Is Hybrid Work the Best of Both Worlds? Evidence from a Field Experiment

Raj Choudhury
Tarun Khanna
Christos Makridis
Kyle Schirmann

ASSA/AEA Annual Meeting
January 6, 2023

Harvard Business School

Hybrid Work:
A Contested Terrain

The Washington Post
Democracy Dies in Darkness

BUSINESS

U.S. workers have gotten way less productive. No one is sure why.

Bosses and economists are troubled by the worst drop in U.S. worker output since 1947

By Taylor Telford

October 31, 2022 at 6:00 a.m. EDT

WSJ

MANAGEMENT & CAREERS

The War to Define What Work Looks Like

Pay. Productivity. Commuting. Rarely have bosses and workers been so at odds over so much.

By Chip Cutter Follow , Kathe

Oct. 22, 2022 12:00 am ET

FINANCIAL TIMES

Global Economy + Add to myFT

Office workers embrace hybrid working as post-pandemic norm

People across the world's largest economies have not gone back to pre-Covid commuting patterns, data shows

THE HINDU

MENU TODAY'S PAPER NEWS OPINION BUSINESS SPORT ENTERTAINMENT CROSSWORD+ SCIENCE

BUSINESS AGRI-BUSINESS INDUSTRY ECONOMY MARKETS BUDGET 2022

BUSINESS > ECONOMY

ECONOMY

Hybrid work model catching on in India

Yuthika Bhargava

NEW DELHI: JUNE 18, 2022 20:13 IST
UPDATED: JUNE 19, 2022 22:28 IST

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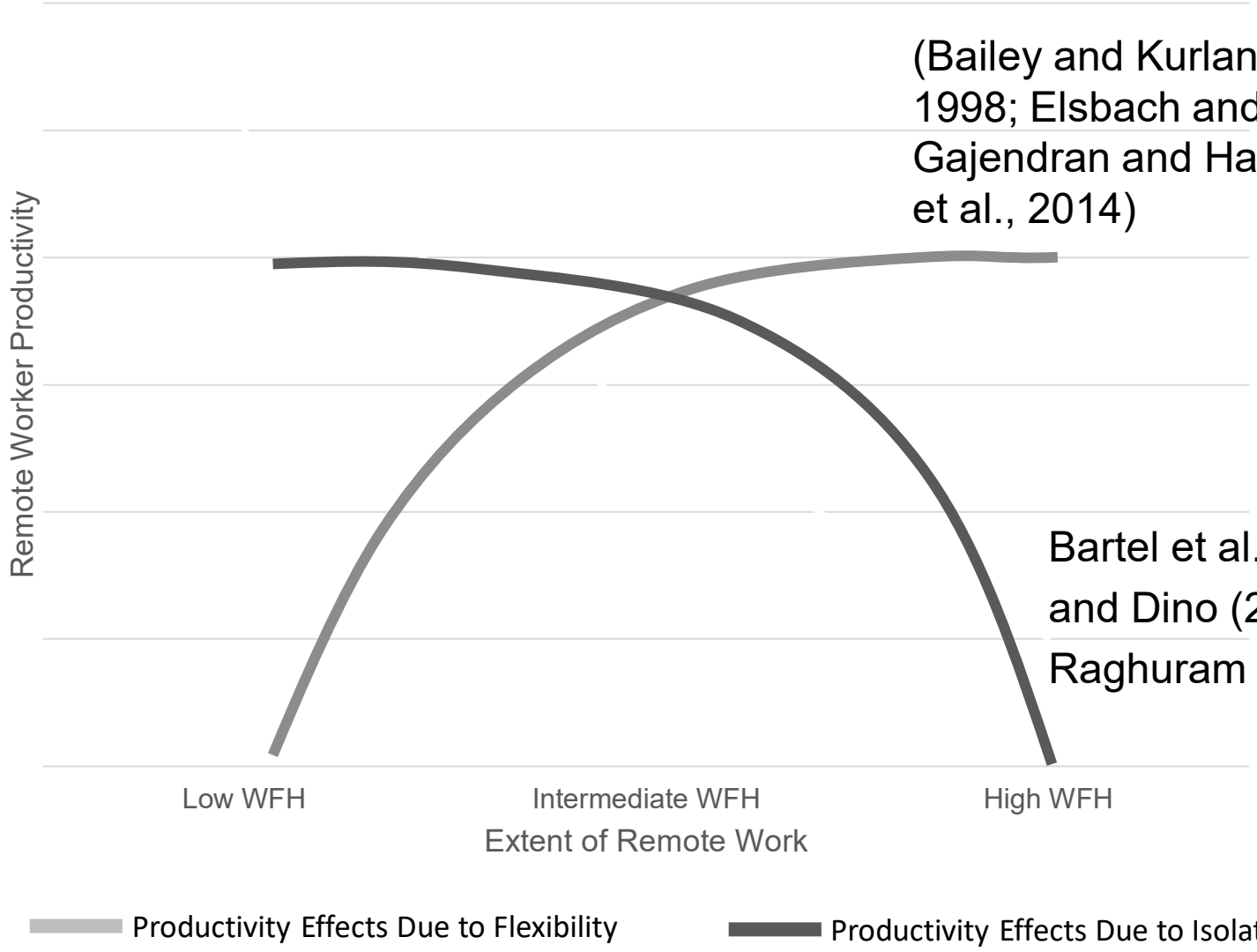
Macro Literature Review: Productivity

- Work-from-home (WFH) leads to productivity gains…
  - Bloom et al. 2015: 13% gain in productivity (call handling) when a large Chinese call center allowed WFH
  - Choudhury et al. 2021: introduction of work-from-anywhere in 2012 increased USPTO examiner productivity by 4.4%
- … or to productivity losses
  - Gibbs et al. 2022: abrupt impact of COVID-era transition at one Asian tech firm
  - Yang et al. 2021: communication silos
  - Emanuel and Harrington 2020: adverse selection into WFH and concerns about promotion/networking
- Workers value WFH at 5% of their salaries (Aksoy et al. 2022)
- No causal work on WFH communication patterns or individual worker satisfaction

Micro Literature Review: Flexibility and Isolation

(Bailey and Kurland, 2002; Apgar, 1998; Elsbach and Hargadon, 2006; Gajendran and Harrison, 2007; Bloom et al., 2014)



Bartel et al. (2012); Golden, Veiga and Dino (2008); Wiesenfeld, Raghuram and Garud (1999)

> How does the intensity of working-from-home (WFH)—the number of days per week in the office—affect employee satisfaction and patterns of asynchronous communication?

Results Preview
(vs. high- or low-WFH workers)

- Intermediate WFH leads to *more emails sent*
  - On average, during the treatment period, an intermediate-WFH worker sends 0.69 more emails than a high-WFH worker to any given individual
- Intermediate WFH leads to *more unique email recipients*
  - 41% increase
- Intermediate WFH leads to *more unique work products*
  - Information uniqueness increases by 1.073 s.d. more for intermediate- vs. high-WFH workers
  - Robust to demographic, behavioral, and colocation controls
- Intermediate WFH workers report *higher job satisfaction*
  - Workers also report greater work-life balance and lower isolation

BRAC
Dhaka, Bangladesh

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Experimental Design

Beginning of Year 2020

No COVID cases in Bangladesh

First Covid Case

Lockdown Starts

Announced on March 23

Lockdown ends officially

Offices make plan to reopen in a week (hybrid-remote)

Hybrid-Remote experiment starts

Offices starts hybrid-remote

Hybrid-Remote Lottery

Randomized lottery each day selects which employee comes to office

Hybrid-Remote experiment ends

Offices starts operating at full capacity

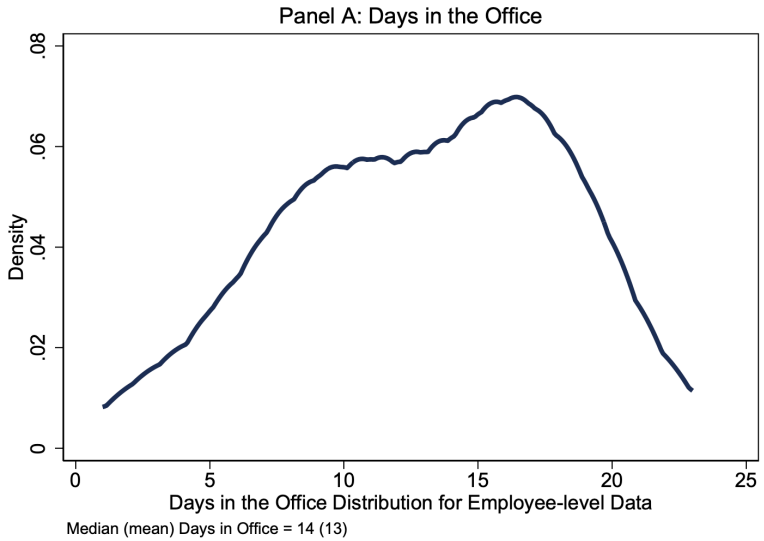
Jan 1, 2020 — **March 8, 2020** — **March 26, 2020** — **May 30, 2020** — **July 5, 2020** — **Sept 3, 2020**

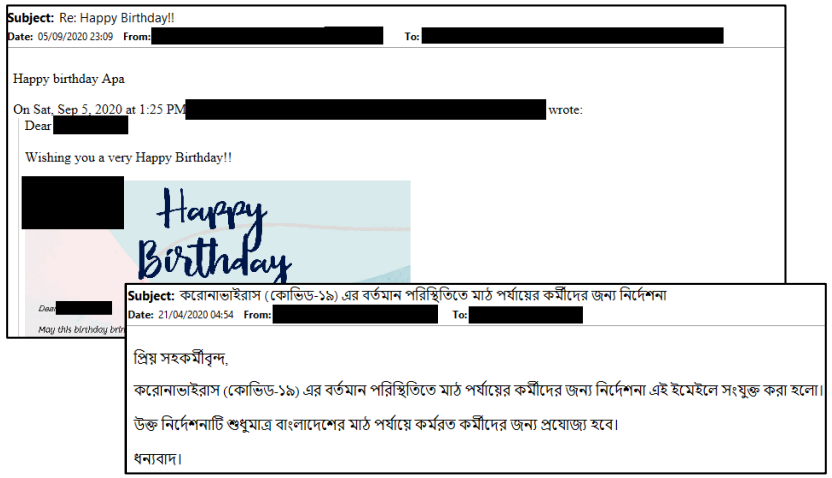
Pre-Lockdown & 100% in office

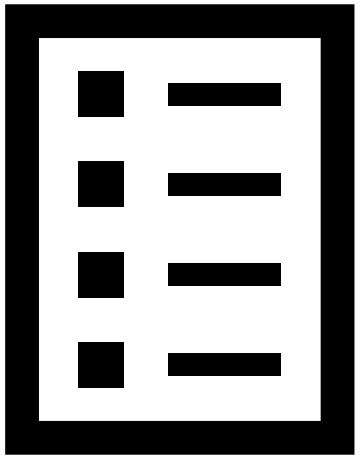
Lockdown & 100% WFH

Treatment & Hybrid-Remote

Data (n = 108)







Attendance, Demographic, and Survey Data

High WFH: < 23%
Intermediate WFH: 23-40%
Low WFH: > 40% of workdays in office

Employee Emails

from corporate HR workers, for control and treatment (experiment) periods

108 employees
32,745 emails
30,323 attachments

Performance Evaluations

completed by a manager

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Results: Communication Volume

- Intermediate WFH is correlated with *more emails sent*

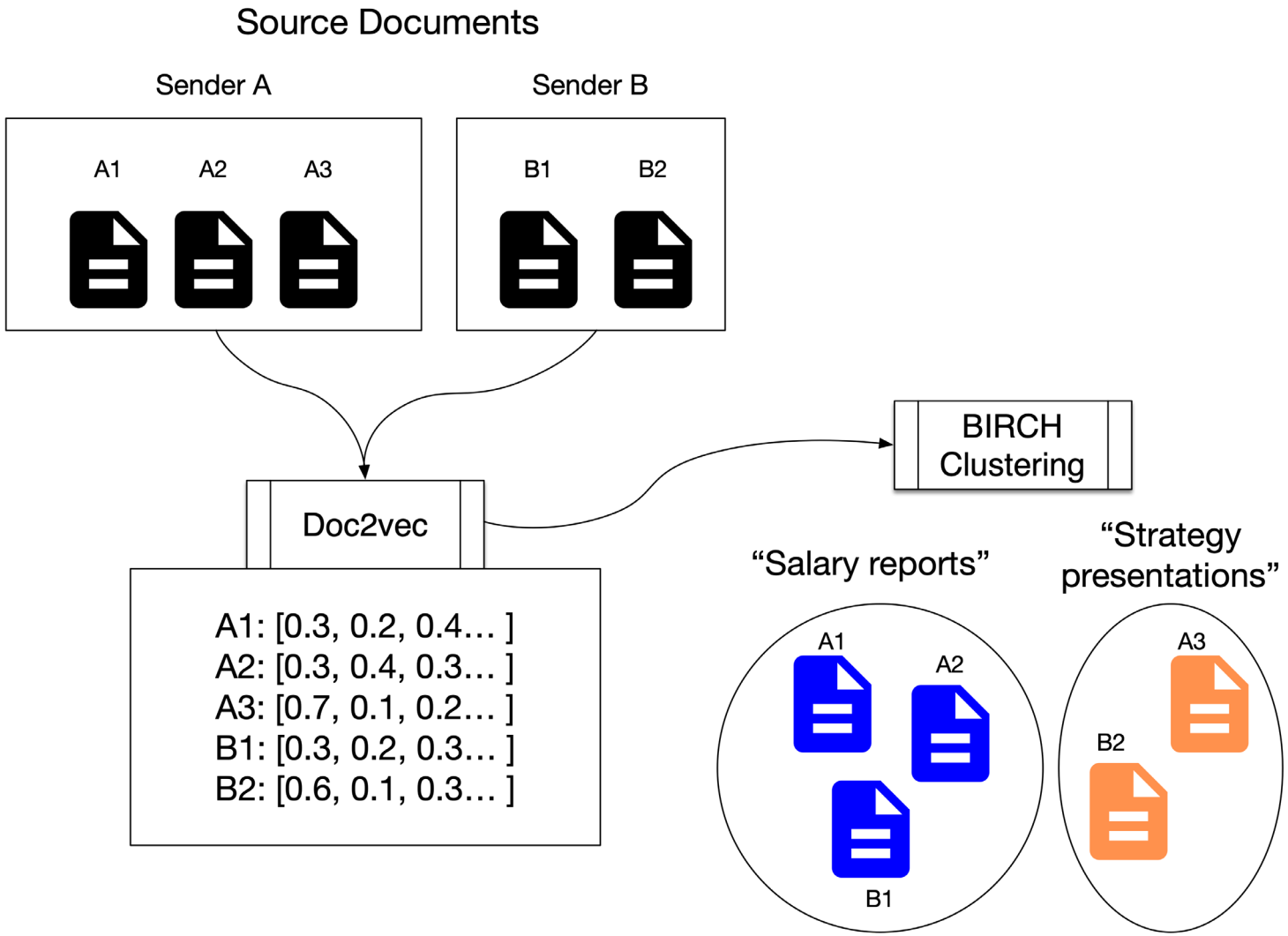
	Dep. var. = Number of Emails Sent					
	(1)	(2)	(3)	(4)	(5)	(6)
Dyadic Data						
Intermediate WFH	.814***	.781***	.758***	.716***	.710***	.689***
	[.178]	[.182]	[.186]	[.171]	[.170]	[.171]
Low WFH	.537***	.493***	.457***	.421***	.379**	.364**
	[.151]	[.152]	[.162]	[.160]	[.161]	[.161]
Non-Manager	-1.608***	-1.558***	-1.555***	-1.563***	-1.538***	-1.419***
	[.217]	[.215]	[.217]	[.216]	[.209]	[.205]
Male		.185	.192	.259*	.260*	.334**
		[.136]	[.140]	[.134]	[.133]	[.137]
Masters/PhD			-.139	-.003	-.018	-.062
			[.180]	[.204]	[.203]	[.208]
Married				-.384	-.337	-.554*
				[.273]	[.274]	[.289]
Spouse WFH					-.127	-.111
					[.138]	[.138]
Caring for Child						.447***
						[.135]
Sample Size	10600	10600	10600	10600	10600	10600

Results: Communication Network

- Intermediate WFH is correlated with a *broader set of recipients*

	Dep. var. = log(Unique Recipients of Emails)					
Employee Data						
Intermediate WFH	.462***	.449***	.404**	.425***	.422**	.406**
	[.155]	[.162]	[.164]	[.160]	[.161]	[.164]
Low WFH	.299	.271	.212	.227	.262	.246
	[.200]	[.214]	[.209]	[.209]	[.207]	[.208]
Non-Manager	-.612**	-.587**	-.555**	-.554**	-.561**	-.502*
	[.275]	[.270]	[.272]	[.273]	[.268]	[.267]
Male		.096	.130	.104	.103	.144
		[.153]	[.152]	[.151]	[.152]	[.154]
Masters/PhD			-.357**	-.396**	-.394**	-.400**
			[.163]	[.176]	[.178]	[.175]
Married				.184	.133	.047
				[.214]	[.221]	[.219]
Spouse WFH					.141	.133
					[.159]	[.161]
Caring for Child						.180
						[.152]
Sample Size	99	99	99	99	99	99

Methodology:
Information Uniqueness



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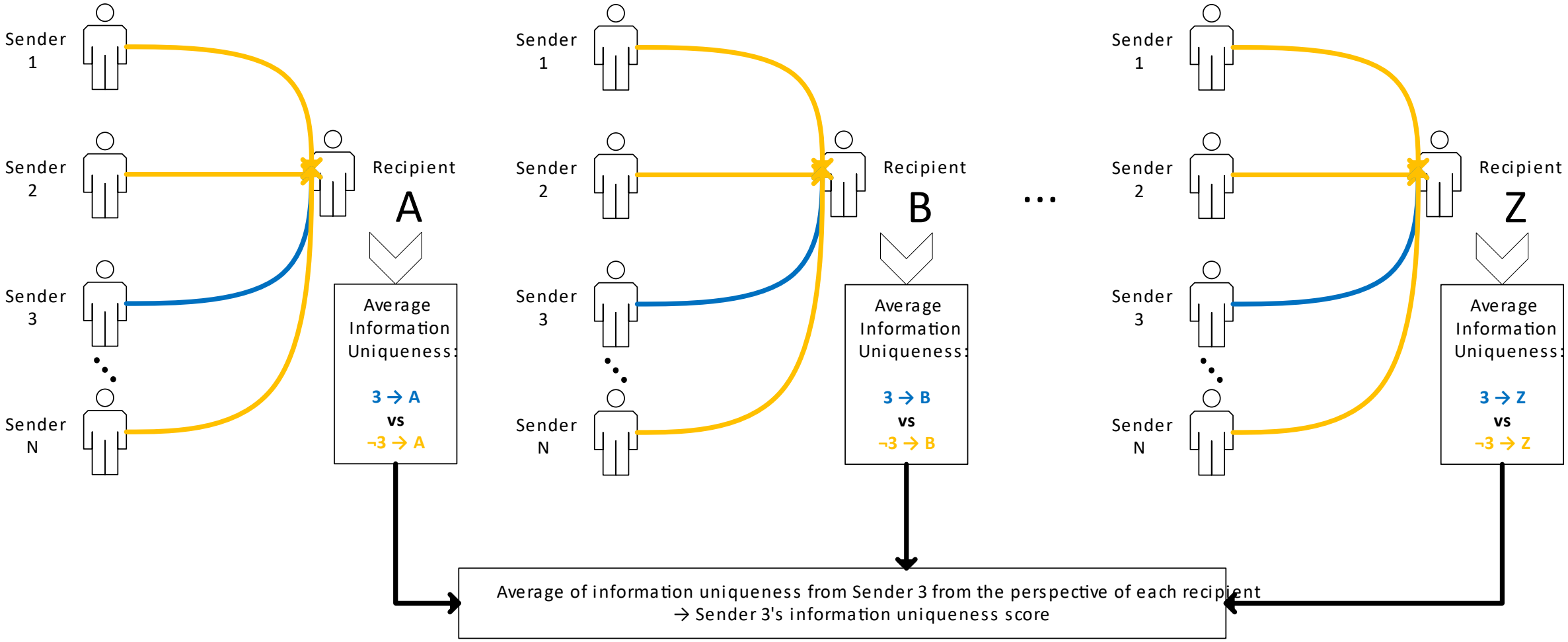
Methodology: Information Uniqueness (Following Aral & Dhillion 2022)



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Results: Information Uniqueness

- Intermediate WFH is correlated with *higher information uniqueness* of work products (emails)

Table 3: Intensity of Working-from-Home and Information Uniqueness (Aral and Dhillon (2022) Method)

	Change in Information Uniqueness						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intermediate WFH	0.436**	0.465***	0.491**	0.520***	0.517***	0.517***	1.073***
	(0.175)	(0.174)	(0.191)	(0.176)	(0.177)	(0.176)	(0.215)
Low WFH	−0.448	−0.336	−0.276	−0.273	−0.236	−0.239	0.991**
	(0.392)	(0.372)	(0.382)	(0.386)	(0.384)	(0.384)	(0.467)
Non-Manager	−0.084	−0.136	−0.193	−0.173	−0.182	−0.163	−0.201
	(0.189)	(0.190)	(0.197)	(0.203)	(0.203)	(0.200)	(0.186)
Male		−0.312*	−0.326*	−0.353**	−0.352**	−0.335**	−0.420**
		(0.168)	(0.176)	(0.164)	(0.165)	(0.169)	(0.169)
Masters/PhD			−0.147	−0.190	−0.192	−0.193	−0.120
			(0.346)	(0.372)	(0.374)	(0.377)	(0.378)
Married				0.221	0.172	0.138	0.111
				(0.376)	(0.387)	(0.388)	(0.363)
Spouse WFH					0.124	0.119	0.043
					(0.163)	(0.164)	(0.162)
Caring for Child						0.078	0.040
						(0.198)	(0.195)
Co-location Intensity							−0.562***
							(0.192)
Sample Size	105	105	99	99	99	99	99

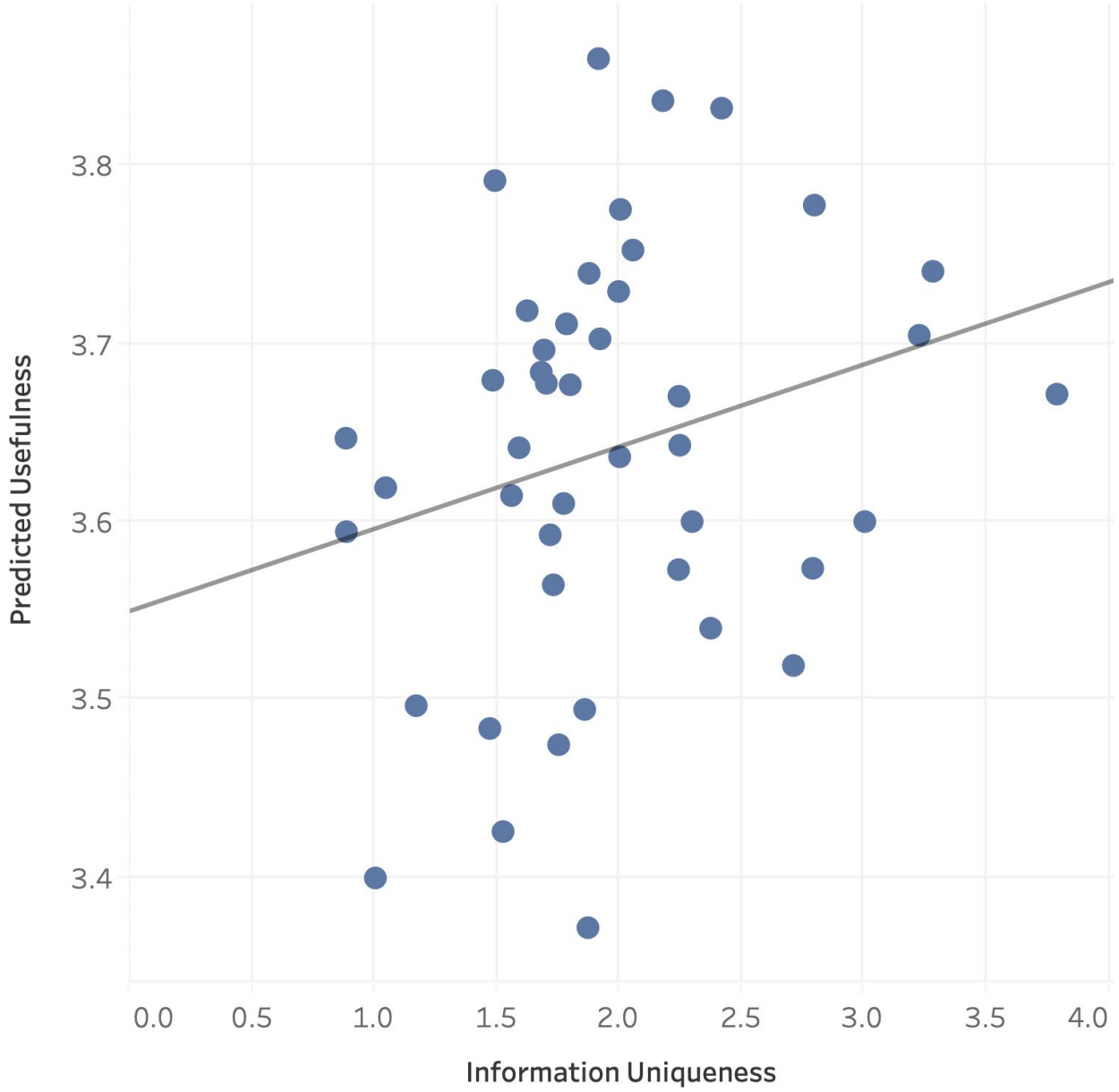
Results: Usefulness

- Alternatively, we propose a metric for information uniqueness by first clustering messages (e.g., “salary reports,” “project management”) and then calculating how different the documents are
- 0.24 correlation between information uniqueness and a manager-assigned “usefulness” score (1-5) for a sample of messages

Uniqueness Percentile	Usefulness Score	Text
1	2	Dear [name] As per conversation, here I attached the screenshot. Kindly see the attachment
10	2	PIease correct accordingly, thanks
43	3	Whats the update on this issue? Please check with [vendor] and solve the issue by today. Also give a reply to the Field Office. Thank you.
46	3	Not match experience. Need at least 3 years’ experience for lab technician position. Thanks
83	5	Dear [name] Greetings! I think it’s all good to me ,just adding one observation-Expected joining date can be written in a specific date in lieu of as early as possible.You can proceed with this approval. Best,
95	4	Dear [name], These items were marked by budget change areas. PRL is requiring the percentage changed of these areas. * Salary & Benefits * Travelling & Transportation * Office supplies, Postage & Stationery * Maintenance, General Expenses and support cost * Fooding expenses ([company] and other) * Meeting and Workshop * Staff training and development * Advertisement and publicity expenses * Audit, Consultancy and Legal fees * Capital Expenditure

Results: Usefulness

- Training on a 100-email set of emails manually scored for usefulness and extrapolating with machine learning techniques, we find that information uniqueness is predictive of usefulness



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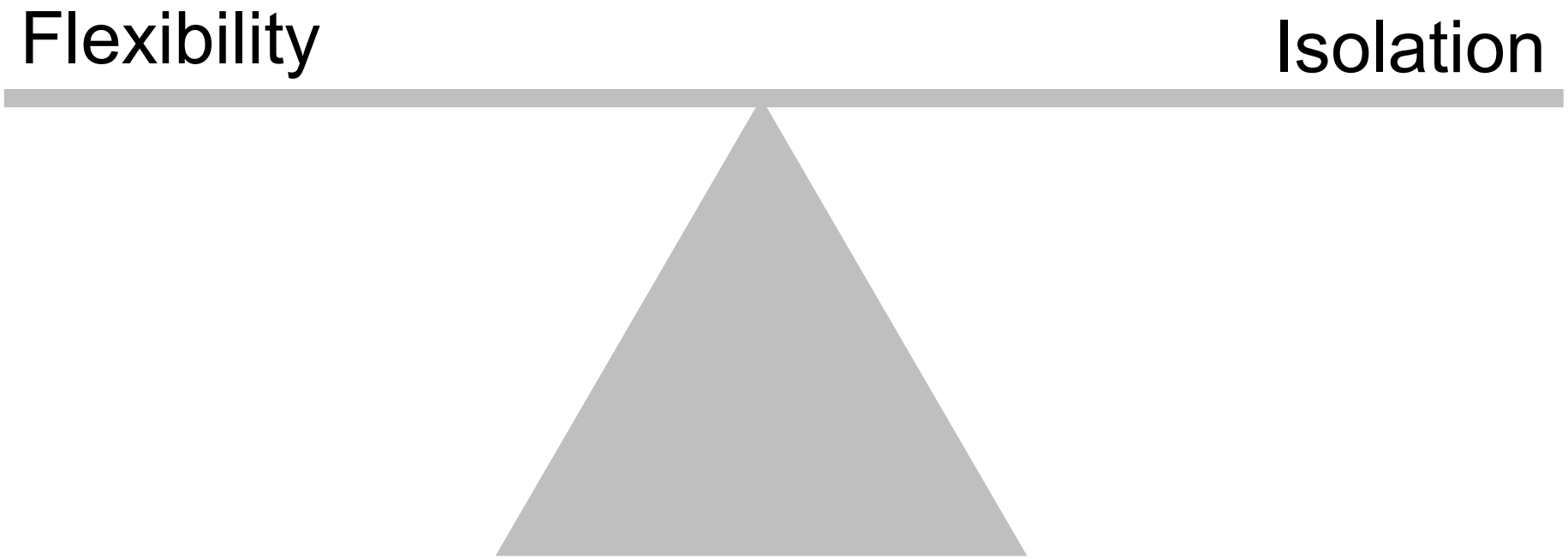
Mechanisms:
The “Best of Both Worlds?”



Results: Mechanisms

	Job Satisfaction	Better Balance	Prefer WFH
	(1)	(2)	(3)
Panel A			
Intermediate WFH	.668**	.803**	-.168
	[.308]	[.355]	[.389]
Low WFH	-.199	-.215	-.116
	[.356]	[.393]	[.415]
R-squared	.16	.11	.12
Sample Size	143	143	143
	Feel Left Out	Miss Mentorship	Feeling Isolated
	(1)	(2)	(3)
Panel B			
Intermediate WFH	.287	-.018	-.784*
	[.388]	[.390]	[.434]
Low WFH	.446	.670	.262
	[.413]	[.429]	[.500]
R-squared	.08	.05	.11
Sample Size	143	143	143

Results: Managerial Evaluations

	Ability	Cooperation	Knowledge	Creativity	Productivity	Quality	Overall
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intermediate WFH	.105	.281	.124	.164	.267	.291	.205
	[.164]	[.237]	[.197]	[.174]	[.207]	[.184]	[.154]
Low WFH	.222	.165	.108	.013	.039	.217	.127
	[.212]	[.248]	[.238]	[.248]	[.239]	[.233]	[.183]
Non-manager	-.015	-.640***	-.118	-.037	-.386	.039	-.193
	[.219]	[.223]	[.226]	[.205]	[.254]	[.269]	[.171]
Male	.182	-.037	.231	.346*	.283	.151	.192
	[.141]	[.186]	[.177]	[.183]	[.192]	[.176]	[.133]
Masters/PhD	-.174	-.199	.216	-.449	.023	.012	-.095
	[.220]	[.309]	[.283]	[.278]	[.266]	[.251]	[.219]
Married	.310	.158	.760***	-.173	-.306	.032	.130
	[.261]	[.290]	[.285]	[.255]	[.273]	[.249]	[.222]
Spouse WFH	-.014	.073	.102	.013	.043	.226	.074
	[.145]	[.196]	[.171]	[.160]	[.180]	[.170]	[.123]
Cares for Child	.149	.239	-.014	.174	.265	.155	.161
	[.134]	[.191]	[.170]	[.191]	[.195]	[.179]	[.137]
R-squared	.07	.10	.15	.09	.09	.06	.09
Sample Size	118	118	118	118	118	118	118

Robustness

- Alternate bin specifications
- Time between a sender's first and last emails of the day
- Direct use of number of days in office, and quadratic specification
- Controlling for pre-experiment dyadic email traffic
- Poisson specifications (vs. negative binomial)
- Day of week (e.g., Wednesday/Thursday vs. others)
- Number of intraweek switches between WFH & office
- Alternate document clustering specifications
- Alternate MD5-based document uniqueness specifications
- Heterogeneity analysis serially interacted with controls
- Hyperbolic sine specifications

Conclusion

- We believe this to be among the earliest causal evidence of how the intensity of hybrid work affects the uniqueness and volume of intrafirm communication
- Our results suggest that intermediate WFH is the “best of both worlds”
  - Employees report less isolation and more work-life balance
  - Intermediate WFH workers communicate with a larger number of other employees and produce more unique work products
- Results likely generalizable beyond an emerging markets setting

Thank You!

kschirmann@hbs.edu

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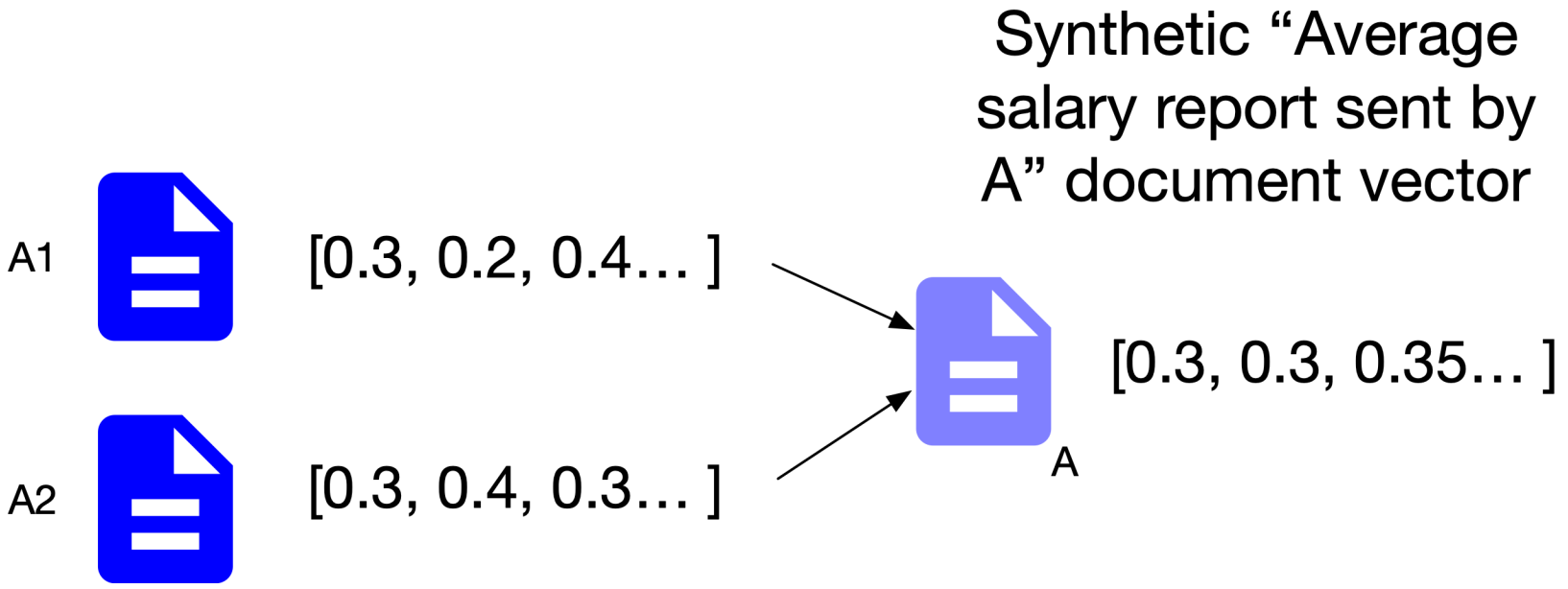
Appendix: Balance Table

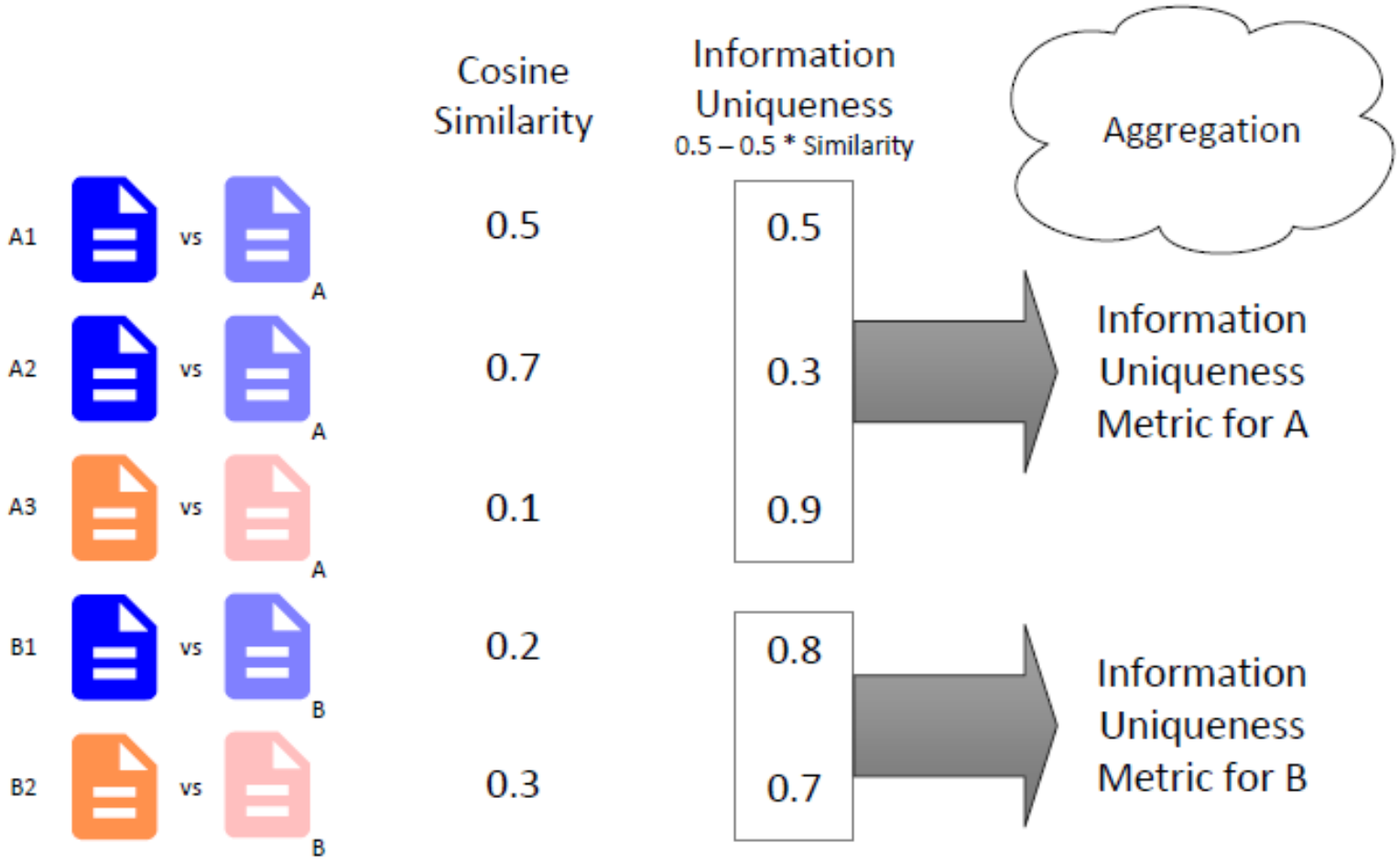
Table A.1: Examining Balancing Across Treatment Groups

	High WFH		Intermediate WFH		Low WFH	
	Mean	SD	Mean	SD	Mean	SD
Male	0.44	0.50	0.54	0.51	0.70	0.47
Non-Manager	0.74	0.44	0.95	0.22	0.95	0.22
Masters/PhD	0.92	0.27	0.82	0.39	0.80	0.41
Married	0.92	0.27	0.79	0.41	0.85	0.37
Spouse WFH	0.36	0.49	0.33	0.48	0.10	0.31
Caring for Child	0.49	0.51	0.44	0.50	0.40	0.50
Observations	39		39		20	

Appendix: Information Uniqueness Methodology



Appendix: Information Uniqueness Methodology



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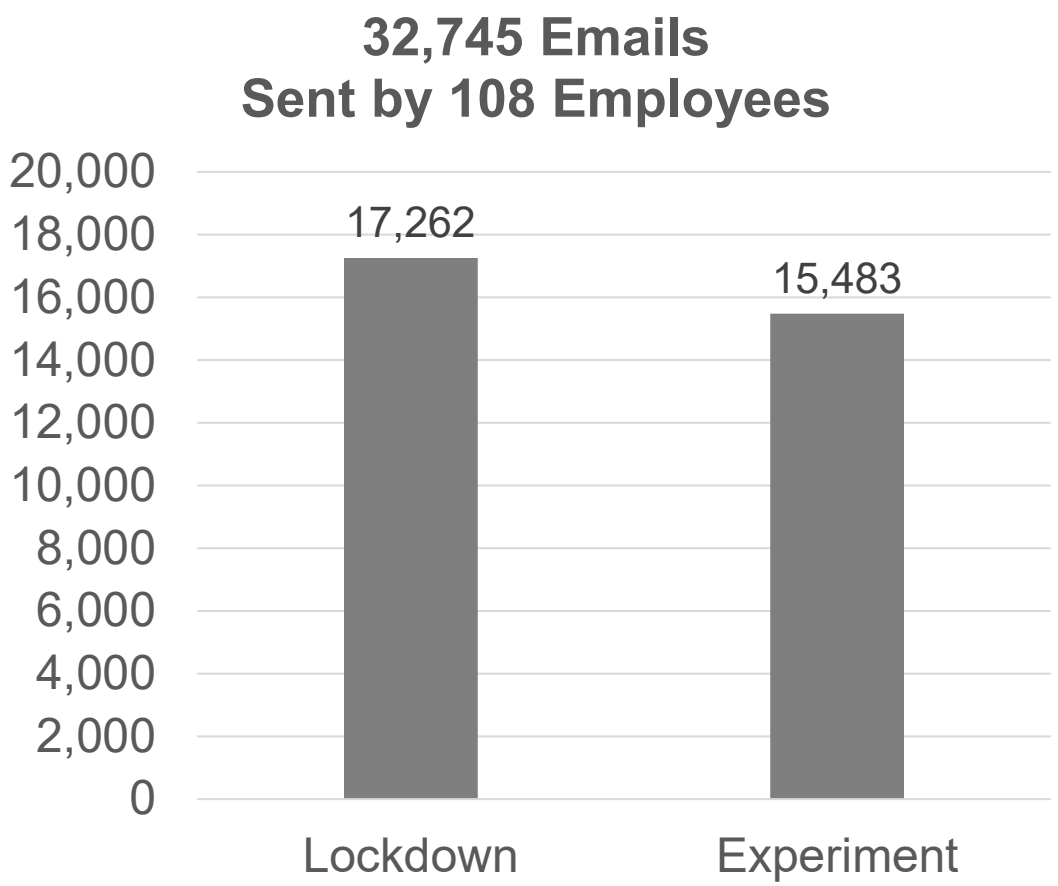
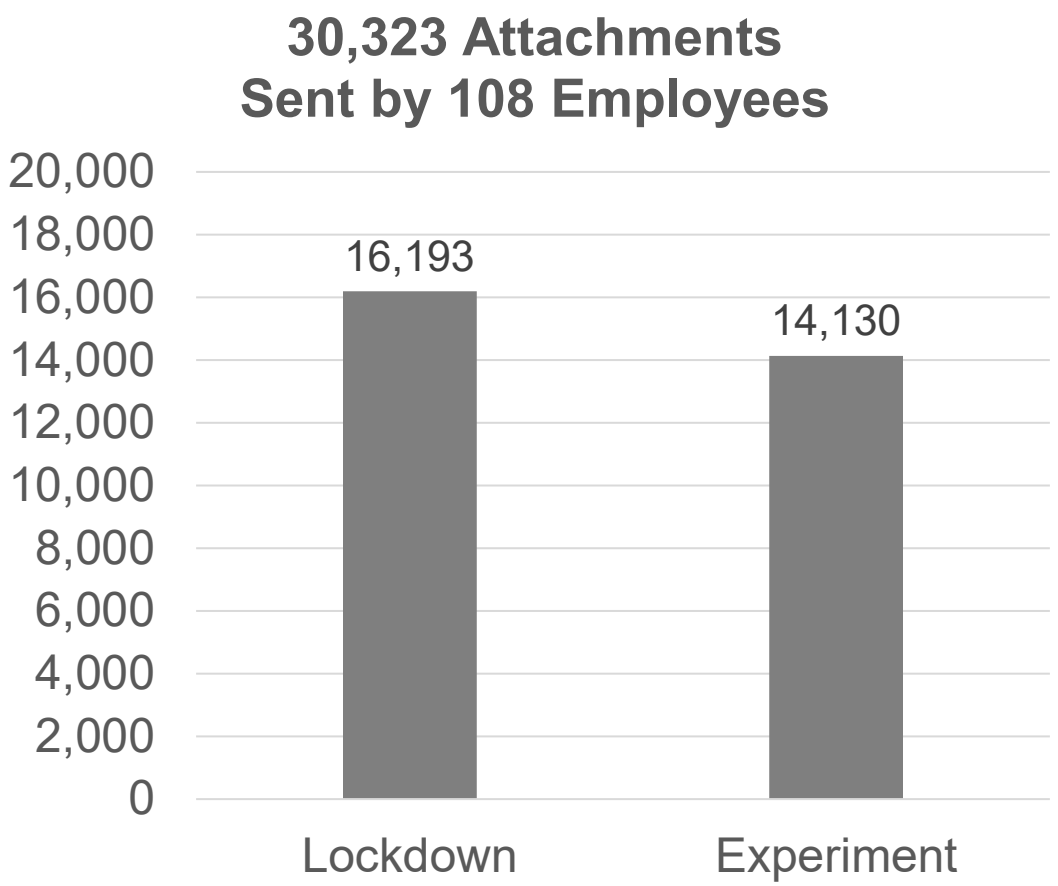
Appendix: Email & Attachment Summary Statistics





** Omits 128 malformed attachments (garbled or unrecognizable type)*

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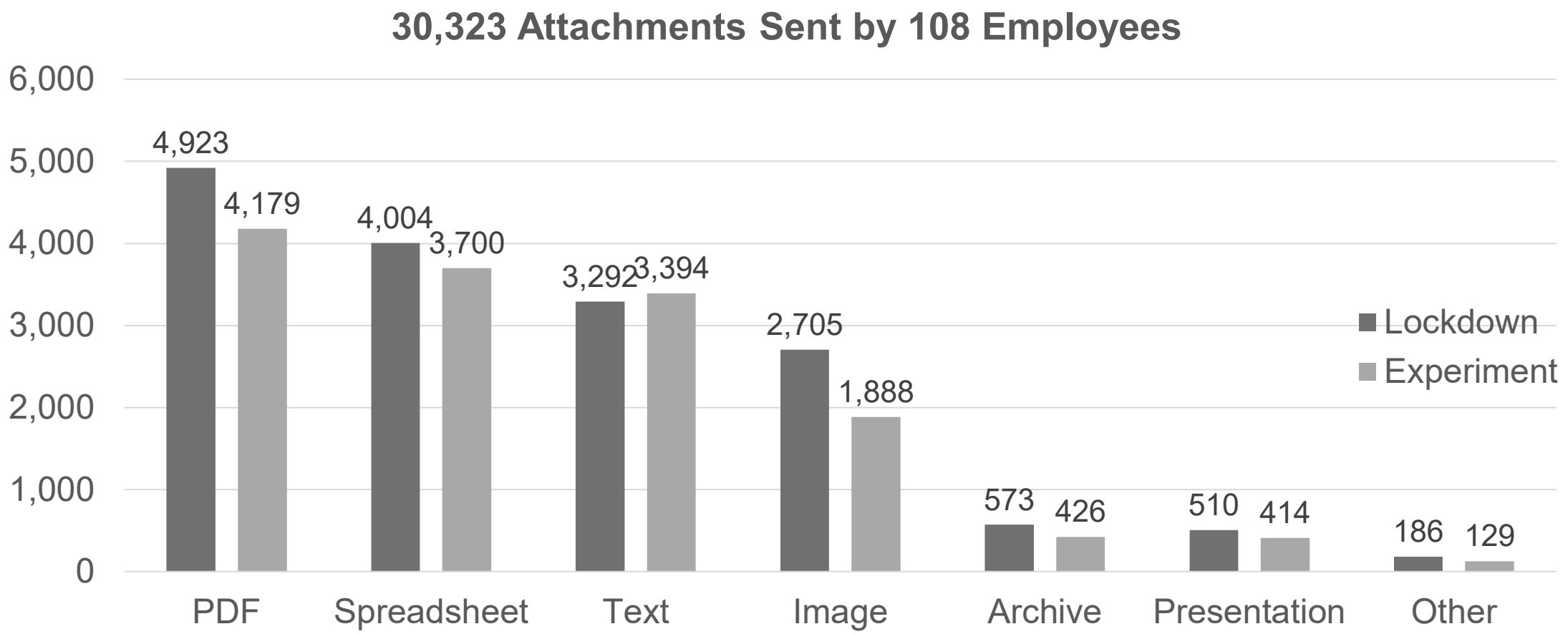
Appendix: Attachment Summary Statistics



Text analysis was performed only on extractable content from PDF, spreadsheet (e.g., Excel), text (e.g., Word), and presentation (i.e., PowerPoint) files. No OCR was attempted on images or embedded images.

Appendix: Pay Effects

	Pay Increase (Growth)	
	(1)	(2)
Intermediate WFH	.021	.033*
	[.015]	[.018]
Low WFH	.003	.027*
	[.011]	[.016]
Non-Manager		-.061**
		[.025]
Male		-.010
		[.014]
Masters/PhD		.014
		[.025]
Married		-.000
		[.015]
Spouse WFH		.016
		[.013]
Caring for Child		-.012
		[.015]
R-squared	.05	.31
Sample Size	46	46

Appendix: Parameterization