

Predicting Next-day Suicidal Urges, Depression, and PTSD Symptoms Using Ecological Momentary Assessments and Passive Sensing of Sleep Among Military Service Members



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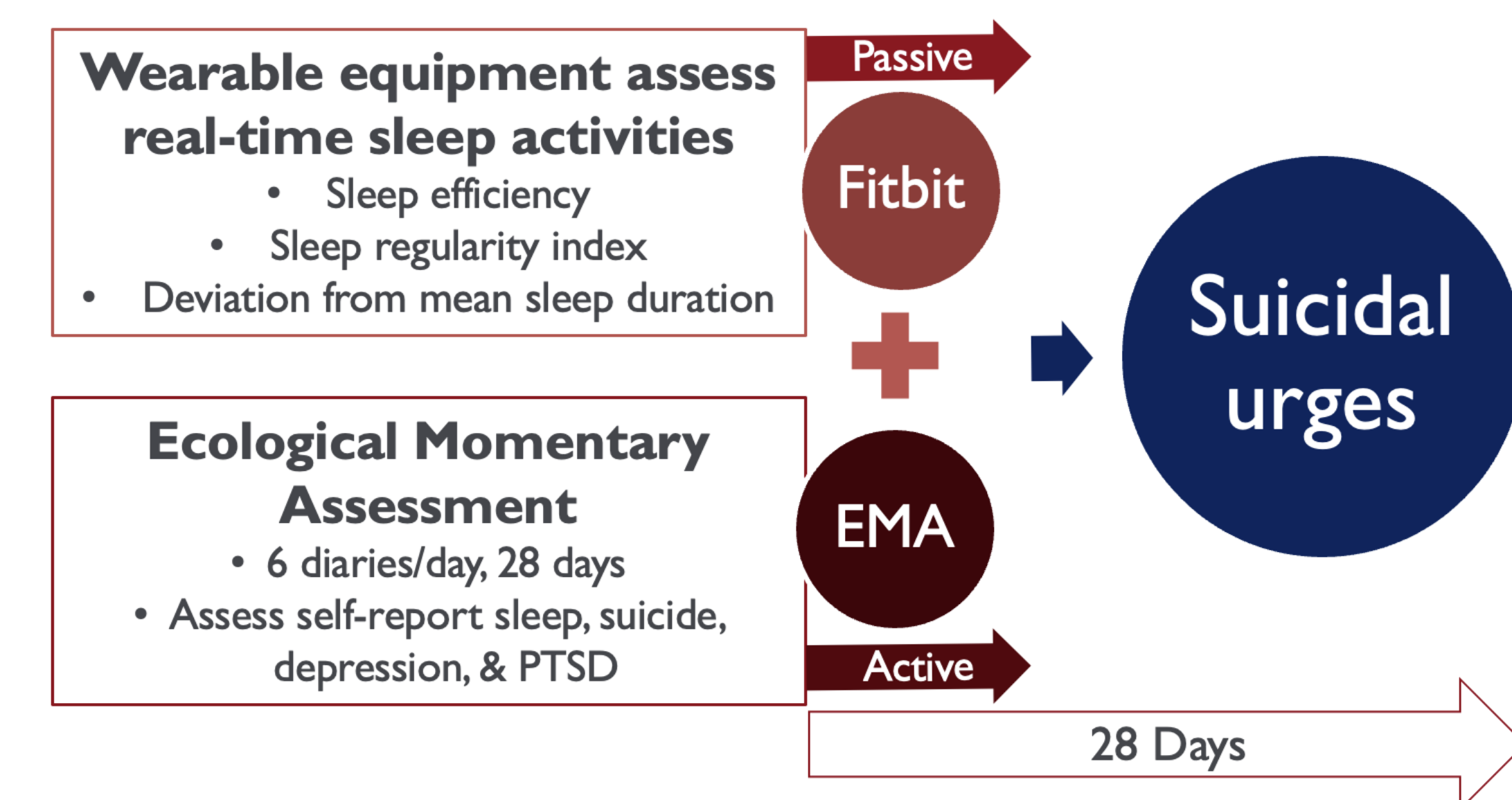
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INTRO

- Suicide is a global public health concern, with military personnel at higher risk (25.6 per 100,000 in 2023).
- Sleep disturbances (insomnia, nightmares, and irregular patterns) are common in the military and are key suicide risk factors.

METHODS

1. N= 86 military personnel with recent suicidal ideation or attempts



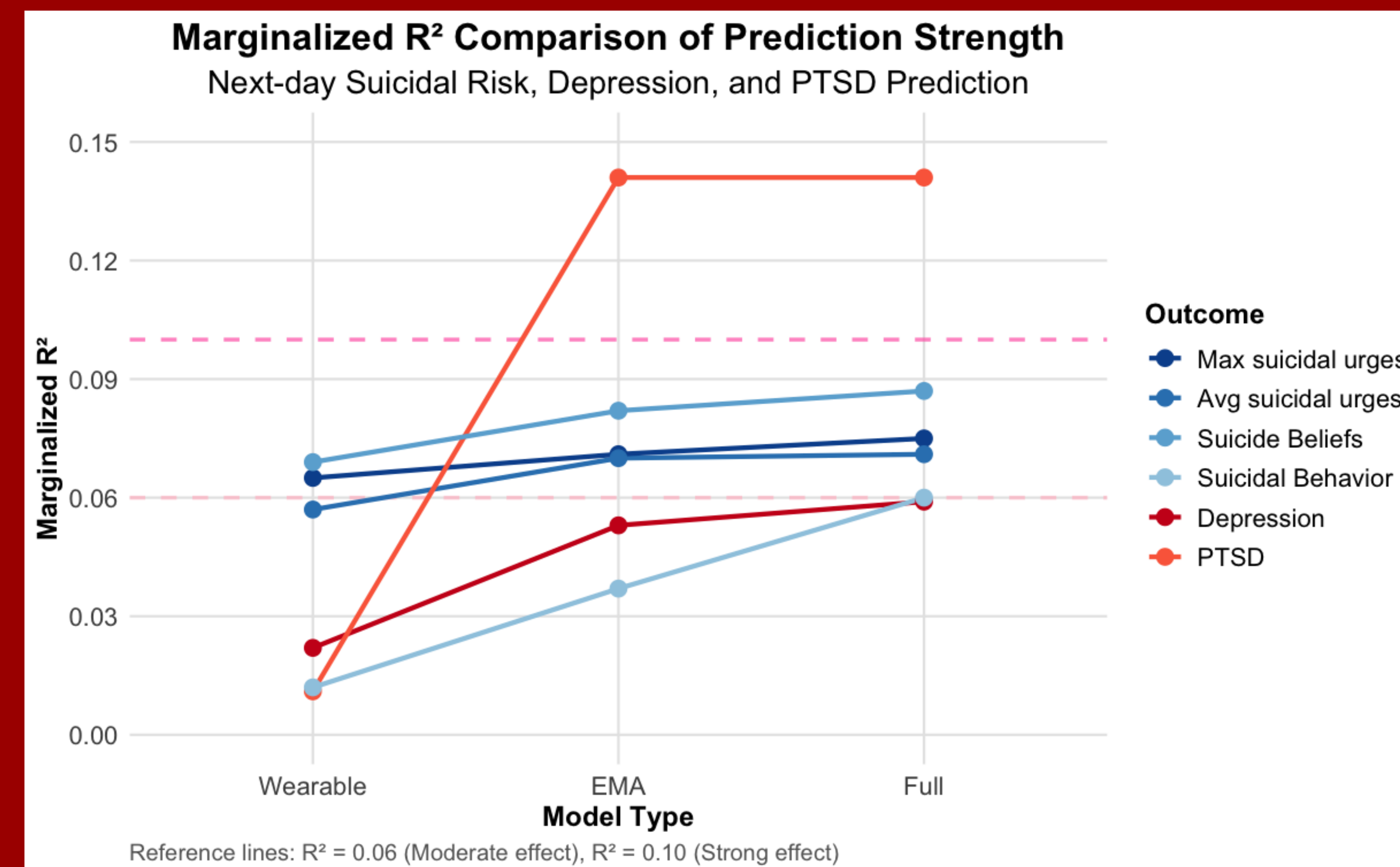
2. Multilevel Models

- **Convergence Model** (Wearable)
→ EMA sleep quality & nightmare severity
- **Prediction Linear MLM**
→ next-day suicidal urges, depression, PTSD (Wearable-only, EMA-only, and EMA + Wearable)
- **Exploratory Logistic MLM**
→ next-day suicidal behavior (attempts + preparatory behaviors)
- Sensitivity Analysis

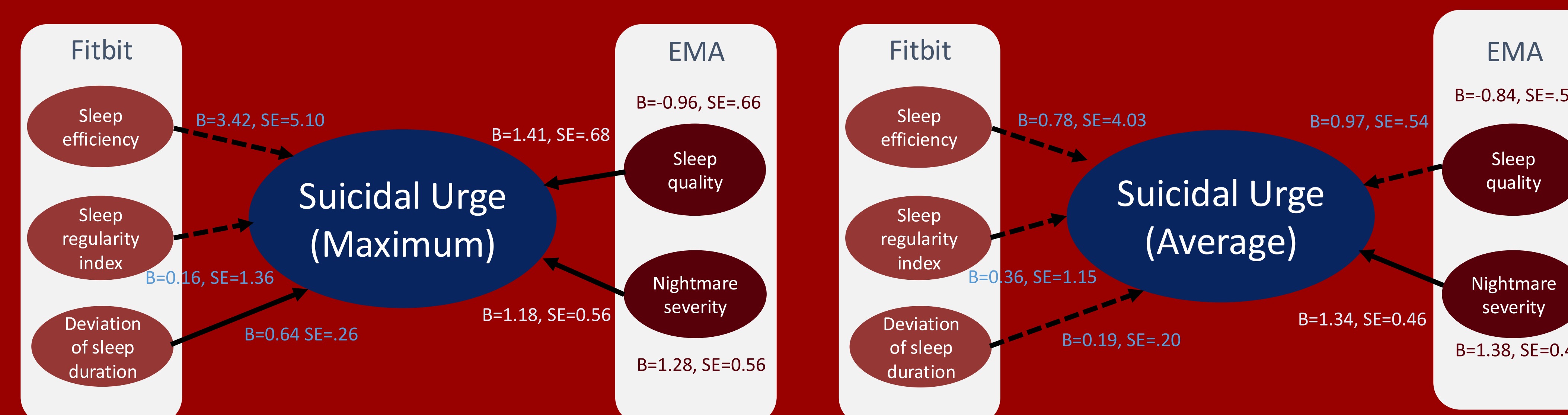
DISCUSSION

- Future studies should explore finer-grained temporal prediction (e.g., hourly risk) using wearable physiological data (e.g., heart rate variability).

Prediction Strength: (next-day suicidal risk, depression, PTSD) EMA + Wearables > EMA (subjective) > Wearables (objective) Top Predictors: Nightmare severity > Poor sleep quality & Irregular sleep duration



Full (EMA + Wearable)*B & p data in blue



CONCLUSIONS

- EMA (subjective) is the strongest to predict short-term suicide risk, depression, and PTSD.
- Wearables (objective) provide low-burden continuous and precise monitoring of sleep patterns, offering incremental value beyond EMA-only models.
- Combining both enhances prediction by capturing distinct dimensions of sleep.

Nightmare Predicts...

