Does commuting really make a difference in my steps? Examining walking experiences of hybrid workers

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Research Question

How does the walking experience differ between a **remote** and an **in-person** working environment?

Background

- Workers sit two or more hours per day when working remotely as compared to in-person (Streeter et al.)
- Computer, mobile and wearable interventions reduce sitting time (Stephenson et al.)
- Reminders (Luo et al.), gamification (Lin et al.) and goal setting (Fan et al.) motivate workers to walk

Streeter et al. (2021). From Bad to Worse: The Impact of Work-From-Home on Sedentary Behaviors and Exercising. Stanford Center on Longevity.
Stephenson et al. (2017). Using computer, mobile and wearable technology enhanced interventions to reduce sedentary behaviour: A systematic review and meta-analysis. International Journal of Behavioral Nutrition and Physical Activity.
Lou et al. (2017). Time for break: Understanding information workers' sedentary behavior through a break prompting system. CHI.
Lin et al. (2006). Fish'n'Steps: Encouraging physical activity with an interactive computer game. Lecture notes in Computer Science.
Fan et al. (2012). A spark of activity: exploring informative art as visualization for physical activity. Ubicomp.

Protocol

- Pre-Study Questionnaire
- 14 days (but only workdays)
  - 2 texts with survey link per workday (no expiry)
    - 1 in the first half of the workday (randomized)
    - 1 in the second half of the workday at least 1 hour after first ping (randomized)
- Apple Health Activity Data

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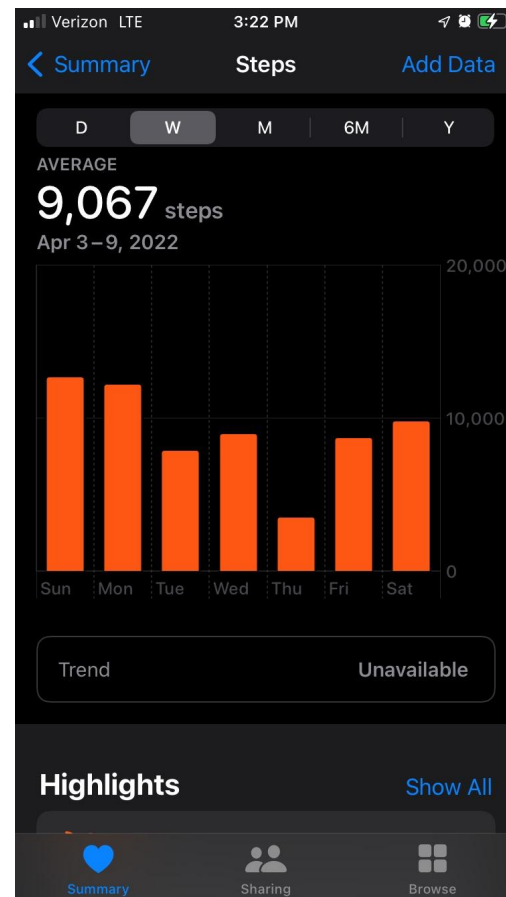
What is your name (First and Last)?

[   ]

Are you working at home or at your
workplace?

○ Home

○ Workplace

○ Other:

[   ]

What are you doing right now?

[   ]

How active has your morning been?

[   ]

Anything else you'd like to tell us?

[   ]

→

Participation

- 6 participants recruited
    - Ownership of personal iOS smartphone required
- 4 participants participated
    - 2 no longer had hybrid work schedules
- No compensation
- 54.4% response rate to texts
- 3 of 4 participants shared their Apple Health Activity Data

Quantitative Results

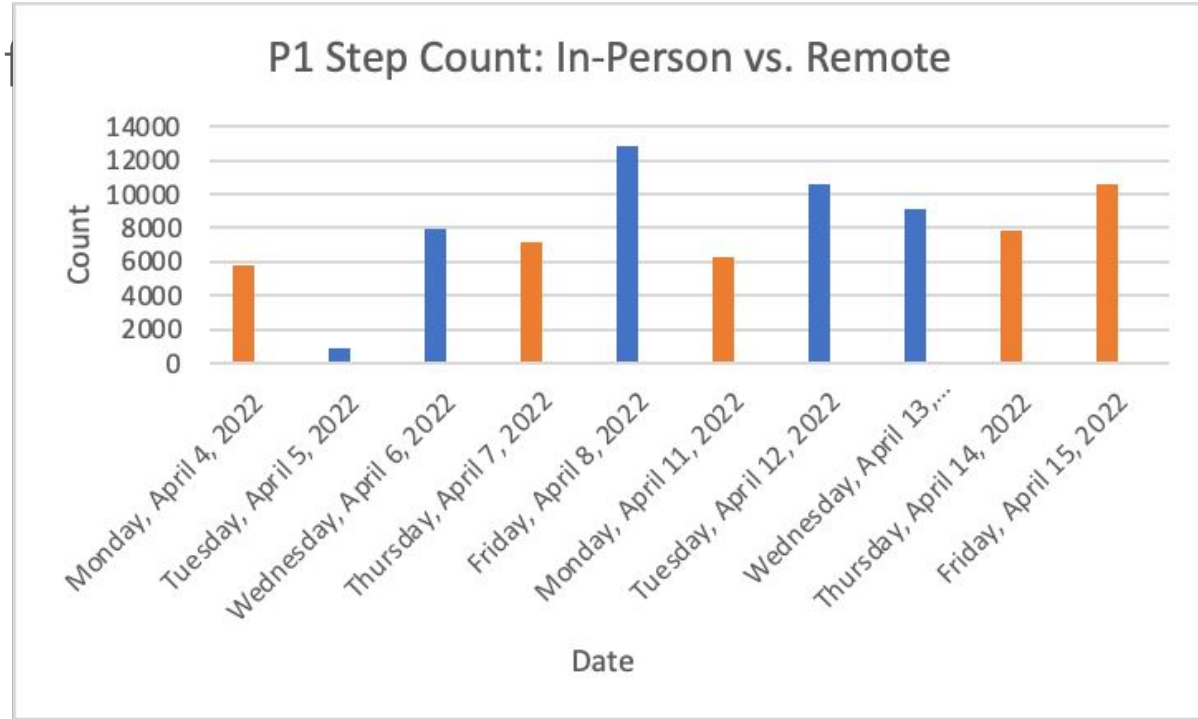| Location	Mean ± SD		
	P1	P2	P4
In-Person	8296.4 ± 4524.3	1259.8 ± 244.5	6589 ± 3119.2
Remote	7531.4 ± 1896.2	1214.5 ± 326.0	4795 ± 6214.1
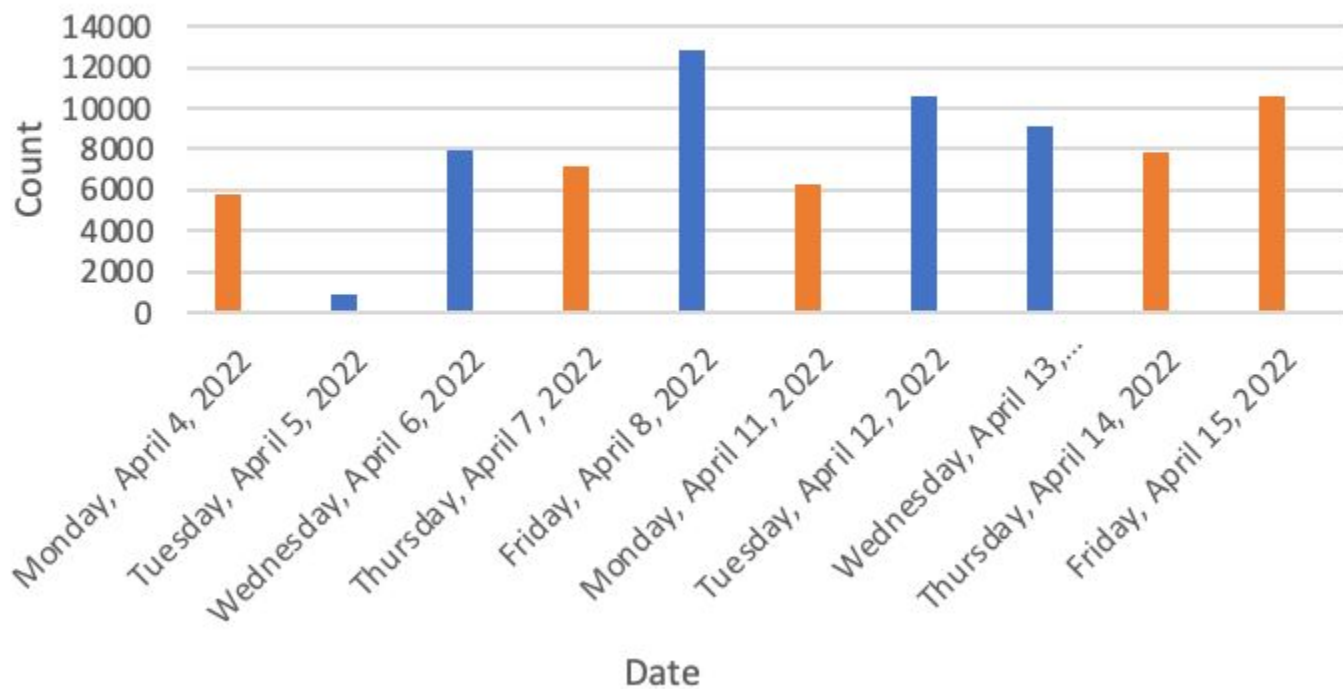
Why did P1 walk so much?

At the max step day of Friday April 8 - "I went out for 45 min walk in the rain. I did my 6 stretching and strengthening exercises." (P1)



P1 Step Count: In-Person vs. Remote

Why did P1 walk so little?

On the min day of Tuesday April 5 - no response, but next day - "My morning was fairly active, pushing my aunt in the wheelchair, carrying her stuff, bringing things to her, dropping them and parking the car and then walking to meet them."(P1)
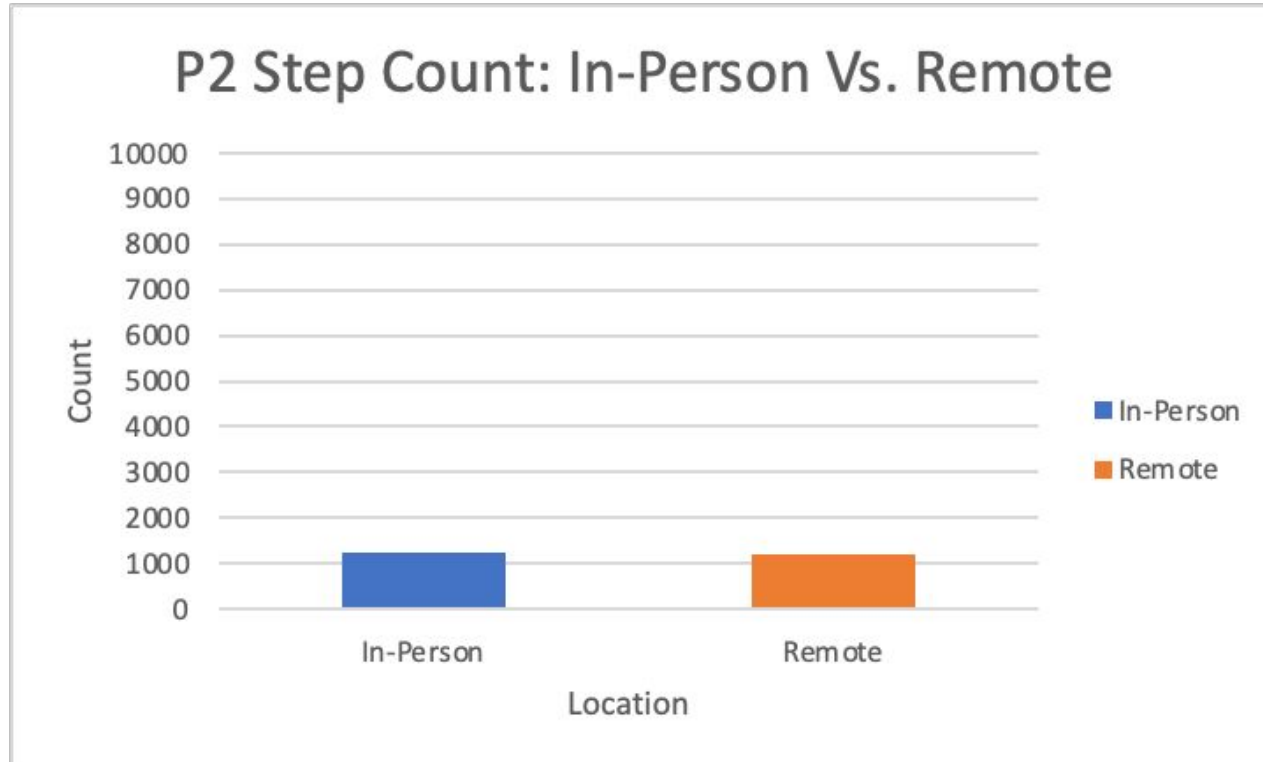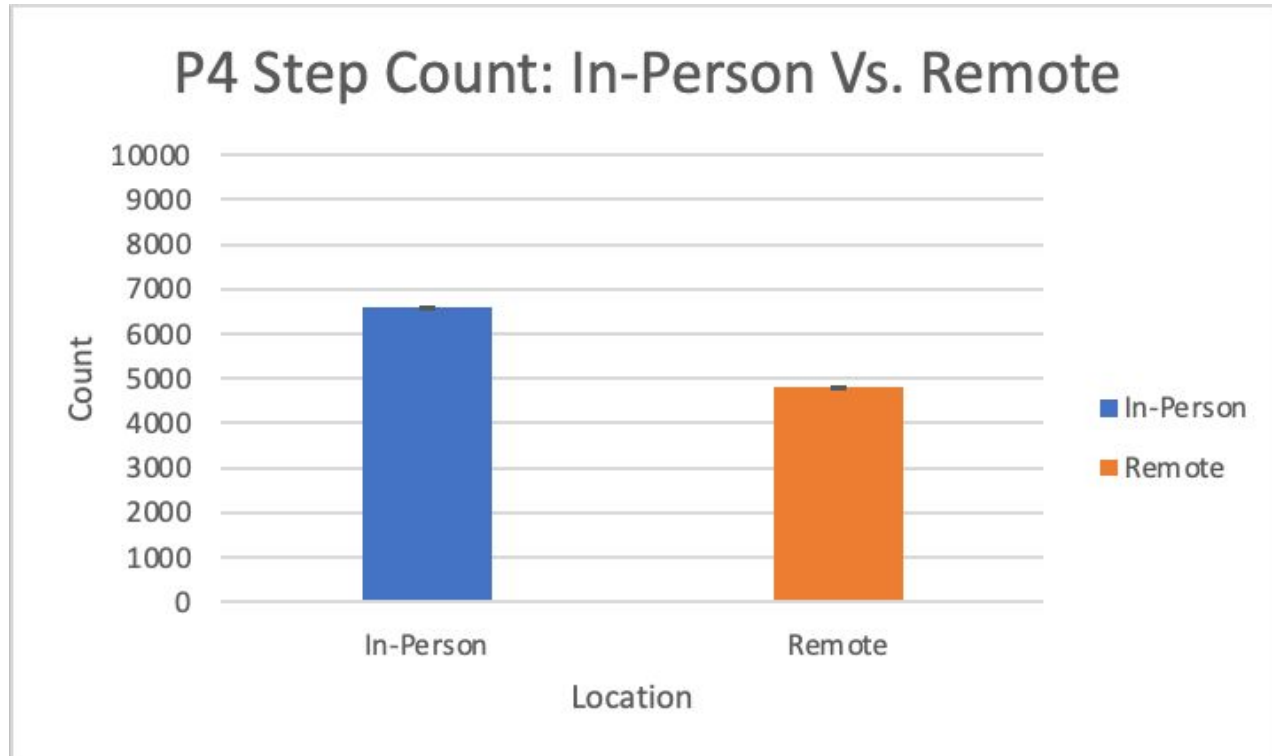

P1 Step Count: In-Person vs. Remote

Quantitative Results

P1 Step Count: In-Person Vs. Remote

Quantitative Results

P2 Step Count: In-Person Vs. Remote
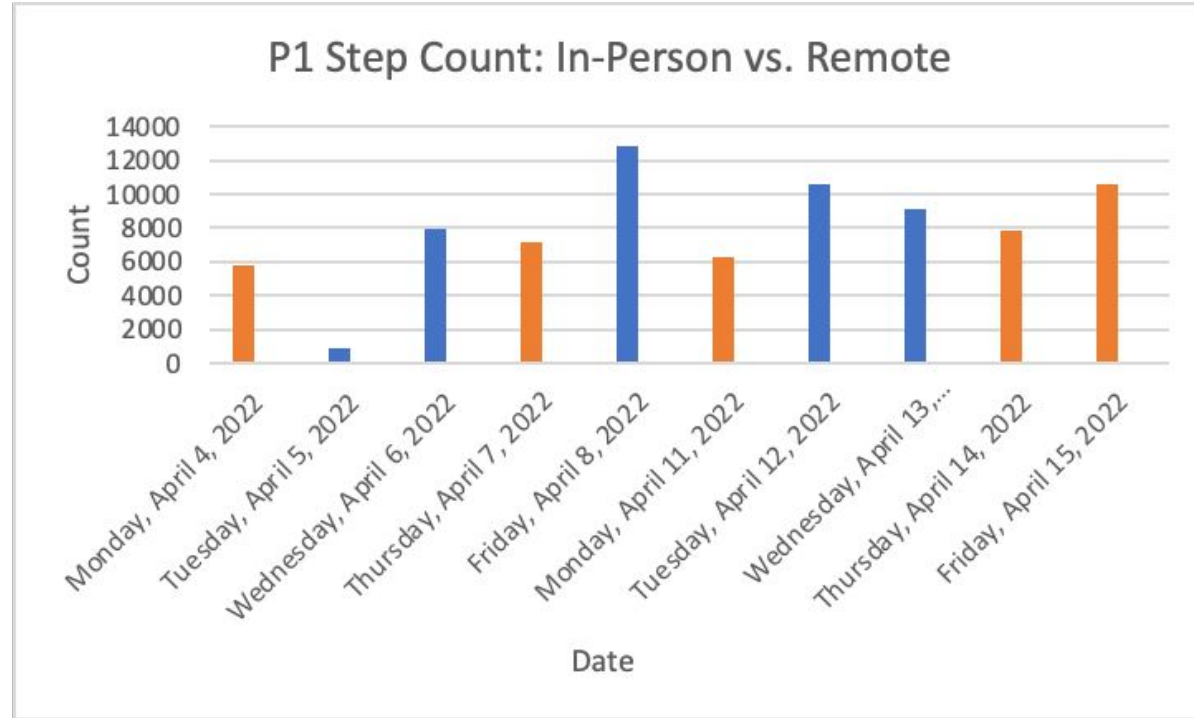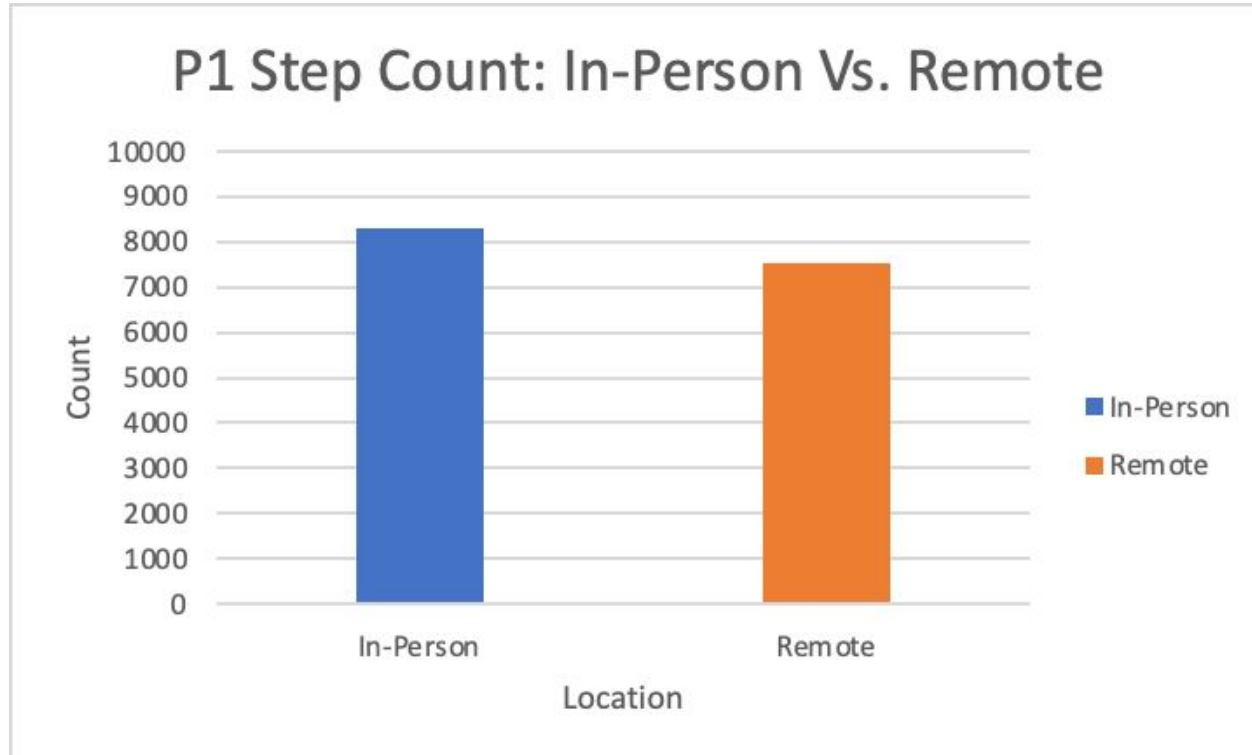
Quantitative Results

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Selected quotes

"I feel especially groggy and tired today and not motivated to move around much" (P3)

"I'm fatigued from stress, anxiety and insomnia" (P1)

"Would LOVED to get out for another walk tonight… Also, my motivation is lower. But, even texting this I feel more resolve to get out" (P1)

"I'm glad I was wearing sneakers!" (P1)

Code book

Code	Example
1 Location	Metro
2 Activity	Jogged for 45 mins
3 Desires	Hope to go for a walk on the way home from work
4 Weather	It's sunny outside!
5 Feelings	I am glad I was wearing sneakers

Discussion

Overall, no significant difference between steps on remote and in-person walking day

All 3 participants data showed more walking on in-person days

Mood and emotions is tied to activity level perception

Weather impacts walking

"The rain will have stopped and it will have dried up and be nice." (P1)

"I went out for 45 min walk in the rain. I did my 6 stretching and strengthening exercises." (P1)

"Pretty active, I have been jogging for 45 mins, I just feel like it and I'm on a track and there's no snow and ice" (P1)

"Will walk to the library later if it's not raining too hard" (P1)

"The weather is nice for exercising outdoors." (P1)

Lessons learned

- Pilot survey implementation
    - Format of survey text boxes
    - Survey not showing as a link
    - Ensure text messages are reliable- some issues with automate on iOS

- Lower data capture burden

- Allow for participants to go back and fill in their information if they want to

Requests for feedback

Feedback on the data analysis approach

We are considering a code book qualitative analysis approach, based on our study is this the best approach?