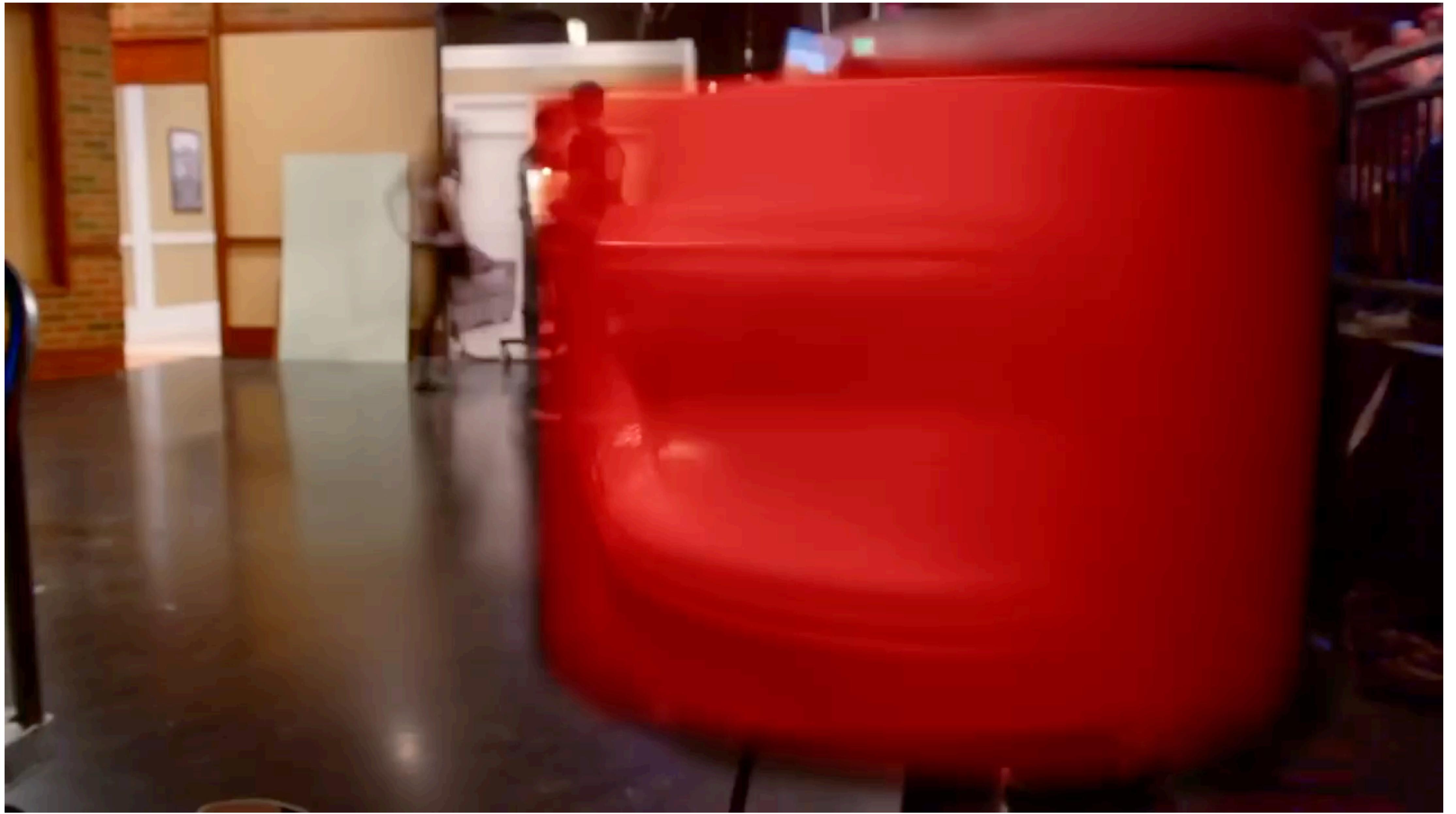


Monitain



Katie Hedgpeth
April 2019



A wide-angle photograph of a majestic mountain range. The mountains are shrouded in a thick, light-colored mist or low-hanging clouds, creating a sense of depth and scale. The peaks are rugged and rocky, with some showing signs of snow or ice. The lighting suggests either early morning or late afternoon, with the sun casting long shadows and highlighting the textures of the mountain faces.

Background

What is Monitain?

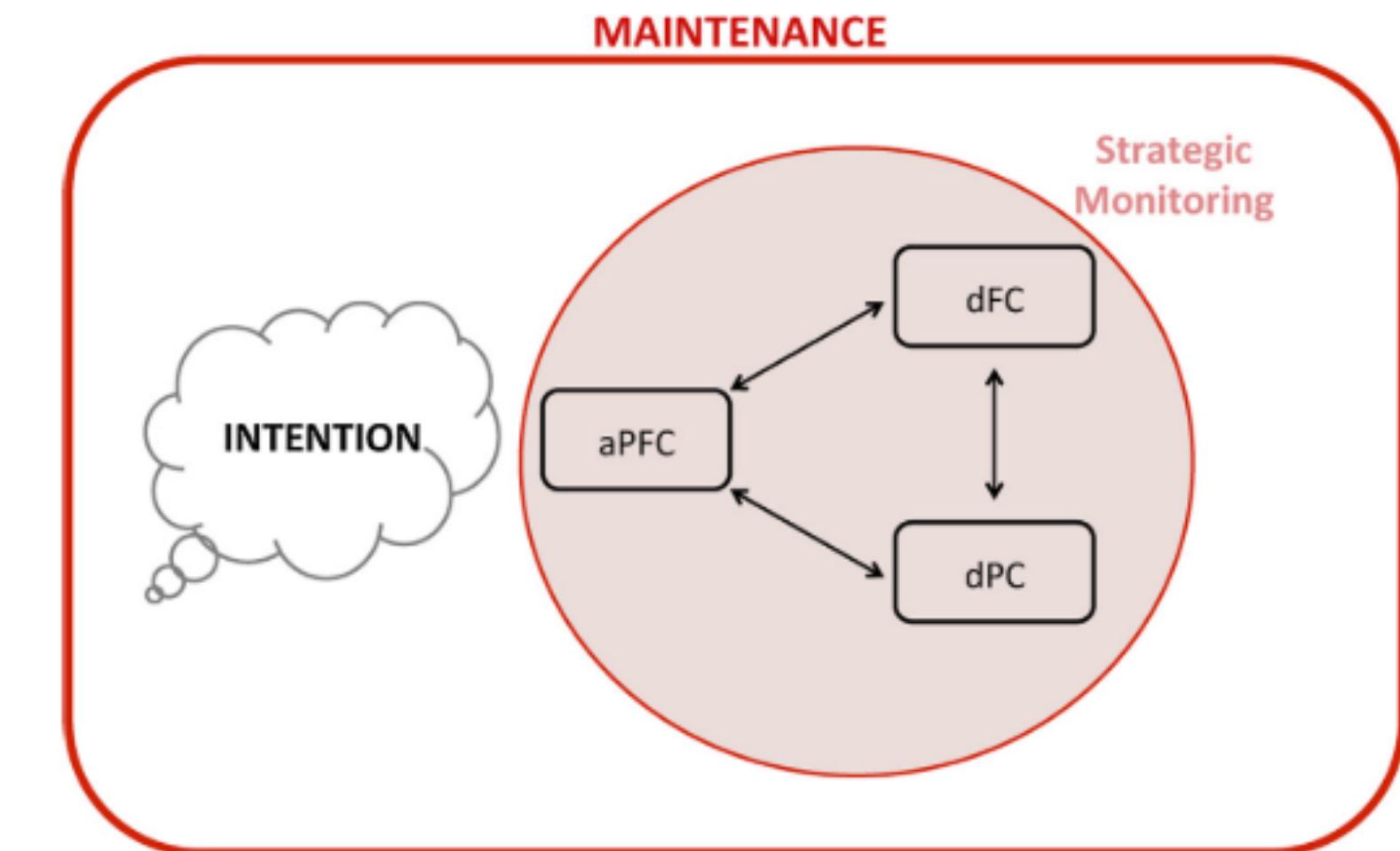


What does it stand for?

Monitor + Maintain = **Monitain**

What are we trying to do?

- Break intention decoding into:
 1. WM **maintenance** of a goal
 2. **Monitoring** for goal relevant information



"In the **maintenance** phase, individuals are engaged in an ongoing activity while simultaneously they have to keep the PM intention in mind, and in some circumstances, to actively **monitor** for the PM cue occurring amid ongoing stimuli." (Cona et al., 2015)

How does this relate back to the lab?

- We want to disentangle these two components of working memory to look deeper at their impact on *prospective memory costs*

What's the difference? 🏔

Is it possible to have monitoring without maintenance? Or maintenance without monitoring?

Maintain



Monitor



What's the difference?



Is it possible to have monitoring without maintenance? Or maintenance without monitoring?

Maintain



- Active representation in WM while navigating external world
- Active process
- Internal FoA
- Refers to retention of an intention (Ballhausen et al., 2017)

Monitor



- Evaluating and scanning for cue
- Active process
- External FoA
- Involves allocating attentional resources in order to detect a target cue (Ballhausen et al., 2017)

Retention in PM requires both maintaining an intention and monitoring for the right moment to act - so why do we study these processes so separately? (Ballhausen et al., 2017)

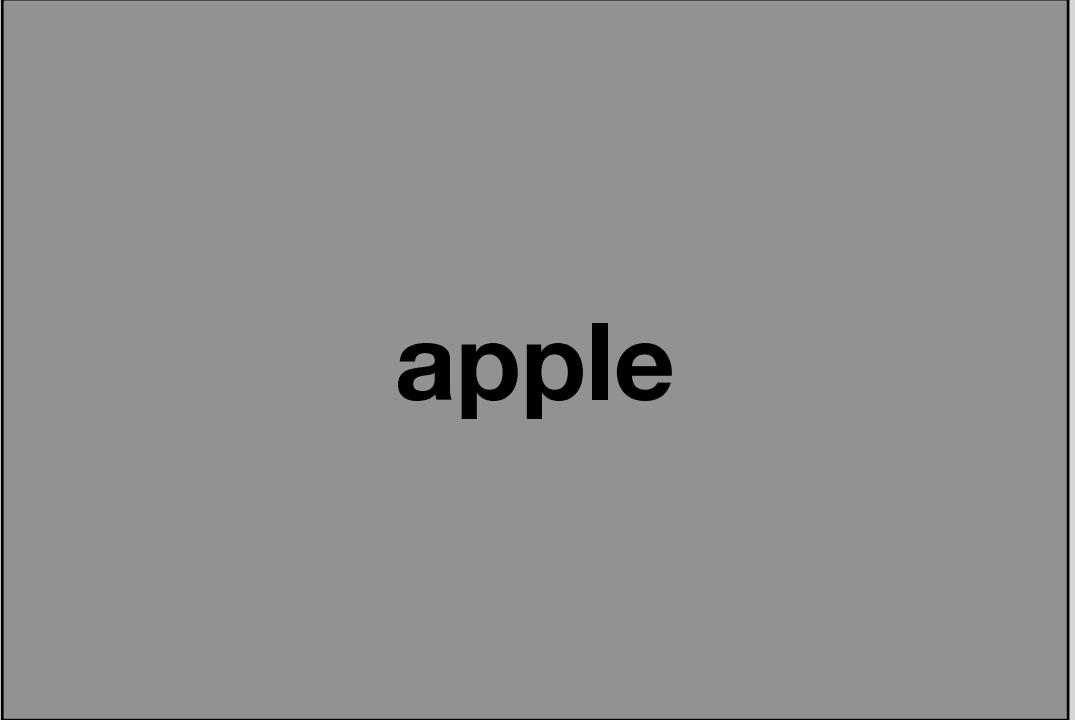
Hypothesis:

There will be a higher PM cost for maintaining AND monitoring when compared to just maintaining or just monitoring.



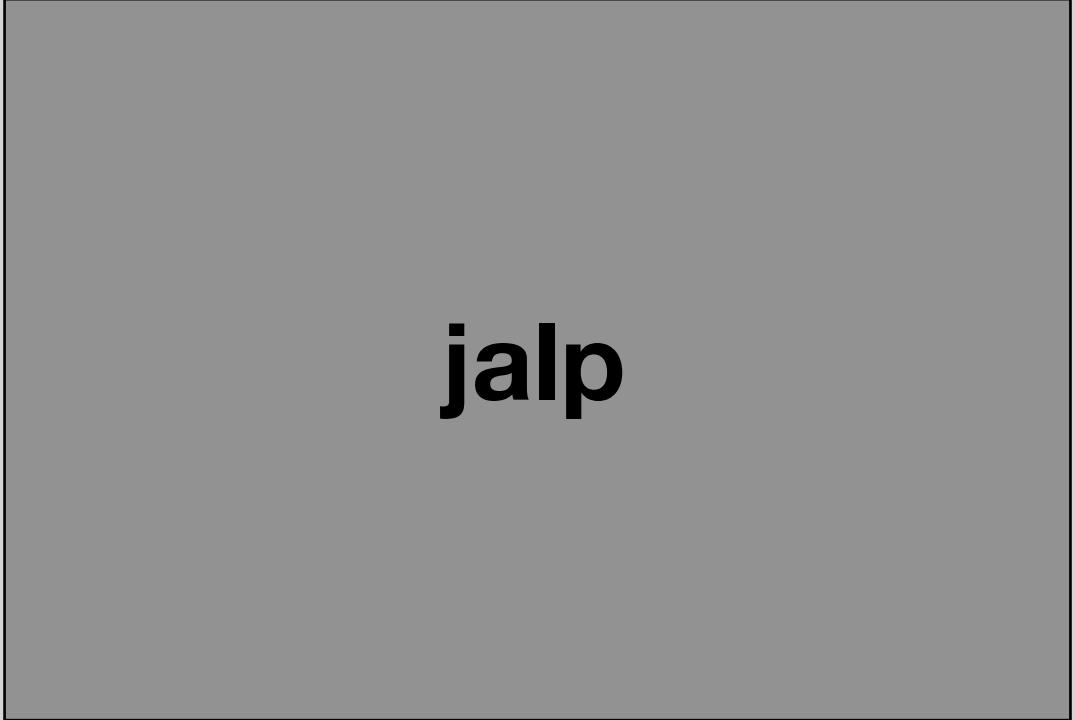
Task Design

probes (2 s each)



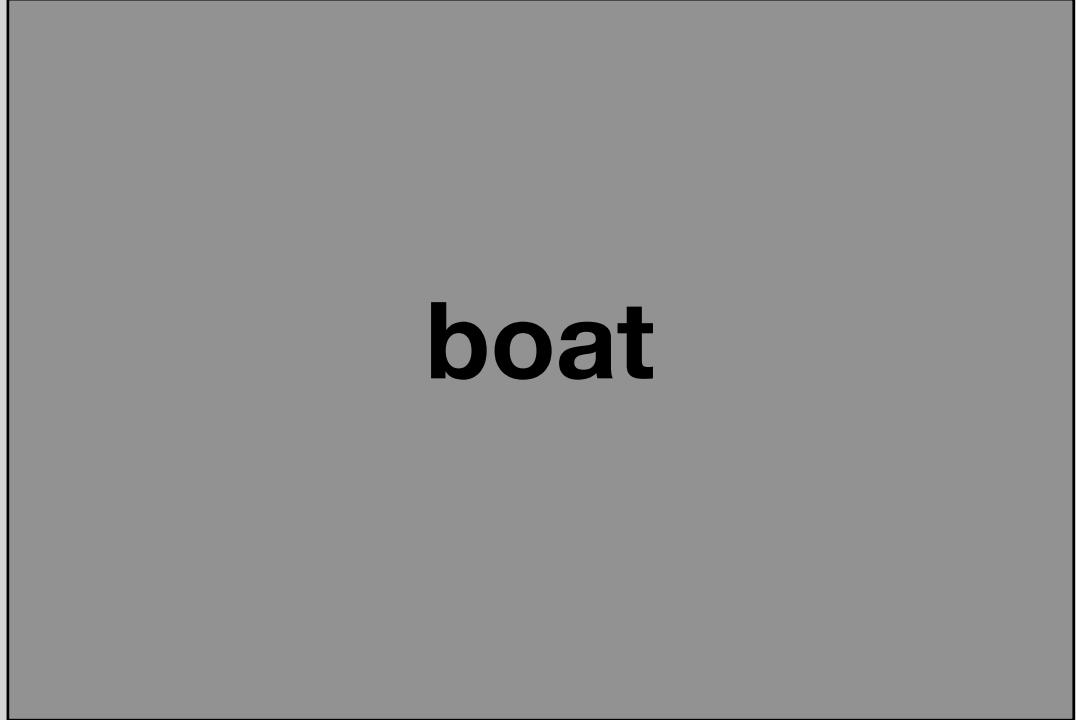
apple

“Word”



jalp

“Non-word”

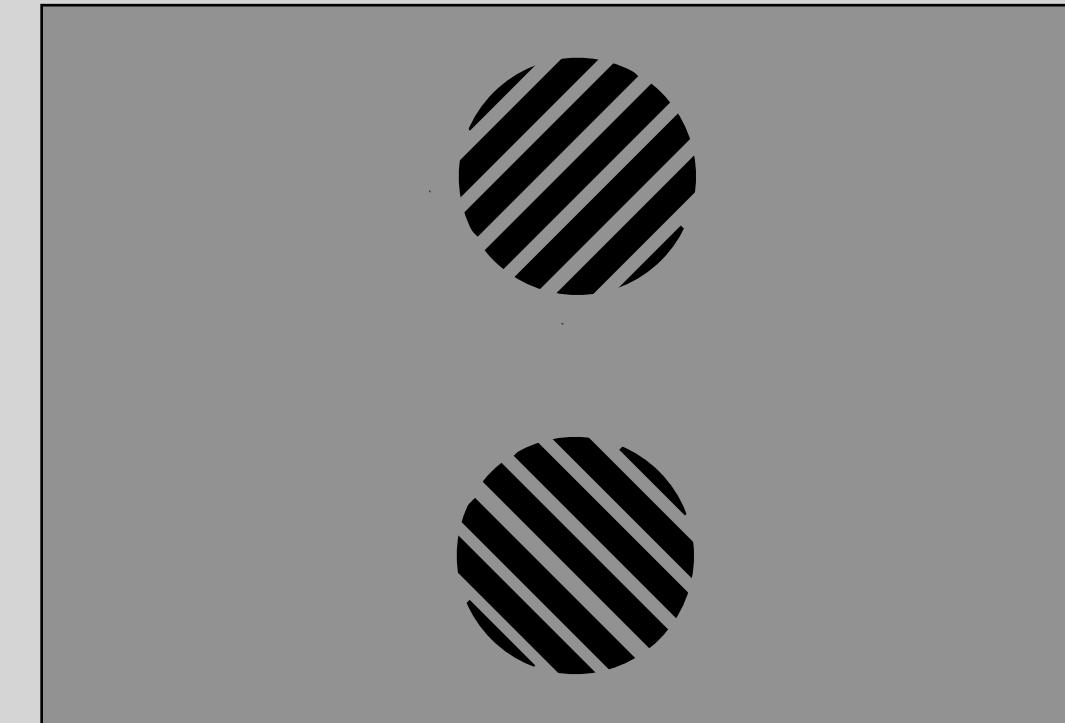
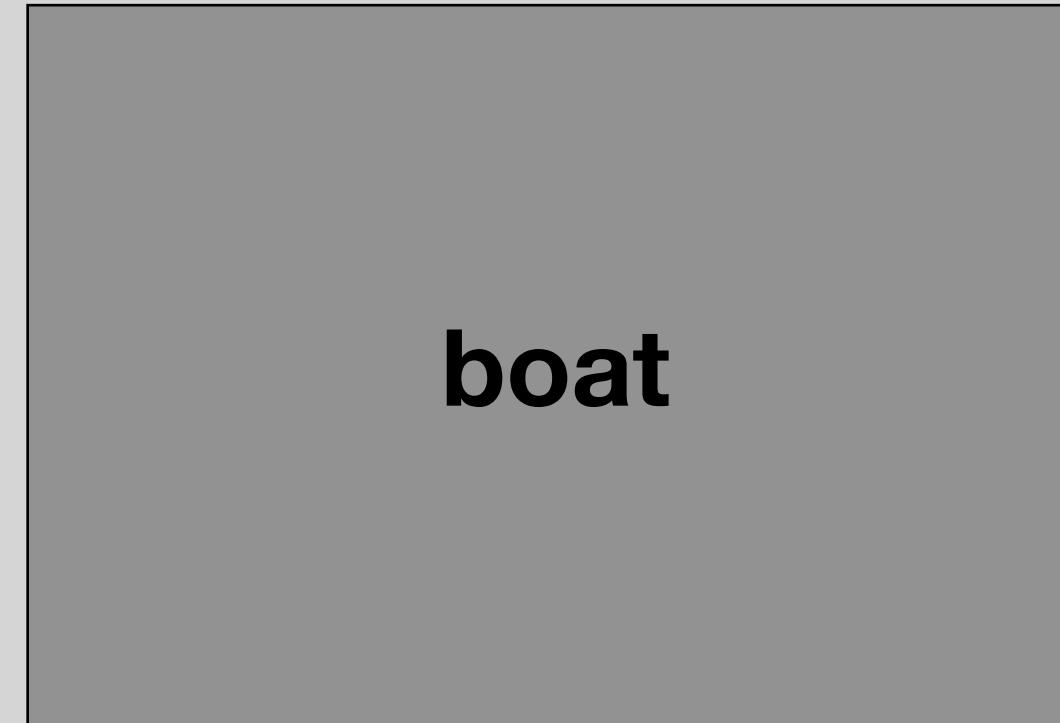
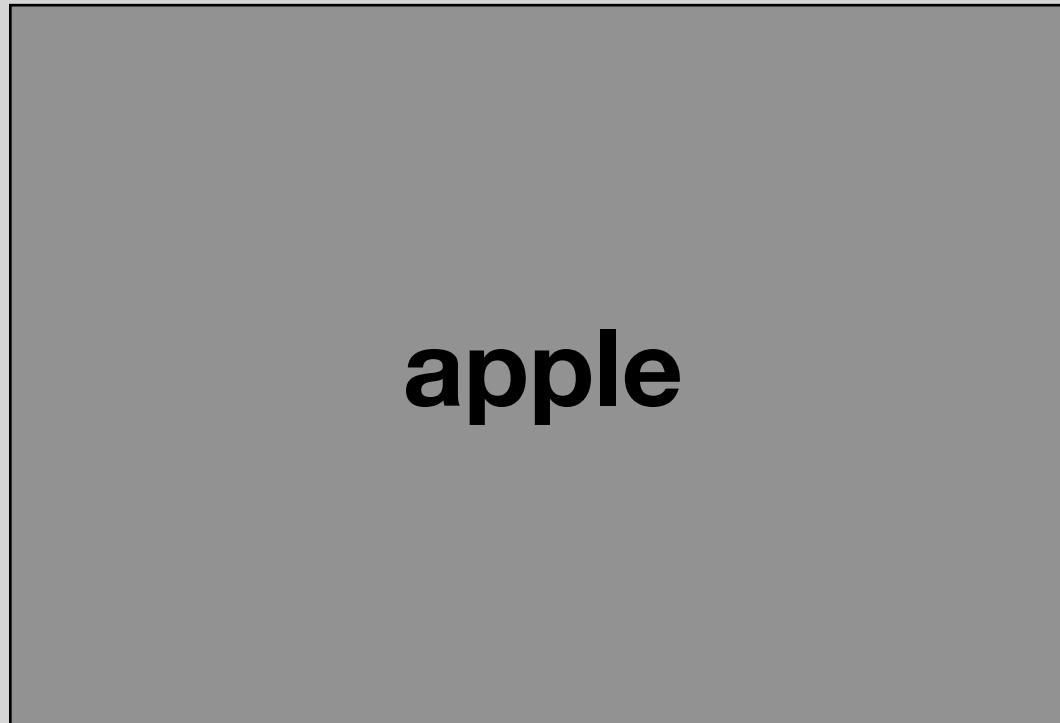
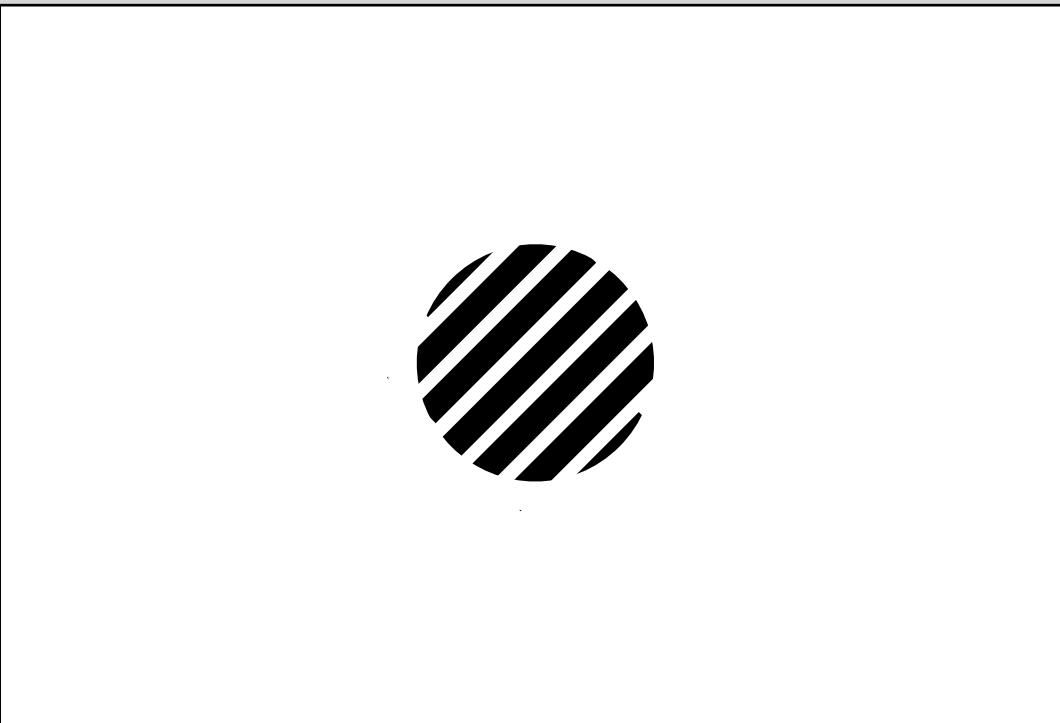


boat

“Word”

Baseline

target (2 s)



“Word”

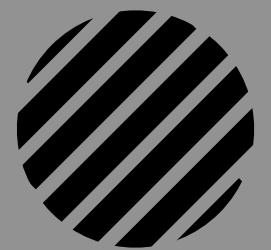
“Word”

“Target!”

Maintenance only



probes (2 s each)



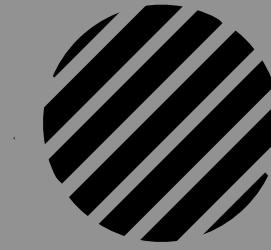
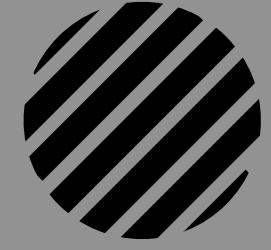
jalp



apple



boat



glorb



“Non-word”

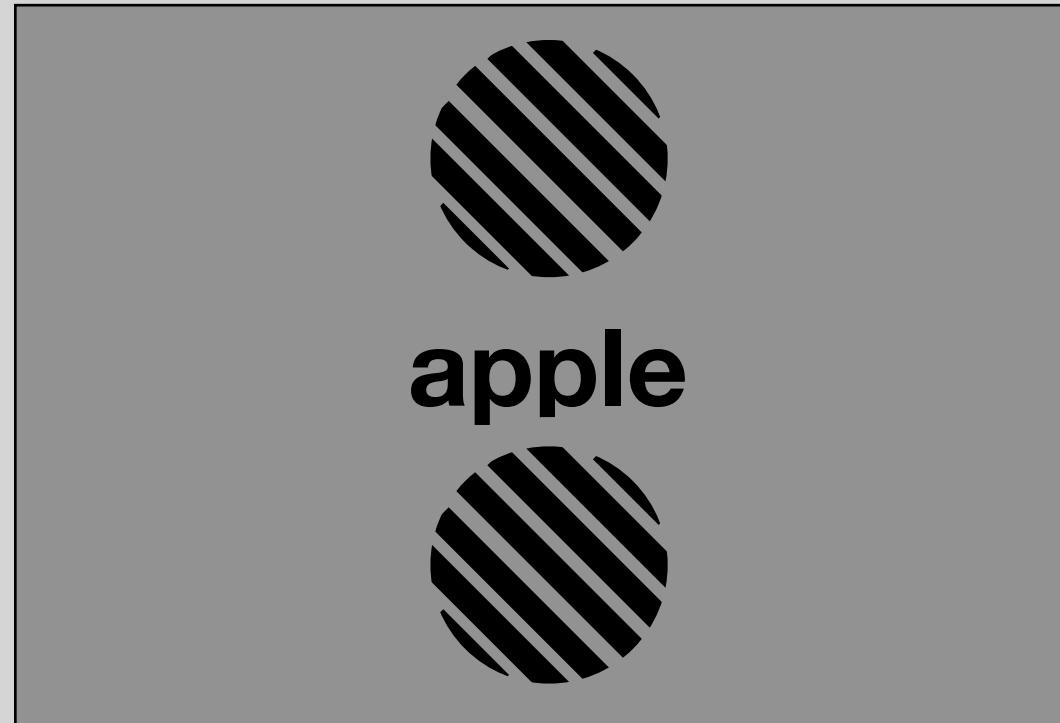
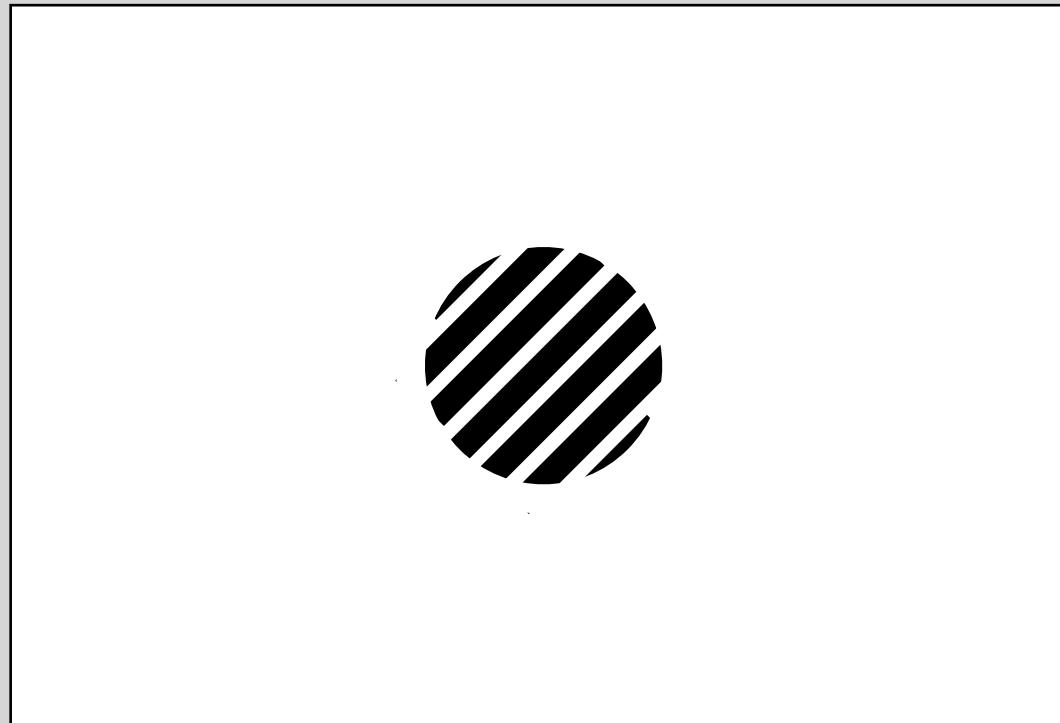
“Word”

“Word”

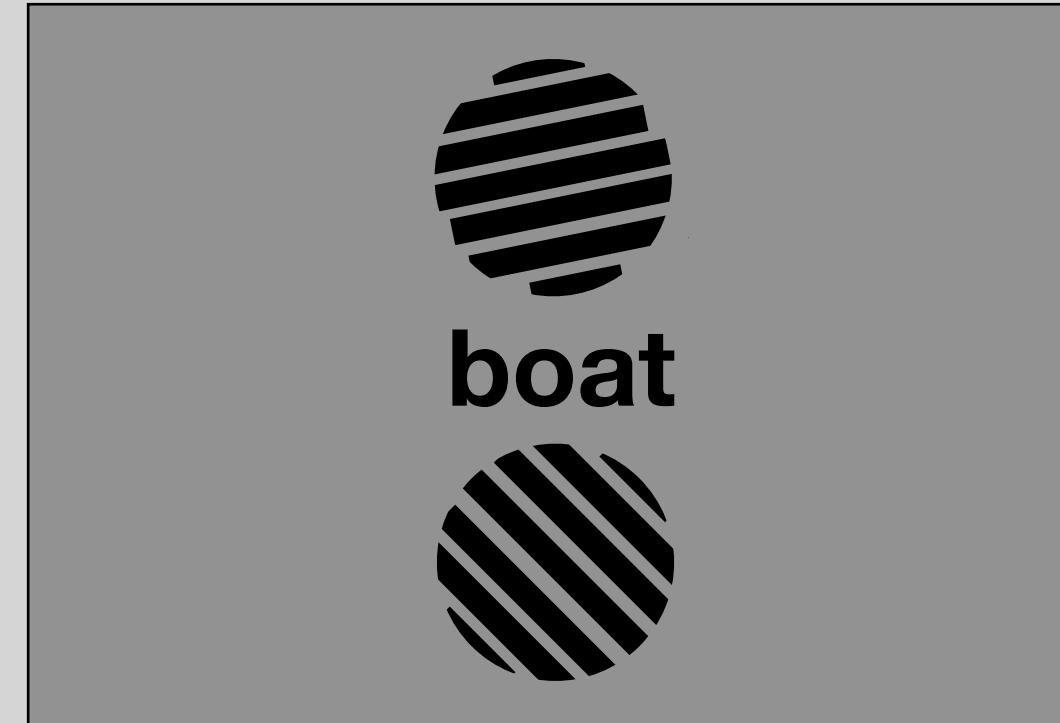
“Same!”

Monitoring only

target (2 s)



“Word”



“Word”



“Target!”

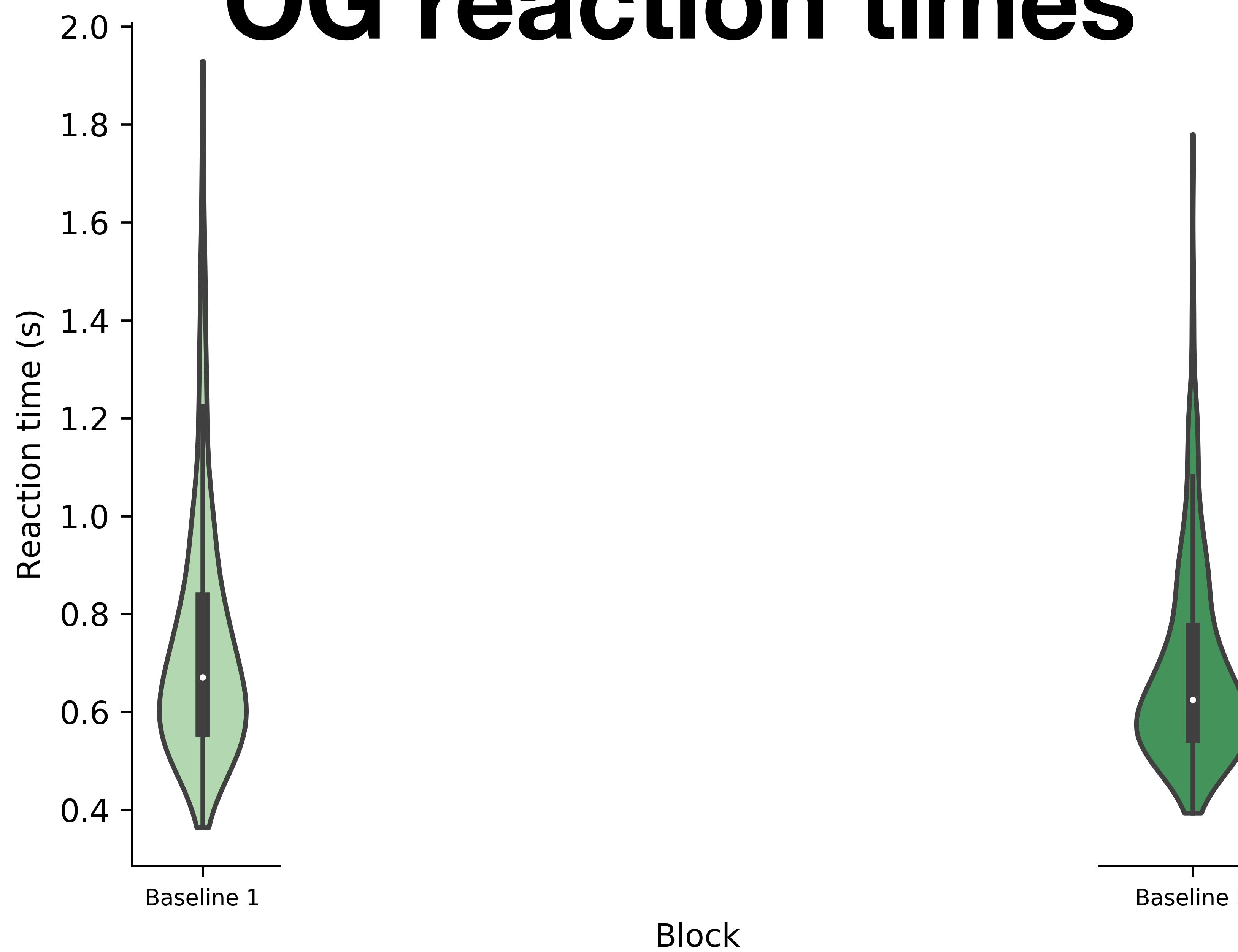
Maintenance AND monitoring



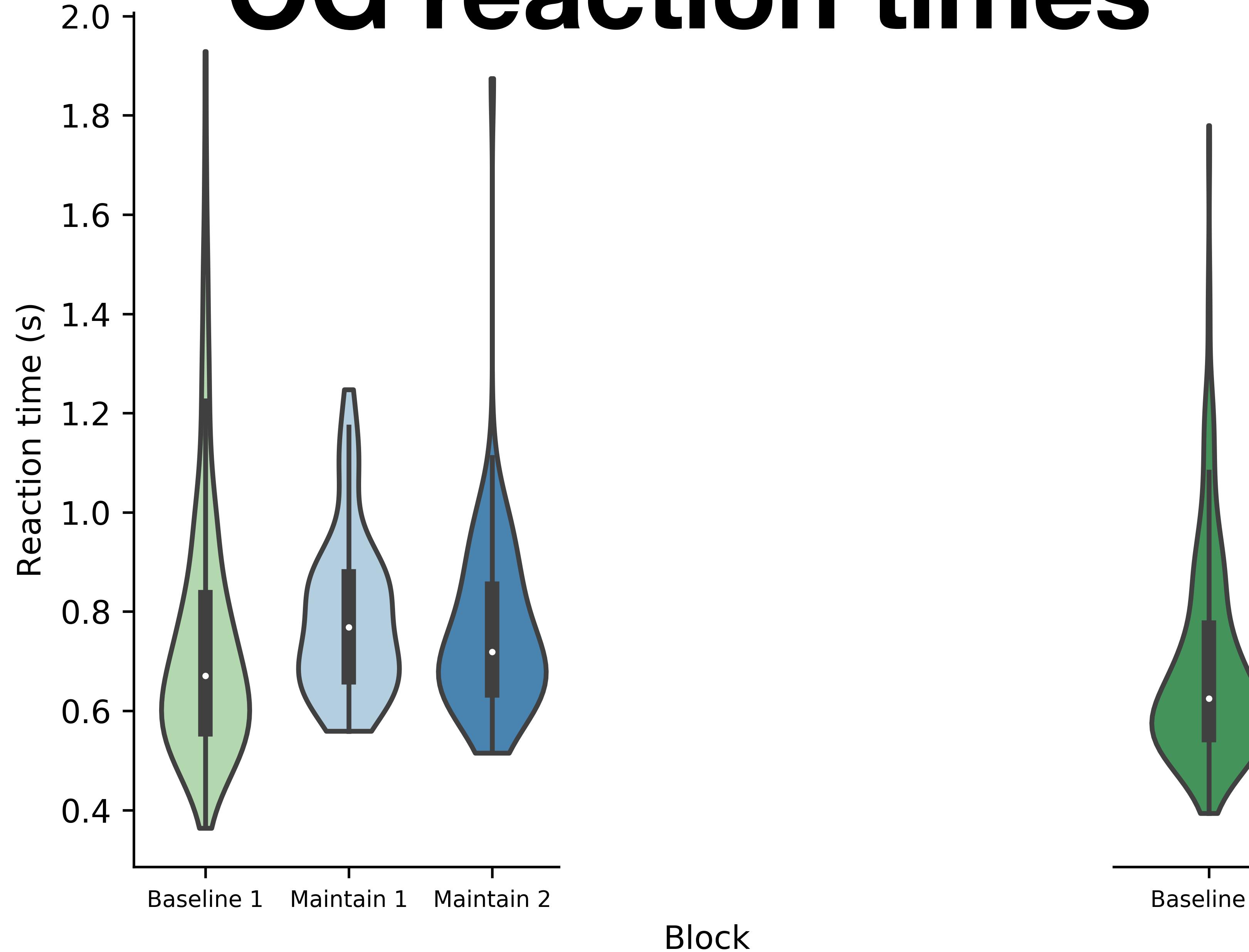


Pilot data

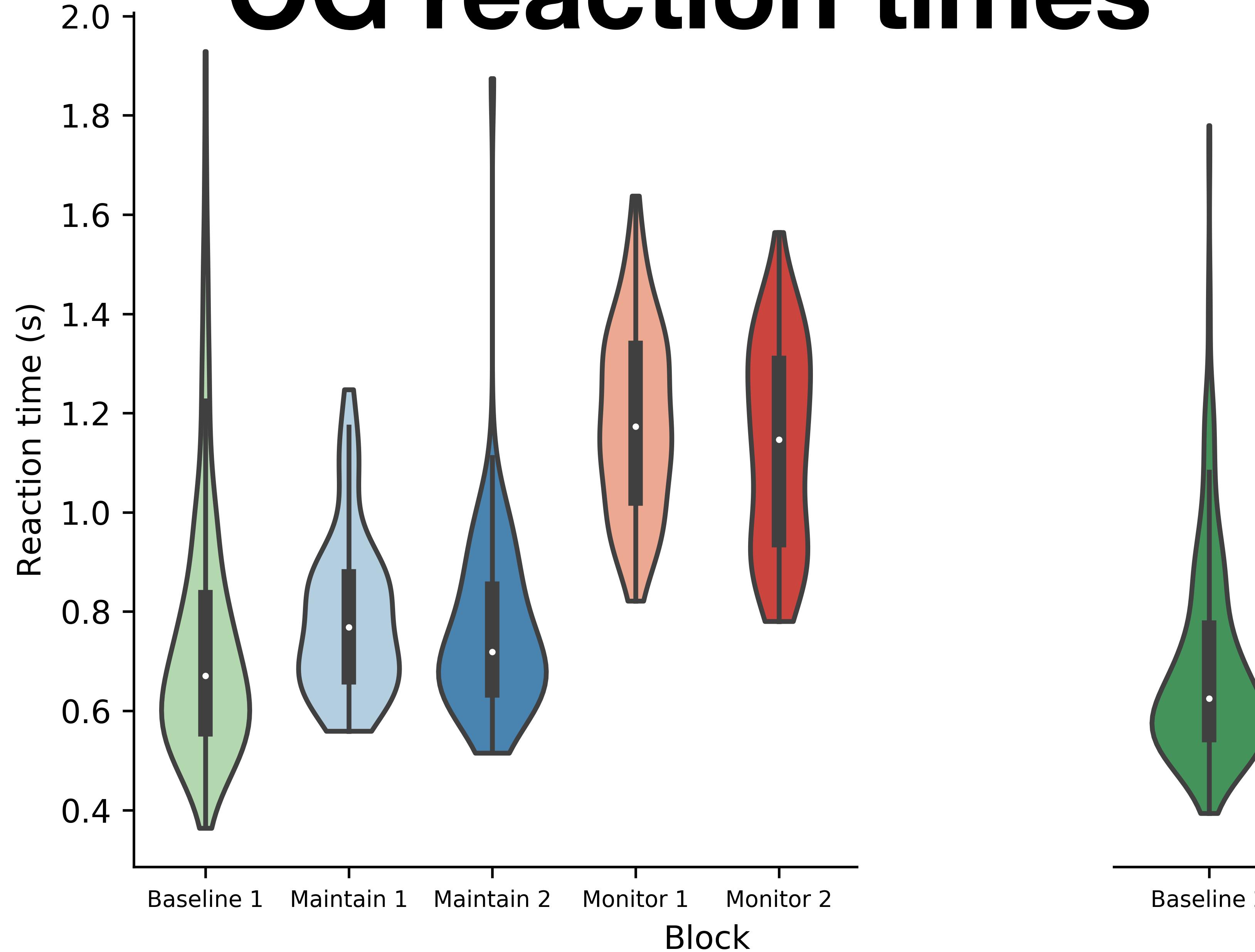
OG reaction times



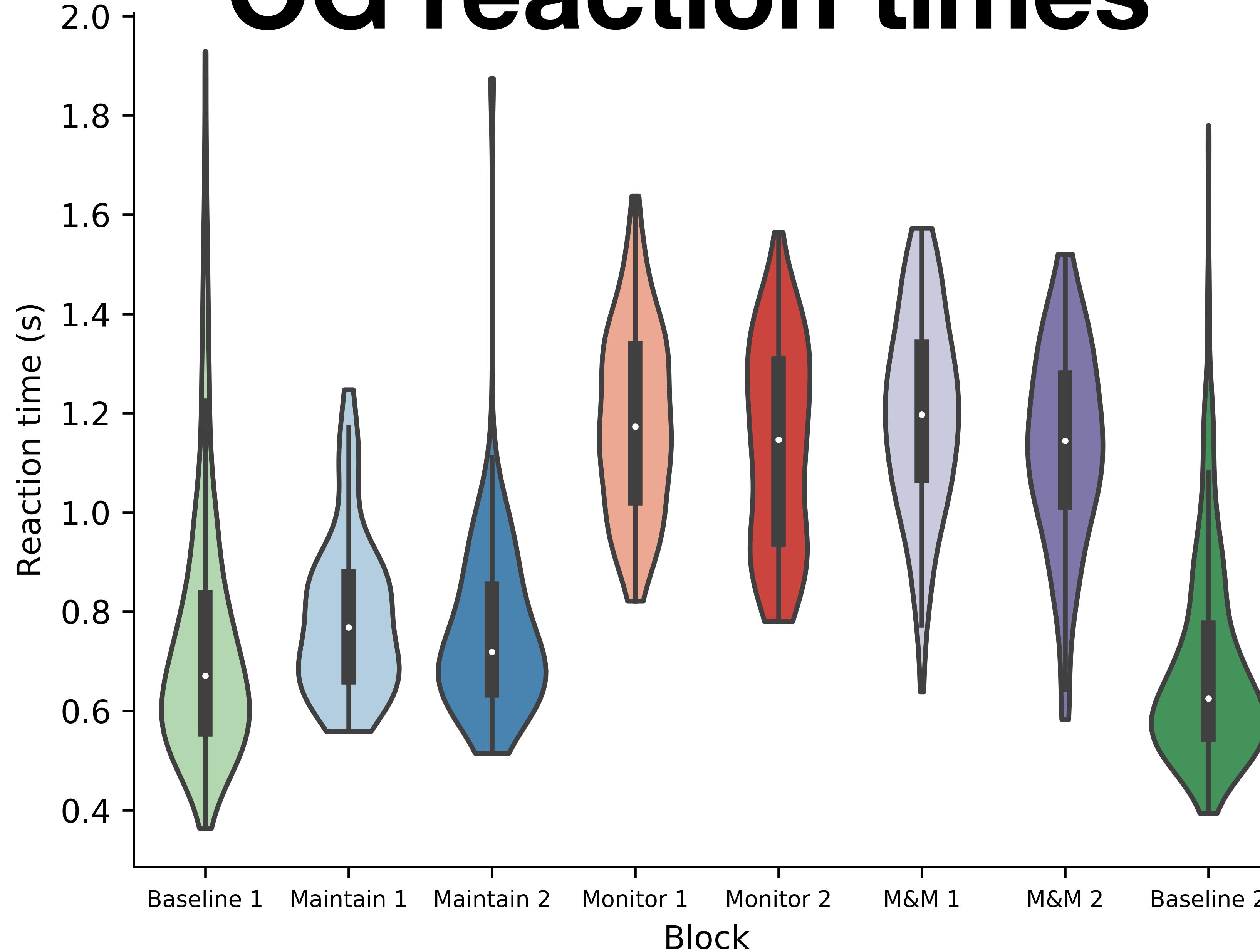
OG reaction times



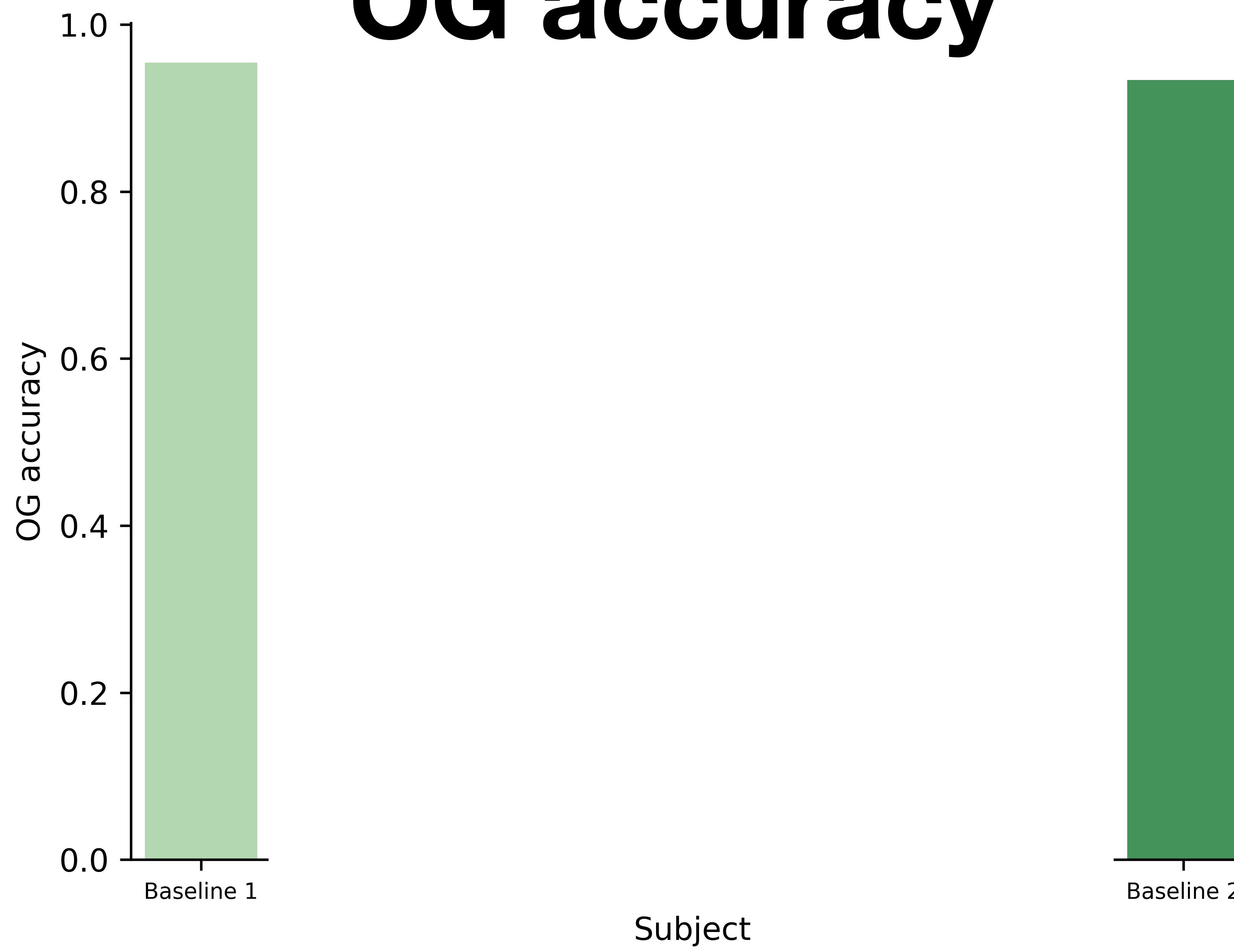
OG reaction times



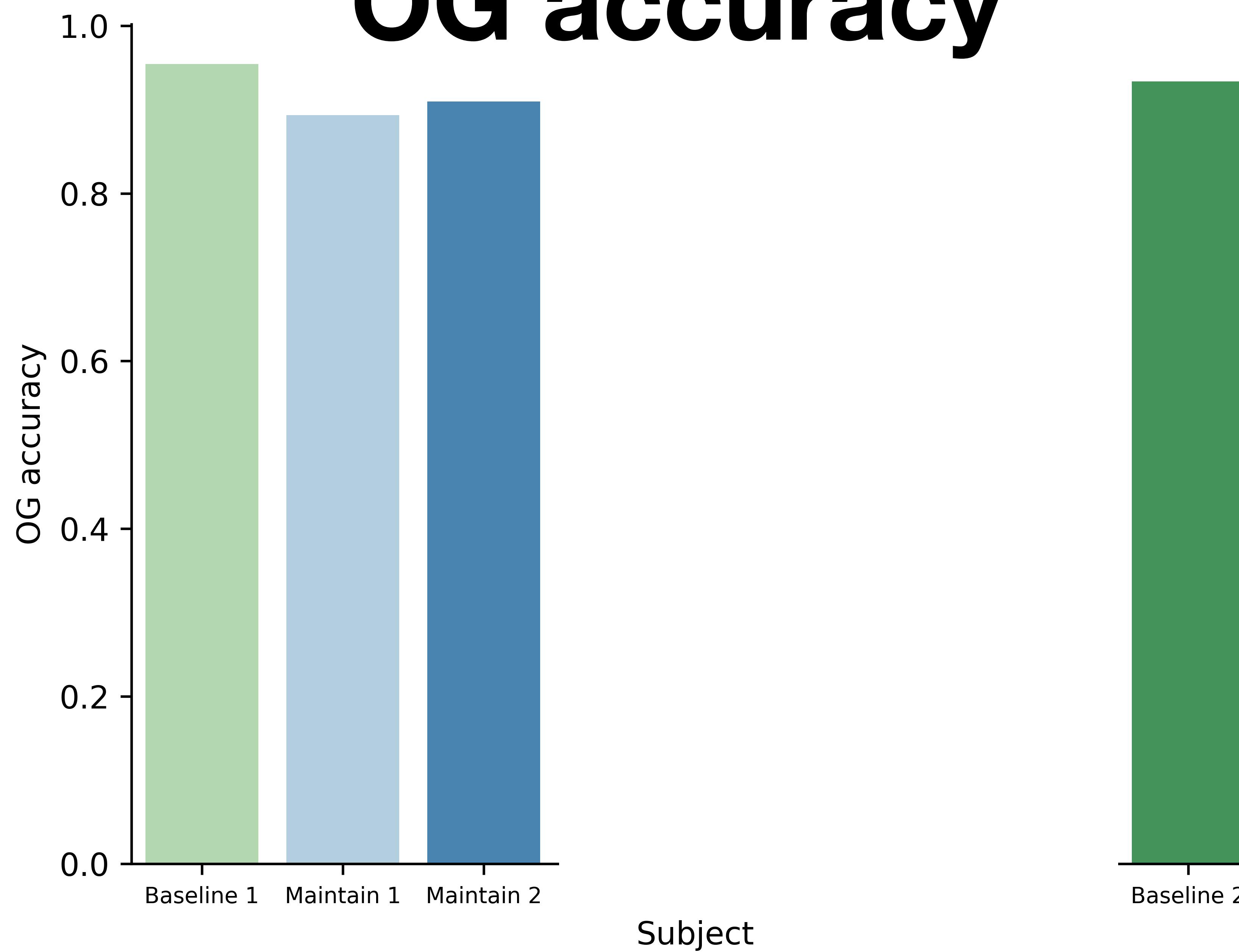
OG reaction times



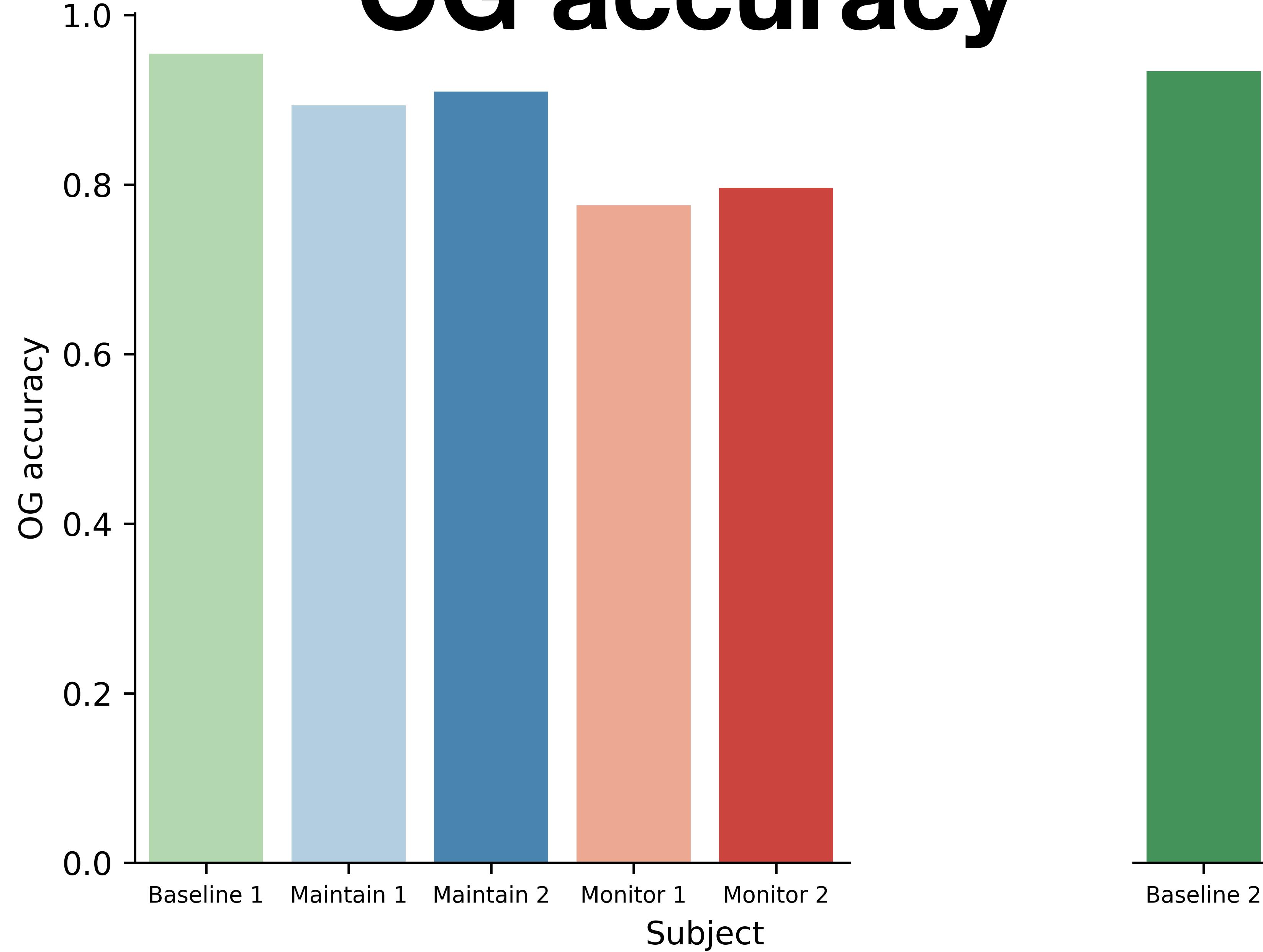
OG accuracy



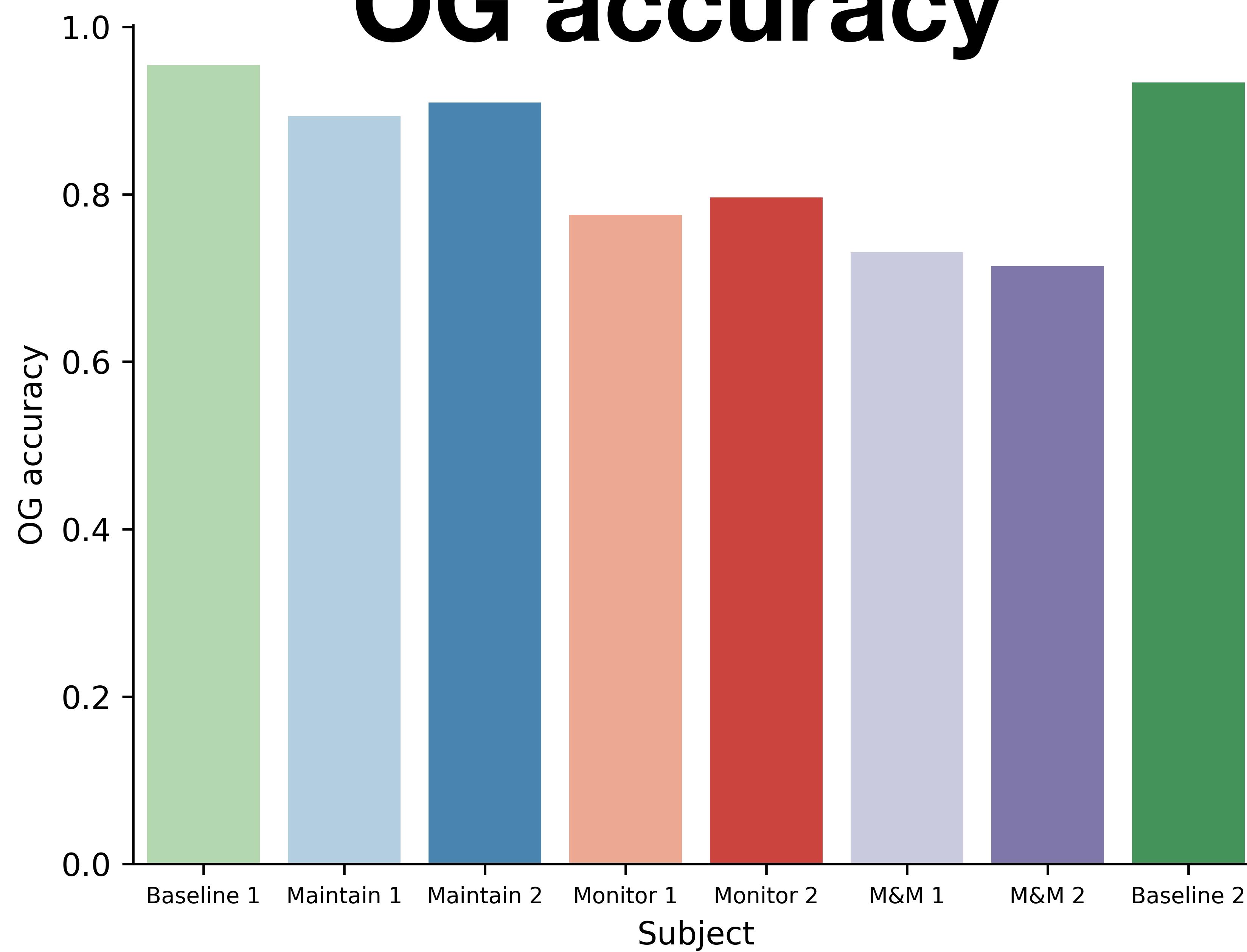
OG accuracy



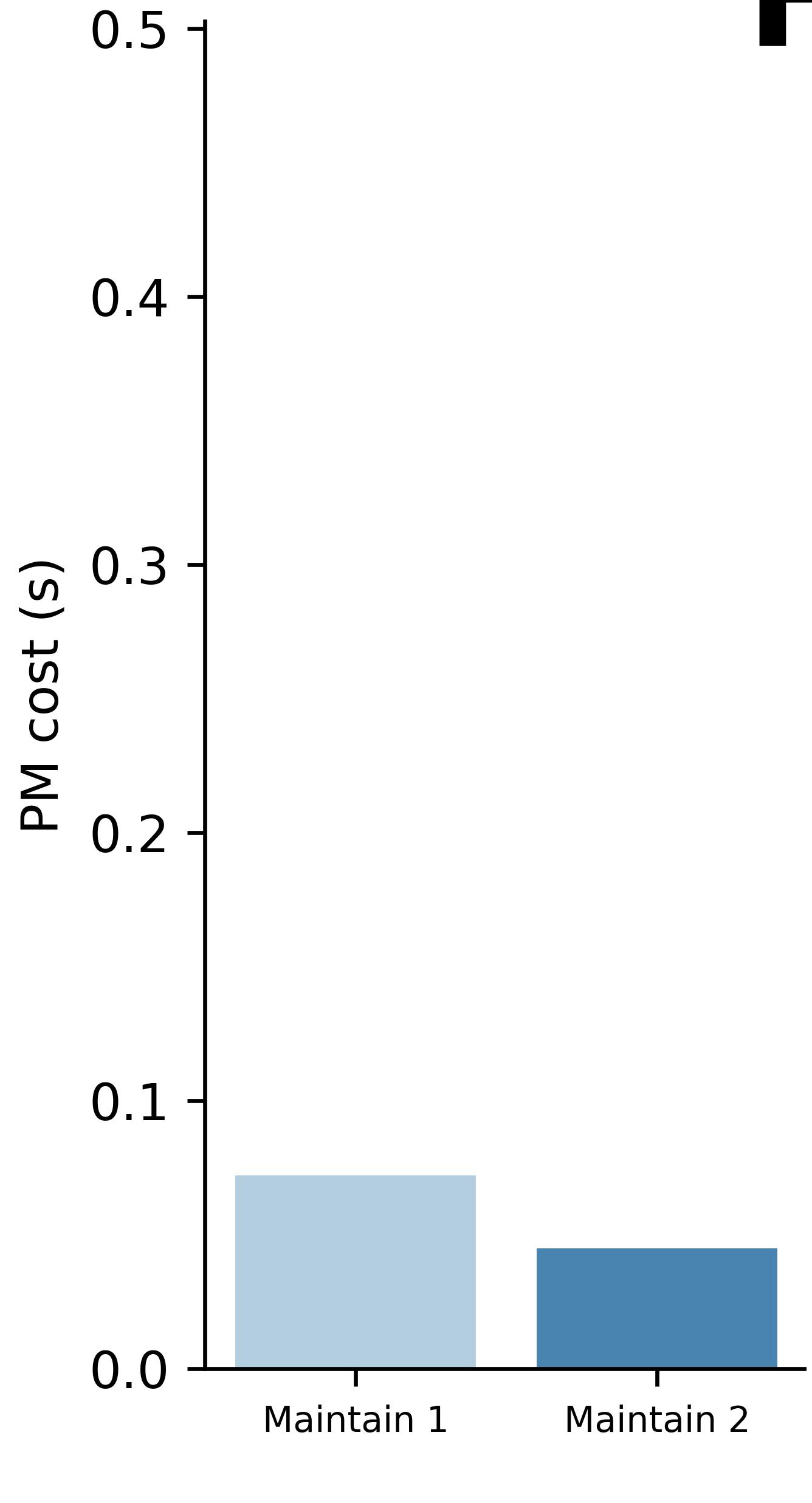
OG accuracy



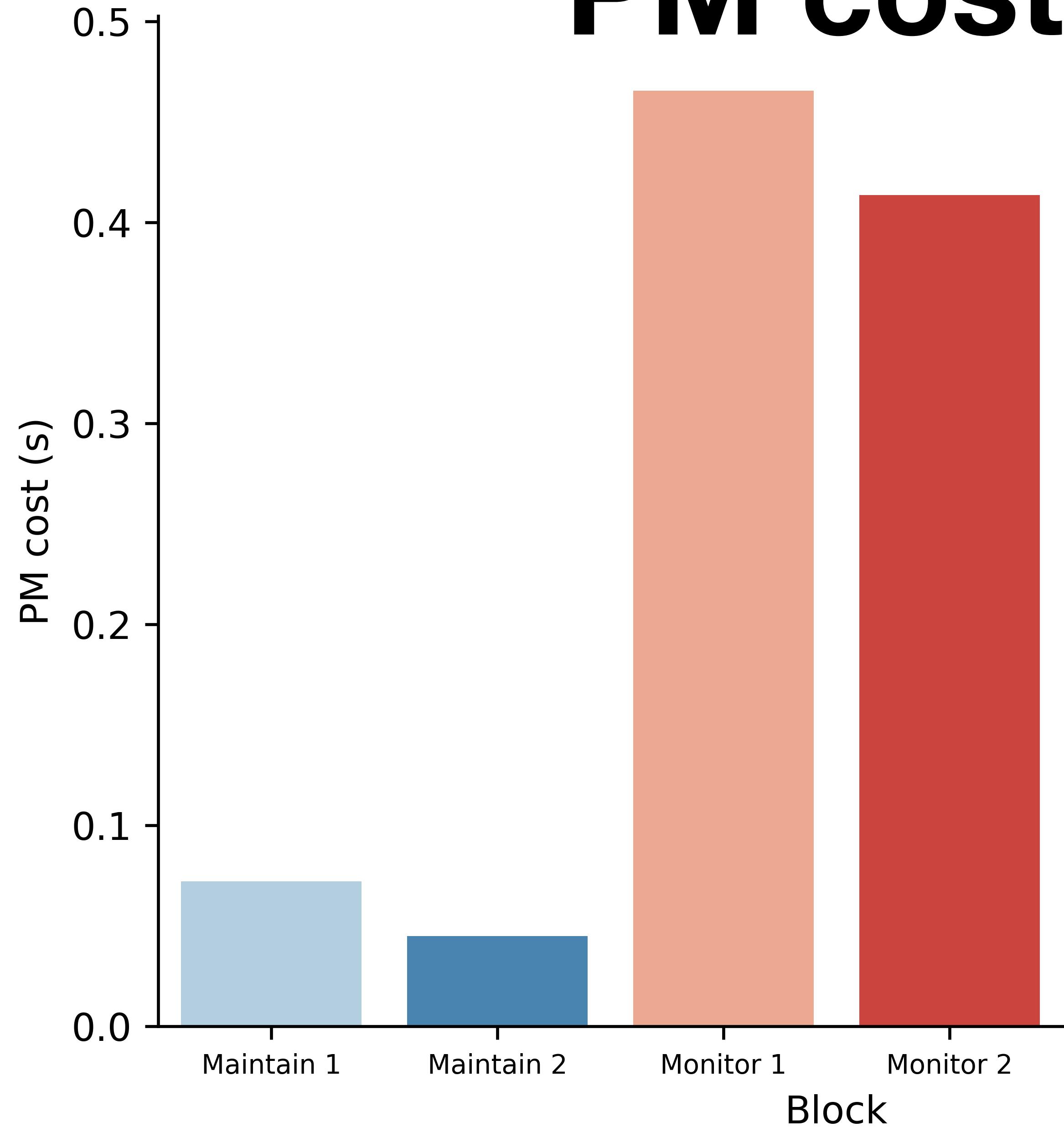
OG accuracy



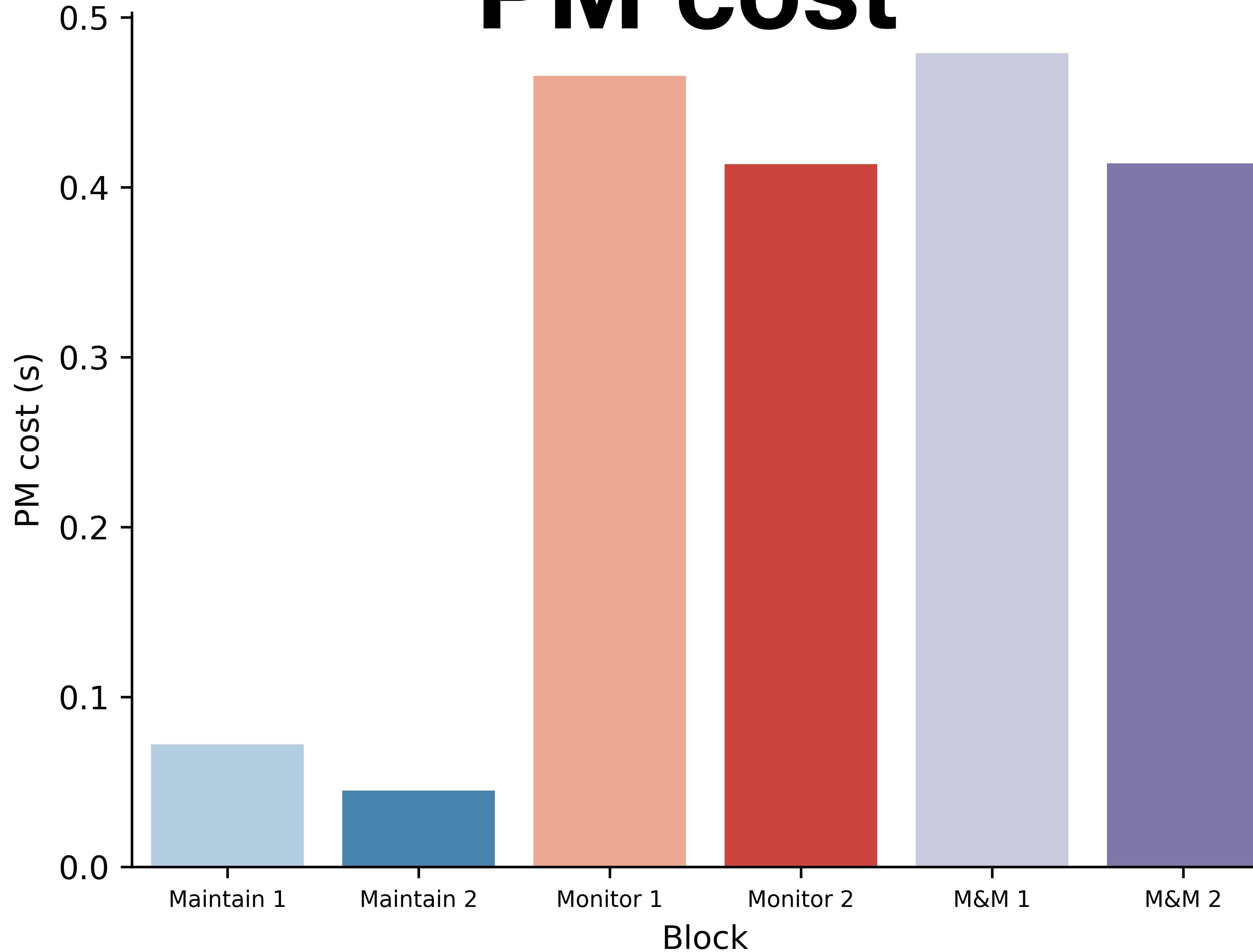
PM cost



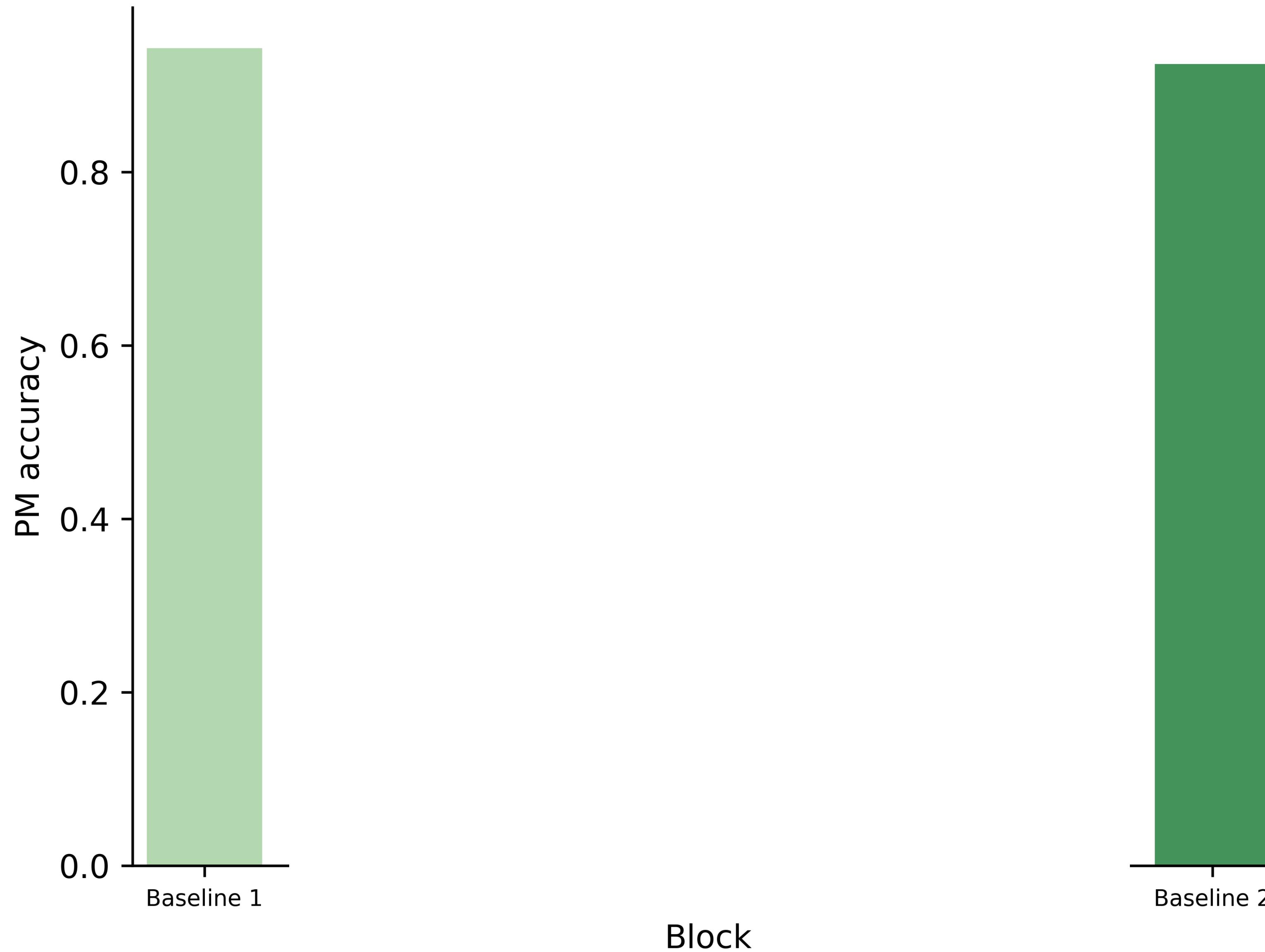
PM cost



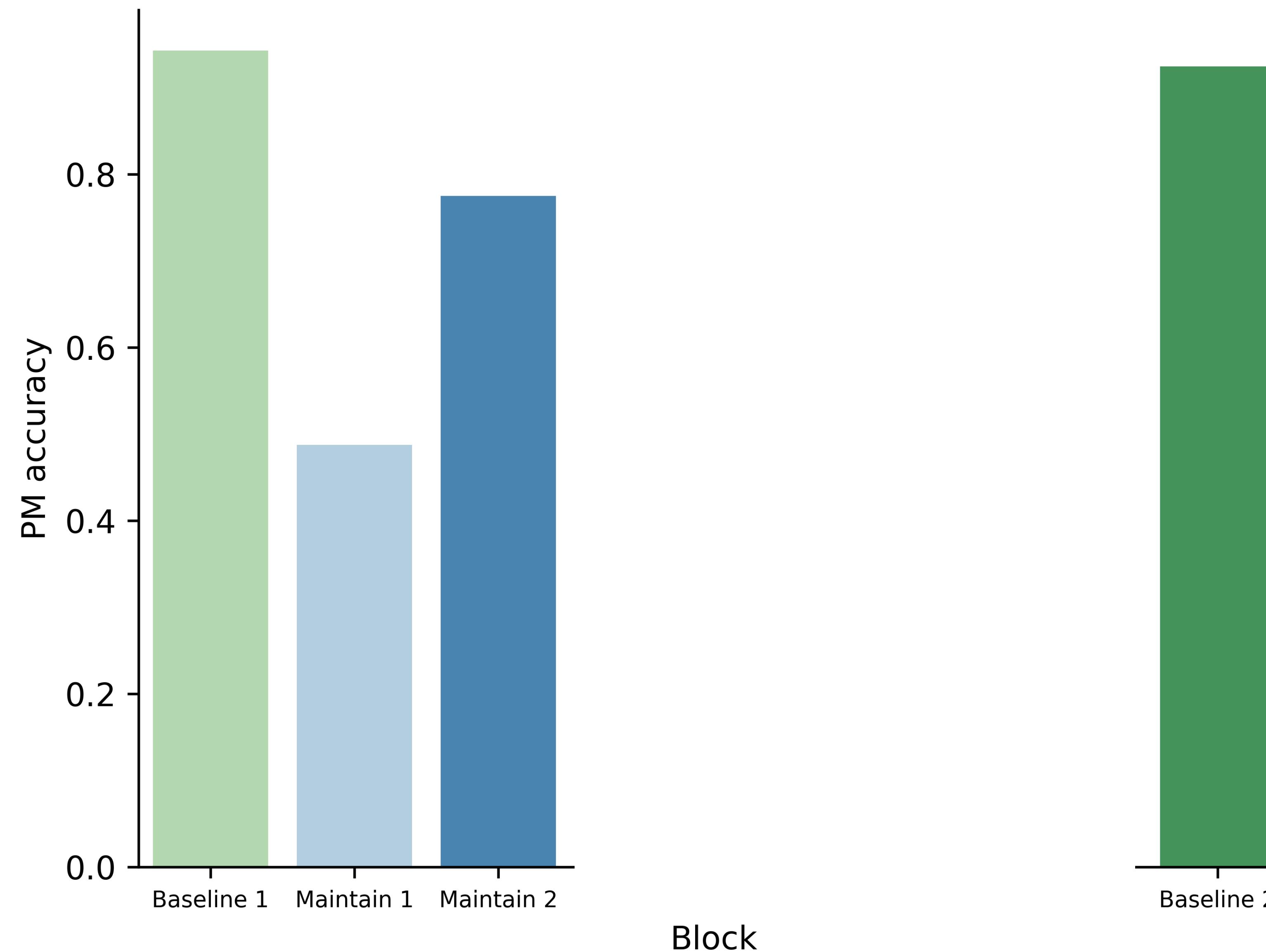
PM cost



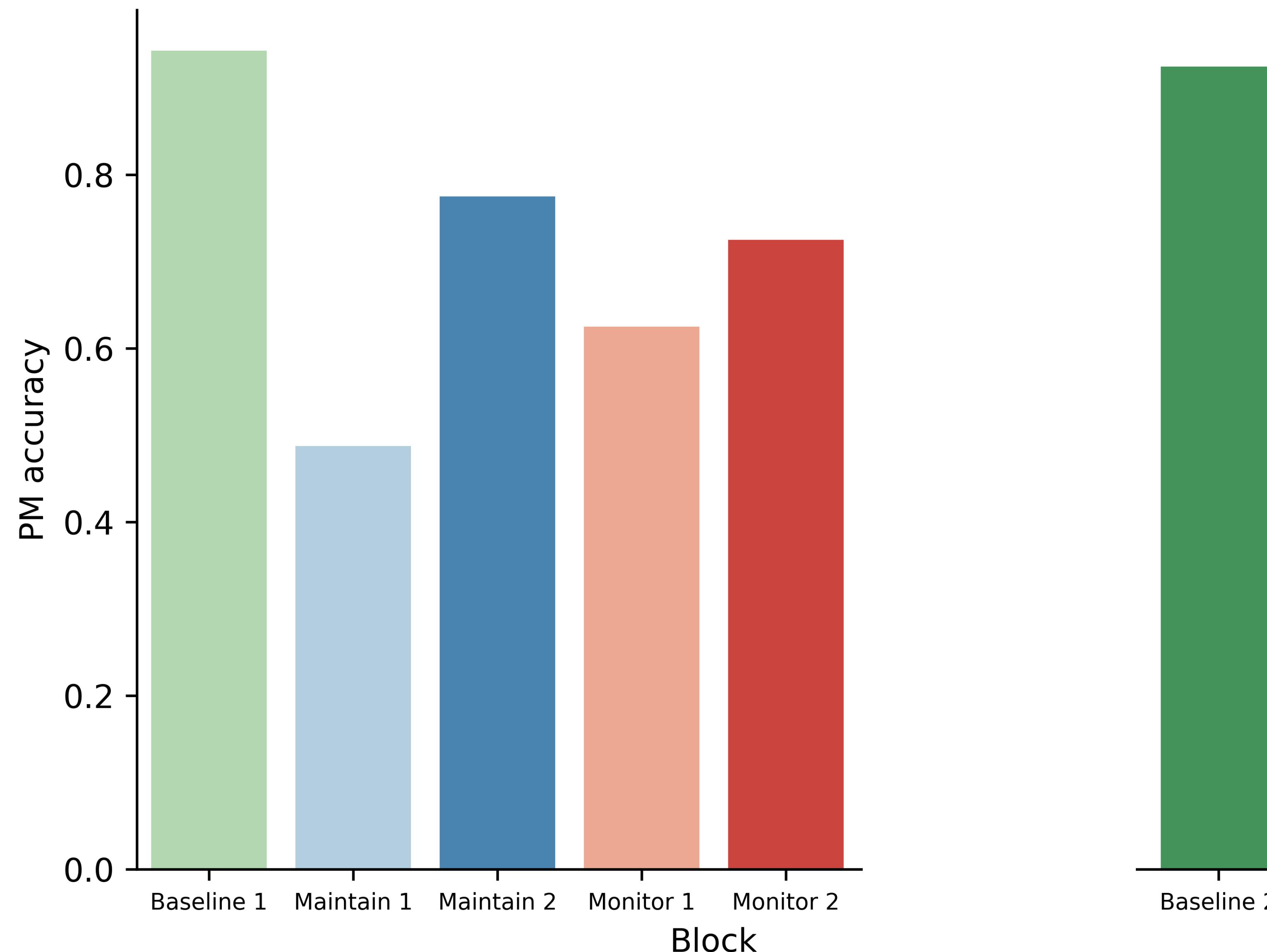
PM performance



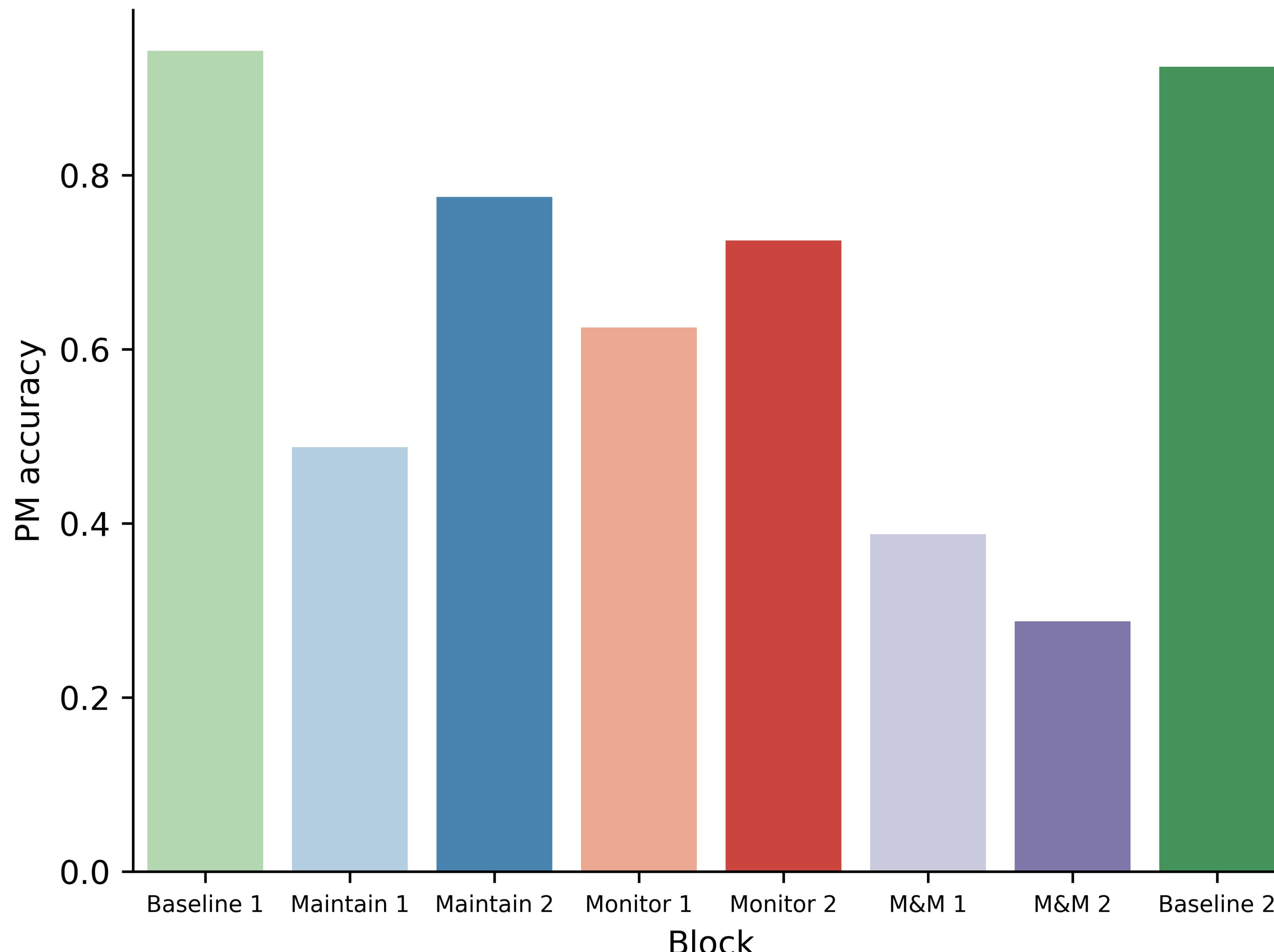
PM performance



PM performance



PM performance

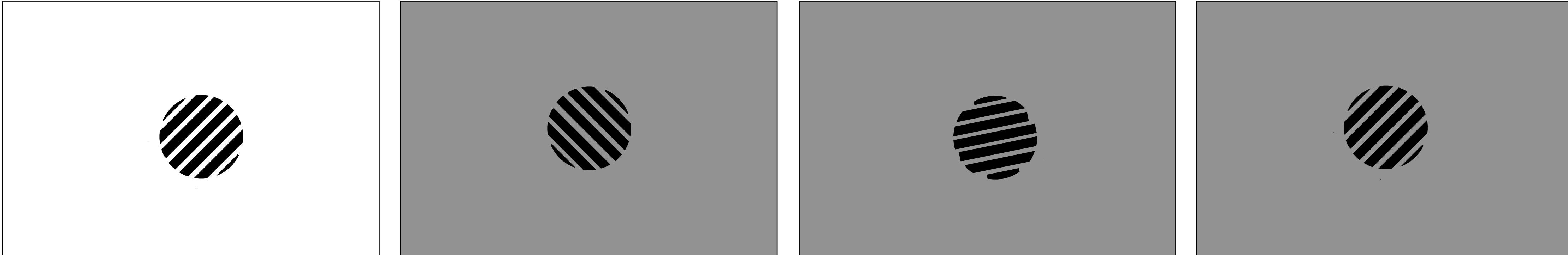




Future directions

Decoding using fMRI

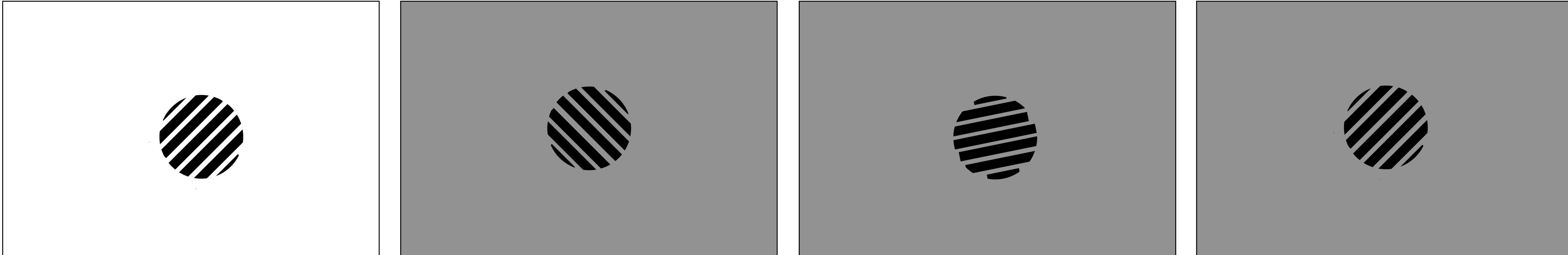
TARGET



“Target!”

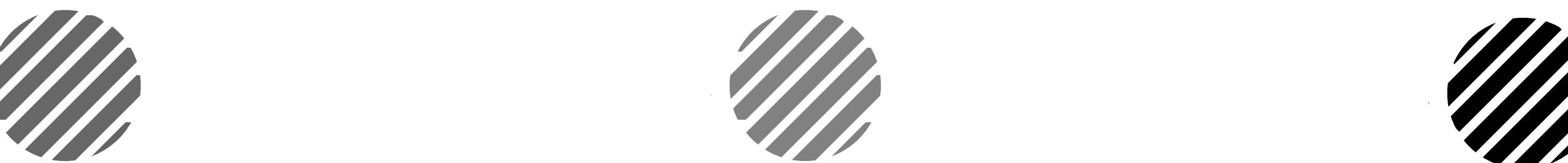
Decoding using fMRI

TARGET



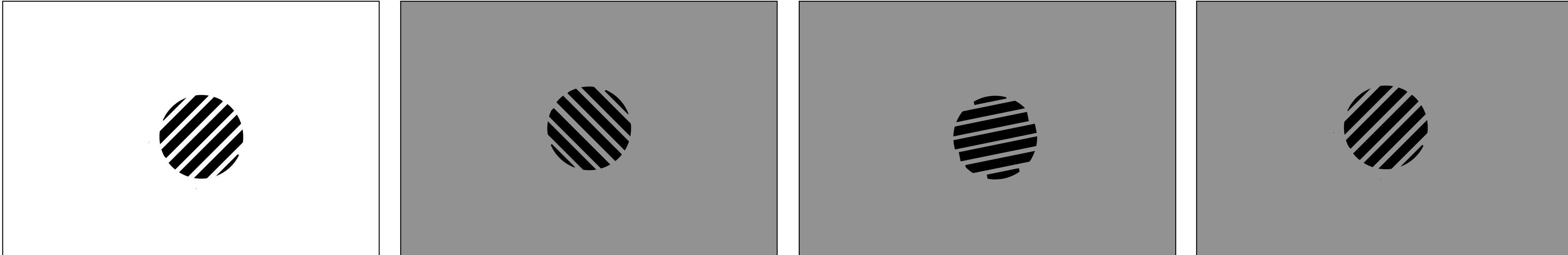
“Target!”

Maintain



Decoding using fMRI

TARGET



“Target!”

Maintain

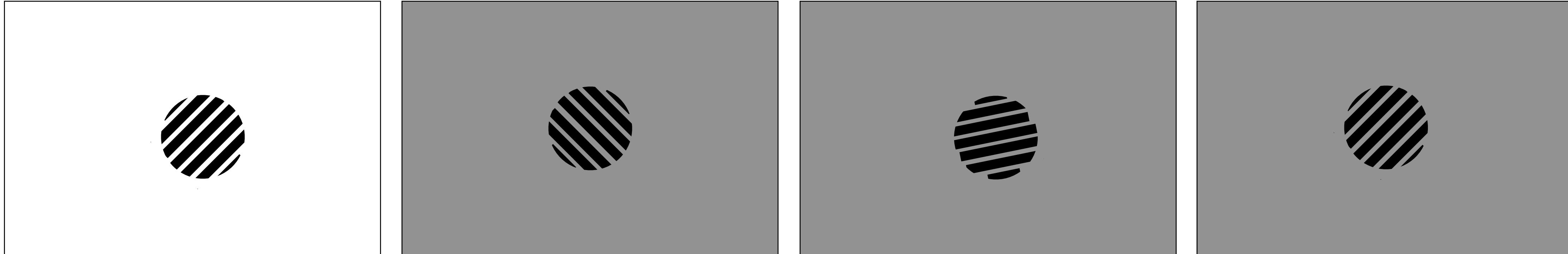


Monitor



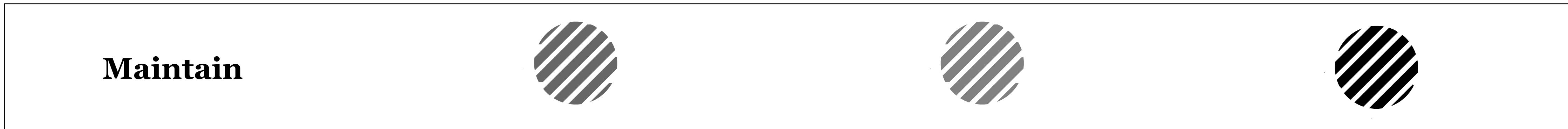
Decoding using fMRI

TARGET

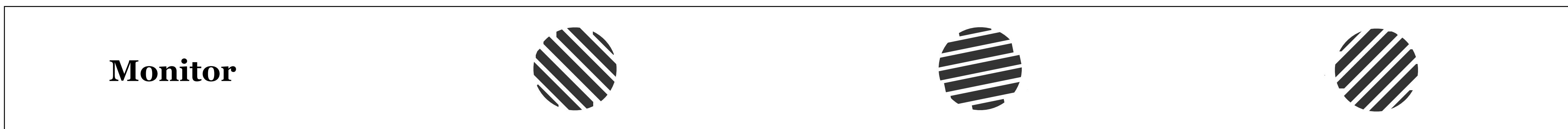


“Target!”

Maintain



Monitor



Maintain & Monitor



Other questions to ask

- Are practice effects present?
- How would a change in the minimum grating distance (in monitoring) affect results?
- Is there a significant difference in RT between block types?
- How is OG performance affected by PM performance? Is this different for maintaining versus monitoring?
- Are maintenance and monitoring two completely separate processes or are they ever additive?
- Could shifts in visual attention between objects in external space or internal attention (Esterman et al., 2009) explain possible differences in PM cost?
- Big question going forward:
 - How can we see the PM cost through the RT difference?



**That's it for now,
thank you!**