

Television Advertising and Online Shopping

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Online Appendix

This Appendix presents survey items and empirical results that were omitted from the main body of the article for brevity. Table A1 provides the original survey items that were coded by the research assistants in the exercise described in section 3.4. Tables A2 and A3 present the brand fixed effects and correlation parameters in the baseline model of online shopping that were estimated using the two-hour window regression data (the δ and μ parameters in Equations 10-12). These effects should not be interpreted as causal, but they do describe some interesting patterns. The effects of advertising expenditure are also reported here, but are difficult to interpret because the model includes a large number of insertion covariates (category/time interactions, TV property and genre fixed effects, etc.) and cost estimates are highly correlated with these variables. Figures A1-A4 graph the category-time interactions for each of the three online shopping variables; point estimates are shown in the solid line, with 95% confidence interval indicated by colored dots above and below the lines.

Table A1. Full List of Content Survey Questions

	% Match	Alpha
Action-focused		
Is there a call to go online (e.g., shop online, visit the web)?	79%	.71
Is there online contact information provided (e.g., URL, website)?	89%	.83
Is there a visual or verbal call to purchase (e.g., buy now, order now)?	70%	.51
Does the ad portray a sense of urgency to act (e.g., buy before sales ends, order before ends)?	79%	.65
Is there an incentive to buy (e.g., a discount, a coupon, a sale or “limited time offer”)?	80%	.75
Is there offline contact information provided (e.g., phone, mail, store location)?	91%	.68
Is there mention of something free?	94%	.86
Information-focused		
Does the ad mention at least one specific product (e.g., model, type, item)?	79%	.69
Is there any visual or verbal mention of the price?	93%	.92
Does the ad show the brand or trademark multiple or few times?	61%	.24
Emotion-focused		
Is the ad intended to be emotional? (You may not agree. But was that the intention of the ad?)	89%	.67
Does the ad give you a warm feeling about the brand?	61%	.30
Does the ad tell a story (e.g., with characters, a plot, an ending)?	73%	.39
Is the ad creative, clever?	54%	.31
Is the ad intended to be funny? (You may not agree. But was that the intention of the ad?)	83%	.78
Imagery-focused		
Does this ad provide sensory stimulation (e.g., cool visuals, arousing music, mouth-watering)?	61%	.31
Is the ad visually pleasing?	66%	.37
Is the ad cute? (e.g., baby, puppy, animated characters)	87%	.05

Table A2. Brand Effects

Brand	2 Hours (Diff.-in-Diff.)			Brand	2 Hours (Diff.-in-Diff.)		
	Search Engine Referrals	Direct Visits	Trans-actions		Search Engine Referrals	Direct Visits	Trans-actions
ATT	-2.814 (1.488)	-10.00*** (2.412)	2.453*** (0.434)	Overstock	-0.208 (1.432)	-1.878 (2.323)	3.271*** (0.377)
Chemistry	-4.355*** (1.498)	-7.555*** (2.427)	2.226*** (0.414)	Priceline	-3.519** (1.551)	-3.556 (2.432)	2.189*** (0.426)
eHarmony	-3.761** (1.496)	-4.441 (2.421)	2.207*** (0.414)	Sears	-0.517 (1.436)	-3.278 (2.331)	3.219*** (0.383)
Expedia	-2.925 (1.549)	-1.661 (2.431)	2.154*** (0.426)	Southwest	-3.073** (1.559)	-3.057 (2.447)	2.273*** (0.431)
JC Penney's	-0.615 (1.467)	-0.442 (2.387)	2.391*** (0.440)	Sprint	-4.434*** (1.487)	-10.52*** (2.412)	2.286*** (0.433)
Macy's	-0.228 (1.444)	-2.245 (2.332)	2.812*** (0.386)	Target	-0.876 (1.544)	-2.346 (2.444)	2.678*** (0.493)
Match	-2.449 (1.499)	-2.165 (2.423)	2.242*** (0.414)	Verizon	-3.687** (1.493)	-15.91*** (2.435)	2.905*** (0.463)
Orbitz	-3.583** (1.552)	-3.684 (2.433)	2.292*** (0.426)	Victoria's	-1.836 (1.438)	-2.015 (2.327)	2.654*** (0.384)

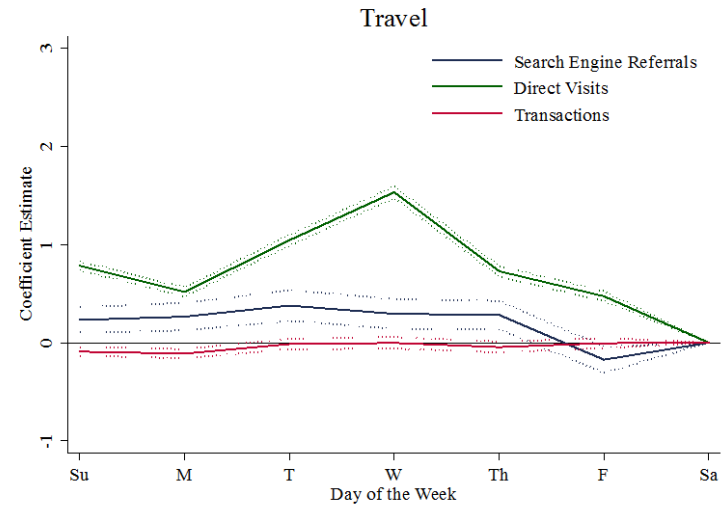
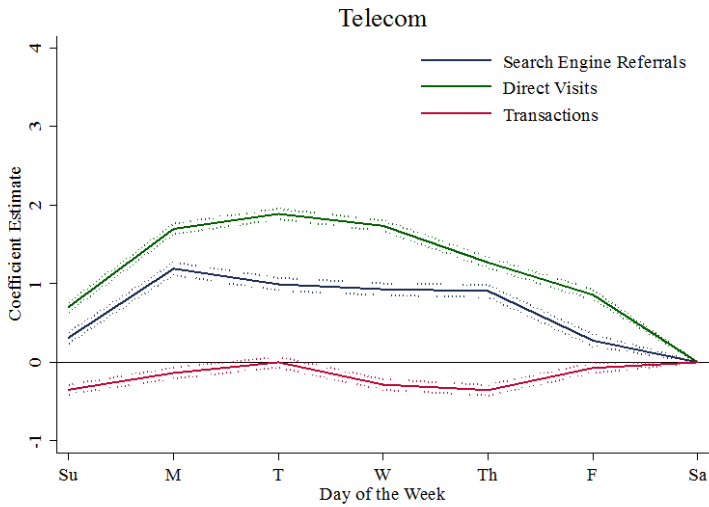
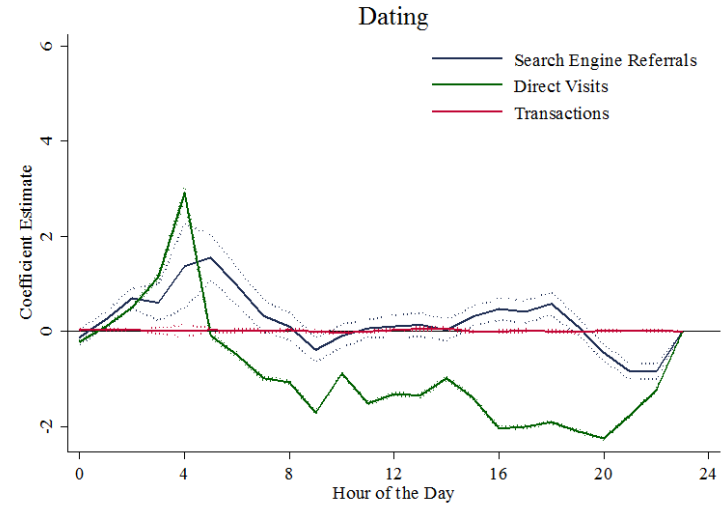
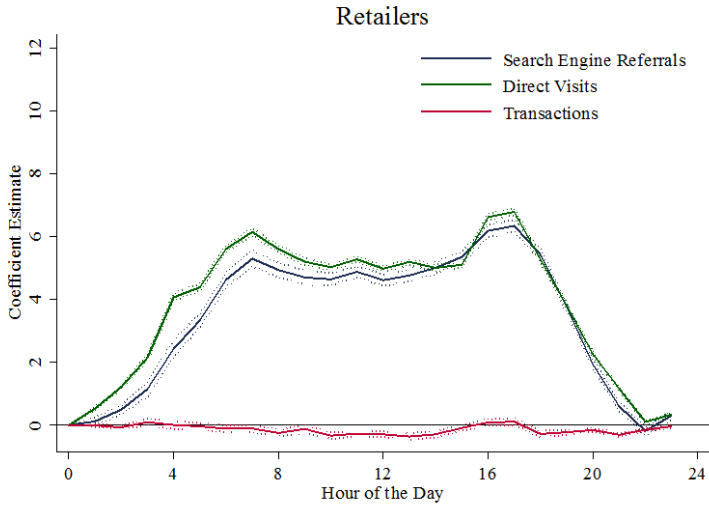
Notes: *** p<0.01, ** p<0.05. Robust standard errors in parentheses.

Table A3. Brand-Specific Parameter Estimates

2 Hrs. (D-in-D)DV:		SE^{POST}				Dir^{POST}				TC^{POST}			
Predictor:	SE^{PRE}	Dir^{PRE}	TC^{PRE}	$Est. Cost$	SE^{PRE}	Dir^{PRE}	TC^{PRE}	$Est. Cost$	SE^{POST}	Dir^{POST}	TC^{PRE}	$Est. Cost$	
Dating	Chemistry	0.0289 (0.0419)	0.138*** (0.0304)	-2.235*** (0.666)	4.63e-05 (2.93e-05)	-0.184*** (0.0691)	0.235*** (0.0703)	-2.416*** (0.678)	-0.000232*** (5.71e-05)	-0.00278 (0.00240)	-0.0114*** (0.00317)	0.0550** (0.0258)	1.05e-05** (4.14e-06)
	eHarmony	0.150*** (0.0116)	0.104*** (0.00614)	-0.406*** (0.0912)	-7.78e-06 (7.61e-06)	0.265*** (0.0223)	0.203*** (0.0130)	-0.515*** (0.181)	-2.49e-05 (2.09e-05)	0.00166 (0.00111)	0.00605*** (0.000809)	0.108*** (0.0200)	-1.64e-06 (1.74e-06)
	Match.com	0.388*** (0.0176)	0.0391*** (0.00883)	0.210** (0.104)	-2.39e-05 (1.86e-05)	0.178*** (0.0165)	0.283*** (0.0130)	0.535*** (0.157)	-8.73e-05*** (2.32e-05)	0.00271 (0.00175)	0.0139*** (0.00151)	0.0214 (0.0128)	-6.84e-06** (2.71e-06)
Retailers	Amazon	0.561*** (0.0571)	0.152*** (0.0381)	-0.0283 (0.110)	-9.26e-05*** (2.27e-05)	0.550*** (0.0833)	0.488*** (0.0578)	-0.0419 (0.156)	-0.000161*** (3.55e-05)	0.107*** (0.0266)	0.0786*** (0.0155)	0.128*** (0.0341)	-6.87e-06 (9.36e-06)
	JC Penney's	0.187*** (0.0104)	0.0851*** (0.00783)	-0.0503*** (0.0177)	1.62e-06 (1.24e-06)	0.300*** (0.0171)	0.260*** (0.00964)	-0.147*** (0.0315)	6.58e-06*** (1.68e-06)	0.0797*** (0.00719)	0.172*** (0.00571)	0.0185 (0.00950)	5.16e-07 (7.91e-07)
	Macy's	0.0508*** (0.00801)	0.0673*** (0.00597)	0.104*** (0.0238)	5.35e-06*** (9.79e-07)	0.186*** (0.0106)	0.235*** (0.00862)	0.0940*** (0.0275)	4.27e-06*** (1.52e-06)	0.0920*** (0.00618)	0.104*** (0.00411)	0.0392*** (0.0102)	-1.32e-06*** (4.89e-07)
	Overstock	0.0681*** (0.0180)	0.0599*** (0.0174)	0.0238 (0.0747)	5.11e-06*** (1.64e-06)	0.0538*** (0.0184)	0.106*** (0.0200)	0.0704 (0.0942)	1.27e-05*** (1.19e-06)	0.0508*** (0.00914)	0.0802*** (0.00744)	0.0110 (0.0394)	-1.54e-06** (6.50e-07)
	Sears	0.0174** (0.00744)	0.0725*** (0.00626)	0.0204 (0.0288)	1.67e-06** (6.80e-07)	0.0347*** (0.0105)	0.312*** (0.00881)	0.0761** (0.0338)	2.27e-06* (1.34e-06)	0.0519*** (0.00428)	0.0792*** (0.00543)	0.0253*** (0.00970)	7.75e-07** (3.26e-07)
	Target	0.289*** (0.00852)	0.253*** (0.00833)	-0.0922** (0.0364)	-9.81e-06*** (1.78e-06)	0.255*** (0.00913)	0.445*** (0.0110)	-0.231*** (0.0433)	-1.12e-05*** (2.77e-06)	-0.00471 (0.00388)	0.0822*** (0.00441)	0.0763*** (0.0122)	6.57e-07 (4.01e-07)
	Victoria's S.	0.104*** (0.0275)	0.0359** (0.0147)	0.0329 (0.0232)	1.03e-05*** (1.84e-06)	0.0604*** (0.0228)	0.276*** (0.0175)	-0.0968*** (0.0302)	1.01e-05*** (2.67e-06)	0.153*** (0.0353)	0.257*** (0.0176)	0.00159 (0.0118)	-1.57e-06 (1.15e-06)
Telecom	AT&T	0.0739*** (0.00359)	0.0860*** (0.00117)	-0.0995*** (0.00553)	-7.63E-07 (4.34e-07)	0.207*** (0.00838)	0.568*** (0.00289)	-0.306*** (0.0133)	-3.63e-06*** (8.15e-07)	0.0973*** (0.00432)	0.0216*** (0.00118)	-0.00977*** (0.00362)	-4.28E-07 (2.42e-07)
	Sprint	-0.0677*** (0.00890)	-0.0474*** (0.00437)	0.000613 (0.0176)	1.39e-06*** (3.92e-07)	-0.0175 (0.0265)	0.0491*** (0.0127)	-0.0233 (0.0534)	8.26e-06*** (1.30e-06)	0.105*** (0.00718)	0.0791*** (0.00350)	0.0843*** (0.0111)	-1.75e-07 (2.32e-07)
	Verizon	0.0695*** (0.00481)	0.00984*** (0.00122)	-0.0133*** (0.00367)	4.79e-07 (3.83e-07)	0.222*** (0.0127)	0.545*** (0.00360)	-0.452*** (0.00992)	-1.04e-06 (1.05e-06)	0.184*** (0.00876)	0.0642*** (0.00199)	-0.00414 (0.00452)	1.02E-06 (5.35e-07)
Travel	Expedia	0.0797*** (0.0160)	0.110*** (0.00916)	-0.109*** (0.0380)	-1.05e-06 (6.76e-06)	0.155*** (0.0245)	0.264*** (0.0140)	-0.203*** (0.0616)	-4.77e-06 (9.79e-06)	0.0381*** (0.00863)	0.0338*** (0.00402)	0.0746*** (0.0143)	-1.87e-06 (2.42e-06)
	Orbitz	-0.0210 (0.0166)	-0.0143** (0.00690)	0.0921 (0.0571)	-2.51e-05*** (7.17e-06)	0.0571 (0.0305)	0.0254** (0.0128)	0.122 (0.0841)	-1.45e-05 (1.84e-05)	0.0358*** (0.00700)	0.0269*** (0.00360)	0.114*** (0.0204)	-1.01e-06 (4.02e-06)
	Priceline	0.0570*** (0.0153)	0.0212*** (0.00747)	-0.00277 (0.0401)	-2.63e-07 (1.90e-06)	0.0940*** (0.0187)	0.000921 (0.0116)	0.208*** (0.0550)	3.71e-07 (4.09e-06)	0.0243*** (0.00710)	0.0425*** (0.00374)	0.0751*** (0.0142)	2.31e-07 (4.33e-07)
	Southwest	0.0584 (0.0394)	0.0679*** (0.0249)	0.0248 (0.123)	1.39e-06** (6.56e-07)	-0.0779 (0.0711)	-0.00653 (0.0407)	0.590*** (0.202)	5.96e-06*** (1.24e-06)	0.0557*** (0.0179)	0.0645*** (0.0127)	-0.0599 (0.0441)	-6.90e-07*** (2.55e-07)

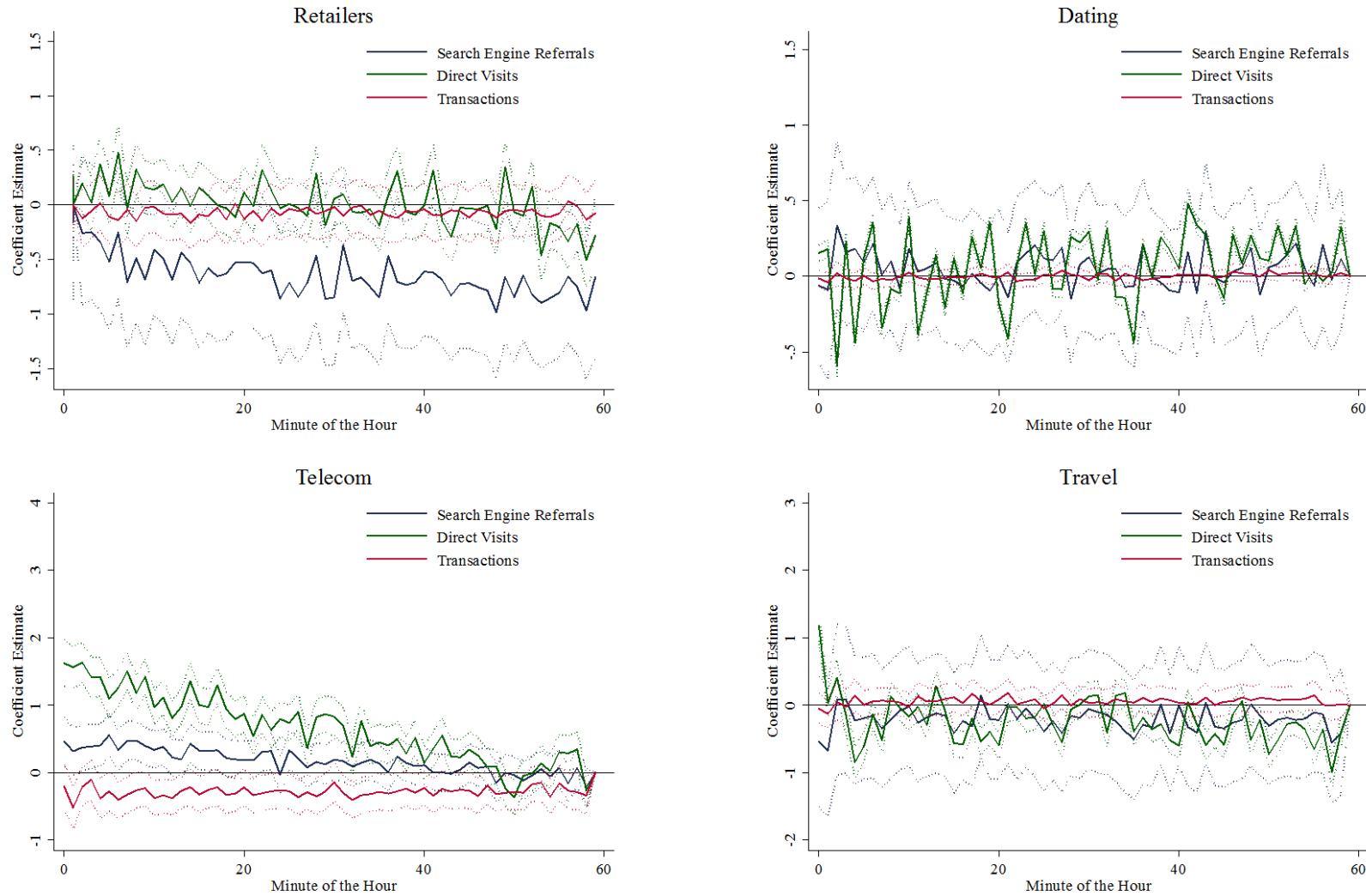
Notes: SE - search engine referrals; DIR - direct traffic; TC - transactions. Robust standard errors in parentheses. *** p<0.01, ** p<0.05.

Figure A1. Fixed Effect Estimates by Product Category and Hour of the Day



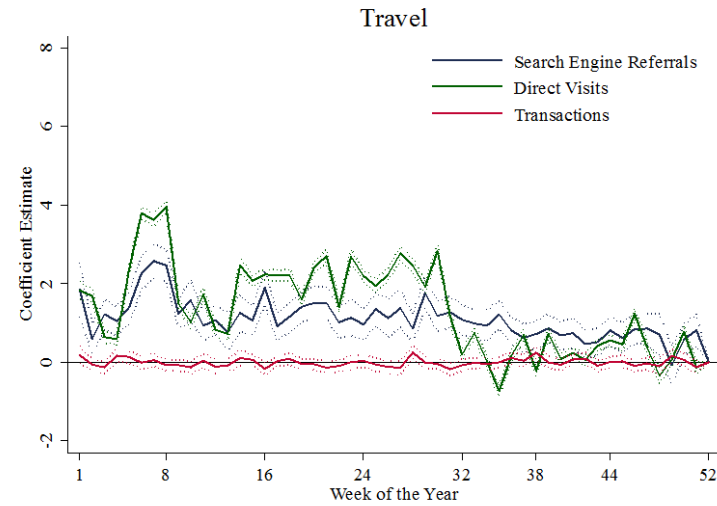
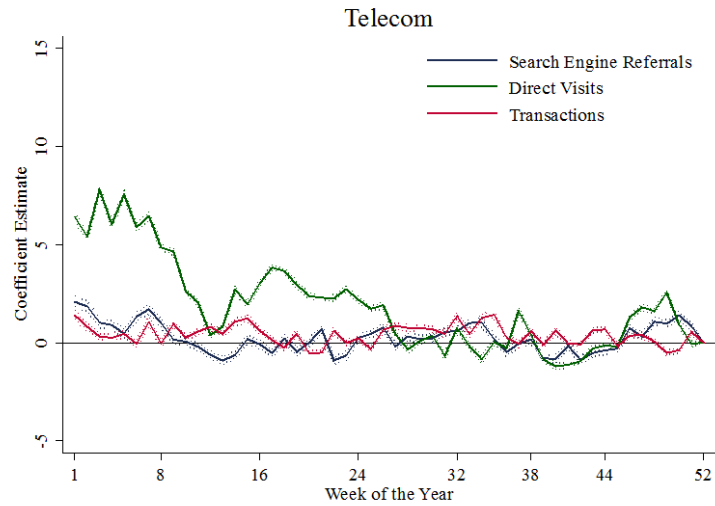
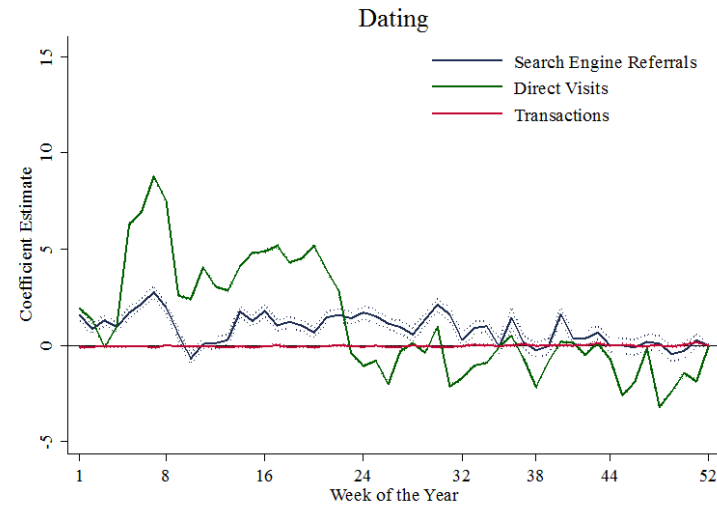
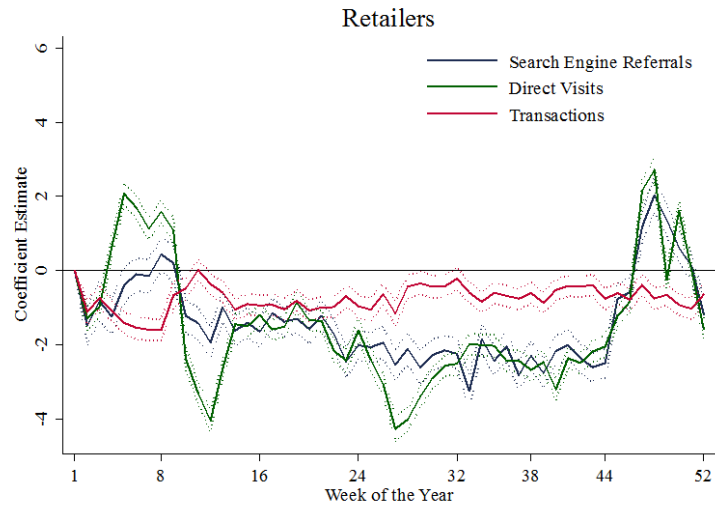
Notes: 24th hour omitted; Dotted lines indicate 95% confidence interval.

Figure A2. Fixed Effect Estimates by Product Category and Minute of the Hour



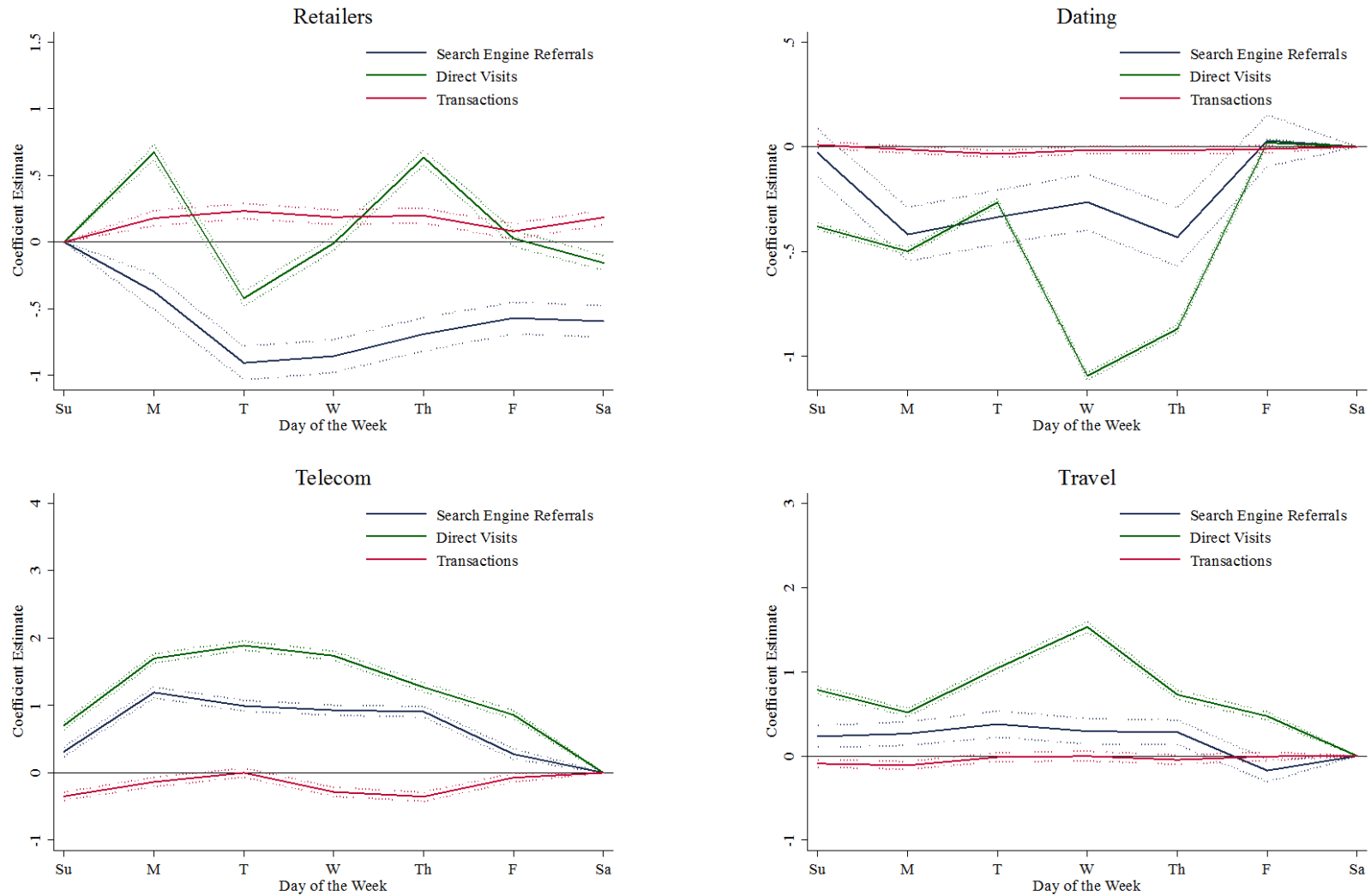
Notes: 60th minute omitted; Dotted lines indicate 95% confidence interval.

Figure A3. Fixed Effect Estimates by Product Category and Week of the Year



Notes: Week 1 means the week starting January 3, 2010; 52nd week is omitted; Dotted lines indicate 95% confidence interval

Figure A4. Fixed Effect Estimates by Product Category and Day of the Week



Notes: Saturday omitted; Dotted lines indicate 95% confidence interval