

LETTER

Examining Voting Spillover Effects of Text Message Reminders

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Abstract

We present results from a pre-registered, well-powered ($N > 3,000,000$) text message get-out-the-vote (GOTV) experiment, conducted during the 2019 European Parliament election in Sweden. Our findings suggest that a simple text message increases the likelihood of voting by 0.3 percentage points. Half of this effect spills over to untreated household members while workplace spillovers are near zero. Subsequent analysis reveals that the direct treatment effect is noticeably stronger among individuals with below-average voting propensities. Interestingly, within this same group, the household spillovers are significantly negative. We speculate and provide some indirect evidence, that these negative spillover effects may stem from the text message reminder influencing the behaviour of voters already motivated to vote. Above all, we propose that an increase in early voting, as opposed to voting on Election Day, among treated individuals may weaken the mechanisms thought to explain spillover effects since voters are less likely to bring their family members with them when voting early.

Keywords: get-out-the-vote; experiment; turnout; Sweden; spillover effects

Introduction

The notion that an individual's immediate social environment shapes their political beliefs and actions is both long-standing and widely accepted (Lazarsfeld, Berelson, and Gaudet 1948). That is, people do not behave as isolated individuals when addressing complex political tasks. Voting in elections is one such fundamental behaviour thought to follow a social logic (Rosenstone and Hansen 1993). In support of this assertion, numerous observational studies have demonstrated that voter turnout exhibits a significant correlation among friends (Huckfeldt and Sprague 1995), household members (Bhatti, Fieldhouse, and Hansen 2020; Cutts and Fieldhouse 2009), and neighbours (Cho, Gimpel, and Dyck 2006). Some of these studies have focused on potential mechanisms driving these correlations, exploring factors such as the political characteristics of members of individuals' social networks (Galardini and Fieldhouse 2019), the quality of the interactions within these networks (Nir 2011), individuals' perceptions of network members' beliefs and behaviours (Fieldhouse and Cutts 2021), or the influence of coordination and companion effects (Bhatti, Fieldhouse, and Hansen 2020; Fieldhouse and Cutts 2012).

Nonetheless, some scholars have questioned the causal interpretation of network effects in these studies due to methodological concerns (for example, Manski 1993; Nickerson 2008).

Selection processes and omitted variables pose significant challenges to the use of observational approaches for studying social contagion and network effects. In social contexts and networks such as families, neighbourhoods, and workplaces, individuals tend to share similar traits and experiences. External factors also influence everyone within the network. Consequently, a correlation in voter turnout behaviour among friends, family, or colleagues could be a result of similarities within the network, external factors, or social contagion. Without strong and often untenable assumptions, determining the primary mechanism or mechanisms is impossible.

To tackle this identification challenge, recent studies have leveraged credible exogenous variation and quasi-experiments to produce causal estimates of voter turnout contagion within social networks. For instance, Oskarsson et al. (2022) assess the importance of socialization factors in generating intergenerational associations in voter turnout using data on adopted children and their biological and adoptee parents. On a different note, Dahlggaard (2018) provides evidence of reverse socialization, demonstrating that parents are more likely to vote when their child enters the electorate. Other studies have utilized the timing of various life events in relation to elections to generate more credible estimates of the causal effects of the death of a spouse (Hobbs, Christakis, and Fowler 2014) and divorce (Dehdari et al. 2022) on turnout.

A related strategy involves using randomized field experiments, particularly get-out-the-vote (GOTV) campaigns, to isolate social influence within networks. Nickerson (2008) pioneered this method by demonstrating that the effects of door-to-door canvassing on voter turnout are transmitted within two-person households. Subsequent GOTV studies employing methods such as mailers, phone calls, Facebook ads, leaflets, and text messages have supported this finding and documented similar spillover effects within households (Bhatti et al. 2017a; Citrin, Green, and Levy 2014; Foos and De Rooij 2017; Sinclair, McConnell, and Green 2012), among friends (Bond et al. 2012), and between neighbours (Foos et al. 2021).

In this study, we add to this literature by presenting the results of a large-scale GOTV experiment conducted during the European Parliament election in May 2019. Conducted in Sweden, the experiment involved sending a text message to treated individuals, encouraging them to vote in the upcoming election. With approximately 250,000 treated individuals, nearly three million people in the control group, and almost population-wide samples for the spillover analyses, this experiment ranks among the largest and most well-powered GOTV experiments to date.¹

The present study makes significant contributions to existing research on several fronts. In contrast to the majority of previous GOTV experiments, ours is both pre-registered and very well-powered. Moreover, we extend current research on spillover effects in social networks by examining not only spillover within families but also among work colleagues. This addition is important because, despite the central role of the workplace in many people's lives, it remains an understudied context for social interaction. To our knowledge, we are the first to study the existence of spillover effects within workplaces. Finally, due to the large scale of the experiment, we are also uniquely positioned to examine subgroup heterogeneity in both direct and indirect treatment effects.

To preview our findings, we observed a modest but significant direct intent-to-treat (ITT) effect, indicating that the text message raised voter turnout by 0.3 percentage points. We show that this direct effect is more pronounced among low-propensity voters. Our main analysis concerns spillover effects within two important social contexts – the household and the workplace. We find

¹A pre-analysis plan outlining the hypotheses and analytical approach used in this paper was posted on the OSF website on June 26, 2020 (prior to obtaining access to the voter turnout data) and is available at the following link: https://osf.io/xdw8y/?view_only=161ad7a0983d4c56adb6551db725ea7a. Any necessary or helpful deviations from or additions to the pre-analysis plan are noted throughout the paper. Given the space constraints, this paper primarily concentrates on the two main pre-registered hypotheses. Empirical tests for the remaining two hypotheses delineated in the pre-analysis plan are provided in the Appendix.

no evidence of spillovers within workplaces. As for turnout contagion within families, our findings suggest that just over half of the direct treatment effect spills over to other household members. However, this estimate is not statistically significant.

Nevertheless, in our subsequent analyses, we demonstrate significant variation in spillover effects across subgroups. It is particularly striking that we find a *negative* spillover effect in certain population strata. We speculate, and offer some indirect support for this hypothesis, that such negative spillover effects might stem from an overlooked effect of GOTV campaigns. Besides prompting non-voters to exercise their right to vote, we hypothesize that GOTV treatments, particularly ‘cold’ messages reminding citizens to vote, may increase the likelihood of early voting rather than voting on Election Day among those already determined to vote. This increase in early voting could lead to fewer voters bringing their family members with them, as early voting is often a more solitary activity compared to the communal experience of voting on Election Day.

Data, context and hypotheses

Even though European Parliament (EP) elections in Sweden are considered less prominent than national elections, they still attract considerable attention in public discourse and the media. EP elections occur every five years, and Swedish citizens aged eighteen and older, as well as non-Swedish European Union citizens registered by the authorities at least thirty days before the election, are eligible to vote. For Swedish citizens, voter registration in the EP election is automatic and does not require any individual action on the part of voters.

The turnout rate in the 2019 EP election was relatively high at 55.3 per cent. This figure surpasses the European average for EP elections (50.6 per cent) but falls notably short of the turnout rate in the latest Swedish national elections (84.2 per cent in 2022). In the 2019 EP election, Swedish voters could either choose to vote on Election Day at one of the 6,000 polling stations that were open on the day of the election or cast an in-person early vote up to eighteen days before the election at one of the 2,500 early voting stations located in places such as local county offices, public libraries, shopping malls, schools, and hospitals. In the Swedish 2019 EP election, close to 39 per cent of all votes were cast as early votes.

Conducting the Experiment

In collaboration with a marketing company, we sampled 3,161,654 Swedish residents aged 18–75 who each had just one associated cellphone number, and randomly assigned 250,000 of them to the treatment group. Each person in the treatment group was sent a text message, which, translated from Swedish, read:² ‘There is an EU [] election this Sunday. Democracy is dependent on engaged citizens like yourself, so don’t forget to vote!/The Conpol project, Uppsala University’.

Recipients were randomly scheduled to receive the text message either at noon or in the evening (7 p.m.), two, three, or four days prior to the election. We then linked the individuals in our sample to population-wide registry data on voter turnout and a broad array of socio-economic characteristics. The Appendix provides additional information about these variables and registers.

²The message in Swedish was ‘På söndag är det EU-val. Demokratin är beroende av engagerade samhällsmedborgare som du, så glöm inte att rösta! /Projektet Conpol, Uppsala universitet.’ Owing to a technical error, the message was altered to the following during the second and third days of the treatment period (two or three days prior to the election): ‘Democracy is dependent on engaged citizens like yourself, so don’t forget to vote!/The Conpol project’. Both messages had ‘EU-election’ as the sender, making the context apparent also for those who received the second message. Estimated effects per delivery are presented in Figure S3 in the Appendix.

Our Hypotheses

In accordance with previous research, our starting point is the Noticeable Reminder Theory (NRT) suggested by Dale and Strauss (2009). The NRT posits that registered voters do not require persuasion to vote; instead, they need reminders of impending elections. Given the information overload during election campaigns, individuals have limited capacity to process information. Thus, a message must surpass a certain attention threshold to influence voter behaviour (Zaller 1992). In this regard, Dale and Strauss (2009) assert that a straightforward text message is an effective and noticeable medium of communication.

Abundant evidence in the research literature confirms that reminders in the form of text messages boost voter turnout (Bergh and Christensen 2022; Bhatti et al. 2017b; Cheng-Matsuno et al. 2023; Dale and Strauss 2009; Malhotra et al. 2011). The estimated average effect (intent-to-treat, inverse-variance weighted) in prior GOTV experiments is approximately 0.8 percentage points (see Table S8 in the Appendix for additional details on previous GOTV studies based on text message treatments). Nevertheless, we anticipate that the potential positive impact on turnout propensities from receiving a text message in relation to the Swedish election for the European Parliament in 2019 would reside at the lower end within the range of previously reported treatment effects. This is because, except for Bergh and Christensen (2022), these studies are much smaller than ours and often have not been pre-registered, making their results susceptible to both sampling errors and model specifications. Other fields have shown that both pre-registration requirements and adjustments for publication bias significantly reduce the size of published effects (Open Science Collaboration 2015). Additionally, many preceding studies report LATEs within subgroups of voters who are likely more susceptible to a text message reminder, such as young voters or registered voters in contexts where registration is not automatic. Nonetheless, we still anticipate the text message reminder to enhance turnout in our sample:

H1: Receiving the text message has a positive effect on turnout.

Our study, however, primarily investigates the spillover effect of text messages within social networks. Past studies suggest multiple mechanisms that could explain such spillover effects, including social contagion resulting from network discussions, observing someone vote as a reminder, rising awareness of voting norms, and the companion effect (Bhatti et al. 2017a, 2020; Foos and De Rooij 2017).

These mechanisms are stronger in tightly-knit networks. Previous research has demonstrated that voter mobilization campaigns indirectly influence untreated household members (Bhatti et al. 2017a; Foos and De Rooij 2017; Nickerson 2008; Sinclair, McConnell, and Green 2012) and friends (Bergan et al. 2021; Bond et al. 2012). Evidence is less clear in loosely connected networks. Foos et al. (2021) reported significant spillover effects within neighbourhoods from a GOTV leafleting campaign in the UK, while Sinclair, McConnell, and Green (2012) found spillover effects within households, but not across households from postcard reminders during the 2009 congressional election in Chicago.

We focus on potential spillover effects within two distinct social contexts – the household and the workplace. We argue that the workplace is a frequently overlooked context for social interaction. People engage in political discussions with colleagues and exchange opinions on a variety of topics, including election outcomes and Election Day plans (Mutz and Mondak 2006). This leads us to the following hypotheses:

H2a: Receiving the text message has a positive effect on turnout among household members.

H2b: Receiving the text message has a positive effect on turnout among colleagues.

To test these hypotheses, we will estimate the direct effect by regressing voter turnout on a binary indicator for being in the treatment group and the spillover effects by regressing voter turnout on the number of treated household members and colleagues, while controlling for the number of household members and colleagues who were part of the sampling frame (that is, the 3,161,654 individuals who were randomized into treatment and controls). For enhanced precision, we also include a vector of covariates comprised of the individual's and his or her parents' turnout in three prior elections, as well as a comprehensive set of socioeconomic characteristics: year of birth, sex, foreign background, household size, income decile, field and level of education, and district-level turnout.³

All equations are estimated using OLS. For all direct effect estimations, we limit the sample to the control group and the treatment group. We exclude those not eligible to vote or not available in our voting records. For all other estimations, the sample is restricted to anyone eligible to vote, available in our records, and for whom at least one person in their household or workplace is included in the sampling frame. We cluster the standard errors in both households and workplaces. The exact model specifications are detailed in the Appendix, while our procedures for handling missing data, duplicates, and fixed effects singletons are outlined in the pre-analysis plan.

Results

The main results are presented in Fig. 1. Starting from the top of the graph, we observe a modest yet statistically significant direct effect, indicating that the text message led to an approximately 0.3 percentage point (CI 0.13–0.48) increase in voter turnout in the treatment group. This effect is small compared to the findings of previous research, and the confidence interval excludes a true effect larger than about half the average size of the effects reported in previous studies.

To investigate where in the distribution these effects occur, we estimated each individual's voting propensity by regressing the 2019 turnout on the same set of covariates that we use as control variables and retained the predicted values. We then estimated the treatment effect for different segments of this distribution using rolling regression. The results are presented in Fig. 2.⁴ As can be seen in the upper-left panel, the estimated direct effect is significantly larger among those with a low propensity to vote. For the group with a voting propensity below 40 per cent, we estimate a treatment effect that is twice as large as for the entire population (see Table S4 in the Appendix).

Arceneaux and Nickerson (2009) contend that citizens near the indifference threshold are the ones mobilized to vote (see also Malhotra et al. (2011)). In their framework, whether these are individuals with low or high voting propensity depends on the salience of the election. In our approach, election salience is integrated into the measure of voting propensity, implying that we should expect to find the largest proportion of citizens on the cusp of voting somewhat below but close to a voting propensity of 50 per cent. Given this, the estimates illustrated in Fig. 2 only partially align with the arguments of Arceneaux and Nickerson (2009).

Transitioning to the spillover effects reported in Fig. 1, the individuals in our sample are 0.15 percentage points likelier to vote with every additional household member who received the text message (CI between –0.03 and 0.34). This suggests that about half of the direct effect spills over to the remainder of the household. However, this household spillover is not statistically significant.

³We define a household as individuals living together and connected either as partners or as children and parents. Similarly, a workplace is identified as individuals employed at the same location for the same employer. Recognizing that workplaces defined in this manner may be too large for frequent interpersonal interactions, we have refined the workplace indicator to enhance its precision. We consider groups of ten or fewer individuals at the same address as a workplace, sub-dividing larger groups at the same address based on their three-digit occupational codes. Moreover, we exclude groups where more than 50 individuals share the same occupation at the same address to ensure accurate identification of groups with likely frequent interaction.

⁴The analyses presented in Fig. 2 were not part of the pre-analysis plan.

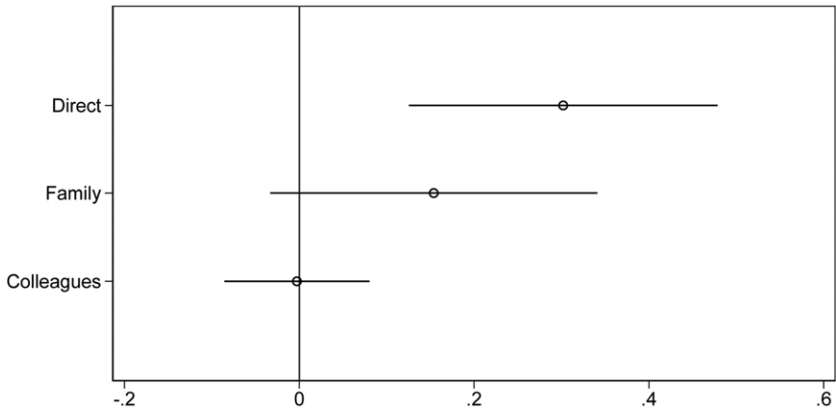


Figure 1. Treatment effects.
Note: This graph illustrates the estimated effect of receiving the text message (the direct effect) and having household members or colleagues who received the text message (spillover effects).

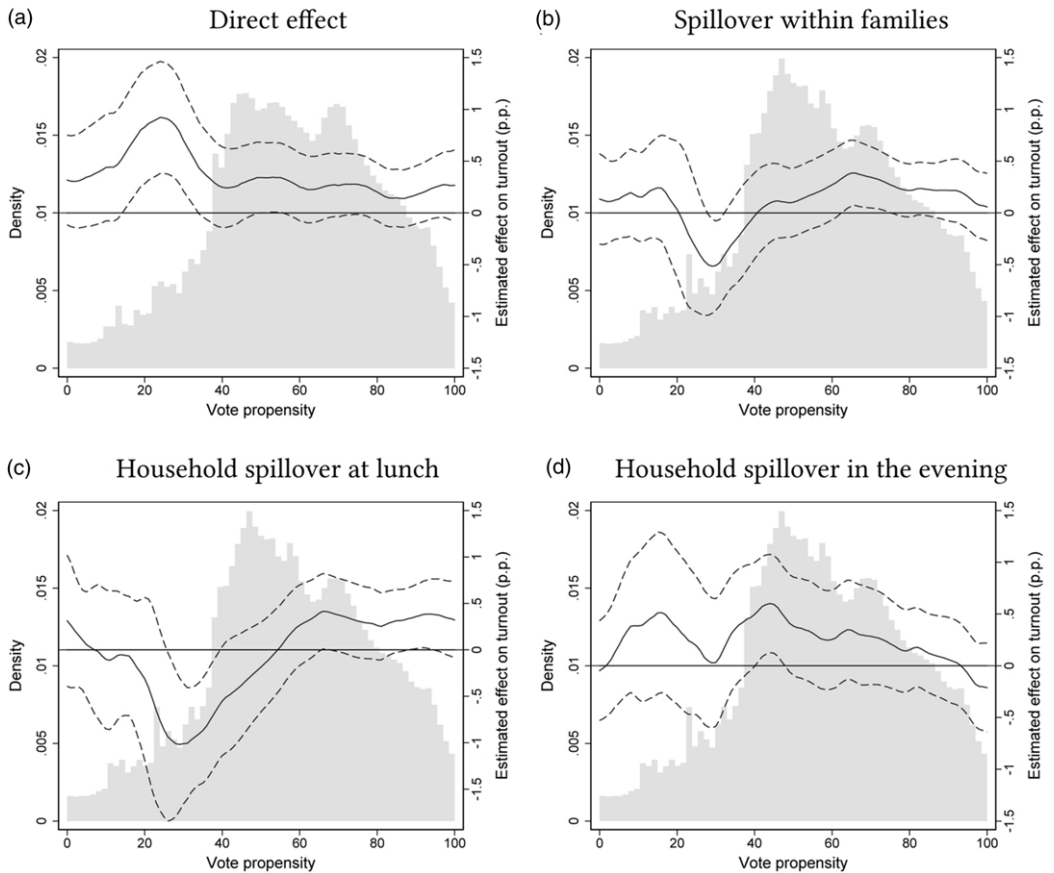


Figure 2. Treatment effects over different vote propensities. (a) Direct effect. (b) Spillover within families. (c) Household spillover at lunch. (d) Household spillover in the evening.
Note: The graphs display the direct effect of receiving the text message (top left) and the indirect effect from when a household member receives a text message (the other three) on voter turnout, using rolling regressions for different vote propensity intervals, with a window of ± 15 percentage points and triangular weights (decreasing linearly with the distance from the middle of the window). The histograms show the distribution of vote propensities for the respective samples. The bottom panels only include the lunch delivery (left) and evening delivery (right), respectively.

No impact is found from having colleagues who received the text message, and our narrow confidence interval allows us to rule out effects as small as 0.1 percentage points.

Turning to Fig. 2 again uncovers an intriguing pattern. Observing the upper right panel, we note that the estimated spillover effect among household members is smaller – in fact, it is even negative – for the same low-propensity group that demonstrated the largest direct effect.⁵ For untreated household members with a vote propensity below 40 per cent, the probability of voting decreases by 0.45 percentage points (CI 0.10–0.80) for every other household member that is treated (see Table S6 in the Appendix).

To maintain transparency, we must confess that this outcome was unexpected. However, upon reflection, we postulate that negative spillover effects in this group are logical. Nevertheless, prior to exploring potential explanations, we wish to emphasize that the forthcoming interpretations are speculative responses to an unexpected result, and should be regarded as such.

GOTV campaigns exert two distinct effects on treated individuals. Firstly, and most evidently, they inspire some individuals to vote, which may create a spillover effect, boosting turnout among those within their networks. Secondly, a less frequently discussed outcome is the potential for these campaigns to raise the likelihood of early voting among already-decided voters. As an illustration, Elvik Næss (2022) estimated that pre-election turnout in Bergen, Norway, increased by 0.2–0.3 percentage points per hour immediately following a governmental text message. Traditional Election Day voting often involves entire families, whereas early voters typically vote alone (Bhatti, Fieldhouse, and Hansen 2020). Thus, if the text message prompts individuals to vote early instead of on Election Day, this could potentially *decrease* household member turnout.

Regrettably, we lack data on early voting in the 2019 election, which precludes direct testing of these theories. However, if early voting is indeed driving the negative spillover effects, there are supplementary empirical implications to examine. Firstly, negative spillover effects should be considerably more prevalent when the text message is disseminated at lunchtime rather than in the evening. This reasoning is partly due to polling booths' operational hours and partly because most treated individuals likely were not with their families at that time. If this holds true, the negative spillover effect should primarily be observed among recipients of the midday message. Secondly, Dehdari et al. (2022) argue that voters with low vote propensities are the ones most likely to be mobilized or demobilized by the presence or absence of a voting spouse who can accompany them to the polling station on Election Day. Consequently, if the text message raises the likelihood of early voting among the recipients, a potential side effect could be that turnout among low vote propensity voters decreases, as they have lost their voting companion.⁶

To investigate the first element of this argument, we divided the sample between those who received the text message at lunch and those treated in the evening. The results, illustrated in the lower panel of Fig. 2, align with our conjecture, showing that the negative household spillover effect for low-propensity voters is entirely driven by lunchtime messaging. Our estimates indicate that the lunch treatment reduced turnout among untreated household members with a voting propensity below 40 per cent by 0.9 percentage points (CI 0.39 – 1.41, $p < 0.001$ – see Table S6 in the Appendix).

Evidence supporting the second aspect of our argument – that having a partner who votes on Election Day is of particular importance for individuals with lower voting propensities – is presented in the Appendix (see Figure S1). This analysis shows that the difference in voter turnout between individuals with a partner who voted on Election Day and those with a partner who voted early is largest among individuals with a low propensity to vote.

⁵The corresponding results for spillover effects within workplaces are presented in the Appendix and show no sign of heterogeneity across vote propensity.

⁶Another plausible mechanism suggests that a text message might have a larger impact on the probability of casting an early vote when household members are less politically engaged.

Discussion

In this study, we examine the direct and spillover effects of a GOTV experiment conducted during the 2019 Swedish election for the European Parliament. Our analysis yields three significant conclusions. First, we identify a modest yet distinct positive direct effect resulting from receiving a reminder to vote. Second, while less precisely estimated, the observed spillover effects within the households of treated individuals align with previous findings (Bhatti et al. 2017a; Foos and De Rooij 2017; Nickerson 2008; Sinclair, McConnell, and Green 2012). However, we find no evidence of spillover effects within workplaces. Lastly, both the direct and the spillover effects are moderated by individuals' voting propensities in the election. Notably, the positive direct effect of the text message treatment is primarily observed among individuals with a low propensity to vote. Yet, the estimated spillover effect on low-propensity household members is statistically significant and *negative* when the text message was sent at lunchtime. Our best explanation for this surprising outcome suggests that a simple text message reminder might prompt some committed voters to vote early rather than on Election Day and that early voters typically vote alone.

Our findings carry both theoretical and practical implications. Theoretically, our results imply that considerations of spillover effects should encompass both the act and the mode of voting. Early voting is less likely to foster contagion effects compared to the more social activity of voting on Election Day. Practically, our evidence supporting an amplified direct GOTV effect among low-propensity voters bolsters the potential for using GOTV campaigns as a tool to enhance political equality. Nevertheless, any equalizing effects might be offset by possible negative spillover effects as a consequence of treated individuals being more inclined to cast an early vote. To mitigate such unintended outcomes, future research should focus more on understanding how GOTV campaigns influence the mode of voting.

Supplementary material. The supplementary material for this article can be found at <https://doi.org/10.1017/S0007123424000504>.

Data availability statement. The do- and log files used to produce these results can be found at <https://doi.org/10.7910/DVN/ONCDXW>.

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Competing interests. The authors declare none.

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