Are there potential biases that impact the collection of wearable data in children ?

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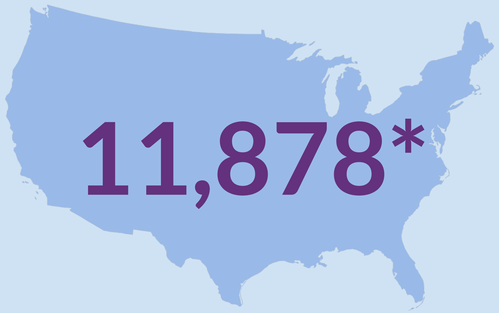

Children enrolled in ABCD Study[1]

10 Years

Year 2

Sociodemographic Differences*

In Children

- 12.6% White children with Fitbits
- 8.5% Black children with Fitbits

In Parents

- 8% Married in Fitbit cohort
- 5.1% Employed full time in Fitbit cohort

** Based on the 3.0 release data; actual socio-demographic differences may differ in full dataset*

Data Quality and Quantity

In Children

- 43.7% **Minutes** of wear from devices of White children
- 19.2% **Minutes excluded from analyses** from devices of Black children

In Parents

- 13% **Married** whose children who had less minutes excluded from analyses
- 3.2% **Employed** whose children who had less minutes excluded from analyses

Take-home Messages

- Significant sociodemographic differences between participants who had received a Fitbit device and shared data vs those who did not*

  *based on 3.0 data release

- Notable differences in quality and quantity of data gathered from devices worn by White and Black children
- Such distinct imbalances in wearable data collected from children in real-world settings can have a serious impact on the generalizability of analytical findings

References

1. Karcher, N. R., & Barch, D. M. (2021). The ABCD study: Understanding the development of risk for mental and physical health outcomes. *Neuropsychopharmacology*, *46*(1), 131–142. https://doi.org/10.1038/s41386-020-0736-6

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