

# Figures

Figure 1: Firm Age and Remote Work

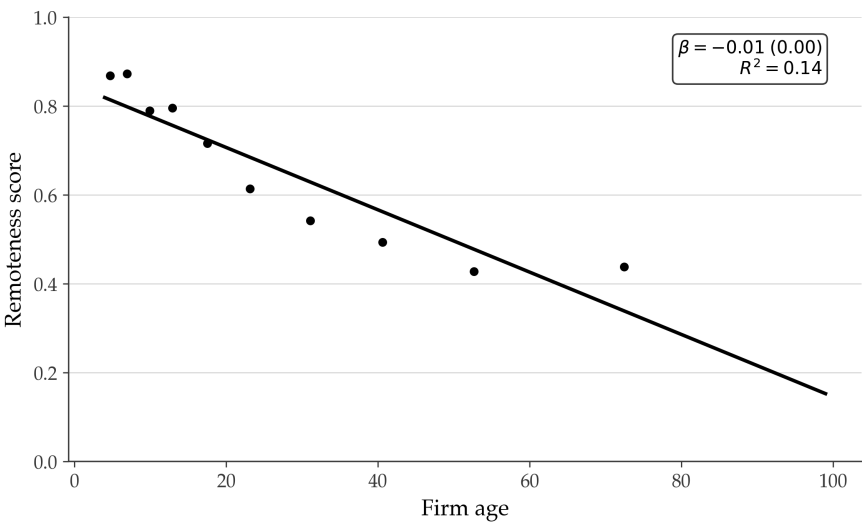


Figure 2: Telework Index and Remote Work

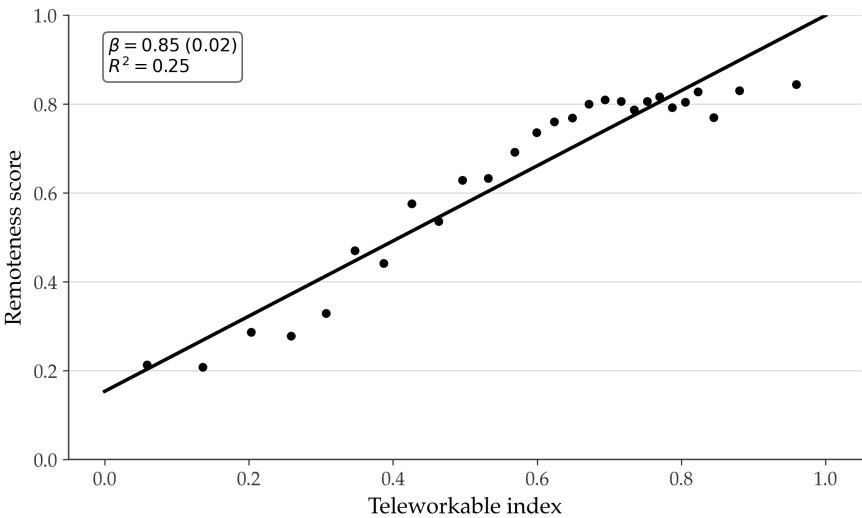
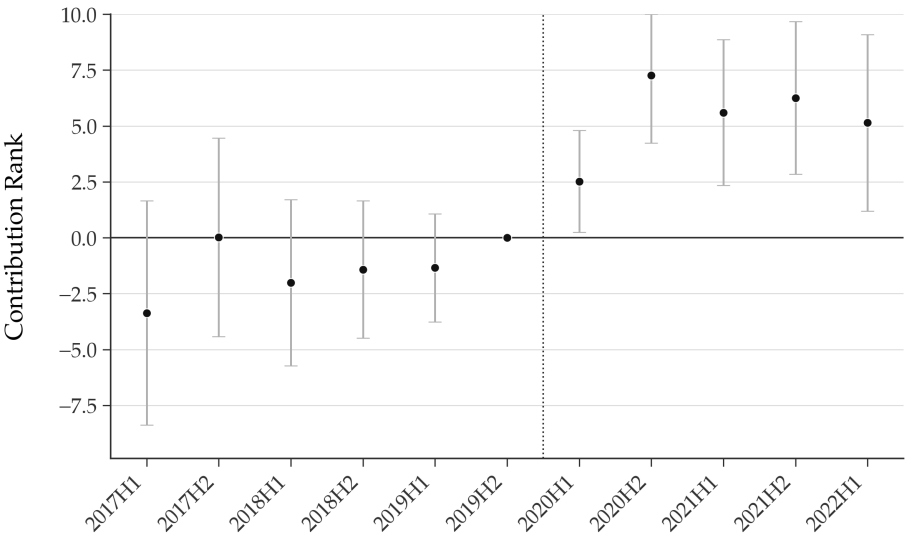


Figure 3: Event Study of Key Outcomes

Panel A: User Productivity



Panel B: Firm Growth

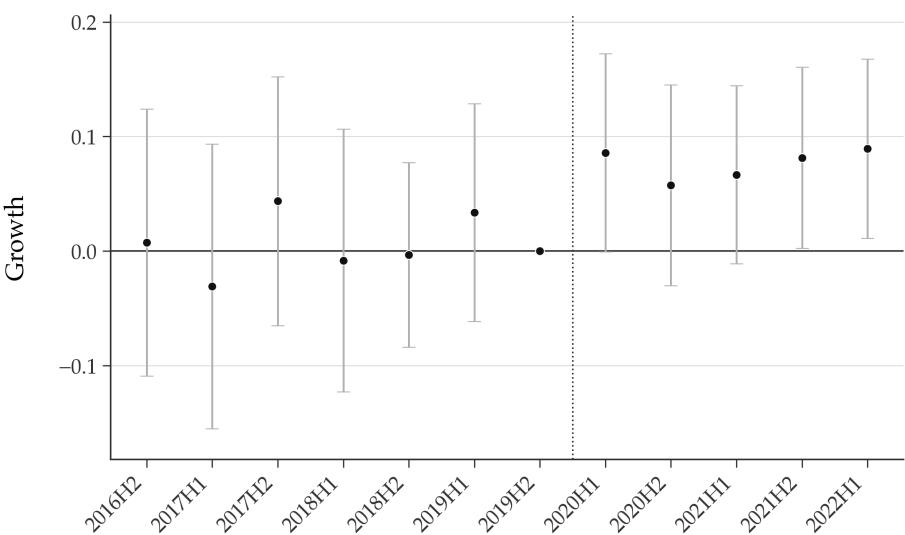
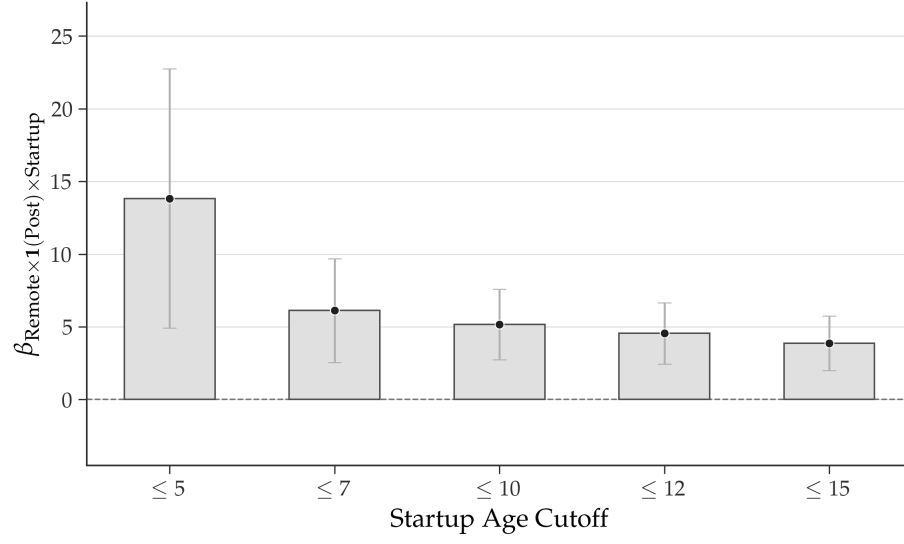


Figure 4: Startup Cutoff Visualization

Panel A: Contribution Rank (Total)



Panel B: Firm Growth Rate

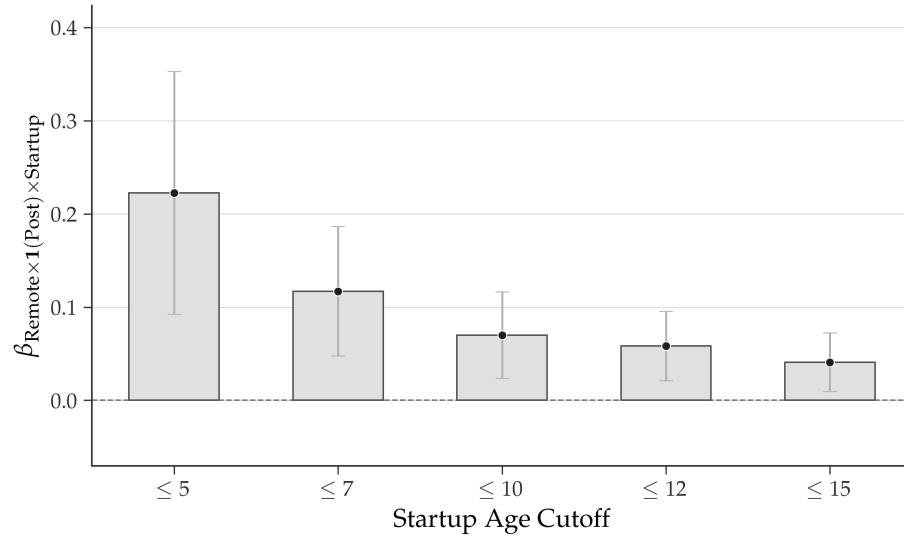
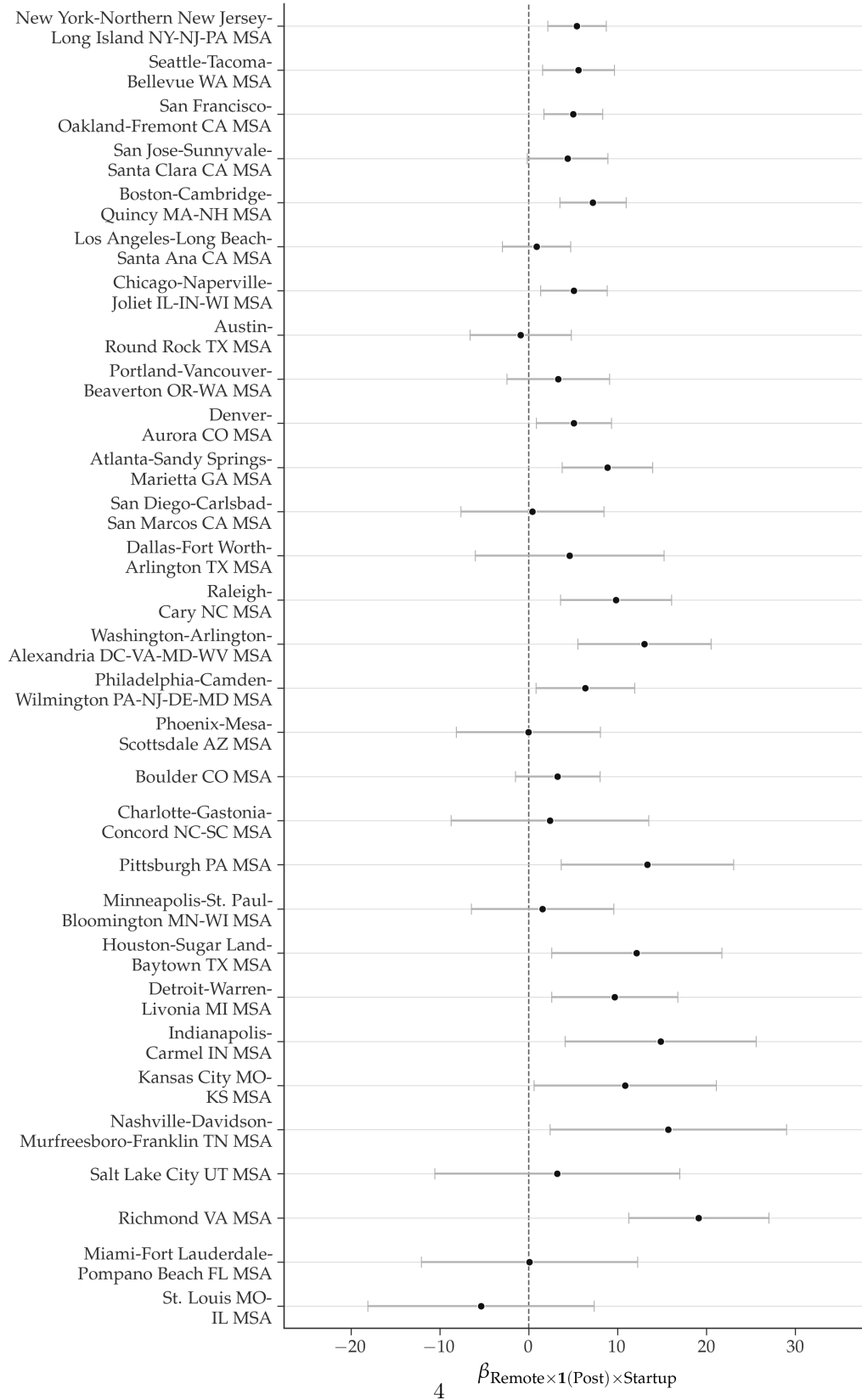


Figure 5: Remote Effect by Top Employment MSAs



# Tables

Table 1: Summary Statistics

	Startup	Incumbent	All Firms
<b>Panel A: Firm-level</b>			
Growth	0.20 (0.31)	0.06 (0.16)	0.09 (0.22)
Leave	0.26 (0.31)	0.21 (0.28)	0.22 (0.29)
Join	0.35 (0.32)	0.17 (0.18)	0.22 (0.24)
Teleworkable Score (0–1)	0.67 (0.18)	0.54 (0.25)	0.57 (0.24)
Remote Score (0–1)	0.85 (0.30)	0.57 (0.41)	0.64 (0.40)
Employees (Count)	271 (1432)	2740 (9555)	2126 (8380)
Age	7 (2)	43 (34)	34 (33)
Rent (\$/sq ft)	49 (21)	37 (19)	40 (20)
Centrality Score	1419 (1830)	949 (1309)	1066 (1470)
Seniority Levels (Count)	3.62 (0.77)	3.86 (0.50)	3.80 (0.59)
Number of firms	878	2630	3508
Observations	10450	31530	41980
<b>Panel B: Individual-level</b>			
Total Contributions	362.95 (817.44)	192.73 (522.28)	225.70 (594.89)
Restricted Contributions	320.05 (746.65)	139.96 (359.56)	174.84 (466.14)
Number of firms	721	1503	2224
Number of individuals	8338	31993	37186
Observations	44801	186504	231305

*Notes:*

Table 2: Remote Work and Individual Productivity – OLS

	Contribution Rank			Total
	(1)	(2)	(3)	(4)
<b>Panel A: OLS</b>				
Remote $\times$ 1(Post)	-0.28 (0.44)	-1.03** (0.48)	-1.23** (0.50)	-19.74*** (4.66)
Remote $\times$ 1(Post) $\times$ Startup	–	5.18*** (1.24)	6.21*** (1.27)	59.23*** (14.22)
Pre-Covid Mean	49.92	49.92	49.92	184.71
N	229,862	229,862	224,708	224,708
<b>Fixed Effects</b>				
Time	✓	✓	✓	✓
Firm	✓	✓		
Individual	✓	✓		
Firm $\times$ Individual			✓	✓

Notes:

Table 3: Remote Work and Individual Productivity – IV

	Contribution Rank			Total
	(1)	(2)	(3)	(4)
<b>Panel B: IV</b>				
Remote $\times$ 1(Post)	-3.61 (2.82)	-7.15* (3.90)	-9.26** (4.01)	-124.39*** (33.82)
Remote $\times$ 1(Post) $\times$ Startup	–	9.94* (5.37)	12.45** (5.39)	130.92** (55.14)
Pre-Covid Mean	49.92	49.92	49.92	184.71
KP rk Wald F	543.26	140.60	123.43	123.43
N	229,862	229,862	224,708	224,708
<b>Fixed Effects</b>				
Time	✓	✓	✓	✓
Firm	✓	✓		
Individual	✓	✓		
Firm $\times$ Individual			✓	✓

Notes:

Table 4: Firm Scaling

	Growth		Join	Leave
	(1)	(2)	(3)	(4)
<b>Panel A: OLS</b>				
Remote $\times$ 1(Post)	0.01** (0.01)	0.00 (0.00)	0.01** (0.00)	0.02*** (0.00)
Remote $\times$ 1(Post) $\times$ Startup	—	0.07*** (0.02)	0.05* (0.03)	-0.01 (0.01)
Pre-Covid Mean	0.11	0.11	0.24	0.14
N	41,980	41,980	41,980	41,980
<b>Panel B: IV</b>				
Remote $\times$ 1(Post)	0.02* (0.01)	0.01 (0.01)	0.04*** (0.01)	0.05*** (0.01)
Remote $\times$ 1(Post) $\times$ Startup	—	0.21** (0.10)	0.23** (0.11)	0.09 (0.06)
KP rk Wald F	839.65	16.53	16.53	16.53
N	41,980	41,980	41,980	41,980
<b>Fixed Effects</b>				
Time	✓	✓	✓	✓
Firm	✓	✓	✓	✓

Notes:

Table 5: Job Posting Outcomes

	Postings (1)	Hires/ Posting (2)	Any Postings (3)
<b>Panel A: OLS</b>			
Remote $\times$ 1(Post)	-0.91*** (0.23)	0.09 (0.08)	0.06*** (0.01)
Remote $\times$ 1(Post) $\times$ Startup	0.63** (0.27)	0.37* (0.22)	-0.02 (0.04)
Pre-Covid Mean	0.50	2.15	0.76
N	37,681	27,790	37,681
<b>Panel B: IV</b>			
Remote $\times$ 1(Post)	-3.58*** (0.61)	0.38** (0.17)	0.06** (0.02)
Remote $\times$ 1(Post) $\times$ Startup	1.60* (0.96)	2.16** (1.09)	0.23 (0.18)
KP rk Wald F	10.66	9.04	10.66
N	37,681	27,790	37,681
<b>Fixed Effects</b>			
Time	✓	✓	✓
Firm	✓	✓	✓

Notes:



Table 6: Individual Productivity Mechanisms

	Contribution Rank					
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Panel A: OLS</b>						
Remote $\times$ 1(Post)	-1.23** (0.50)	-0.95* (0.51)	-1.22** (0.50)	-1.19** (0.50)	-0.91* (0.52)	-1.21** (0.50)
Remote $\times$ 1(Post) $\times$ Startup	6.21*** (1.27)	4.03*** (1.26)	6.39*** (1.28)	6.15*** (1.28)	4.21*** (1.29)	6.24*** (1.29)
N	224,708	218,112	224,596	224,708	218,032	224,708
<b>Panel B: IV</b>						
Remote $\times$ 1(Post)	-9.26** (4.01)	-9.23* (4.87)	-9.72** (3.93)	-9.28** (4.12)	-10.13** (5.14)	-3.68 (3.88)
Remote $\times$ 1(Post) $\times$ Startup	12.45** (5.39)	11.76* (6.15)	14.94*** (5.62)	12.30** (5.52)	14.97** (6.91)	6.88 (5.65)
N	224,708	218,112	224,596	224,708	218,032	224,708
KP rk Wald F	123.43	81.62	130.14	117.48	74.32	134.89
<b>Fixed Effects</b>						
Time	✓	✓	✓	✓	✓	✓
Firm $\times$ Individual	✓	✓	✓	✓	✓	✓
<b>Controls</b>						
Rent		✓			✓	
HHI			✓		✓	
Seniority				✓	✓	
Firm Growth						✓

Notes:

Table 7: Fully Remote Versus Hybrid Productivity

Sample Filter	Contribution Rank			
	Hybrid		Hybrid / In-Person	
	(1)	(2)	(3)	(4)
<b>Panel A: OLS</b>				
$\mathbb{1}(\text{Remote}) \times \mathbb{1}(\text{Post})$	-0.97*** (0.32)	-0.76** (0.31)	-0.86*** (0.31)	-0.67** (0.30)
$\mathbb{1}(\text{Remote}) \times \mathbb{1}(\text{Post}) \times \text{Startup}$	2.97*** (0.72)	2.44*** (0.71)	3.39*** (0.71)	2.81*** (0.69)
Pre-Covid Mean	50.04	50.04	49.92	49.92
N	210,721	215,332	224,708	229,862
<b>Panel B: IV</b>				
$\mathbb{1}(\text{Remote}) \times \mathbb{1}(\text{Post})$	-3.72** (1.74)	-2.71* (1.64)	-4.11** (1.77)	-3.09* (1.68)
$\mathbb{1}(\text{Remote}) \times \mathbb{1}(\text{Post}) \times \text{Startup}$	4.37* (2.50)	3.39 (2.45)	5.61** (2.45)	4.38* (2.41)
KP rk Wald F	292.85	351.60	311.51	371.38
N	210,721	215,332	224,708	229,862
<b>Fixed Effects</b>				
Time	✓	✓	✓	✓
Firm		✓		✓
Individual		✓		✓
Firm $\times$ Individual	✓		✓	

Notes:

Table 8: Productivity Heterogeneity by Worker Traits

	Contribution Rank	
	(1)	(2)
<b>Panel A: OLS</b>		
Remote $\times$ 1(Post)	-1.03** (0.48)	-1.23** (0.50)
Remote $\times$ 1(Post) $\times$ Female	-2.54*** (0.62)	-2.18*** (0.66)
Remote $\times$ 1(Post) $\times$ Startup	5.18*** (1.24)	6.21*** (1.27)
Remote $\times$ 1(Post) $\times$ Female $\times$ Startup	3.49 (3.41)	6.42* (3.85)
<b>Panel B: IV</b>		
Remote $\times$ 1(Post)	-7.15* (3.90)	-9.26** (4.01)
Remote $\times$ 1(Post) $\times$ Female	-2.75*** (0.72)	-2.37*** (0.77)
Remote $\times$ 1(Post) $\times$ Startup	9.94* (5.37)	12.45** (5.39)
Remote $\times$ 1(Post) $\times$ Female $\times$ Startup	5.67 (10.98)	21.98* (11.66)
<b>Fixed Effects</b>		
Time	✓	✓
Firm	✓	
Individual	✓	
Firm $\times$ Individual		✓

Notes:

Table 9: Remote Work Outside Software and Hub Markets

Sample Filter	Contribution Rank		
	Drop NAICS	Drop SOC	Drop CA/NY
	(1)	(2)	(3)
<b>Panel A: OLS</b>			
Remote $\times$ 1(Post)	-1.16** (0.52)	-0.58 (0.70)	-0.85 (0.69)
Remote $\times$ 1(Post) $\times$ Startup	7.08*** (1.38)	6.47*** (1.89)	6.47*** (2.08)
Pre-Covid Mean	49.11	48.47	49.01
N	207,857	123,122	109,314
<b>Panel B: IV</b>			
Remote $\times$ 1(Post)	-10.47** (4.25)	-2.58 (5.17)	-12.70** (5.18)
Remote $\times$ 1(Post) $\times$ Startup	13.07** (5.63)	7.78 (7.45)	30.95*** (10.98)
KP rk Wald F	111.33	70.48	72.09
N	207,857	123,122	109,314
<b>Fixed Effects</b>			
Time	✓	✓	✓
Firm $\times$ Individual	✓	✓	✓

Notes:

Table 10: Remote Work and Top CSA Filters (Firm×Individual FE)

	Keep Top 5 CSAs	Keep Top 10 CSAs	Drop Top 5 CSAs	Drop Top 10 CSAs
	(1)	(2)	(3)	(4)
<b>Panel A: OLS</b>				
Remote × 1(Post)	-1.54** (0.68)	-1.34** (0.57)	-0.58 (0.75)	-1.48 (1.00)
Remote × 1(Post) × Startup	5.59*** (1.64)	5.50*** (1.45)	7.44*** (2.16)	8.62*** (2.73)
Pre-Covid Mean	49.73	50.50	50.28	48.03
N	151,831	174,809	71,906	49,211
<b>Panel B: IV</b>				
Remote × 1(Post)	-4.43 (5.20)	-7.52 (9.92)	-14.02* (7.52)	-7.81** (3.45)
Remote × 1(Post) × Startup	-10.35 (15.95)	8.43 (10.91)	22.97*** (8.74)	13.06** (5.47)
Pre-Covid Mean	49.73	50.50	50.28	48.03
KP rk Wald F	9.60	20.76	26.29	185.42
N	151,831	174,809	71,906	49,211
<b>Fixed Effects</b>				
Time	✓	✓	✓	✓
Firm × Individual	✓	✓	✓	✓

*Notes:* Reports the firm×individual fixed-effect version of the worker-level regressions from Tables 2–3 under alternative geographic scopes. Columns (1) and (2) retain only firms headquartered in the top five or top ten CSAs, respectively, while columns (3) and (4) drop those CSAs. Panels A and B show the OLS and IV coefficients (instrumenting the remote interactions with their teleworkability counterparts), and every specification absorbs half-year fixed effects, includes the post×startup main effect, and clusters standard errors by worker.

Table 11: Per-Employee Geographic Reach

	<u># States / Employee</u>	<u># MSAs / Employee</u>	<u># Locations / Employee</u>
	(1)	(2)	(3)
<b>Panel A: OLS</b>			
Remote $\times$ 1(Post)	-0.012*** (0.003)	-0.004 (0.004)	0.008* (0.004)
Remote $\times$ 1(Post) $\times$ Startup	0.056*** (0.018)	0.048** (0.019)	0.060*** (0.018)
Pre-Covid Mean	0.156	0.234	0.475
N	41,959	41,959	41,959
<b>Panel B: IV</b>			
Remote $\times$ 1(Post)	-0.018** (0.007)	-0.002 (0.007)	0.031*** (0.009)
Remote $\times$ 1(Post) $\times$ Startup	-0.062 (0.081)	-0.061 (0.078)	0.032 (0.075)
Pre-Covid Mean	0.156	0.234	0.475
KP rk Wald F	16.40	16.40	16.40
N	41,959	41,959	41,959

*Notes:*

Table 12: Remote Work and Imputed Wages: Fixed-Effect Variants

	Log salary		
	(1)	(2)	(3)
<b>Panel A: OLS</b>			
Remote $\times$ 1(Post)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Remote $\times$ 1(Post) $\times$ Startup	-0.00 (0.01)	-0.02** (0.01)	-0.00 (0.01)
Pre-Covid Mean	11.49	11.49	11.49
N	229,862	224,708	222,531
<b>Panel B: IV</b>			
Remote $\times$ 1(Post)	-0.01 (0.02)	0.03 (0.02)	0.08*** (0.01)
Remote $\times$ 1(Post) $\times$ Startup	-0.04 (0.03)	-0.05* (0.03)	-0.08*** (0.02)
KP rk Wald F	140.60	123.43	127.26
N	229,862	224,708	222,531
<b>Fixed Effects</b>			
Time	✓	✓	✓
Firm	✓		
Individual	✓		
Firm $\times$ Individual		✓	✓
Title			✓

Notes:

# Appendix

## Tables

Table A1: First-Stage Diagnostics

	Remote $\times$ 1(Post)		Remote $\times$ 1(Post) $\times$ Startup	
<b>Panel A: Individual-level</b>				
Teleworkable $\times$ 1(Post)	0.23*** (0.01)	0.24*** (0.02)	-0.00* (0.00)	-0.00*** (0.00)
Teleworkable $\times$ 1(Post) $\times$ Startup	0.16*** (0.02)	0.16*** (0.03)	0.39*** (0.02)	0.40*** (0.02)
1(Post) $\times$ Startup	0.09*** (0.02)	0.09*** (0.02)	0.60*** (0.01)	0.59*** (0.01)
<b>Fixed Effects</b>				
Time	✓	✓	✓	✓
Firm	✓		✓	
Individual	✓		✓	
Firm $\times$ Individual		✓		✓
Partial F	325.46	295.11	186.55	175.46
KP rk Wald F	140.60	123.43	140.60	123.43
N	229,862	224,708	229,862	224,708
<b>Panel B: Firm-level</b>				
Teleworkable $\times$ 1(Post)	0.83*** (0.03)	—	-0.00 (0.00)	—
Teleworkable $\times$ 1(Post) $\times$ Startup	-0.41*** (0.08)	—	0.41*** (0.07)	—
1(Post) $\times$ Startup	0.46*** (0.06)	—	0.58*** (0.05)	—
<b>Fixed Effects</b>				
Time	✓		✓	
Firm	✓		✓	
Partial F	437.86	—	16.54	—
KP rk Wald F	16.53	—	16.53	—
N	41,980	—	41,980	—

Notes:



Table A2: Remote Work and Restricted Contributions

	Contribution Rank			Total
	(1)	(2)	(3)	(4)
<b>Panel A: OLS</b>				
Remote $\times$ 1(Post)	-0.51 (0.46)	-1.44*** (0.50)	-1.48*** (0.52)	-17.33*** (3.91)
Remote $\times$ 1(Post) $\times$ Startup	—	6.37*** (1.24)	7.31*** (1.27)	55.41*** (12.74)
Pre-Covid Mean	48.48	48.48	48.48	138.15
N	229,862	229,862	224,708	224,708
<b>Panel B: IV</b>				
Remote $\times$ 1(Post)	-3.36 (2.91)	-6.60 (4.08)	-6.75 (4.19)	-105.59*** (28.11)
Remote $\times$ 1(Post) $\times$ Startup	—	9.07* (5.43)	10.52* (5.42)	108.20** (48.92)
KP rk Wald F	543.26	140.60	123.43	123.43
N	229,862	229,862	224,708	224,708
<b>Fixed Effects</b>				
Time	✓	✓	✓	✓
Firm	✓	✓		
Individual	✓	✓		
Firm $\times$ Individual			✓	✓

Notes:

Figures

Figure A1: Event Study of Labor Market Flows

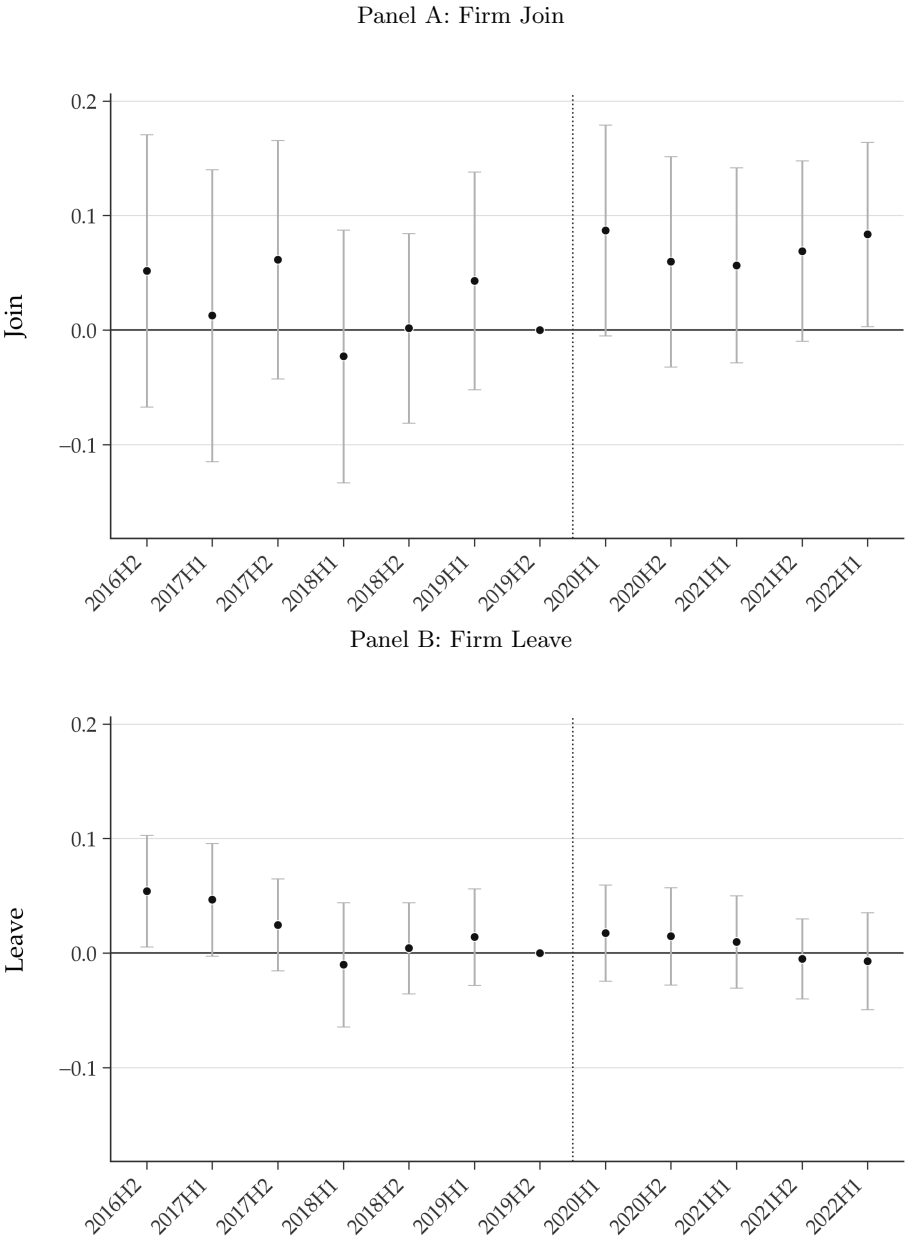
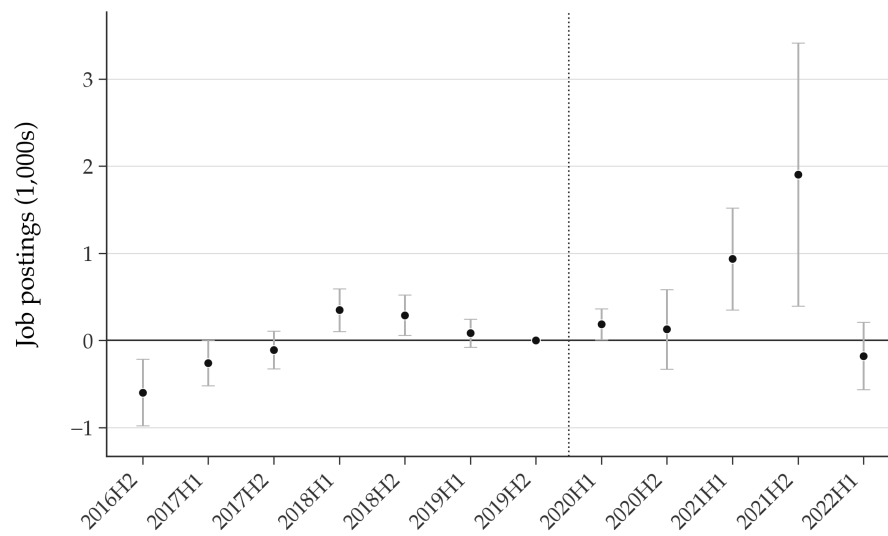


Figure A2: Event Study of Job Postings and Fill Rates

Panel A: Job Postings



Panel B: Hires per Posting

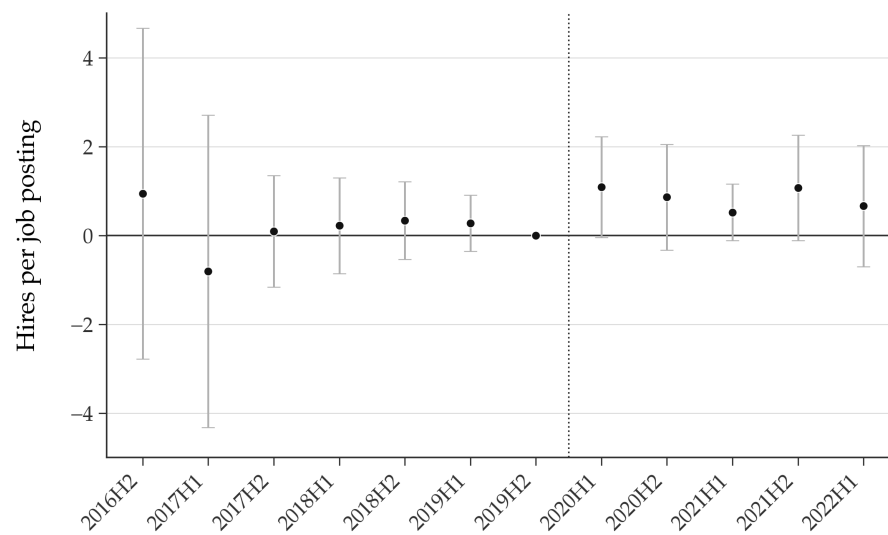
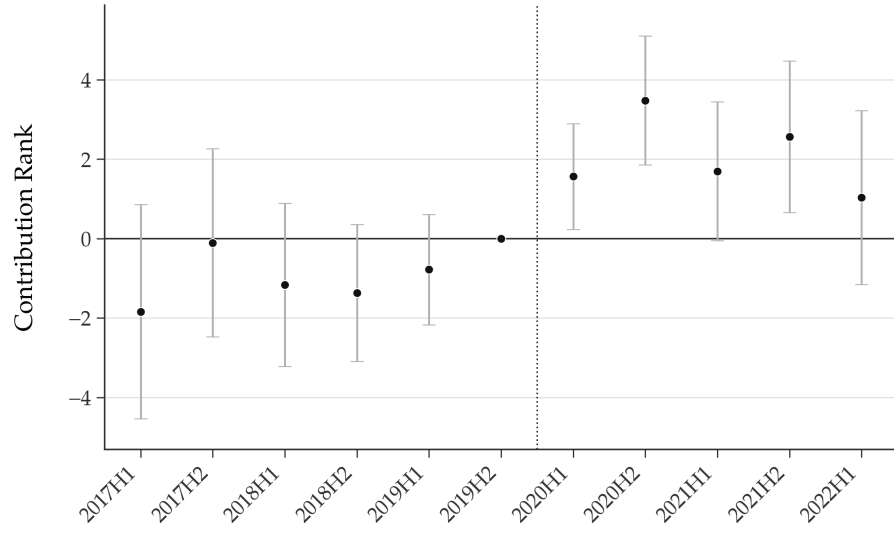


Figure A3: Event Study of Fully Remote Key Outcomes

Panel A: User Productivity



Panel B: Firm Growth

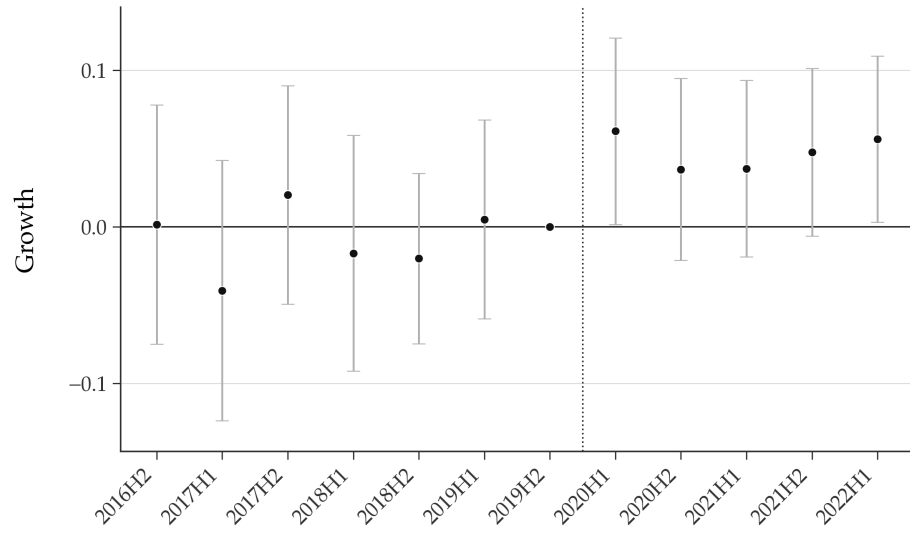
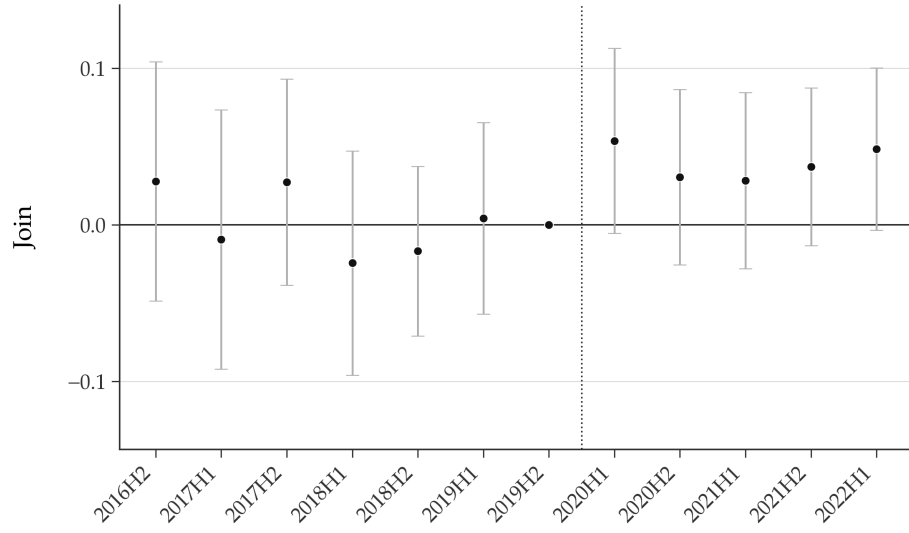


Figure A4: Event Study of Fully Remote Labor Flows

Panel A: Firm Join



Panel B: Firm Leave

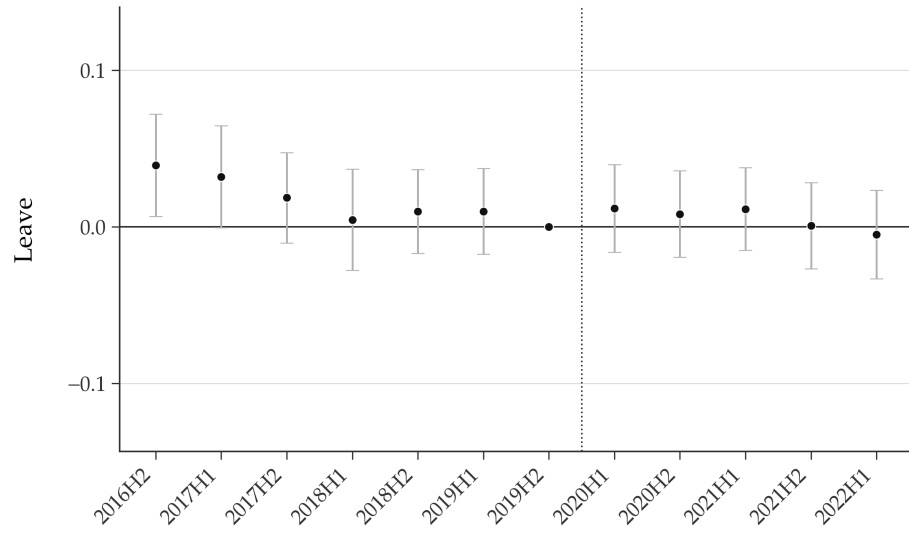
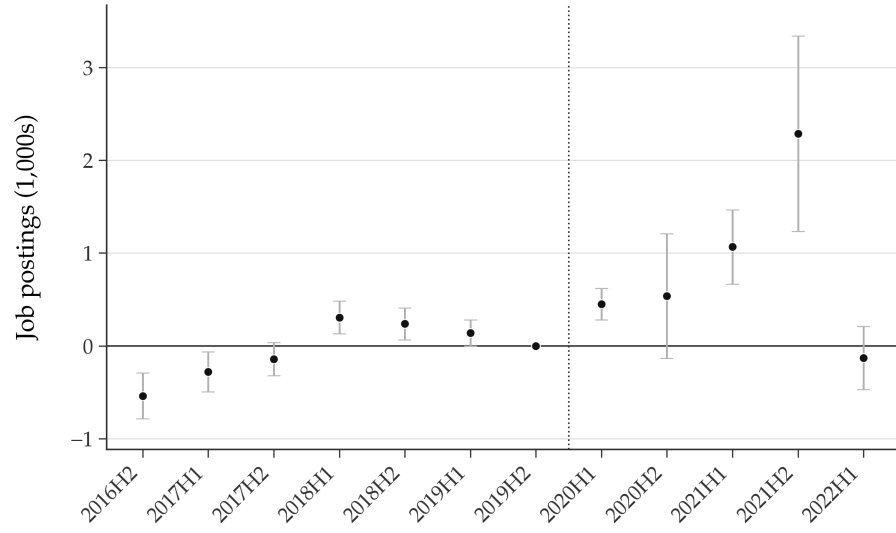


Figure A5: Event Study of Fully Remote Hiring Channels

Panel A: Job Postings



Panel B: Hires per Posting

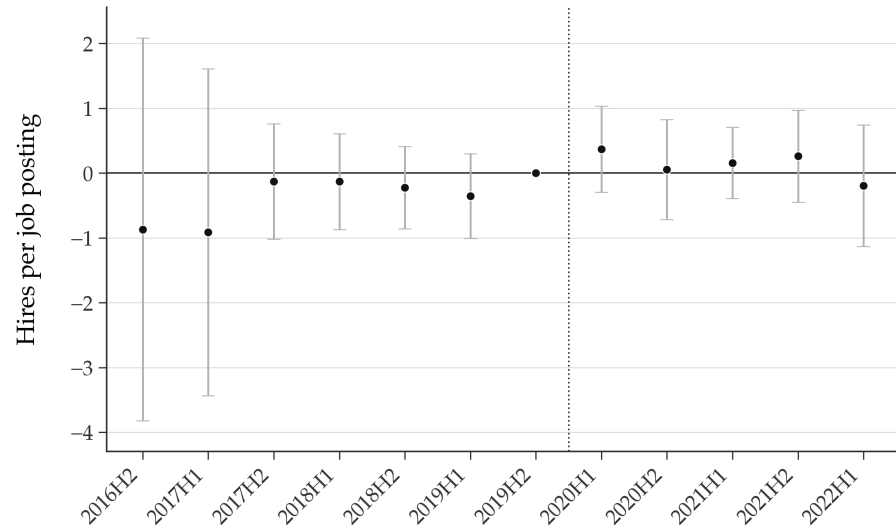
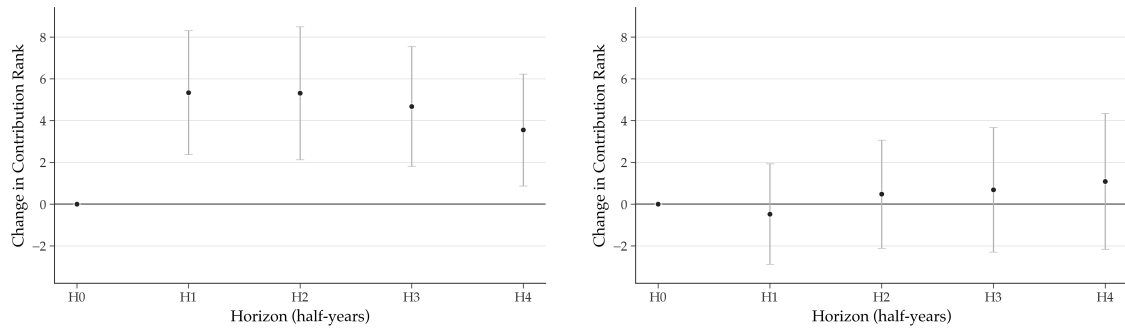


Figure A6: Impulse Responses

Panel A: Hybrid/In-person



Panel B: Fully Remote

