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INTRODUCTION

- **More than half** of Americans report trouble falling asleep, staying asleep, or both. With increasing cannabis legalization, people may use it to improve sleep.
- Detrimental effects of **pain** on sleep and **racial disparities** in sleep are established. However, findings on how **cannabis** affects objectively measured sleep are limited and mixed.
- **Aim:** To examine the associations between **past-3-month cannabis use** and concurrent **Fitbit sleep** measurements, controlling for pain and race among participants in the NIH *All of Us* (AoU) Research Program.

Methods

Sample and Measures

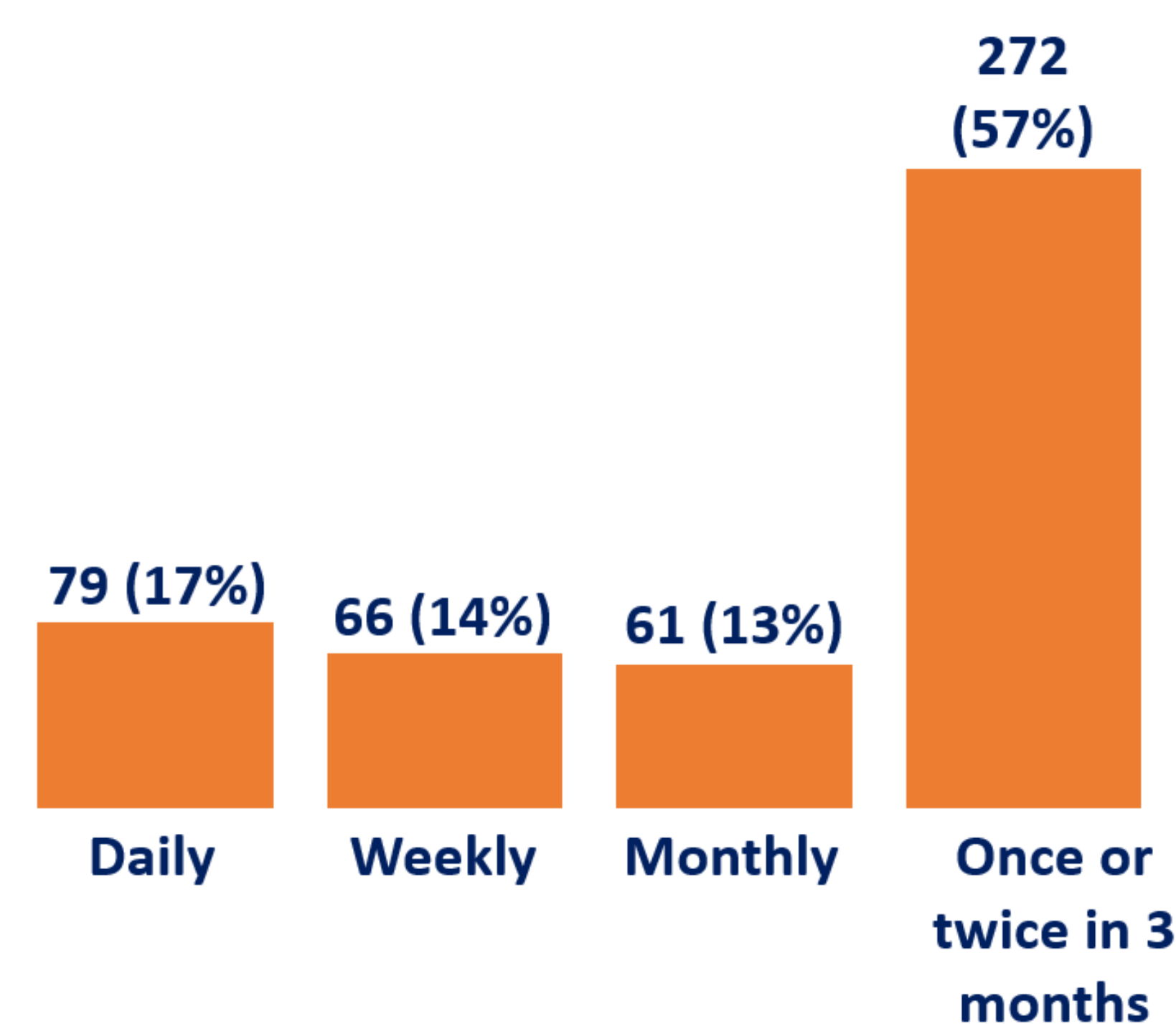
- Adult participants ($n = 2359$) with Fitbit sleep data who answered past-3-month cannabis use and pain questions and reported not using any other controlled substances in the past 3 months, AoU registered tier dataset v7. $M (SD)$ age 49.81 (15.92), 70.6% female, 87% White; 65% had income > \$75,000
- **Pain intensity:** In the past 7 days, how would you rate your pain on average? 0 - no pain; 10 - worst pain imaginable.
- **Cannabis use:** In the past three months, how often have you used marijuana (cannabis, pot, grass, hash, etc.)? Recoded into 0 - no use; 1 - any use
- **Averaged Fitbit nightly sleep** over 3 months before the date of reporting past 3-month cannabis use:
 - (1) Total minutes asleep
 - (2) Total sleep latency (time in bed - time asleep)*
 *Includes sleep onset latency & awake time during night

Data Analyses

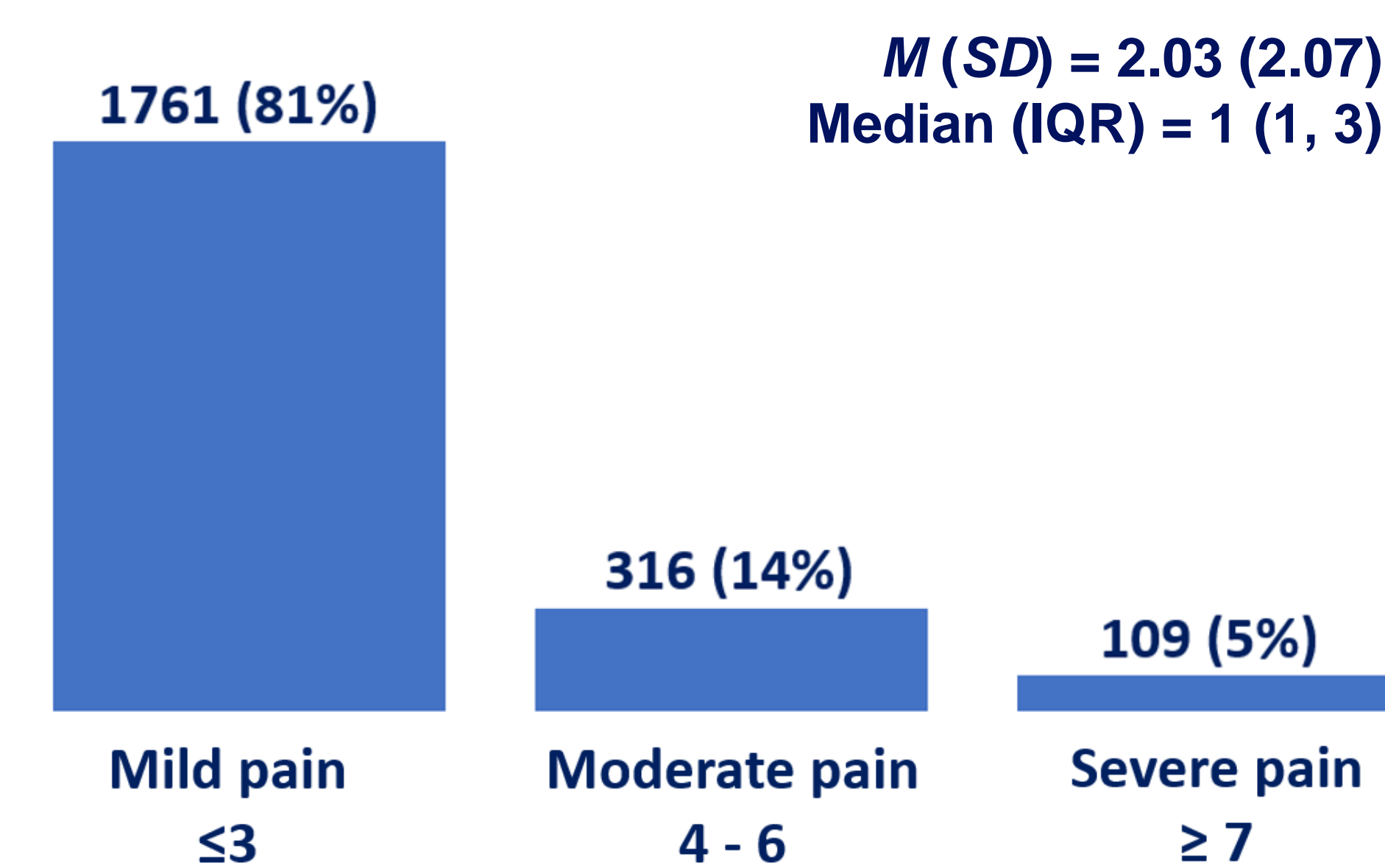
- Separate multivariate regression analyses with the *lavaan* package in R, using maximum likelihood estimation with robust standard errors (MLR).

RESULTS

478 participants (20%) reported past-3-month **cannabis use**:



1645 participants (75%) reported any **pain (>0)**:



Participants who used **cannabis** compared to **non-users** disproportionately had **lower income**, **higher pain intensity**, were **younger**, and **Black/ African American**.

	$M (SD)$	Median (IQR)
Number of Fitbit sleep-days over 3 months	64.05 (28.01)	76 (43, 88)
Total time asleep, hours	6.33 (1.36)	6.62 (5.90, 7.16)
Sleep latency, minutes	50.35 (23.54)	51.59 (40.67, 60.07)

Note: IQR - interquartile range, the spread of values in the middle 50% of the sample

Multivariate regression results for Fitbit sleep outcomes (Minutes)				
	Total Sleep Estimate (SE)	P (FDR-adjusted p)	Sleep Latency Estimate (SE)	P (FDR-adjusted p)
Intercept	434.62 (11.78)	0.000 (0.000)	48.77 (2.85)	0.000 (0.000)
Past 3-mo cannabis use	6.42 (4.87)	0.188 (0.347)	2.90 (1.56)	0.063 (0.182)
Pain intensity	-1.38 (0.90)	0.127 (0.277)	0.34 (0.40)	0.388 (0.517)

Note: Only focal variables shown; the model included race, sex, age, alcohol use. P-values adjusted for false discovery rate (FDR) using the Benjamini-Hochberg procedure

DISCUSSION

Results

- **Cannabis use** had **very small**, positive bivariate correlations with total sleep time: $r_s = 0.07$, $p < 0.001$ and with sleep latency: $r_s = 0.05$, $p < 0.05$.
- Participants who used cannabis compared to non-users had 2.9 minutes **longer sleep latency**, all other variables held constant. The difference in latency was approaching statistical significance ($p < .10$); the difference in total sleep was not.
- Participants who used cannabis compared to non-users and 6.42 minutes **longer sleep duration**, all other variables held constant. However, this difference was not statistically significant.
- On average, **Black/African American** participants had 42.94 minutes and **Latino** participants - 21.50 minutes **shorter sleep** than White participants, all other variables held constant.

Conclusions

- **Cannabis use** may be very weakly associated with **longer sleep latency and longer sleep duration**, however, these associations do not remain after controlling for pain and race.
- The **clinical significance** of the 2.90 minutes difference in sleep latency between cannabis users and non-users remains to be examined in future studies.
- Racial minority participants tend to have **shorter sleep**, regardless of pain or cannabis use.

Disclosures

- Authors have no conflicts of interest to disclose.

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