

# Effectiveness of incentives and follow-up on increasing survey response rates and participation in field studies

## Supplementary Online Materials

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This supplement provides ancillary methods and results to the main text:

### A. Questionnaire instruments

Complete versions of the short, medium and long questionnaires are given on p. 2, pp. 3-4 and pp. 5-8 respectively.

### B. Cost estimate calculations

Formulae used to estimate the costs to receive one completed survey and to recruit one participant into the field study are given on p. 9.

### C. Field study participation

Results of the regression models for the odds of a mailed individual eventually participating in the field study are given in Table S1 (p. 10). Data are visualized for each predictor variable in Figure S1 (p. 11).

### D. Figures

Figure S1 (p. 11) presents the odds ratios of completing the survey, interest in the field study and participating in the field study. Results are given for each independent predictor variable in the fully adjusted regression models: Model 2 for survey completion and Model 3 for interest and participation in the field study. The presented results are from Table 2 and Table 3 in the main article, and Table S1 in this Supplemental Material (p. 10).

## Short questionnaire

**Q1.** During the **past month**, how would you rate your sleep quality overall?

<b>Very Good</b>	<b>Fairly Good</b>	<b>Fairly Bad</b>	<b>Very Bad</b>
▼	▼	▼	▼
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Q2.** In general, would you say your health is...?

<b>Poor</b>	<b>Fair</b>	<b>Good</b>	<b>Very Good</b>	<b>Excellent</b>
▼	▼	▼	▼	▼
<input type="checkbox"/>				

**Q3.** Rate how strongly you agree or disagree to the statement: I am sensitive to noise

<b>Strongly Disagree</b>						<b>Strongly Agree</b>
1	2	3	4	5	6	
▼	▼	▼	▼	▼	▼	▼
<input type="checkbox"/>						

**Q4.** Thinking about the **last 12 months** or so, when you were here at home, how much was your sleep disturbed by noise from the following sources?

	<b>Not at all</b>	<b>Slightly</b>	<b>Moderately</b>	<b>Very</b>	<b>Extremely</b>
	▼	▼	▼	▼	▼
<b>Q4a.</b> Road Traffic	<input type="checkbox"/>				
<b>Q4b.</b> Trains	<input type="checkbox"/>				
<b>Q4c.</b> Aircraft	<input type="checkbox"/>				
<b>Q4d.</b> Neighbors	<input type="checkbox"/>				

**Q5.** Are you Hispanic or Latino?  Yes  No  Prefer Not to Answer

**Q6.** What race do you consider yourself to be? (mark all that apply)

American Indian or Alaska Native     Native Hawaiian or Other Pacific Islander  
 Asian     White  
 Black or African American     Other (please specify): \_\_\_\_\_  
 Prefer Not to Answer

**Q7.** Gender:  Male  Female    **Q8.** Age: \_\_\_\_\_(years)

## Medium questionnaire

**Q1.** During the **past month**, how would you rate your sleep quality overall?

<b>Very Good</b>	<b>Fairly Good</b>	<b>Fairly Bad</b>	<b>Very Bad</b>
▼	▼	▼	▼
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Q2.** How often have you have taken medicine (prescribed or “over the counter”) to help you sleep in the **past month**?

<b>Not during the past month</b>	<b>Less than once a week</b>	<b>Once or twice a week</b>	<b>Three or more times a week</b>
▼	▼	▼	▼
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Q3.** How often in the **past month** have you done the following because of noise when trying to sleep at home?

	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>Always</b>
	1	2	3	4	5
	▼	▼	▼	▼	▼
<b>Q3a.</b> Wear earplugs or headphones	<input type="checkbox"/>				
<b>Q3b.</b> Turn on the TV	<input type="checkbox"/>				
<b>Q3c.</b> Turn on music	<input type="checkbox"/>				
<b>Q3d.</b> Close windows	<input type="checkbox"/>				
<b>Q3e.</b> Use a sound machine	<input type="checkbox"/>				
<b>Q3f.</b> Turn on a fan	<input type="checkbox"/>				

**Q4.** Rate how strongly you agree or disagree to the statement: I am sensitive to noise

<b>Strongly Disagree</b>					<b>Strongly Agree</b>
1	2	3	4	5	6
▼	▼	▼	▼	▼	▼
<input type="checkbox"/>					

**Q5.** Thinking about the **last 12 months** or so, when you were here at home, how much was your sleep disturbed by noise from the following sources?

	<b>Not at all</b>	<b>Slightly</b>	<b>Moderately</b>	<b>Very</b>	<b>Extremely</b>
	▼	▼	▼	▼	▼
<b>Q5a.</b> Road Traffic	<input type="checkbox"/>				
<b>Q5b.</b> Trains	<input type="checkbox"/>				
<b>Q5c.</b> Aircraft	<input type="checkbox"/>				
<b>Q5d.</b> Neighbors	<input type="checkbox"/>				

**Q6.** In general, would you say your health is...?

<b>Poor</b>	<b>Fair</b>	<b>Good</b>	<b>Very Good</b>	<b>Excellent</b>
▼	▼	▼	▼	▼
<input type="checkbox"/>				



## Long questionnaire

<b>Q1a.</b> During the <b>past month</b> , at what time have you usually gone to bed on weekdays or workdays?	_____ (HH:MM AM/PM)
<b>Q1b.</b> During the <b>past month</b> , at what time have you usually woken up on weekdays or workdays?	_____ (HH:MM AM/PM)
<b>Q1c.</b> During the <b>past month</b> , how much sleep did you usually get on weekdays or workdays?	_____ (Hours)

<b>Q2.</b> During the <b>past month</b> , how would you rate your sleep quality overall?			
<b>Very Good</b>	<b>Fairly Good</b>	<b>Fairly Bad</b>	<b>Very Bad</b>
▼	▼	▼	▼
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Q3.</b> For the following questions, select the response that best reflects how often the following occurred during the <b>past month</b> .				
	<b>Not during the past month</b>	<b>Less than once a week</b>	<b>Once or twice a week</b>	<b>Three or more times a week</b>
	▼	▼	▼	▼
<b>Q3a.</b> You had trouble sleeping because you cannot get to sleep within <b>30 minutes</b> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Q3b.</b> You had trouble sleeping because you wake up in the middle of the night or early morning?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Q3c.</b> You have taken medicine (prescribed or “over the counter”) to help you sleep?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Q3d.</b> You had trouble staying awake while driving, eating meals, or engaging in social activity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Q4.</b> How often in the <b>past month</b> have you done the following because of noise when trying to sleep at home?					
	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>Always</b>
	1	2	3	4	5
	▼	▼	▼	▼	▼
<b>Q4a.</b> Wear earplugs or headphones	<input type="checkbox"/>				
<b>Q4b.</b> Use alcohol	<input type="checkbox"/>				
<b>Q4c.</b> Use medication	<input type="checkbox"/>				
<b>Q4d.</b> Turn on the TV	<input type="checkbox"/>				
<b>Q4e.</b> Turn on music	<input type="checkbox"/>				
<b>Q4f.</b> Close windows	<input type="checkbox"/>				
<b>Q4g.</b> Use a sound machine	<input type="checkbox"/>				
<b>Q4h.</b> Turn on a fan	<input type="checkbox"/>				

Q5. For the following statements respond how strongly you agree or disagree.						
	Strongly Disagree					Strongly Agree
	1	2	3	4	5	6
	▼	▼	▼	▼	▼	▼
Q5a. I am easily awakened by noise	<input type="checkbox"/>					
Q5b. I get used to most noises without much difficulty	<input type="checkbox"/>					
Q5c. I find it hard to relax in a place that is noisy	<input type="checkbox"/>					
Q5d. I am good at concentrating no matter what is going on around me	<input type="checkbox"/>					
Q5e. I get mad at people who make noise that keeps me from falling asleep or getting work done	<input type="checkbox"/>					
Q5f. I am sensitive to noise	<input type="checkbox"/>					

Q6. Thinking about the last 12 months or so, when you were here at home, how much was your sleep disturbed by noise from the following sources?					
	Not at all	Slightly	Moderately	Very	Extremely
	▼	▼	▼	▼	▼
Q6a. Road Traffic	<input type="checkbox"/>				
Q6b. Trains	<input type="checkbox"/>				
Q6c. Aircraft	<input type="checkbox"/>				
Q6d. Industries/Factories	<input type="checkbox"/>				
Q6e. Construction	<input type="checkbox"/>				
Q6f. Neighbors	<input type="checkbox"/>				
Q6g. Air Conditioner	<input type="checkbox"/>				

Q7. Thinking about the last 12 months or so, when you are here at home, how much does noise from each of the following bother, disturb, or annoy you?					
	Not at all	Slightly	Moderately	Very	Extremely
	▼	▼	▼	▼	▼
Q7a. Road Traffic	<input type="checkbox"/>				
Q7b. Trains	<input type="checkbox"/>				
Q7c. Aircraft	<input type="checkbox"/>				
Q7d. Industries/Factories	<input type="checkbox"/>				
Q7e. Construction	<input type="checkbox"/>				
Q7f. Neighbors	<input type="checkbox"/>				
Q7g. Air Conditioner	<input type="checkbox"/>				

Q8. In general, would you say your health is...?				
Poor	Fair	Good	Very Good	Excellent
▼	▼	▼	▼	▼
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**Q18.** What race do you consider yourself to be? (mark all that apply)

American Indian or Alaska Native       Native Hawaiian or Other Pacific Islander

Asian       White

Black or African American       Other (please specify): \_\_\_\_\_

Prefer Not to Answer

**Q19.** Has your current residence received any sound proofing treatment to reduce noise?       Yes       No

**Q20.** How long have you lived at your current residence?

Less than 1 year

1-5 years

5-10 years

More than 10 years

**Q21.** Do you have an air conditioner in your bedroom?

No Unit

Central Air Conditioner

Window Unit

**Q22.** How many people (including yourself) reside in this household?      \_\_\_\_\_

**Q23.** How many children in this household are under the age of 5?      \_\_\_\_\_

**Q24.** Gender:       Male       Female      **Q25.** Age:      \_\_\_\_\_ (years)

**Q26.** What is your height?      \_\_\_\_\_ feet \_\_\_\_\_ inches

**Q27.** What is your weight?      \_\_\_\_\_ lbs

## Cost estimate calculations

$$\#nondeliverable\ surveys = \frac{(nondelivery\ rate)}{delivery\ rate} \times \#surveys\ delivered$$

where *#surveys delivered* is the number of surveys that must be delivered in order to receive one response to the postal survey (Table 6 in main manuscript).

$$reclaimed\ cash\ incentives = \#nondeliverable\ surveys \times \$2$$

$$\begin{aligned} cost\ estimate,\ 1\ response \\ &= (\#surveys\ delivered \times cost\ of\ single\ mailing) \\ &+ (\#nondeliverable\ surveys \times cost\ of\ single\ mailing) \\ &- reclaimed\ cash\ incentives \end{aligned}$$

$$\begin{aligned} cost\ estimate,\ 1\ participant \\ &= cost\ estimate,\ 1\ response \times 1/field\ study\ participation\ rate \end{aligned}$$

The following example is for short surveys using a \$2 cash incentive and 3 follow-up waves:

Delivery rate = 87.6%; #surveys delivered = 4.61

$$\#nondeliverable\ surveys = \frac{(1 - 0.876)}{0.876} \times 4.61 = 0.65$$

$$reclaimed\ cash\ incentives = 0.65 \times \$2 = 1.3$$

A complete mailing round costs \$5.74:

$$cost\ estimate,\ 1\ response = (4.61 \times 5.74) + (0.65 \times 5.74) - 1.3 = \mathbf{\$28.89}$$

Field study participation rate = 9.1%;

$$cost\ estimate,\ 1\ participant = 28.89 \times 1/0.091 = \mathbf{\$317.47}$$

The \$0.04 difference between this cost estimate for one participant and the cost estimate in Table 6 is due to rounding of the values in the above calculation. The cost estimates in Table 6 are calculated using non-rounded data.

Table S1 Results of the regression models for recipients participating in the field study (including only completed surveys). All analyses excluded surveys that could not be delivered for any reason. df=Degrees of Freedom. OR=Odds Ratio. CI=Confidence Interval. Ref=Reference category.

Model and test relative to intercept-only model	Variable	Fixed effects			Variable level	Field study participation		
		df	Wald $\chi^2$	p		p-value	OR	95% CI
Model 1 $\chi^2(6, n=407)=4.707,$ p=0.582	Survey incentive	1	0.174	0.677	Gift card	Ref		
					\$2	0.677	0.608	0.059-6.305
	Survey length	2	0.058	0.971	Short	Ref		
					Medium	0.809	0.855	0.241-3.040
					Long	0.896	0.929	0.307-2.811
	Follow-up waves	2	0.805	0.669	0	Ref		
					2	0.698	1.528	0.179-13.022
					3	0.936	0.914	0.100-8.300
	Field study incentive	1	2.828	0.093	150	Ref		
					200	0.093	0.376	0.120-1.176
Model 2 $\chi^2(9, n=407)=10.502,$ p=0.486	Survey incentive	1	0.294	0.588	Gift card	Ref		
					\$2	0.588	0.521	0.049-5.505
	Survey length	2	0.065	0.968	Short	Ref		
					Medium	0.810	0.854	0.236-3.095
					Long	0.843	0.892	0.290-2.748
	Follow-up waves	2	1.012	0.603	0	Ref		
					2	0.628	1.703	0.197-14.691
					3	0.971	0.960	0.104-8.834
	Field study incentive	1	3.254	0.071	150	Ref		
					200	0.071	0.346	0.109-1.094
	Noise exposure category	4	3.662	0.454	<40	Ref		
					40-45	0.258	0.519	0.166-1.619
					45-50	0.906	1.061	0.399-2.818
					50-55	0.605	0.770	0.285-2.079
					>55	0.142	0.427	0.137-1.330
	Direction	1	1.917	0.166	West	Ref		
					East	0.166	0.607	0.299-1.231
Model 3 $\chi^2(17, n=364)=13.496,$ p=0.702	Survey incentive	1	0.286	0.593	Gift card	Ref		
					\$2	0.593	0.520	0.047-5.730
	Survey length	2	0.011	0.995	Short	Ref		
					Medium	0.919	0.933	0.244-3.569
					Long	0.944	0.959	0.303-3.036
	Follow-up waves	2	1.092	0.579	0	Ref		
					2	0.642	1.687	0.187-15.238
					3	0.935	0.910	0.094-8.817
	Field study incentive	1	3.190	0.074	150	Ref		
					200	0.074	0.344	0.107-1.110
	Noise exposure category	4	3.432	0.488	<40	Ref		
					40-45	0.354	0.570	0.173-1.873
					45-50	0.992	0.995	0.360-2.746
					50-55	0.722	0.828	0.293-2.340
					>55	0.119	0.391	0.120-1.274
	Direction	1	1.877	0.171	West	Ref		
					East	0.171	0.602	0.291-1.245
	Sex	1	0.081	0.776	Female	Ref		
					Male	0.776	0.894	0.411-1.942
Age category	5	3.223	0.666	<30	Ref			
				30-39	0.906	1.096	0.237-5.064	
				40-49	0.696	0.737	0.159-3.410	
				50-59	0.624	0.686	0.152-3.093	
				60-69	0.722	0.764	0.173-3.368	
				$\geq 70$	0.173	0.263	0.039-1.793	

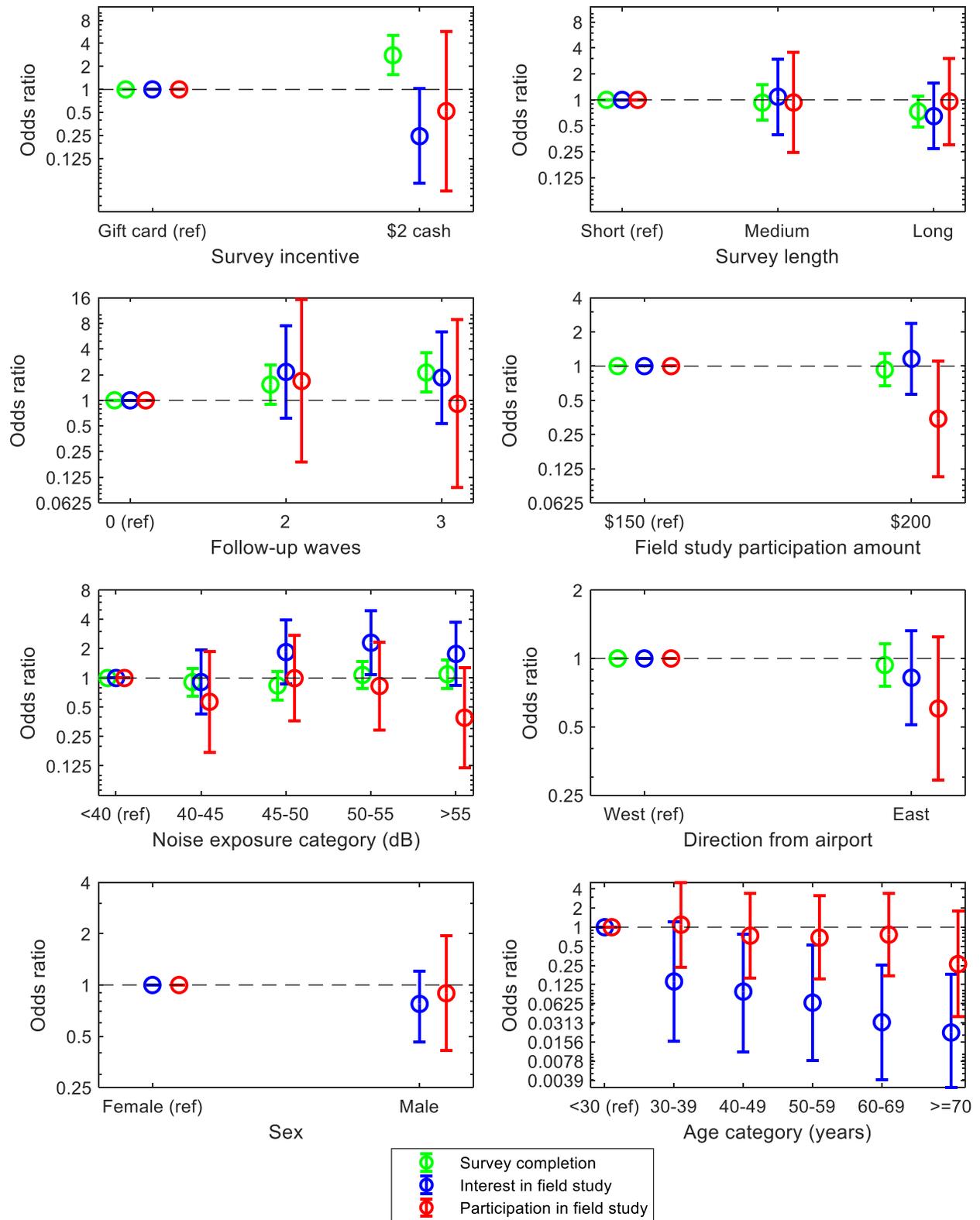


Figure S1 Odds ratios and 95% confidence intervals for the effect of different survey approaches and situational factors on receiving completed surveys (green), eliciting interest in the study (blue) and recruiting a participant into the study (red). The horizontal dashed line indicates the reference value OR=1.0.