# Understanding Diet and Sleeping Patterns Across a Lifespan

*Tyler Tran, Jason G. Fleischer, Satchidananda Panda*

PRESENTER:
**Tyler Tran**

t8tran@ucsd.edu
github.com/tktran11

## BACKGROUND

Circadian clocks are a biological timing system that temporally regulates daily behaviors and physiology. These clocks are controlled by activity-rest and food consumption cycles that optimize health[2] using external signals, such as light or nutrient intake, to sync our internal biology with our surroundings.[1] Poor circadian health stemming from erratic eating and rest patterns can lead to impaired muscle function, poor sleep quality and increases a person's risk of several chronic diseases associated with aging.[3] Furthermore, modern lighting and electronic devices have elongated the typical eating window, allowing more opportunity for circadian disruption from extended wakefulness and irregular eating. Although these irregularities become more potent with age as circadian rhythms deteriorate[3], consistent daily eating and rest patterns can help maintain circadian health. Therefore, it becomes crucial to understand the progression of these daily habits across age groups.

## METHODS

**N= 12,656**
Participants of all age groups self-monitoring daily eating using a smartphone app[3]

→ Participants also self-reported sleep information in the same smartphone app.

↓ Aggregate information for participants was generated. For example "average sleep duration" for each participant.

→ **Participants Grouped By Decile:** Participants grouped by years of age as a decile (i.e.. 10-19 or 50-59)

↓

**Group Based Analysis**
Used to discover trends and potential effects between deciles and across lifespan overall.

↓

**Undersampling and Monte Carlo Simulations**
10,000 resamples of N = 100 per decile (to balance deciles) were generated to create confidence intervals for summary statistics of each decile with 100+ participants.

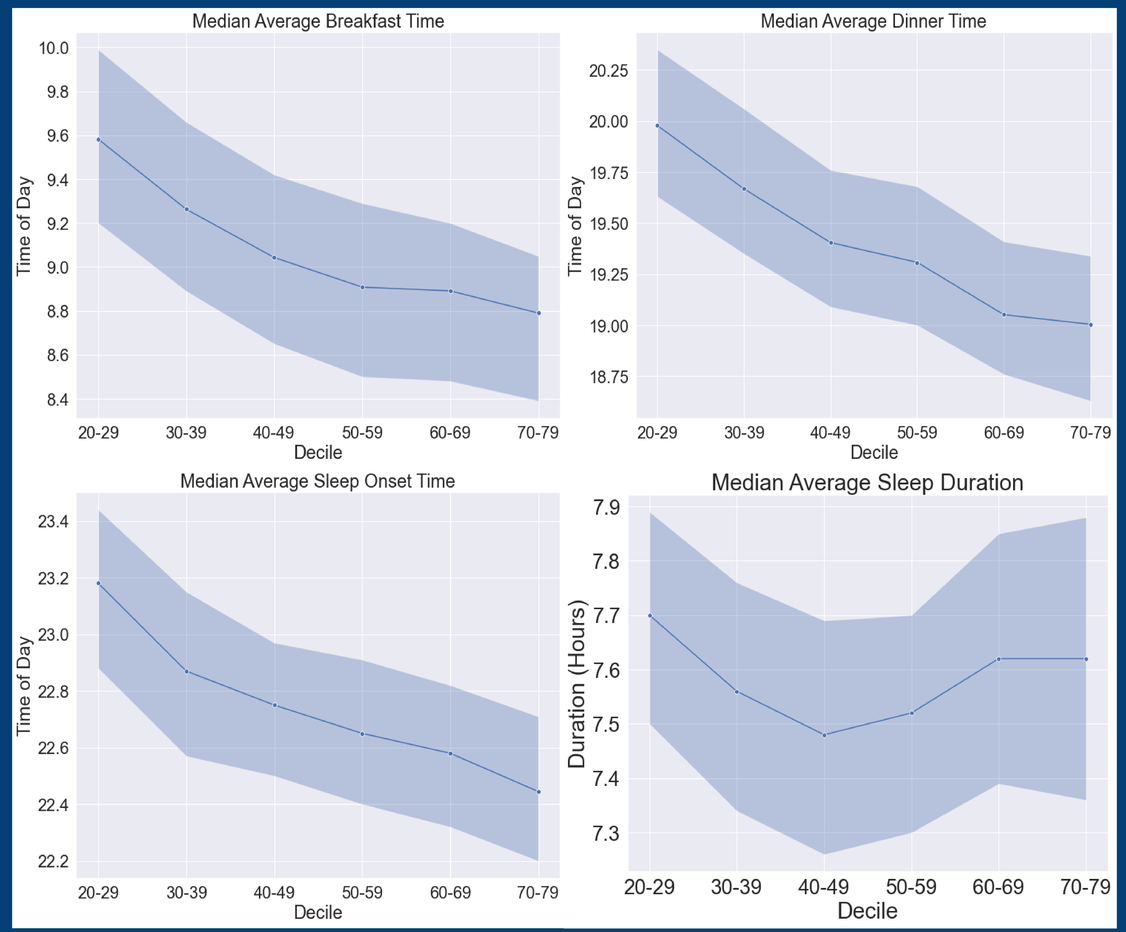
## CITATIONS

1. https://doi.org/10.1177/0748730419892105
2. https://doi.org/10.1146/annurev-nutr-082018-124320
3. https://doi.org/10.1016/j.arr.2016.12.006
4. https://doi.org/10.1016/j.cmet.2015.09.005
5. https://doi.org/10.1126/sciadv.aau6200

## ACKNOWLEDGEMENTS

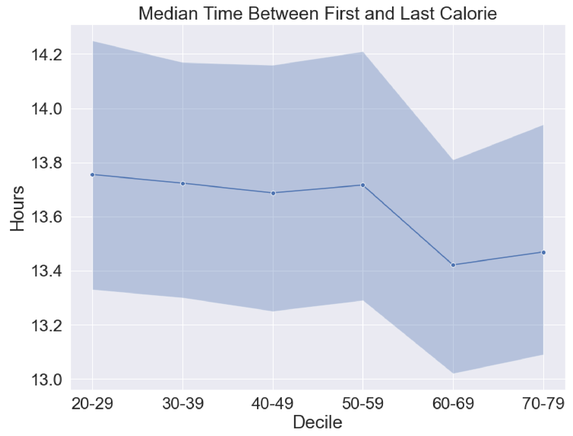
Work was done under the MADURA Program (Mentorship for Advancing Diversity in Undergraduate Research on Aging) grant National Institute on Aging (Steven Edland, PI; 1 R25 AG066594-01)

Meal times and sleep onset **shifts earlier** with age. Sleep duration **decreases** throughout working years.

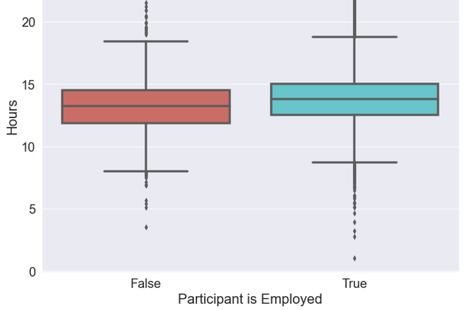



**Take a picture** to **view the code** as a notebook presentation

## RESULTS




- Meal times are shifted ← with age:
  - Median Average Breakfast: **49 minutes earlier**
  - Median Average Dinner: **61.5 minutes earlier**
  - Eating Interval Duration: **- 20 minutes** for participants 60-69
- Sleep duration **-13.2 minutes** from 20-29 to 40-49, but participants in older deciles see some recovery
- Unemployed participants eat and sleep later but have shorter eating windows. Same trends with age.




## DISCUSSION

- ↑ Sleep critical to pos. health outcomes (such as learning retention[5]) but there is a **↓ in sleep duration with age**
- Eating Interval for all age deciles **↑ than recommended**[1]
- **Limitations**
  - Findings exclude ages ↓ 20 and ↑ 79
  - # of participants aged 70-79 ↓ than other deciles
  - Eating and sleep information was self-reported

UC San Diego
MADURA Program