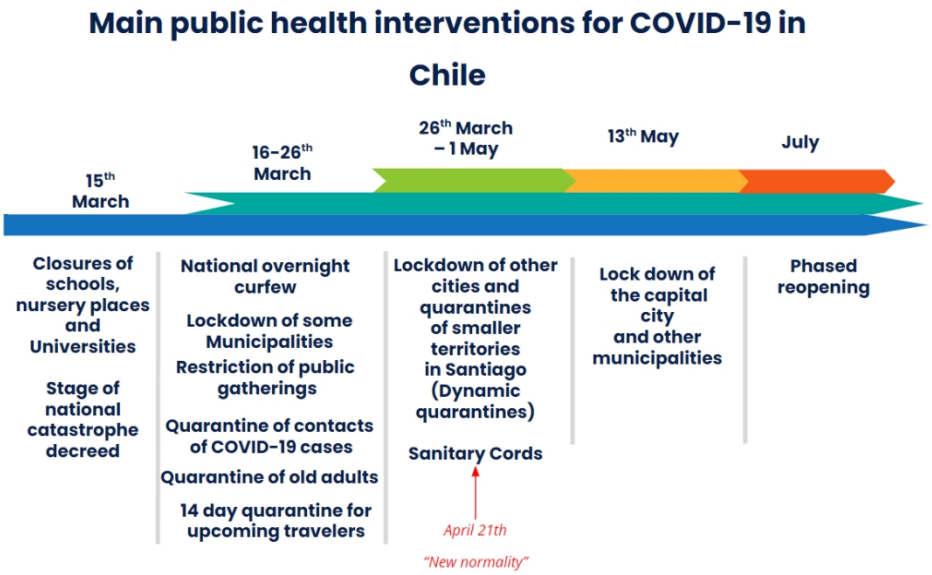
Binary logistic regression models predicting odds of leaving home (Social Thermometer, n = 1,078)

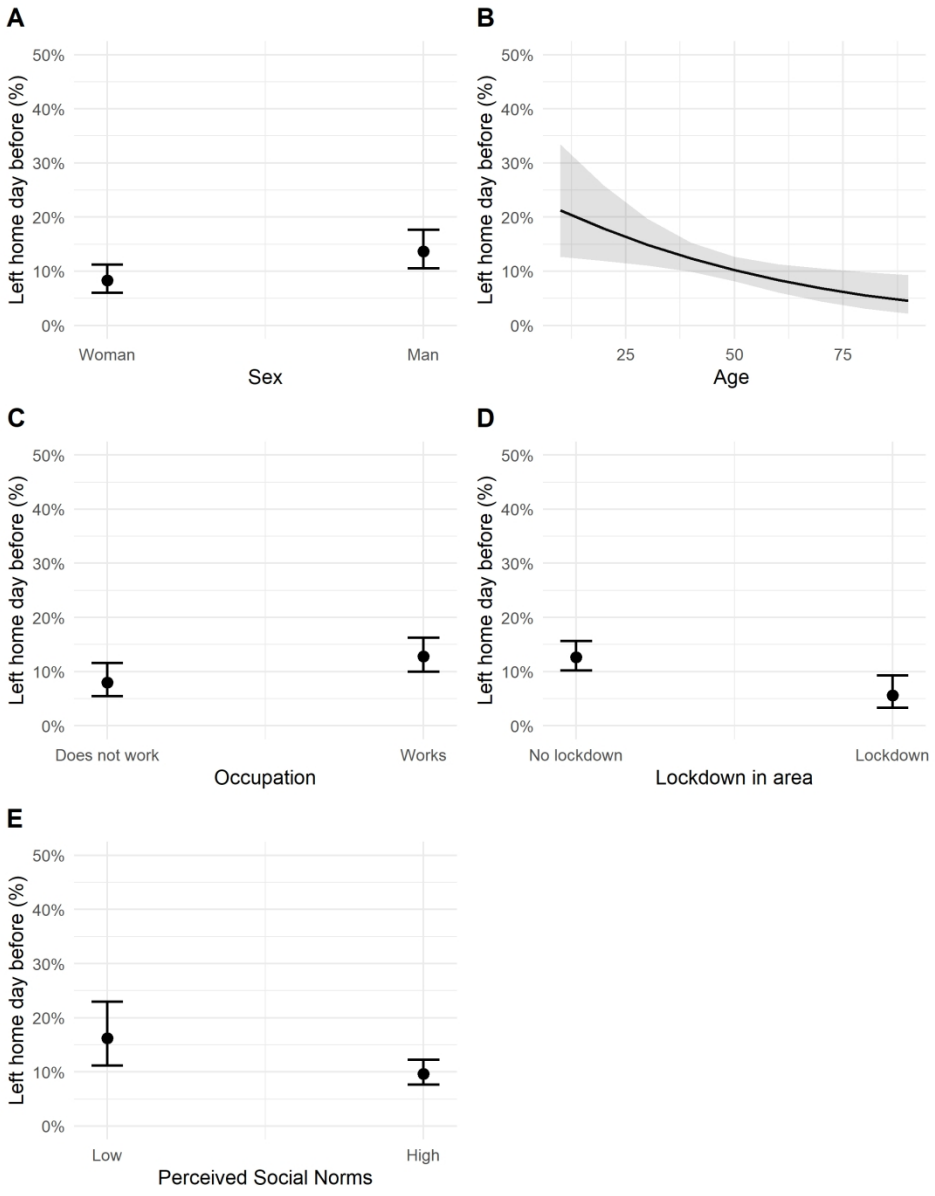
	Model 1		Model 2		Model 3		Model 4	
	OR	*p*	*OR*	*p*	*OR*	*p*	*OR*	*p*
Intercept	0.02	0.06	0.04	0.14	0.02	0.05	0.04	0.13
Sociodemographic and socioeconomic factors								
Sex (1=Men)	1.88	**<0.01**	1.83	**0.01**	1.81	**0.01**	1.76	**0.01**
Age	0.97	**<0.01**	0.98	**<0.01**	0.98	**<0.01**	0.98	**0.01**
Education (ref: high-school or less)								
Technical qualification	1.09	0.76	1.01	0.98	1.1	0.74	1.02	0.95
University degree	0.56	**0.05**	0.55	**0.04**	0.57	0.06	0.56	0.05
Household income (log)	1.18	0.26	1.16	0.32	1.23	0.17	1.22	0.20
Health risk-factor (1= Yes)	0.98	0.93	1.00	0.99	0.93	0.75	0.96	0.86
Health insurance (ref: None)								
Private	1.83	0.37	1.95	0.33	1.87	0.36	2.00	0.31
Public	1.38	0.61	1.43	0.58	1.41	0.59	1.46	0.56
Other	1.51	0.63	1.48	0.65	1.87	0.47	1.79	0.51
Occupation (1=Works)	1.82	**0.01**	1.66	**0.04**	1.86	**0.01**	1.69	**0.04**
Lack of income staying home (1= Yes)	1.41	0.11	1.39	0.12	1.41	0.11	1.38	0.14
Live in an area under lockdown (1=Yes)	0.44	**<0.01**	0.40	**<0.01**	0.44	**<0.01**	0.41	**<0.01**
Instrumental factors								
Perceived risk			0.84	0.09			0.82	0.06
Controlled by law enforcement agencies			1.56	**0.04**			1.48	0.08
Normative factors								
Perceived social norms					0.58	**0.03**	0.55	**0.02**
Trust in President					1.00	0.99	1.02	0.83
Trust in Minister of Health					1.01	0.94	0.99	0.93

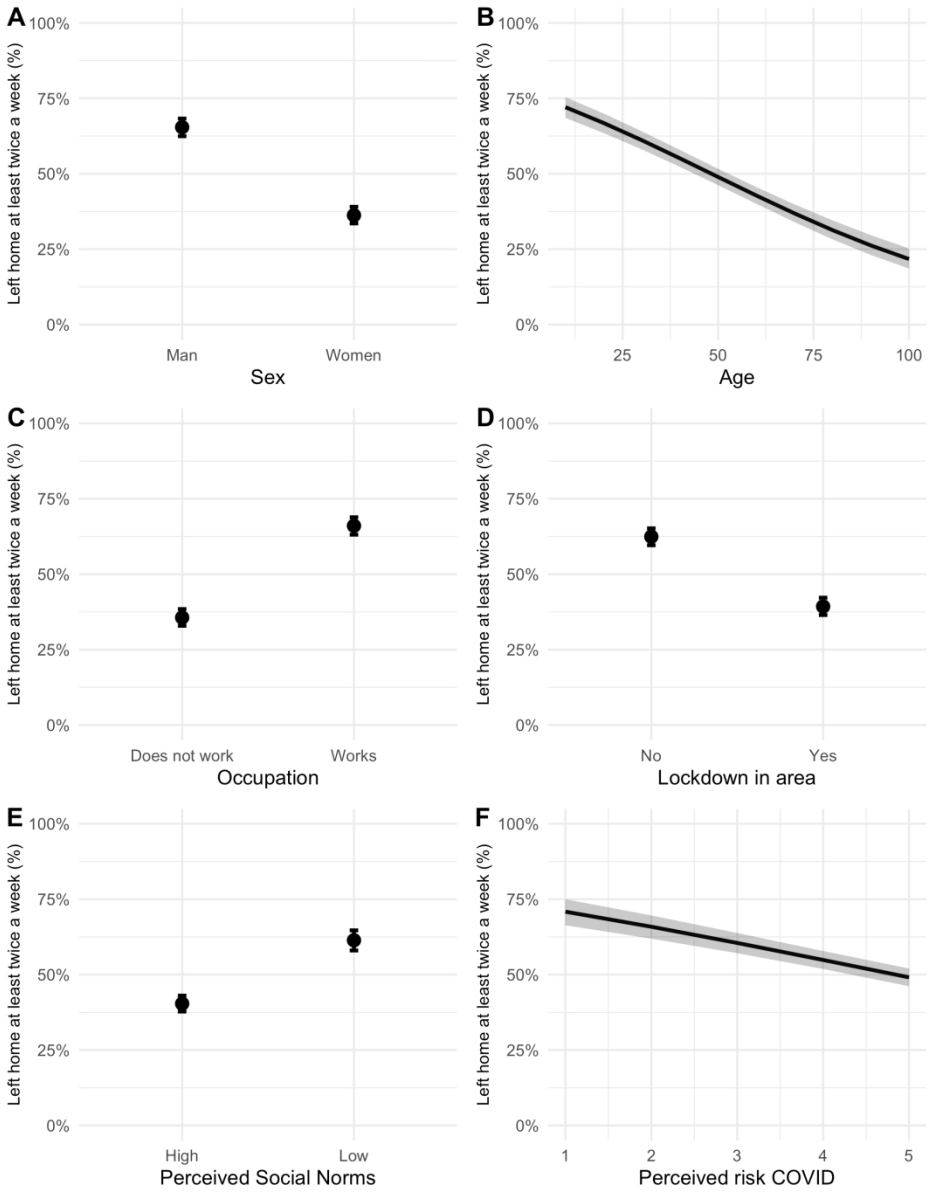
Table 2.

Logistic multilevel regression models predicting odds of leaving home at least for two activities per week (n = 32,304; 96,695 observations)

	Model 1		**Model 2**		**Model 3**		**Model 4**	
	OR	*p*	*OR*	*p*	*OR*	*p*	*OR*	*p*
Intercept	0.11	**<0.01**	0.17	**<0.01**	0.22	**<0.01**	0.32	**<0.01**
Socio-demographics								
Sex (1=Men)	3.29	**<0.01**	3.3	**<0.01**	3.26	**<0.01**	3.26	**<0.01**
Age (years)	0.97	**<0.01**	0.97	**<0.01**	0.98	**<0.01**	0.98	**<0.01**
Health risk-factor (1=Yes)	0.82	**<0.01**	0.82	**<0.01**	0.81	**<0.01**	0.82	**<0.01**
Education (ref: high-school or less)								
Technical qualification	1.01	0.95	1.00	1.00	1.02	0.86	1.01	0.90
University degree	0.72	**<0.01**	0.72	**<0.01**	0.73	**<0.01**	0.72	**<0.01**
Health insurance (ref: None)								
Public	0.61	**<0.01**	0.62	**<0.01**	0.61	**<0.01**	0.62	**<0.01**
Private	0.4	**<0.01**	0.41	**<0.01**	0.41	**<0.01**	0.41	**<0.01**
Other	0.54	**<0.01**	0.55	**<0.01**	0.55	**<0.01**	0.56	**<0.01**
Occupation (1=Works)	3.96	**<0.01**	3.96	**<0.01**	3.97	**<0.01**	3.98	**<0.01**
Live in an area under lockdown (1=Yes)	0.38	**<0.01**	0.38	**<0.01**	0.39	**<0.01**	0.39	**<0.01**
Time (weeks)	1.21	**<0.01**	1.21	**<0.01**	1.21	**<0.01**	1.21	**<0.01**
Instrumental factors								
Perceived risk			0.6	**<0.01**			0.64	**<0.01**
Normative factors								
Perceived social norms					0.43	**<0.01**	0.43	**<0.01**


Main public health interventions for COVID-19 in Chile
15th March
16-26th March
26th March – 1 May
13th May
July
Closures of schools, nursery places and Universities
Stage of national catastrophe decreed
National overnight curfew
Lockdown of some Municipalities
Restriction of public gatherings
Quarantine of contacts of COVID-19 cases
Quarantine of old adults
14 day quarantine for upcoming travelers
Lockdown of other cities and quarantines of smaller territories in Santiago (Dynamic quarantines)
Sanitary Cords
April 21th
"New normality"
Lock down of the capital city and other municipalities
Phased reopening


A
Left home day before (%)
50%
40%
30%
20%
10%
0%
Woman
Man
Sex
B
Left home day before (%)
50%
40%
30%
20%
10%
0%
25
50
75
Age
C
Left home day before (%)
50%
40%
30%
20%
10%
0%
Does not work
Works
Occupation
D
Left home day before (%)
50%
40%
30%
20%
10%
0%
No lockdown
Lockdown
Lockdown in area
E
Left home day before (%)
50%
40%
30%
20%
10%
0%
Low
High
Perceived Social Norms


A
Left home at least twice a week (%)
100%
75%
50%
25%
0%
Man
Women
Sex
B
Left home at least twice a week (%)
100%
75%
50%
25%
0%
25
50
75
100
Age
C
Left home at least twice a week (%)
100%
75%
50%
25%
0%
Does not work
Works
Occupation
D
Left home at least twice a week (%)
100%
75%
50%
25%
0%
No
Yes
Lockdown in area
E
Left home at least twice a week (%)
100%
75%
50%
25%
0%
High
Low
Perceived Social Norms
F
Left home at least twice a week (%)
100%
75%
50%
25%
0%
1
2
3
4
5
Perceived risk COVID