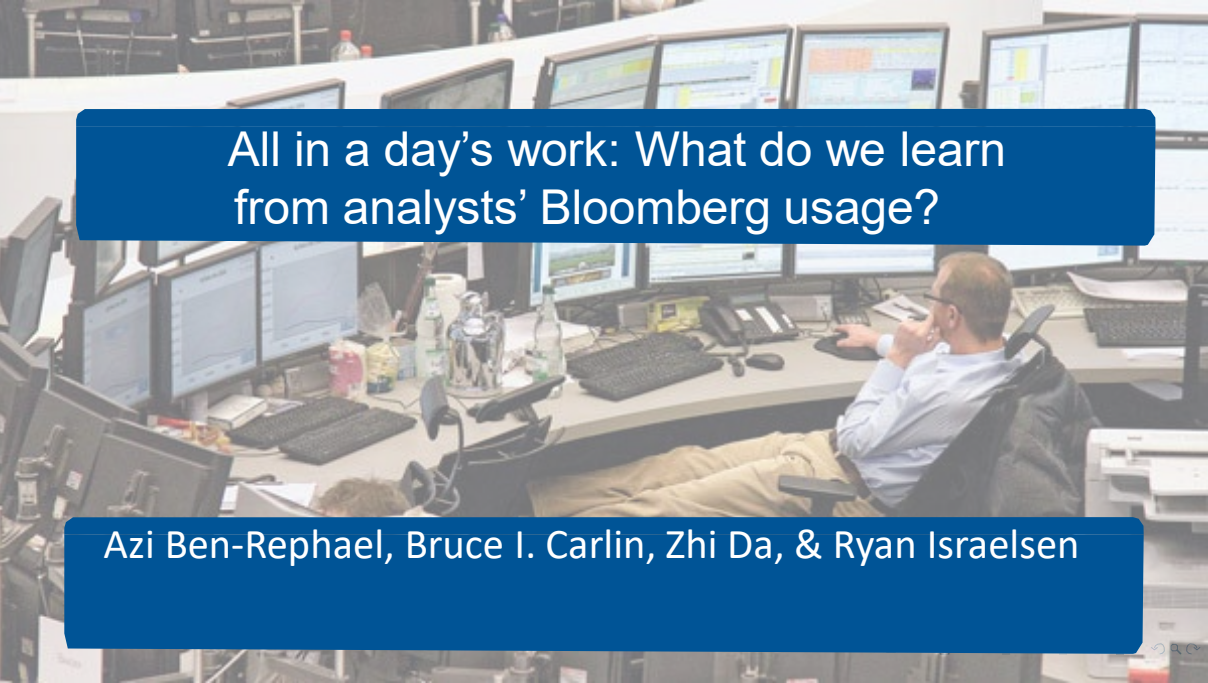


All in a day's work: What do we learn from analysts' Bloomberg usage?

Azi Ben-Rephael, Bruce I. Carlin, Zhi Da, & Ryan Israelsen

Motivation

- Sell-side analysts are in important source of information production in the financial market
  - Earnings forecasts, price target forecasts, and stock recommendations
- There is large systematic variation across analysts in their forecast accuracy
  - Identified characteristics: prior experience (+), employer resources (+), industry specialization (+), portfolio complexity (-), peer competition (+), decision fatigue (-), among others
- Still, the very basic characteristics related to analysts' work habits (or effort provision) remain understudied

Do not observe how analysts spend their working hours on a day-to-day basis

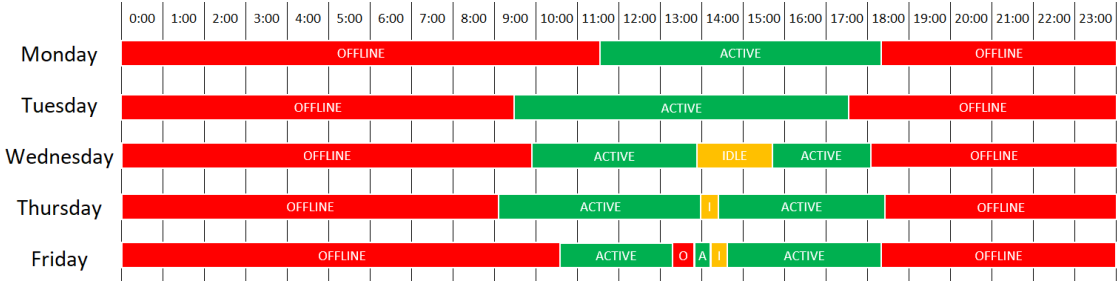
How Do We Address this Issue?

- We hand-collect login (usage) information from personal Bloomberg accounts of sell-side analysts that cover publicly traded firms (I/B/E/S)
- For each analyst, we can track the time spent on the Bloomberg Terminal throughout the day
- Construct two measures that are aimed to capture various dimensions of the analysts' work habits [related to overall effort provision and soft information acquisition]
- We explore how these measures are associated with analysts output, the timeliness of analysts forecasts and forecast accuracy
- We take advantage of the way the COVID period shaped these measures to provide a causal flavor to our findings

Green: Active
Yellow: Inactive
Red: Off-line
Phone: Mobile
Gray: Private (<10%)

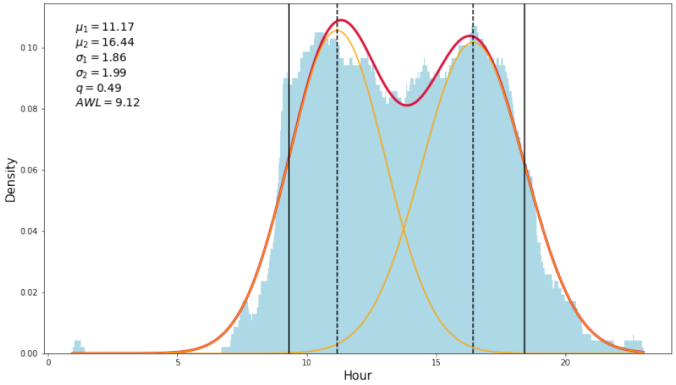
An account that is inactive for more than 15 minutes will turn Yellow

Example, 4/1/19 – 4/5/19



Average Workday Length (AWL) Measure, Figure 2

proxies for analysts' general effort provision or work ethics



$$AWL = (\hat{\mu}_2 - \hat{\mu}_1) + \hat{\sigma}_1 + \hat{\sigma}_2$$

The % Away Days (PAD) Measure

- A large strand of literature suggests that analysts can gather “soft" information away from the office
- We use the % of workdays when analysts are away from the Bloomberg terminals (*PAD*)
  - Measurement errors: still be in office, non-work-related travel
  - A systematic attempt to proxy for analyst's soft information production
- To reduce noise, we focus on ***PAD_HIGH*** =1 if the analyst’s *PAD* is above the sample median, 0 otherwise

Related Literature

- Contributes to a long strand of literature that links characteristics of sell-side equity analysts to their performance
  - Stickel (1992), Sinha, Brown and Das (1997), Clement (1999), Jacob, Lys, and Neale (1999), Hong and Kacperczyk (2010), Kirk and Markov (2016), Chang, Chi, and Wu (2017) Merkley, Michaely, and Pacelli (2017), Han, Kong, and Liu (2018), Hirshleifer, Levi, Lourie, and Teo (2019), Gibbons, Iliev and Kalodimos (2020)
  - Use Bloomberg usage data to quantify two important yet previously unexplored dimensions of analysts' work habits
- Speaks to the emerging literature on the impact of working-from-home (WFH)
  - Identify both positive and negative effects
- Uncover the hidden effort problem
  - Ben-Rephael, Carlin, Da, and Israelsen (2021)
  - Sell-side analysts offer a better setting

Data

- Bloomberg Status
  - Determined by doing a profile search (PEOP function)
  - ~1000 analysts with “analyst” in title (remove credit analyst etc.), matched with I/B/E/S
  - At least one quarter with a quarterly average percent activity greater than 3% (min/1440)~40 minutes (removes the left tail of inactive users)
  - At least two earnings forecasts per quarter, cover at least 3 stocks
  - End up with 336 analysts from 42 brokerage firms

- I/B/E/S
  - Earnings forecasts and price targets and stock recommendations

- CRSP and 13F
  - LnSize, LnBM, Std.Dev.Ret, institutional holdings

Table 1A – Summary Stats of Analysts Output

	Mean	Std. Dev.	10%	25%	Median	75%	90%
# Unique Stocks t-4_t-1	17.848	10.529	4.000	10.000	17.000	25.000	31.000
Ave # Stocks t-4_t-1	15.696	9.384	3.000	7.500	15.500	22.250	27.000
# of GICS6 Industries	2.999	1.969	1.000	2.000	2.000	4.000	6.000
# of Stocks w Q1 EPS Forecasts	16.068	9.354	4.000	8.000	16.000	22.000	28.000
% of Common Stocks	77.070	27.997	28.125	69.231	88.000	96.154	100.000
# Q1 EPS Forecasts	23.079	16.194	5.000	10.000	21.000	32.000	43.000
# Y1 EPS Forecast	24.785	17.414	5.000	11.000	22.000	35.000	47.000
# Long Term Growth Forecasts	5.673	11.281	0.000	0.000	0.000	6.000	20.000
# of Other Forecasts	140.124	133.086	19.000	45.000	101.000	193.000	305.000
# of Stocks w Rec	3.276	3.269	1.000	1.000	2.000	4.000	7.000
# of Rec	2.468	3.343	0.000	0.000	2.000	3.000	6.000
# of non-stale Rec	2.225	3.025	0.000	0.000	1.000	3.000	5.000
# of Stocks w PTG	11.805	7.940	2.000	5.000	11.000	17.000	23.000
# of PTG	15.275	14.429	0.000	4.000	12.000	23.000	34.000
# of Analyst-Quarters	2,874						

2017/09 -2021/03, 336 sell-side analysts (matched with I/B/E/S) employed by 42 brokerage firms, Similar to other analysts in the same firms (Table 1B)

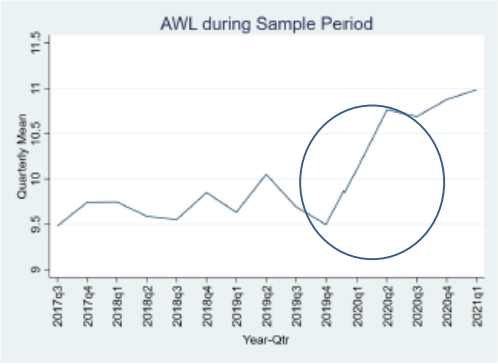
Table 2 - Summary Stats of Bloomberg Activity

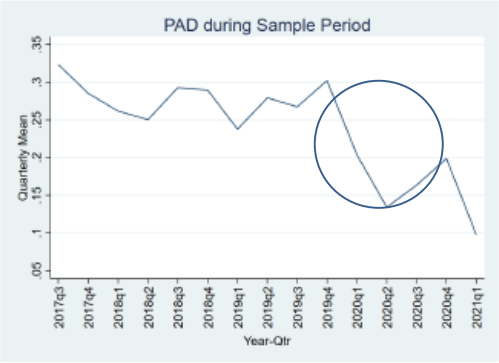
	Mean	Std. Dev.	10%	25%	Median	75%	90%
% of Workdays with Bloomberg Activity	0.717	0.246	0.344	0.611	0.786	0.902	0.967
Active (minutes per day)	361.711	198.075	87.190	235.902	362.169	477.891	588.000
Conditional Active (on active days)	475.638	188.910	285.829	382.333	472.765	552.520	650.085
Active - hours per Week	30.143	16.506	7.266	19.658	30.181	39.824	49.000
# of Analyst-Quarters	2,874						

	Mean	Std. Dev.	10%	25%	Median	75%	90%
AWL	9.805	2.028	7.966	8.830	9.732	10.873	12.074
PAD	0.283	0.246	0.033	0.098	0.214	0.389	0.656
# of Analyst-Quarters	2,874						

	(1)	(2)	(3)
(1) *AWL*	1.00		
(2) *PAD*	-0.23	1.00	
(3) *LnCondActive*	0.25	-0.37	1.00

Figure 4 – Time Series





Fixed Effects Analysis (Table 4A)

	AWL				PAD			
	(1) TIME	(2) ANALYST	(3) BROKER	(4) INDUSTRY	(5) TIME	(6) ANALYST	(7) BROKER	(8) INDUSTRY
Constant	9.346***	10.940***	10.797***	10.069***	0.335***	0.145	0.801***	0.263***
	(68.06)	(12.40)	(12.43)	(65.05)	(21.37)	(1.53)	(8.05)	(14.40)
R^2	0.055	0.498	0.095	0.105	0.095	0.572	0.127	0.087
Observations	2,874	2,874	2,874	2,874	2,874	2,874	2,874	2,874

Analyst FEs seem to be the main driver of *AWL* and *PAD* variation

Analyst Characteristics (Table 4B)

	AWL				*HIGH_PAD*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IBES Years	-0.044***	-0.041***	-0.044***	-0.034**	0.005	0.004	0.005	0.004
	(-2.88)	(-2.65)	(-2.87)	(-1.99)	(1.27)	(1.20)	(1.25)	(1.15)
High Rank Indicator	-0.455**	-0.491***	-0.534***	-0.390**	0.139***	0.136***	0.139***	0.102**
	(-2.52)	(-2.77)	(-3.07)	(-2.20)	(3.07)	(2.95)	(3.02)	(2.20)
STAR	0.218	0.117	0.133	-0.163	0.116***	0.116**	0.114**	0.182***
	(1.23)	(0.65)	(0.73)	(-0.81)	(2.64)	(2.58)	(2.55)	(3.99)
Work Experience	0.007	-0.000	-0.000	-0.012	0.000	0.001	0.001	0.003
	(0.44)	(-0.01)	(-0.01)	(-0.67)	(0.03)	(0.17)	(0.17)	(0.70)
# Jobs FINRA	-0.026	-0.026	-0.036	-0.048	0.013	0.013	0.014	0.023*
	(-0.56)	(-0.56)	(-0.78)	(-0.93)	(1.11)	(1.16)	(1.22)	(1.90)
Ave Q1 PMAFE t-4_t-1	0.039	0.047	0.069	-0.094	-0.054	-0.031	-0.033	-0.034
	(0.08)	(0.10)	(0.15)	(-0.22)	(-0.49)	(-0.28)	(-0.29)	(-0.31)
NYC Indicator		0.311*	0.346*	0.192		0.008	0.005	-0.001
		(1.72)	(1.95)	(0.87)		(0.18)	(0.12)	(-0.01)
MBA Indicator		0.279	0.311	0.563		-0.119	-0.122	-0.168*
		(0.57)	(0.64)	(1.25)		(-1.50)	(-1.54)	(-1.97)
Female Indicator		0.081	0.090	-0.030		-0.001	-0.002	0.008
		(0.36)	(0.40)	(-0.13)		(-0.02)	(-0.04)	(0.15)
Children Indicator		0.373	0.392	0.145		-0.024	-0.026	0.013
		(0.72)	(0.75)	(0.27)		(-0.21)	(-0.23)	(0.10)
Principal Exam			0.385*	0.197			-0.033	-0.045
			(1.70)	(0.79)			(-0.58)	(-0.79)
Coverage x Time FE	YES	YES	YES	YES	YES	YES	YES	YES
Brokerage Firm FE	NO	NO	NO	YES	NO	NO	NO	YES
Analyst Cluster	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,501	2,501	2,501	2,499	2,501	2,501	2,501	2,499
R^2	0.195	0.212	0.217	0.268	0.152	0.154	0.154	0.229

Analysts Output (Table 5)

	Q1 EPS				Y1 EPS				PTG			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(5)	(6)	(7)	(8)
AWL	0.250***		0.214**	0.306*	0.364***		0.330***	0.539***	0.462***		0.420***	0.540**
	(2.67)		(2.24)	(1.76)	(3.73)		(3.34)	(2.97)	(3.61)		(3.18)	(2.41)
HIGH_PAD		-1.095***	-0.993***	-1.554***		-1.082***	-0.926**	-1.749***		-1.129**	-0.884*	-1.290**
		(-3.24)	(-2.94)	(-3.54)		(-3.02)	(-2.58)	(-3.69)		(-2.58)	(-1.96)	(-1.99)
AveDep t-4_t-1	0.864***	0.865***	0.864***	0.120	0.865***	0.865***	0.864***	0.099	0.769***	0.777***	0.771***	-0.054
	(46.67)	(46.38)	(46.90)	(1.13)	(44.91)	(45.15)	(45.35)	(0.92)	(20.26)	(20.13)	(20.19)	(-0.78)
IBES Years	-0.026	-0.028	-0.020	-4.711	-0.034	-0.042	-0.029	-6.604*	0.007	-0.002	0.013	-7.852
	(-1.10)	(-1.17)	(-0.83)	(-1.27)	(-1.38)	(-1.63)	(-1.15)	(-1.79)	(0.23)	(-0.07)	(0.45)	(-0.51)
Ave # of Industries t-4_t-1	-0.048	-0.050	-0.052	-0.252	-0.083	-0.086	-0.088	-0.476	-0.059	-0.063	-0.064	0.510
	(-0.61)	(-0.61)	(-0.64)	(-0.39)	(-0.98)	(-0.98)	(-1.03)	(-0.69)	(-0.65)	(-0.67)	(-0.71)	(0.98)
Coverage x Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Analyst FE	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES
Analyst Cluster	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,591	2,591	2,591	2,559	2,593	2,593	2,593	2,561	2,279	2,279	2,279	2,247
R^2	0.793	0.794	0.794	0.841	0.797	0.797	0.798	0.845	0.630	0.628	0.630	0.715

- A 1 hour increase in AWL is associated with 0.3-0.5 more EPS forecasts (~2%) and 0.54 more PTGs (~5%)
- Analyst FEs – the coefficient estimates are larger

Timeliness (Table 6) & Price Impact (Table 7)

	Time From Earnings					
	(1)	(2)	(3)	(4)	(5)	(6)
AWL	-0.059**		-0.062**	-0.061**	-0.059**	-0.019
	(-2.24)		(-2.40)	(-2.28)	(-2.22)	(-0.82)
HIGH_PAD		-0.074	-0.102	-0.108	-0.107	-0.101
		(-0.82)	(-1.18)	(-1.25)	(-1.23)	(-1.57)
IBES Years	-0.022**	-0.019**	-0.021**	-0.019*	-0.019**	-0.916***
	(-2.31)	(-1.98)	(-2.23)	(-1.96)	(-1.97)	(-2.72)
# Q1 EPS Forecasts	0.017***	0.017***	0.017***	0.015***	0.015***	-0.009**
	(4.27)	(4.08)	(4.25)	(3.63)	(3.68)	(-2.59)
Ave # of Industries t-4_t-1				-0.068**	-0.067**	0.033
				(-2.28)	(-2.26)	(0.56)
Ave Q1 PMAFE t-4_t-1					0.363	0.247
					(1.09)	(0.86)
Coverage x Time FE	YES	YES	YES	YES	YES	YES
Analyst FE	NO	NO	NO	NO	NO	YES
Analyst Cluster	YES	YES	YES	YES	YES	YES
Observations	2,374	2,374	2,374	2,365	2,345	2,312
R^2	0.111	0.107	0.112	0.120	0.119	0.519

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
AWL	-0.001		0.000	0.002	-0.001		0.000	0.002
	(-0.33)		(0.03)	(0.35)	(-0.34)		(0.04)	(0.32)
HIGH_PAD		0.026**	0.026**	0.010		0.028**	0.028**	0.011
		(2.02)	(2.08)	(0.80)		(2.12)	(2.17)	(0.88)
Ave Q1 PMAFE t-4_t-1	0.001	0.011	0.012	0.026	0.001	0.012	0.013	0.028
	(0.03)	(0.26)	(0.26)	(0.36)	(0.02)	(0.28)	(0.29)	(0.39)
Early Forecast	0.000**	0.000**	0.000**	0.000	0.000**	0.000**	0.000**	0.000
	(2.37)	(2.41)	(2.40)	(0.73)	(2.36)	(2.38)	(2.38)	(0.85)
IBES Years	0.000	0.000	0.000	-0.044	0.000	0.000	0.000	0.026
	(0.34)	(0.17)	(0.18)	(-0.24)	(0.38)	(0.22)	(0.24)	(0.14)
# Q1 EPS Forecasts	-0.000	-0.000	-0.000	-0.001	-0.000	-0.000	-0.000	-0.001
	(-0.26)	(-0.22)	(-0.23)	(-1.05)	(-0.25)	(-0.22)	(-0.22)	(-1.01)
# of GICS6 Industries	-0.006	-0.007	-0.007	-0.006	-0.006	-0.007	-0.007	-0.005
	(-1.52)	(-1.61)	(-1.62)	(-0.53)	(-1.53)	(-1.62)	(-1.63)	(-0.46)
LnSize					-0.009	-0.013*	-0.013**	-0.015**
					(-1.43)	(-1.97)	(-2.00)	(-2.38)
LnBM					-0.002	-0.001	-0.001	-0.000
					(-0.65)	(-0.28)	(-0.29)	(-0.03)
StdDev.Ret					0.110	0.111	0.111	0.153
					(0.55)	(0.56)	(0.56)	(0.96)
InstHold					-0.026**	-0.026**	-0.026**	-0.023**
					(-2.46)	(-2.49)	(-2.50)	(-2.36)
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
Coverage x Time FE	YES	YES	YES	YES	YES	YES	YES	YES
Analyst FE	NO	NO	NO	YES	NO	NO	NO	YES
Analyst Cluster	YES	YES	YES	YES	YES	YES	YES	YES
Observations	8,712	8,712	8,712	8,708	8,598	8,598	8,598	8,594
R^2	0.326	0.335	0.335	0.647	0.328	0.338	0.338	0.650

Prob of being a Star Analyst (Table 8)

	ALL				Not a STAR in t-1		A STAR in t-1	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ave AWL Q1-Q3	-0.008		-0.001	-0.003	-0.001	-0.001	-0.020	-0.012
	(-0.63)		(-0.09)	(-0.23)	(-0.13)	(-0.07)	(-1.21)	(-0.66)
Ave High_PAD Q1-Q3		0.107**	0.106**	0.121**	0.079**	0.085**	-0.050	-0.051
		(2.25)	(2.19)	(2.51)	(2.04)	(2.27)	(-0.97)	(-0.98)
Ave Q1 PMAFE t-4_t-1	0.070	0.067	0.067	0.028	0.031	0.027	0.094	0.082
	(0.58)	(0.56)	(0.56)	(0.23)	(0.39)	(0.32)	(0.38)	(0.30)
IBES Years	0.019***	0.018***	0.018***	0.021***	0.009**	0.010**	0.002	0.007
	(5.29)	(5.16)	(5.16)	(5.78)	(2.26)	(2.55)	(0.75)	(1.50)
High Rank Indicator	0.121**	0.114**	0.113**	0.120**	0.060	0.053	0.056	0.047
	(2.30)	(2.24)	(2.21)	(2.45)	(1.37)	(1.12)	(1.33)	(1.08)
Work Experience	-0.004	-0.004	-0.004	-0.008	-0.011***	-0.012***	0.003	0.003
	(-0.73)	(-0.74)	(-0.74)	(-1.52)	(-2.96)	(-3.39)	(1.02)	(0.62)
# Jobs FINRA				-0.042***		-0.016*		-0.027*
				(-3.26)		(-1.73)		(-1.84)
NYC Indicator				0.013		0.024		-0.033
				(0.22)		(0.50)		(-0.55)
MBA Indicator				0.145		0.002		-0.107
				(1.30)		(0.04)		(-0.88)
Female Indicator				-0.010		-0.010		0.038
				(-0.19)		(-0.22)		(0.74)
Children Indicator				-0.251*		-0.128*		-0.042
				(-1.96)		(-1.67)		(-0.82)
Principal Exam				-0.010		0.063		-0.149**
				(-0.14)		(0.90)		(-2.13)
Coverage x Time FE	YES	YES	YES	YES	YES	YES	YES	YES
Brokerage Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
Analyst Cluster	YES	YES	YES	YES	YES	YES	YES	YES
Observations	690	690	690	690	457	457	227	227
R^2	0.529	0.535	0.535	0.556	0.289	0.299	0.291	0.335

Analysts Accuracy (Table 9)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
AWL	-0.006***		-0.007***	-0.005*	-0.006***		-0.007***	-0.005*
	(-2.71)		(-2.94)	(-1.71)	(-2.84)		(-3.06)	(-1.65)
HIGH_PAD		-0.013*	-0.016**	-0.019**		-0.012*	-0.015**	-0.018**
		(-1.89)	(-2.28)	(-2.09)		(-1.73)	(-2.15)	(-1.99)
Ave Q1 PMAFE t-4_t-1	0.236***	0.241***	0.234***	-0.230***	0.234***	0.239***	0.231***	-0.230***
	(6.11)	(6.14)	(6.05)	(-4.99)	(5.92)	(5.95)	(5.85)	(-4.89)
Early Forecast	0.001***	0.001***	0.001***	0.001**	0.001***	0.001***	0.001***	0.001**
	(2.75)	(2.78)	(2.72)	(2.13)	(2.82)	(2.86)	(2.79)	(2.19)
IBES Years	0.001	0.001**	0.001	-0.029	0.001	0.001*	0.001	-0.021
	(1.52)	(2.11)	(1.63)	(-0.38)	(1.31)	(1.90)	(1.41)	(-0.28)
# Q1 EPS Forecasts	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(4.56)	(4.47)	(4.51)	(3.50)	(4.72)	(4.65)	(4.68)	(3.67)
# of GICS6 Industries	0.003	0.002	0.002	0.001	0.003	0.002	0.003	0.002
	(0.90)	(0.70)	(0.85)	(0.30)	(0.91)	(0.71)	(0.86)	(0.32)
LnSize					-0.003	-0.003	-0.003	-0.006
					(-0.24)	(-0.24)	(-0.25)	(-0.45)
LnBM					0.004	0.004	0.004	0.002
					(0.59)	(0.51)	(0.56)	(0.20)
StdDev.Ret					0.170	0.164	0.165	0.066
					(0.47)	(0.46)	(0.46)	(0.18)
InstHold					0.025	0.025	0.025	0.027
					(1.04)	(1.05)	(1.04)	(1.09)
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
Coverage x Time FE	YES	YES	YES	YES	YES	YES	YES	YES
Analyst FE	NO	NO	NO	YES	NO	NO	NO	YES
Analyst Cluster	YES	YES	YES	YES	YES	YES	YES	YES
Observations	37,373	37,373	37,373	37,372	36,795	36,795	36,795	36,794
R^2	0.090	0.090	0.090	0.106	0.090	0.090	0.090	0.107

PMAFE measure:

$$(AFE_{i,j,t} - \overline{AFE_{j,t}}) \;/\; \overline{AFE_{j,t}}$$

- Mean of |PMAFE| is 0.39
- A one hour increase in AWL or High_PAD ~ 2% / 5% accuracy improvement

PAD and the COVID Lockdown (Table 10)

	Output			Accuracy		
	(1) Q1	(2) Y1	(3) PTG	(4) PMAFE	(5) FAR	(6) NEAR
TREATMENT	-4.830**	-4.387**	-0.681	-0.049	-0.070	-0.041
	(-2.47)	(-2.12)	(-0.30)	(-1.34)	(-1.64)	(-0.63)
POST	5.546***	6.818***	8.164***	-0.038	-0.046	0.067
	(3.15)	(3.48)	(4.15)	(-0.79)	(-0.87)	(0.89)
TREATMENT × POST	2.410	1.511	2.631	0.117**	0.128**	-0.017
	(1.06)	(0.60)	(0.74)	(2.47)	(2.29)	(-0.19)
Ave # Stocks t-4_t-1	1.071***	1.072***	0.829**	0.006*	0.008**	-0.001
	(3.08)	(2.93)	(2.07)	(1.79)	(2.08)	(-0.09)
Ave # of Industries t-4_t-1	-0.447	-0.754	-1.207*	-0.008	-0.004	0.003
	(-0.63)	(-1.04)	(-1.65)	(-1.21)	(-0.61)	(0.24)
IBES Years	-0.370**	-0.298	0.100	-0.002	-0.004	0.001
	(-2.08)	(-1.55)	(0.36)	(-0.78)	(-1.44)	(0.42)
Ave Q1 PMAFE t-4_t-1	-1.151	0.052	-6.048	-0.015	-0.076	-0.040
	(-0.17)	(0.01)	(-0.70)	(-0.14)	(-0.61)	(-0.19)
Firm FE	YES	YES	YES	YES	YES	YES
Coverage FE	YES	YES	YES	YES	YES	YES
Location FE	YES	YES	YES	YES	YES	YES
Analyst Cluster	YES	YES	YES	YES	YES	YES
Observations	408	408	305	407	380	327
AdjR^2	0.561	0.555	0.400	0.036	0.042	0.030

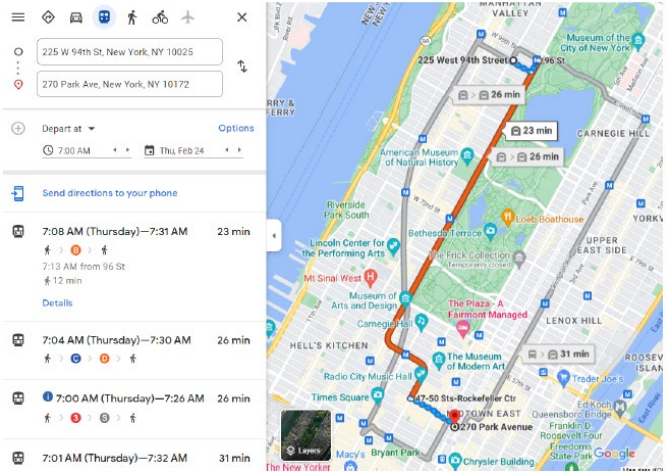
- Keep all analysts with full 4-quarter data and information about home and work locations (102 unique analysts, mainly NY, Chicago, SF)
- Pre (Post) are Q3-Q4 (Q1-Q2) of 2019(2020)
- **Treatment – above median PAD** based on Q3 and Q4 of 2019 sample
- Traveling analysts' forecast errors increased more during lockdown, especially on faraway firms

Commute Time Saved

Home address: 225 W 94th st, 10025

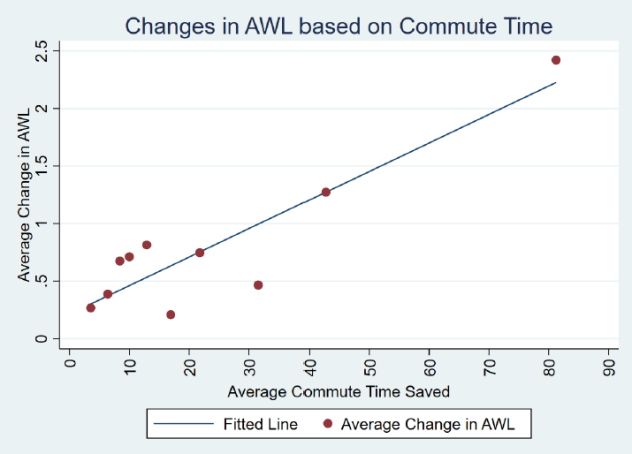
Work address: 270 Park Ave, 10172
(JPMorgan Chase & Co)

Commute Time Saved (Figure 6)



- Home address: 225 W 94th st, 10025
- Work address: 270 Park Ave, 10172

CTS “First Stage” (Figure 7)



CTS – “First Stage” (Table 11.A)

	Changes in *AWL* in Minutes							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Commute-Time-Saved	1.314***	1.318***	1.328***	1.394***	1.387***	1.309***	1.320***	1.315***
	(2.90)	(2.92)	(2.87)	(2.88)	(2.94)	(2.86)	(2.75)	(2.75)
AGE		-0.097	-0.064	-0.128	-0.049	-0.094	-0.164	-0.135
		(-0.16)	(-0.11)	(-0.21)	(-0.05)	(-0.11)	(-0.22)	(-0.18)
Young Kids Indicator			-17.834	-16.855	-16.806	-23.829	-24.399	-24.713
			(-1.00)	(-0.95)	(-0.94)	(-1.36)	(-1.32)	(-1.32)
Female Indicator				20.286	20.087	21.879	20.122	18.216
				(1.06)	(1.04)	(1.12)	(0.90)	(0.78)
IBES Years					-0.198	-1.250	-1.326	-1.266
					(-0.16)	(-0.70)	(-0.67)	(-0.65)
Work Experience						3.017	3.089	3.260
						(1.40)	(1.37)	(1.39)
MBA Indicator						59.568	60.919	59.671
						(1.08)	(1.12)	(1.09)
# Jobs FINRA						3.136	3.279	3.679
						(0.71)	(0.70)	(0.73)
High Rank Indicator							5.332	6.025
							(0.22)	(0.25)
Principal Exam								-13.248
								(-0.76)
White SE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	102	102	102	102	102	102	102	102
AdjR^2	0.136	0.128	0.126	0.123	0.114	0.132	0.123	0.116

(*) Du (2021) and Li and Wang (2021) document that the productivity of female analysts was negatively a affected by the COVID lockdown, especially when they have young children

CTS – Diff-in-Diff (Table 11.B)

	Output			Accuracy
	(1) Q1	(2) Y1	(3) PTG	(4) MPAFE
TREATMENT	2.817	2.583	2.853	0.046
	(1.59)	(1.39)	(1.63)	(1.52)
POST	5.064***	5.490***	5.744***	0.060
	(3.32)	(3.48)	(2.95)	(1.36)
TREATMENT × POST	3.689	4.616*	9.326**	-0.085*
	(1.50)	(1.68)	(2.42)	(-1.75)
Ave # Stocks t-4_t-1	1.087***	1.064***	0.811**	0.006*
	(3.29)	(3.06)	(2.25)	(1.89)
Ave # of Industries t-4_t-1	-0.636	-0.928	-0.868	-0.009*
	(-0.86)	(-1.21)	(-1.58)	(-1.85)
IBES Years	-0.383**	-0.286	0.179	-0.002
	(-1.97)	(-1.36)	(0.74)	(-0.83)
Ave Q1 PMAFE t-4_t-1	-0.438	1.465	-2.086	-0.012
	(-0.06)	(0.20)	(-0.35)	(-0.11)
Firm FE	YES	YES	YES	YES
Coverage FE	YES	YES	YES	YES
Location FE	YES	YES	YES	YES
Analyst Cluster	YES	YES	YES	YES
Observations	396	396	296	395
AdjR^2	0.571	0.570	0.471	0.032

- Pre (Post) are Q3-Q4 (Q1-Q2) of 2019(2020)
- **Treatment – above median CTS**
- Reduced forecast errors for Analysts who saved more on commuting time during the lockdown

Conclusion

- Despite the importance of equity analysts, we still know relatively little about how they spend their working hours
- We take advantage of analysts' minute-by-minute Bloomberg usage data to quantify two dimensions of their work habits: ***AWL*** and ***PAD***
- "Working harder" and "working "smarter" improve earnings forecast accuracy
- The COVID lockdown identification speak to the recent debate on the costs and benefits of working-from-home (WFH)