

The Pitfalls of Review Solicitation: Evidence from a Natural Experiment on TripAdvisor

Online Appendix

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Section A. Figures and Tables

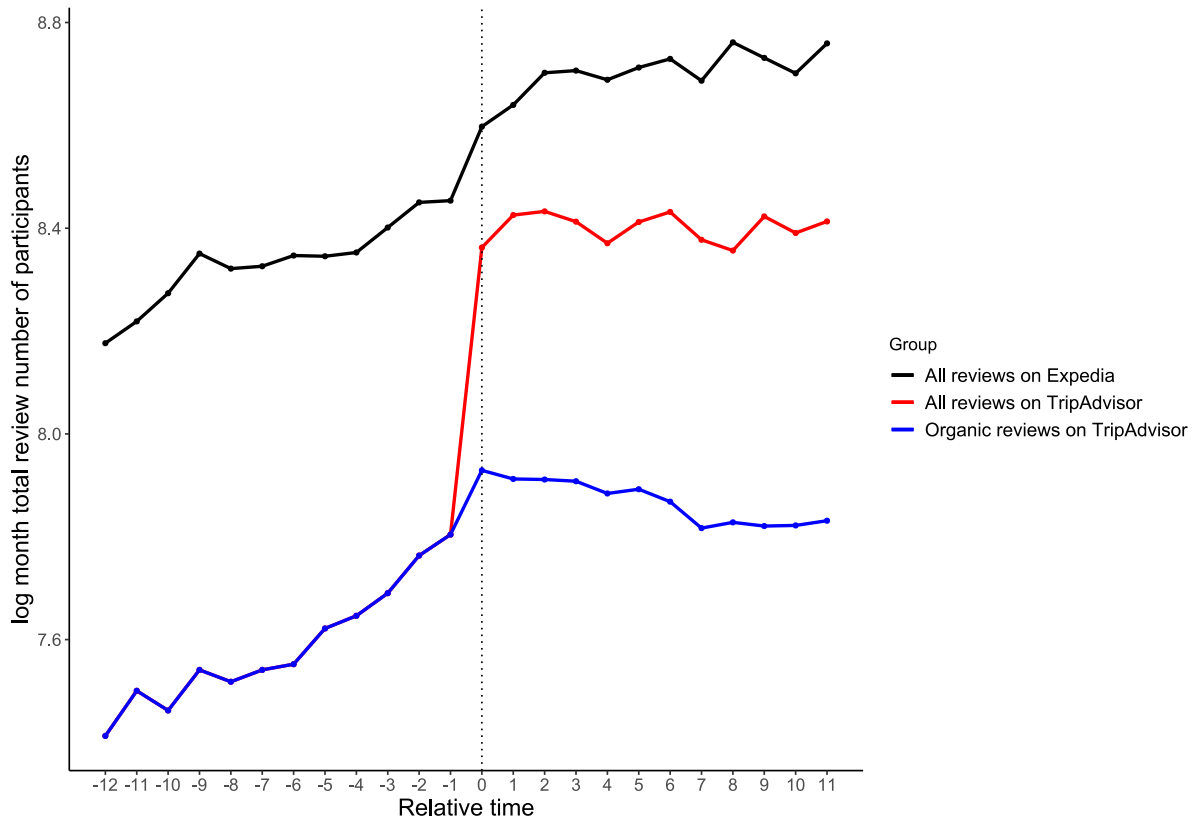
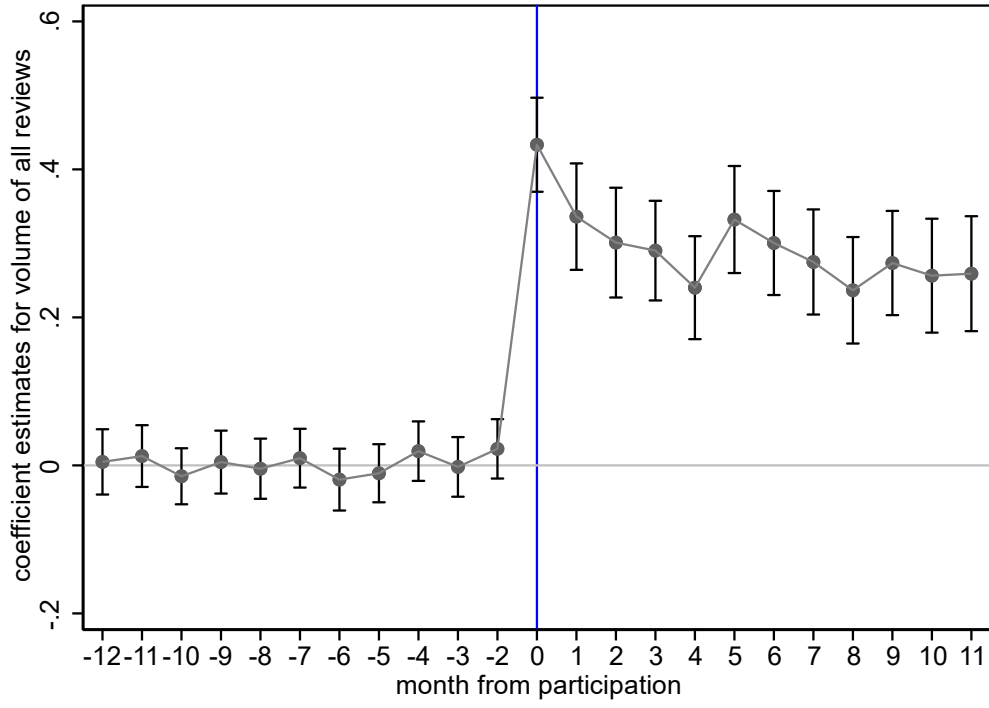
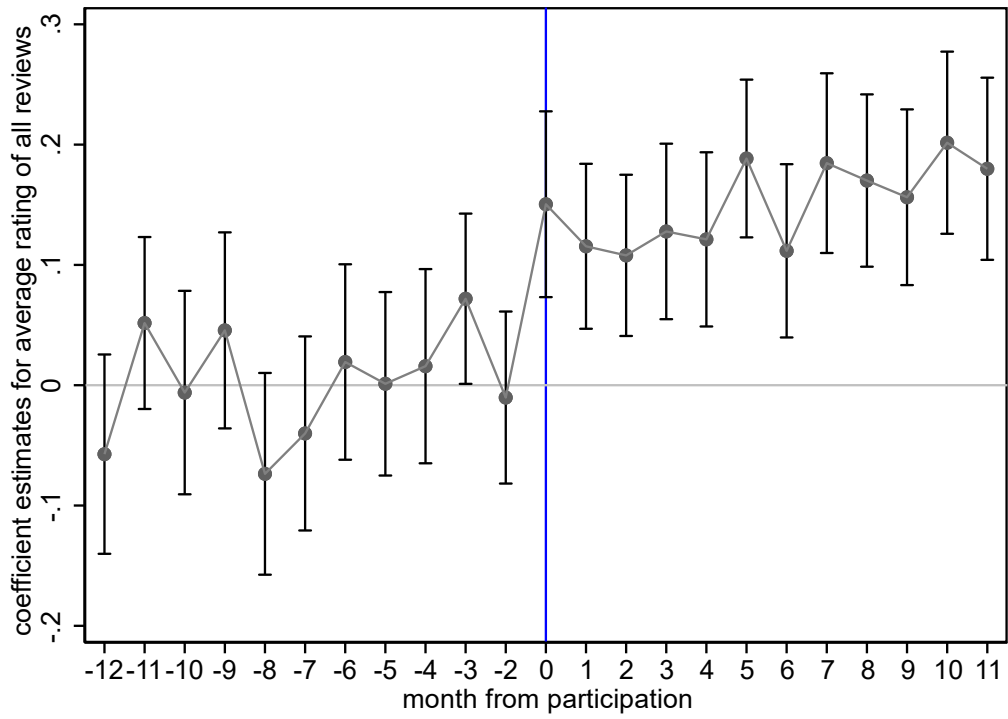


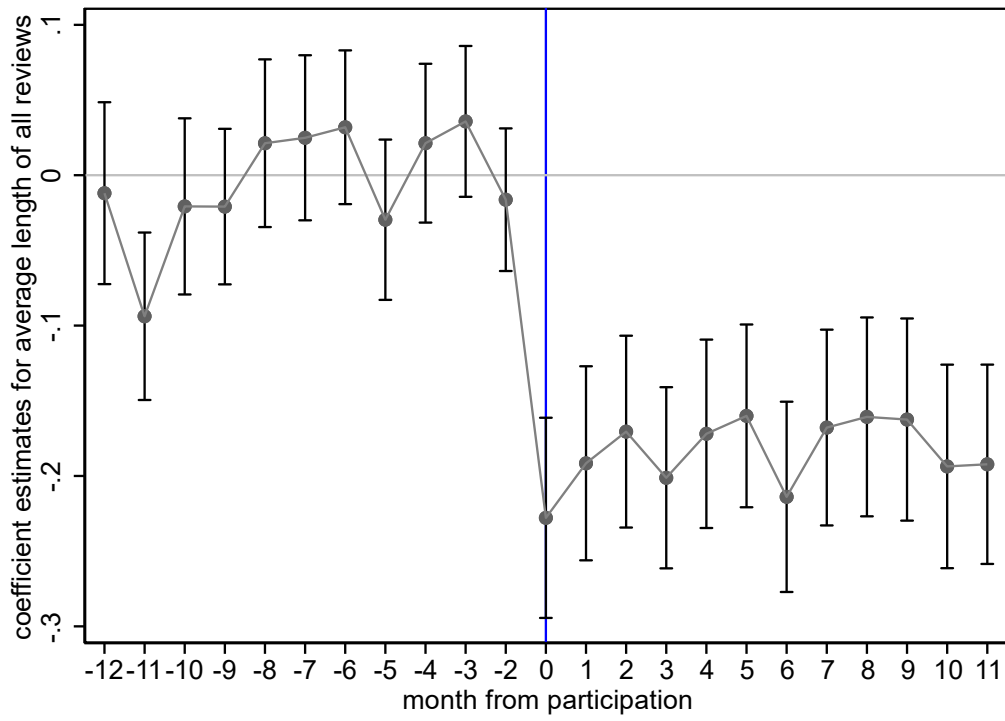
Figure A1. Number of Reviews for Participating Hotels on TripAdvisor and Expedia in Relative Time



(a) Volume

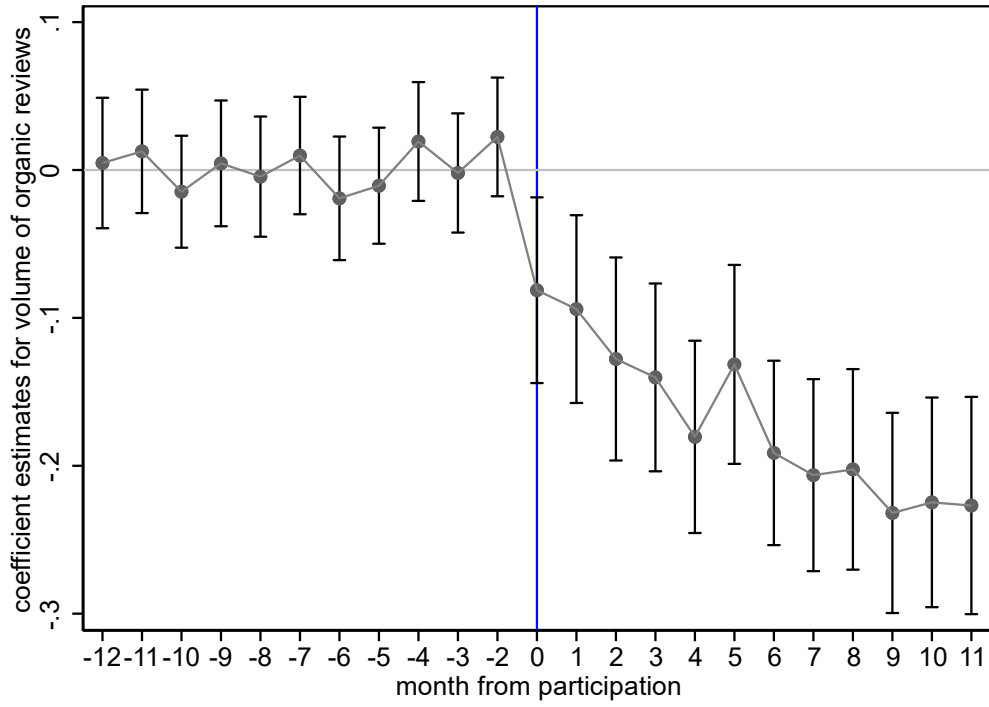


(b) Average Rating

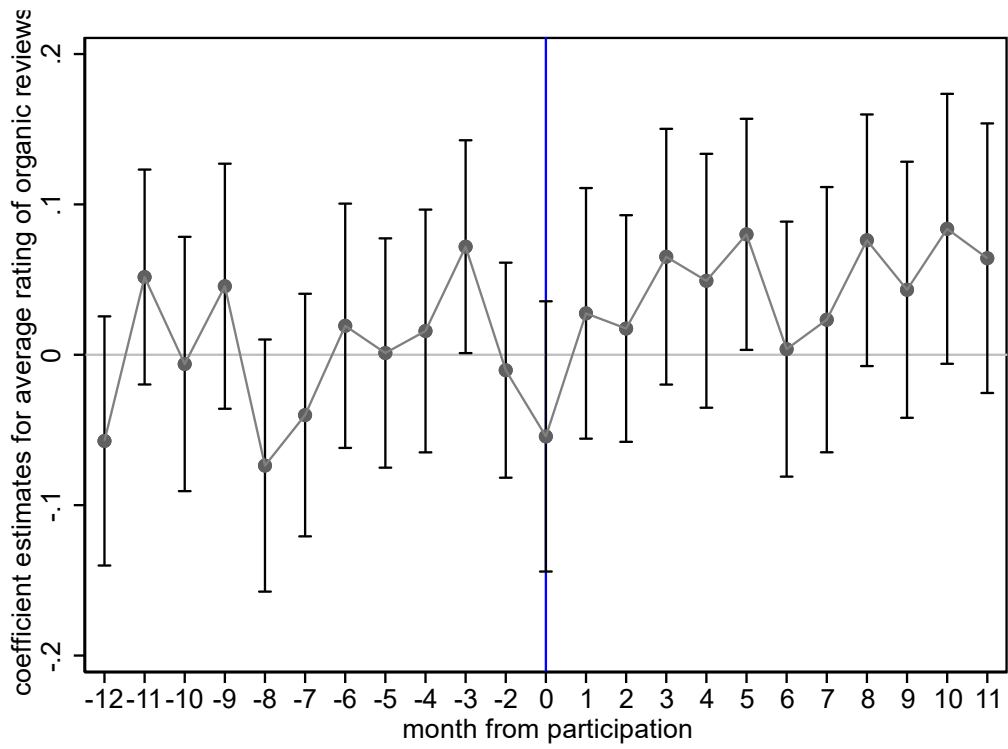


(c) Average Length

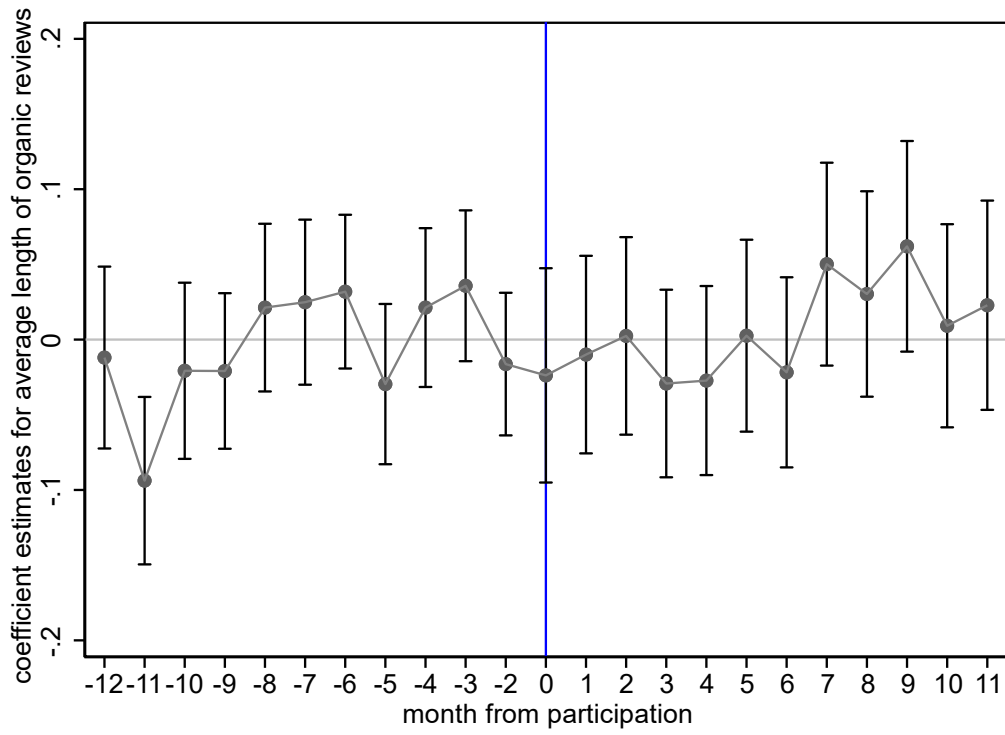
Figure A2. Treatment Effects Over Time Relative to One Month before Treatment (All Reviews)



(a) Volume



(b) Average Rating



(c) Average Length

Figure A3. Treatment Effects Over Time Relative to One Month before Treatment (Organic Reviews)

Table A1. The Effect of Review Solicitation on All Reviews, Using Only Hotels with Data of Full 12 Months Before and After the Participation (Two-Stage DID)

	<i>Dependent variable</i>		
	<i>log(Volume)</i> (1)	<i>Avg_Rating</i> (2)	<i>log(Avg_length)</i> (3)
<i>After</i> × <i>TripAdvisor</i>	0.293*** (0.030)	0.160*** (0.024)	-0.153*** (0.026)
<i>TripAdvisor</i>	Yes	Yes	Yes
<i>After</i>	Yes	Yes	Yes
Hotel fixed effects	Yes	Yes	Yes
Year-month fixed effects	Yes	Yes	Yes
Observations	19,632	16,770	16,663

Notes: 1. Clustered robust standard errors at the hotel level are in parentheses. 2. *, **, and *** indicate significance at the 0.05, 0.01, and 0.001 level, respectively. 3. The average length includes only English-language reviews.

Table A2. The Effect of Review Solicitation on Organic Reviews, Using Only Hotels with Data of Full 12 Months Before and After the Participation (Two-Stage DID)

	<i>Dependent variable</i>		
	<i>log(Volume)</i> (1)	<i>Avg_Rating</i> (2)	<i>log(Avg_length)</i> (3)
<i>After</i> × <i>TripAdvisor</i>	-0.151*** (0.025)	0.046 (0.024)	0.030 (0.025)
<i>TripAdvisor</i>	Yes	Yes	Yes
<i>After</i>	Yes	Yes	Yes
Hotel fixed effects	Yes	Yes	Yes
Year-month fixed effects	Yes	Yes	Yes
Observations	19,632	16,190	16,060

Notes: 1. Clustered robust standard errors at the hotel level are in parentheses. 2. *, **, and *** indicate significance at the 0.05, 0.01, and 0.001 level, respectively. 3. The average length includes only English-language reviews.

Table A3. The Effect of Review Solicitation on All Reviews, Using Only Hotels Whose First Solicited Reviews were Collected in Partnership with Themselves (Two-Stage DID)

	<i>Dependent variable</i>		
	<i>log(Volume)</i> (1)	<i>Avg_Rating</i> (2)	<i>log(Avg_length)</i> (3)
<i>After</i> × <i>TripAdvisor</i>	0.414*** (0.036)	0.189*** (0.028)	-0.255*** (0.032)
<i>TripAdvisor</i>	Yes	Yes	Yes
<i>After</i>	Yes	Yes	Yes
Hotel fixed effects	Yes	Yes	Yes
Year-month fixed effects	Yes	Yes	Yes
Observations	16,295	13,851	13,767

Notes: 1. Clustered robust standard errors at the hotel level are in parentheses. 2. *, **, and *** indicate significance at the 0.05, 0.01, and 0.001 level, respectively. 3. The average length includes only English-language reviews.

Table A4. The Effect of Review Solicitation on Organic Reviews, Using Only Hotels Whose First Solicited Reviews were Collected in Partnership with Themselves (Two-Stage DID)

	<i>Dependent variable</i>		
	<i>log(Volume)</i> (1)	<i>Avg_Rating</i> (2)	<i>log(Avg_length)</i> (3)
<i>After</i> × <i>TripAdvisor</i>	-0.187*** (0.033)	0.045 (0.029)	-0.013 (0.030)
<i>TripAdvisor</i>	Yes	Yes	Yes
<i>After</i>	Yes	Yes	Yes
Hotel fixed effects	Yes	Yes	Yes
Year-month fixed effects	Yes	Yes	Yes
Observations	16,295	13,244	13,141

Notes: 1. Clustered robust standard errors at the hotel level are in parentheses. 2. *, **, and *** indicate significance at the 0.05, 0.01, and 0.001 level, respectively. 3. The average length includes only English-language reviews.

Table A5. The Effect of Review Solicitation on All Reviews, Chain Hotels Only (Two-Stage DID)

	<i>Dependent variable</i>		
	<i>log(Volume)</i> (1)	<i>Avg_Rating</i> (2)	<i>log(Avg_length)</i> (3)
<i>After</i> × <i>TripAdvisor</i>	0.285*** (0.033)	0.120*** (0.024)	-0.202*** (0.028)
<i>TripAdvisor</i>	Yes	Yes	Yes
<i>After</i>	Yes	Yes	Yes
Hotel fixed effects	Yes	Yes	Yes
Year-month fixed effects	Yes	Yes	Yes
Observations	18,744	16,247	16,149

Notes: 1. Clustered robust standard errors at the hotel level are in parentheses. 2. *, **, and *** indicate significance at the 0.05, 0.01, and 0.001 level, respectively. 3. The average length includes only English-language reviews.

Table A6. The Effect of Review Solicitation on Organic Reviews, Chain Hotels Only (Two-Stage DID)

	<i>Dependent variable</i>		
	<i>log(Volume)</i> (1)	<i>Avg_Rating</i> (2)	<i>log(Avg_length)</i> (3)
<i>After</i> × <i>TripAdvisor</i>	-0.189*** (0.030)	0.031 (0.024)	-0.004 (0.026)
<i>TripAdvisor</i>	Yes	Yes	Yes
<i>After</i>	Yes	Yes	Yes
Hotel fixed effects	Yes	Yes	Yes
Year-month fixed effects	Yes	Yes	Yes
Observations	18,744	15,767	15,648

Notes: 1. Clustered robust standard errors at the hotel level are in parentheses. 2. *, **, and *** indicate significance at the 0.05, 0.01, and 0.001 level, respectively. 3. The average length includes only English-language reviews.

Table A7. The Effect of Review Solicitation on All Reviews, with Review Environment Control Variables (Two-Stage DID)

	<i>Dependent variable</i>		
	<i>log(Volume)</i> (1)	<i>Avg_Rating</i> (2)	<i>log(Avg_length)</i> (3)
<i>After</i> × <i>TripAdvisor</i>	0.189*** (0.028)	0.126*** (0.023)	-0.198*** (0.026)
<i>TripAdvisor</i>	Yes	Yes	Yes
<i>After</i>	Yes	Yes	Yes
<i>log(Cum_Volume)</i>	Yes	Yes	Yes
<i>Cum_Avg_Rating</i>	Yes	Yes	Yes
<i>log(Cum_Avg_length)</i>	Yes	Yes	Yes
Hotel fixed effects	Yes	Yes	Yes
Year-month fixed effects	Yes	Yes	Yes
Observations	23,196	19,969	19,847

Notes: 1. Clustered robust standard errors at the hotel level are in parentheses. 2. *, **, and *** indicate significance at the 0.05, 0.01, and 0.001 level, respectively. 3. The average length includes only English-language reviews.

Table A8. The Effect of Review Solicitation on Organic Reviews, with Review Environment Control Variables (Two-Stage DID)

	<i>Dependent variable</i>		
	<i>log(Volume)</i> (1)	<i>Avg_Rating</i> (2)	<i>log(Avg_length)</i> (3)
<i>After</i> × <i>TripAdvisor</i>	-0.164*** (0.026)	0.029 (0.022)	0.010 (0.023)
<i>TripAdvisor</i>	Yes	Yes	Yes
<i>After</i>	Yes	Yes	Yes
<i>log(Cum_Volume)</i>	Yes	Yes	Yes
<i>Cum_Avg_Rating</i>	Yes	Yes	Yes
<i>log(Cum_Avg_length)</i>	Yes	Yes	Yes
Hotel fixed effects	Yes	Yes	Yes
Year-month fixed effects	Yes	Yes	Yes
Observations	23,179	19,303	19,157

Notes: 1. Clustered robust standard errors at the hotel level are in parentheses. 2. *, **, and *** indicate significance at the 0.05, 0.01, and 0.001 level, respectively. 3. The average length includes only English-language reviews.

Table A9. The Effect of Review Solicitation on All Reviews, Using DDD Model (Two-Stage DID)

	<i>Dependent Variable</i>		
	<i>log(Volume)</i> (1)	<i>Avg_Rating</i> (2)	<i>log(Avg_Length)</i> (3)
<i>After × TripAdvisor × Participating</i>	0.295*** (0.029)	0.154*** (0.022)	-0.185*** (0.025)
<i>TripAdvisor</i>	Yes	Yes	Yes
<i>After × Participating</i>	Yes	Yes	Yes
<i>TripAdvisor × Participating</i>	Yes	Yes	Yes
Hotel fixed effects	Yes	Yes	Yes
Year-month fixed effects	Yes	Yes	Yes
Observations	96,644	62,702	61,916

Notes: 1. Clustered robust standard errors at the hotel level are in parentheses. 2. *, **, and *** indicate significance at the 0.05, 0.01, and 0.001 level, respectively. 3. The average length includes only English-language reviews.

Table A10. The Effect of Review Solicitation on Organic Reviews, Using DDD Model (Two-Stage DID)

	<i>Dependent Variable</i>		
	<i>log(Volume)</i> (1)	<i>Avg_Rating</i> (2)	<i>log(Avg_Length)</i> (3)
<i>After × TripAdvisor × Participating</i>	-0.169*** (0.026)	0.045* (0.022)	0.004 (0.023)
<i>TripAdvisor</i>	Yes	Yes	Yes
<i>After × Participating</i>	Yes	Yes	Yes
<i>TripAdvisor × Participating</i>	Yes	Yes	Yes
Hotel fixed effects	Yes	Yes	Yes
Year-month fixed effects	Yes	Yes	Yes
Observations	96,644	62,036	61,226

Notes: 1. Clustered robust standard errors at the hotel level are in parentheses. 2. *, **, and *** indicate significance at the 0.05, 0.01, and 0.001 level, respectively. 3. The average length includes only English-language reviews.

Table A11. The Effect of Review Solicitation on All Reviews Posted by Organic Reviewers Who Were Active Before the Policy Change (Two-Stage DID)

	<i>Dependent variable</i>		
	<i>log(Volume)</i> (1)	<i>Avg_Rating</i> (2)	<i>log(Avg_length)</i> (3)
<i>After</i> × <i>TripAdvisor</i>	-0.356*** (0.026)	0.031 (0.024)	-0.006 (0.024)
<i>TripAdvisor</i>	Yes	Yes	Yes
<i>After</i>	Yes	Yes	Yes
Hotel fixed effects	Yes	Yes	Yes
Year-month fixed effects	Yes	Yes	Yes
Observations	23,350	17,077	16,998

Notes: 1. Clustered robust standard errors at the hotel level are in parentheses. 2. *, **, and *** indicate significance at the 0.05, 0.01, and 0.001 level, respectively. 3. The average length includes only English-language reviews.

Table A12. The Effect of Review Solicitation on All Reviews Posted by Organic Reviewers Based on Majority (Two-Stage DID)

	<i>Dependent variable</i>		
	<i>log(Volume)</i> (1)	<i>Avg_Rating</i> (2)	<i>log(Avg_length)</i> (3)
<i>After</i> × <i>TripAdvisor</i>	-0.084*** (0.026)	0.080*** (0.021)	-0.047* (0.024)
<i>TripAdvisor</i>	Yes	Yes	Yes
<i>After</i>	Yes	Yes	Yes
Hotel fixed effects	Yes	Yes	Yes
Year-month fixed effects	Yes	Yes	Yes
Observations	23,350	19,491	19,352

Notes: 1. Clustered robust standard errors at the hotel level are in parentheses. 2. *, **, and *** indicate significance at the 0.05, 0.01, and 0.001 level, respectively. 3. The average length includes only English-language reviews.

Section B. Shift in Review Topics

B.1. STM

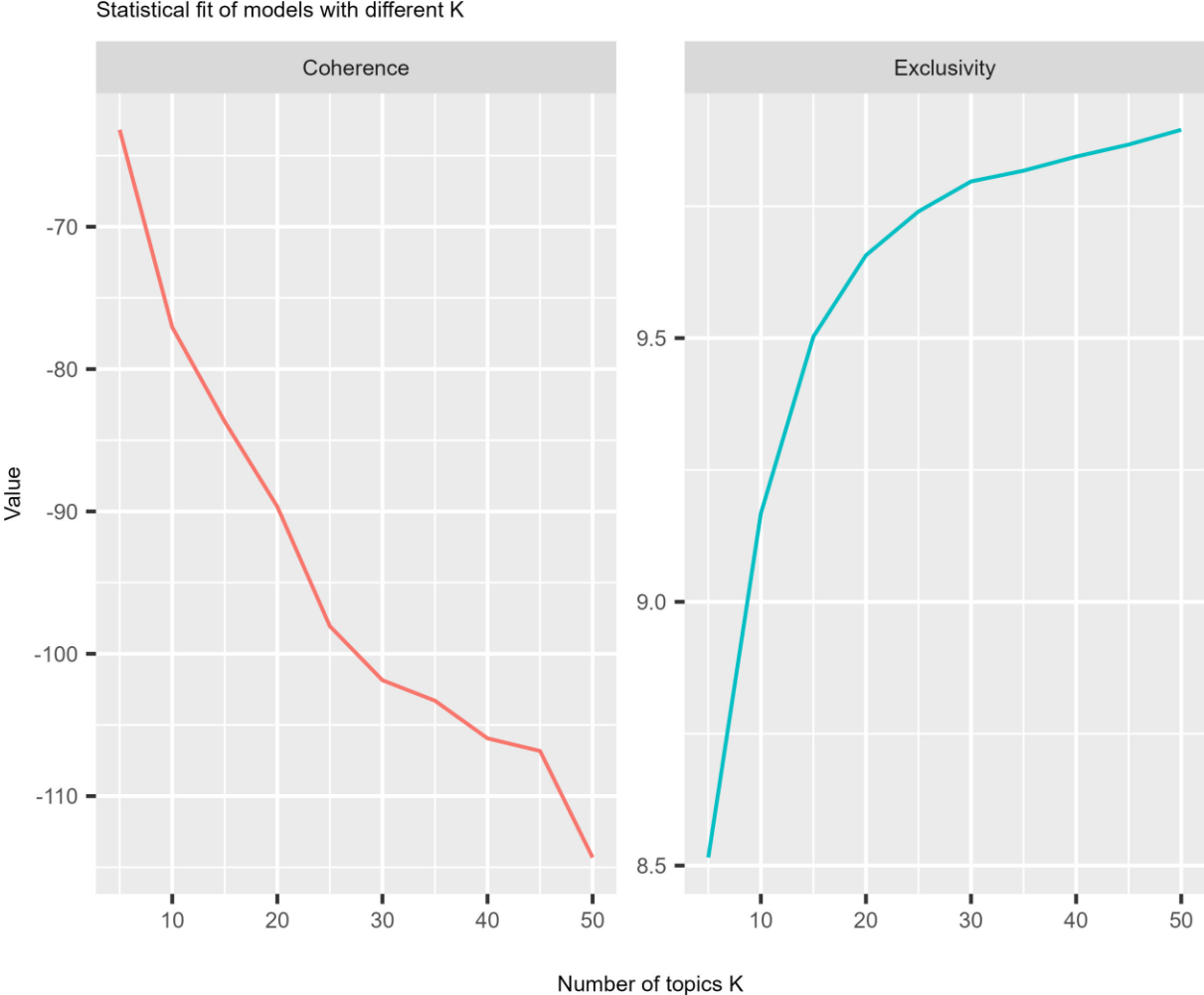


Figure B1. Model Diagnostics by Number of Topics

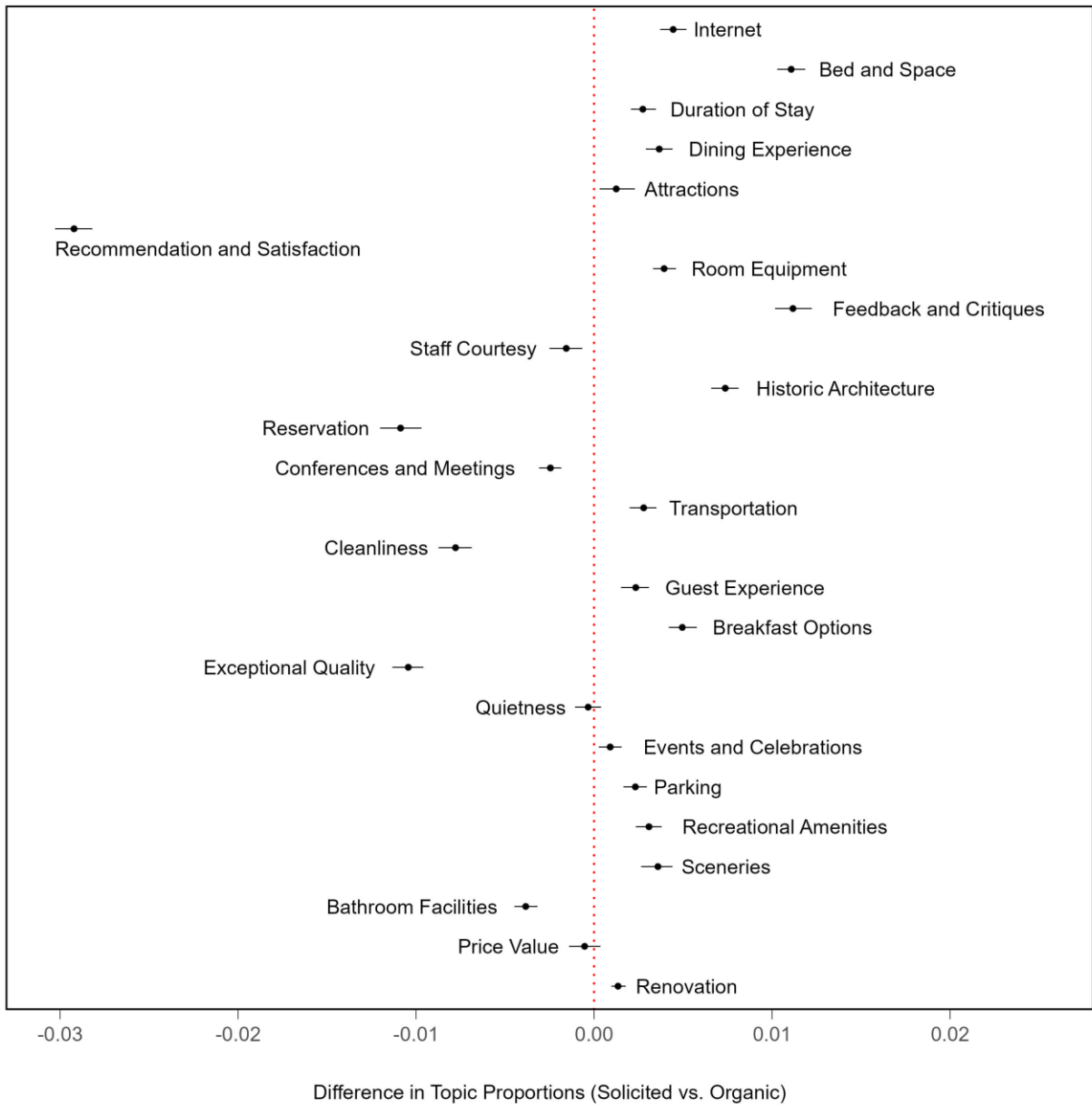


Figure B2. Difference in the Topic Proportions (Organic – Solicited; Direct Effect)

Table B1. The 25 Topics and Their Top Words

Topic Label	Top Words	Proportion
Recommendation and Satisfaction	recommend, excel, great, definit, antonio, san, high, perfect, wonder, friend	9.27%
Bed and Space	nice, comfort, bed, comfi, spacious, size, littl, big, king, larg	7.04%
Reservation	call, told, card, phone, credit, said, reserv, final, later, apolog	6.20%
Staff Courtesy	help, polit, courteous, everyon, profession, front, smile, alway, will, job	6.09%
Exceptional Quality	custom, omni, notch, exceed, experienc, detail, frequent, servic, attent, season	5.11%
Price Value	inn, hampton, quinta, valu, price, motel, reason, good, money, budget	4.79%
Feedback and Critiques	dont, review, somewher, els, saw, let, know, guess, wouldnt, stuff	4.58%
Internet	internet, average, slow, standard, wifi, fine, limit, lack, marriott, decent	4.43%
Attractions	galleria, shop, dalla, mall, within, west, nearbi, downtown, houston, museum	4.19%
Duration of Stay	suit, year, embassi, week, bedroom, live, last, month, past, homewood	4.14%
Sceneries	river, austin, alamo, walk, street, riverwalk, capitol, congress, across, block	3.94%
Breakfast Options	buffet, egg, complimentari, fruit, sausag, varieti, omelet, snack, bacon, fresh	3.91%
Guest Experience	hyatt, club, home, treat, rememb, feel, welcom, thank, regenc, grand	3.59%
Quietness	hear, nois, loud, sound, construct, sleep, noisi, pet, door, neighbor	3.46%
Cleanliness	smoke, smell, stain, carpet, dirti, sheet, mold, musti, odor, cigarett	3.21%
Transportation	airport, shuttl, graduat, driver, highway, termin, lackland, dfw, freeway, road	2.95%
Events and Celebrations	wed, late, arriv, saturday, earli, friday, sunday, arrang, parti, group	2.88%
Parking	park, car, garag, valet, self, per, fee, vehicl, cost, entranc	2.83%
Recreational Amenities	resort, spa, golf, kid, swim, hill, pool, outdoor, activ, relax	2.67%
Dining Experience	westin, anniversari, server, bartend, waiter, ate, celebr, menu, champagn, chef	2.64%
Historic Architecture	histor, histori, charm, menger, adolphus, driskil, rooftop, indigo, architectur, boutiqu	2.60%
Bathroom Facilities	shower, pressur, water, tub, temperatur, condition, drain, degre, bath, air	2.60%
Room Equipment	microwav, fridg, maker, coffe, machin, refriger, cup, screen, flat, iron	2.46%
Conferences and Meetings	convent, confer, center, meet, medic, hilton, anatol, fit, execut, toyota	2.41%
Renovation	renov, updat, need, remodel, improv, older, properti, major, complet, appear	2.03%

B.2. Alternative Explanation

We posit that the shift in review topics could potentially be attributed to a lower level of intrinsic motivation among reviewers when composing solicited reviews. However, the finding that solicited reviews are more abstract could also be attributed to an alternative explanation that these reviews are written after a greater delay. As the construal level theory (CLT) posits, individuals tend to conceptualize temporally distant events in a more abstract and high-level manner (Trope and Liberman 2010).

To explore this possibility, we examine whether there is a greater delay between the date of review and the date of stay for solicited reviews. We noted that on TripAdvisor, while the review date is made public, only the year and month of the stay are disclosed. As a result, we are unable to directly gauge the difference between these two dates. As an alternative approach, we assess the difference between the year and month of the review posting and those of the hotel stay. Specifically, we check the percentage of reviews that were posted in the same month as the stay, the next month following the stay, and two or more months after the stay. As presented in Table B2, the percentage of solicited reviews posted in the same month as the stay is substantially higher than that of organic reviews (83.70% vs. 69.72%). On the other hand, the percentage of solicited reviews posted in two or more months after the stay is significantly lower than that of organic reviews (0.43% vs. 10.57%). Taken together, these results suggest that the interval between the time of the stay and the review appears to be shorter for solicited reviews. Therefore, it is unlikely that the observed topical disparities between solicited reviews and organic reviews can be explained by the timing difference in review writing.

Table B2. Difference Between Review Posting and Hotel Stay

	Organic Reviews (%)	Solicited Reviews (%)
Reviews posted in the same month	69.74%	83.77%
Reviews posted in the next month	19.69%	15.81%
Review posted in two or more months	10.56%	0.42%

References

Trope, Y., and Liberman, N. (2010). Construal-level theory of psychological distance. *Psychological Review*, 117(2), 440-463.