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## Short Communication

## Social distancing as a public good under the COVID-19 pandemic

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## ABSTRACT

**Objectives:** The purpose of this study is to show that social distancing is a public good under the COVID-19 pandemic.

**Study design:** We apply economic theory to analyse a cross-sectional survey.

**Methods:** Economic theory is complemented with empirical evidence. An online survey of those aged 30–49 years in Japan ( $n = 2177$ ) was conducted between April 28 and May 7. Respondents were selected by quota sampling with regard to age group, gender and prefecture of residence. Our main figure shows the proportion of people who increased/did not change/decreased social distancing, relative to the level of altruism and sensitivity to public shaming. The results of OLS and logit models are shown in [Supplementary Materials](#).

**Results:** Social distancing is a public good under the COVID-19 pandemic for which the free-rider problem is particularly severe. Altruism and social norms are crucial factors in overcoming this problem. Using an original survey, we show that people with higher altruistic concerns and sensitivity to shaming are more likely to follow social distancing measures.

**Conclusions:** Altruism and social norms are important for reducing the economic cost of the pandemic.

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The concept of public goods has been explored in various fields of the social sciences. By definition, public goods are non-rivalrous (their usage by one individual does not reduce their availability to others) and non-excludable (individuals cannot be excluded from using them). As a result, people have an incentive to ‘free ride’: receiving the benefits without paying for the costs.<sup>1</sup>

Social distancing during the COVID-19 pandemic is one such public good. Consider a selfish individual who maximizes his/her own utility, which consists solely of personal benefits and costs. The personal benefit of social distancing is the reduction of one's probability of infection, while the personal cost (assuming employment opportunities are unchanged) comes from foregoing enjoyable activities, such as dining out. He/she chooses the degree of social distancing by balancing these benefits and costs. However, selfish individuals do not take the social benefit of social distancing into account. Because social distancing by one individual decreases not only the probability of his/her own infection but also that of others, the social benefit of social distancing is greater than its personal benefit. This gap results in the insufficient provision of social distancing. The management of COVID-19 thus requires the

resolution of a collective action problem, where the lack of alignment between individual incentives and common objectives produces socially suboptimal outcomes.

Crucially, inefficiency due to this collective action problem can be particularly severe in the case of COVID-19. For one, social distancing is beneficial to society as a whole, but public goods are more difficult to provide in larger groups, where freeriding incentives are stronger.<sup>2</sup> For another, because the health effects of COVID-19 are heterogeneous, those who expect minimal symptoms, such as younger age cohorts, have weaker incentives to maintain social distance. Even if the share of such people is small, the collective consequences can be dire. In sum, even if some people follow social distancing measures for self-preservation reasons alone, the social average is likely to be substantially lower than the level required to eradicate the pandemic.

However, social and psychological mechanisms can mitigate the collective action problem. The first is altruism. Although the argument thus far has relied on the assumption of selfishness, numerous studies in ethics, psychology and economics have demonstrated that people care about others.<sup>3</sup> In particular, the empathy-altruism hypothesis suggests that people have intrinsic motivations to help others because of empathy or the incorporation of the utility of others into one's own utility function. This claim is consistent with the traditions of moral philosophy since Adam

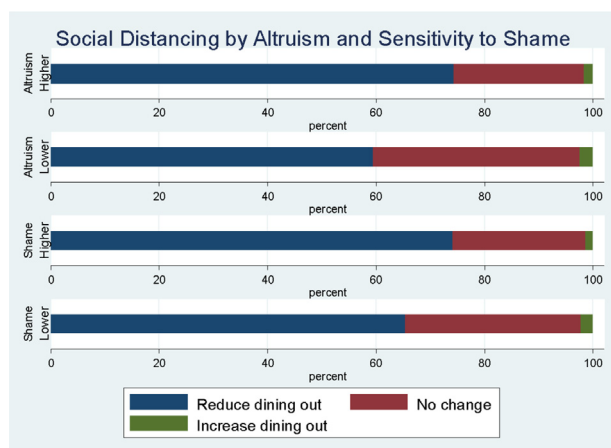
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Smith and David Hume. Fig. 1 shows the results from an original social survey in Japan, where we measured respondents' psychological traits and enquired about various social distancing actions. Those who agreed that 'it is important to help people around you and make them happy' (top row) were more likely to have reduced how often they dined out. Thus, we find a positive effect of altruism on social distancing behaviours. This pattern is robust in OLS and logit models that control for respondents' demographic characteristics (Supplementary Material (1)).

This evidence is theoretically explained as follows. An altruistic individual takes the probability of being a silent spreader into account when they choose his/her level of social distancing. Thus, his/her willingness to dine out or engage in other public activities is lower than that of selfish individuals. As a consequence, altruistic individuals are expected to maintain social distance more than selfish individuals. This mechanism might not always work. In Fig. 1, we examine one specific type of behaviour: dining out. Other types of social distancing may be reduced by altruism. For example, somebody with strong empathy for those facing physical or emotional hardships, especially family and friends, may feel compelled to engage them in face-to-face interactions for altruistic reasons. In such a case, altruistic concerns may have a negative influence on social distancing, as well as a positive one.

A second mechanism that can mitigate the collective action problem is shaming, an extrinsic motivation driven by social norms and obligations.<sup>4,5</sup> People who violated social distancing guidelines have been publicly criticized in many countries, including Japan, the UK and the U.S. (Supplementary Material (2)). Fear of these implicit or explicit sanctions—such as peer pressure, public shame, exclusion and criticism from neighbours and colleagues—can generate incentives to abide by social norms. The third and fourth rows in Fig. 1 provide evidence of this. Survey respondents who agreed that 'it is important to always avoid doing anything people would say is wrong' were more likely to have reduced the frequency of dining out. This observation suggests that public shame can encourage social distancing (Supplementary Material (1)).



**Fig. 1.** Social distancing by altruism and sensitivity to shame. Each row shows the distribution of responses to the following question: 'has your frequency of going out for dinners increased or decreased since last March?' The first two rows divide the sample according to the respondent's altruism, elicited by the following question: 'do you think it is important to help people around you and make them happy?' The first row presents those who answered affirmatively, whereas the second row corresponds to those with neutral or negative responses. Similarly, the third and fourth rows divide the sample by the respondents' sensitivity to shame, elicited by the following question: 'do you think it is important to avoid doing anything people would say is wrong?' These questions on altruism and sensitivity to shame are modified from the World Values Survey. Our survey ( $n = 2177$ ) was conducted between April 28 and May 7, using an access panel provided by Rakuten Insight.

However, if shaming results in the stigmatization of infected persons as norm breakers, not to say as public health risks, then that can generate the worse outcome of people hiding their illness. It is incumbent upon policymakers to provide accurate local information about infections and promote altruism without stigmatization, for example, by avoiding naming individuals or businesses with confirmed infections.

The aforementioned two mechanisms rely on voluntary actions, but not all individuals are sufficiently altruistic or norm abiding. As such, legal enforcement, including extensive monitoring and penalties for violations, may be necessary for infection control. However, the cost of enforcement is tremendously high: the epicentres of infection are mainly metropolitan areas, whose lockdown—even if temporary—can result in severe economic damages.<sup>6</sup> Because voluntary or nudge-based approaches are not accompanied with high economic cost, these can help to reduce collective costs; moreover, these might successfully preserve civil liberties. At the same time, in the presence of altruistic, other-regarding concerns, small legal sanctions may be enough. Designing these sanctions can be tricky: seemingly simple penalties, such as imposing a fee, can reduce altruistic behaviour if individuals come to believe that they are absolved morally for violating social norms as long as they pay the fee.<sup>7,8</sup>

We should note here that the results of our survey on Japan should be generalized only with caution. Altruistic concerns or social norms change over time, and their effectiveness also varies across cultural backgrounds. Further studies from different countries are essential before we can reliably conclude how policymakers can overcome collective action problems during this pandemic.

That said, the economic argument and social-psychological evidence discussed previously point to the following policy implication. Each of the three mechanisms for mitigating collection action problems—altruism, shaming and legal sanctions—have inherent advantages and disadvantages, and none may be strong enough individually to produce socially optimal outcomes. However, combining these mechanisms may yield sufficient social distancing with low economic costs because there are possible complementary effects between them. Thus, an important task for policymakers is to integrate psychological, social and legal measures to ensure that these public goods are provided adequately.

## Author statements

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## Ethical approval

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## Competing interests

None declared.

### Author contributions

S.C. contributed in survey design, writing and data analysis; T.I. contributed in survey design and data collection; K.I. contributed in survey design and data analysis; A.I. contributed in survey design and data interpretation; K.M.M. contributed in survey design, writing and data interpretation and M.S. contributed in survey design, writing and data analysis.

### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.puhe.2020.08.005>.

### References

1. Samuelson PA. The pure theory of public expenditure. *Rev Econ Stat* 1954;**36**(4): 387–9.
2. Olson M. *The logic of collective action: public goods and the theory of group*. Cambridge MA: Harvard University Press; 1965.
3. Batson CD. *Altruism in humans*. Oxford: Oxford University Press; 2011.
4. Bénabou R, Tirole J. Incentives and prosocial behavior. *Am Econ Rev* 2006;**96**(5): 1652–78.
5. Ostrom E. Collective action and the evolution of social norms. *J Econ Perspect* 2000;**14**(3):137–58.
6. Lin Z, Meissner CM. *Health vs. wealth? public health policies and the economy during Covid-19* (No. w27099). National Bureau of Economic Research; 2020.
7. Gneezy U, Rustichini A. A fine is a price. *J Leg Stud* 2000;**29**(1):1–17.
8. Bowles S, Polania-Reyes S. Economic incentives and social preferences: substitutes or complements? *J Econ Lit* 2012;**50**(2):368–425.