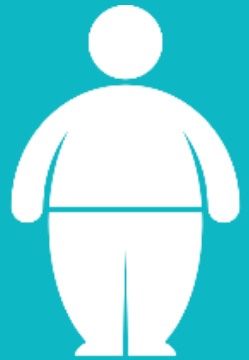
Easy-to-use and interpretable AI-based calculator predicting 5 year-weight trajectories after bariatric surgery

A multiple international cohort SOPHIA study

Pierre Bauvin, PhD



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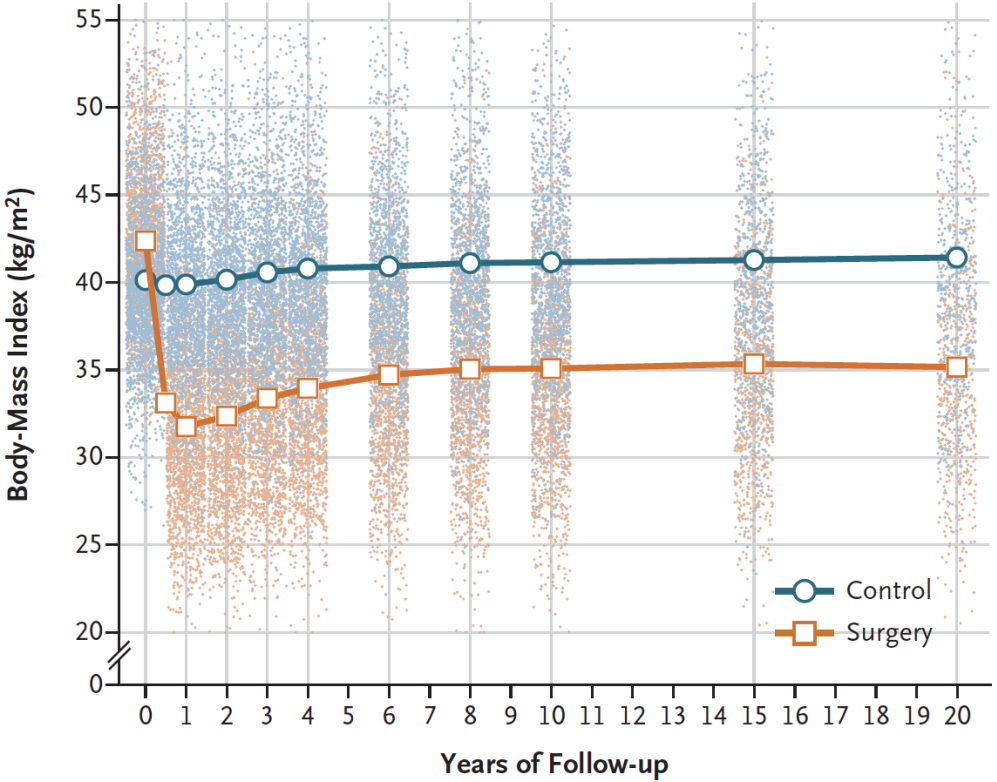
SOPHIA
Stratification of Obesity Phenotypes to Optimize Future Therapy

Conflict of interest

None.

Individual prediction of heterogeneous trajectories



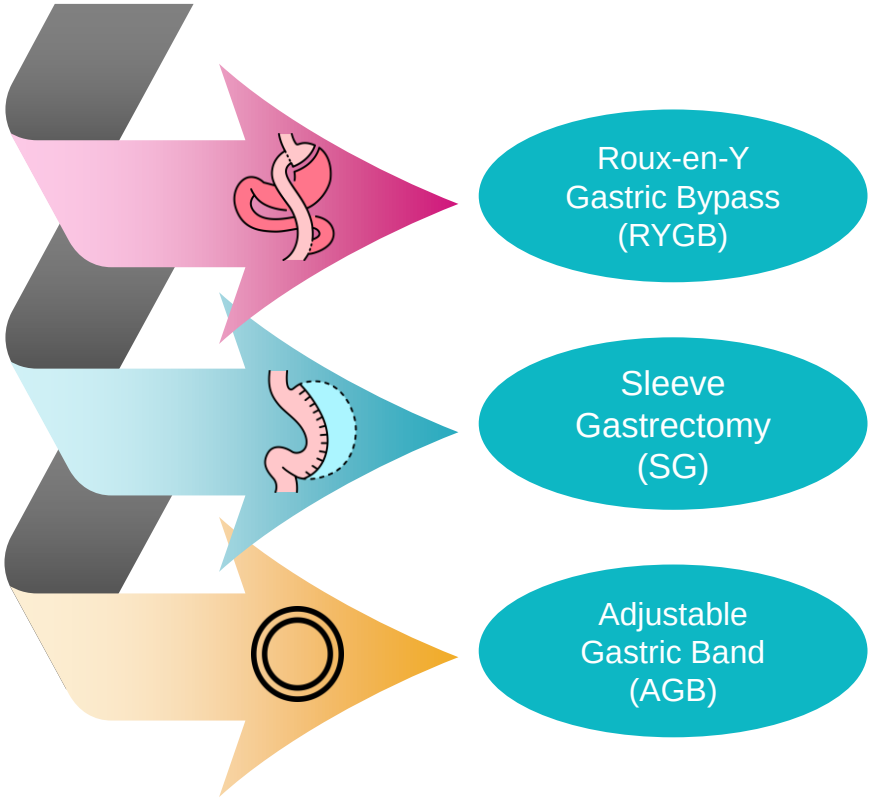
Carlson et al, N Engl J Med 2020

Primary outcome

Total Weight Loss (%TWL)

⟶ between preop and follow-up visits
(1, 3, 12, 24, 60 months)

⟶ continuous outcome

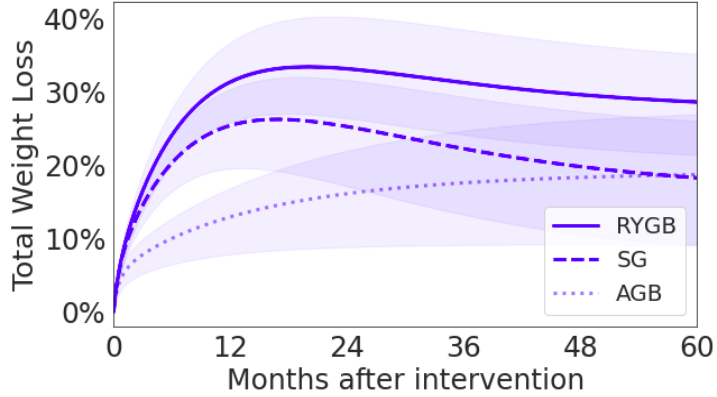


Training cohorts

ABOS

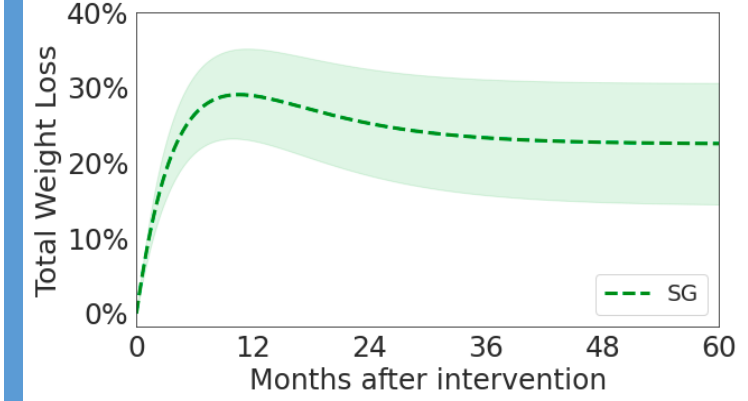
Prospective cohort, retrospective study

- N=1147 (first intervention)
- > 500 baseline attributes



BAREVAL

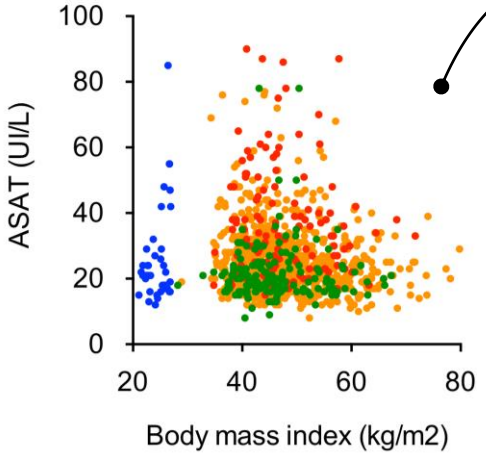
- N=348
- SG only

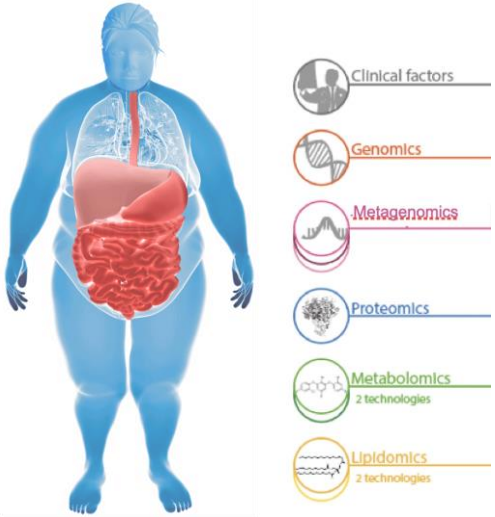


Focus on ABOS data set

503 clinical & biological variables:

- Before intervention only
- With quality control

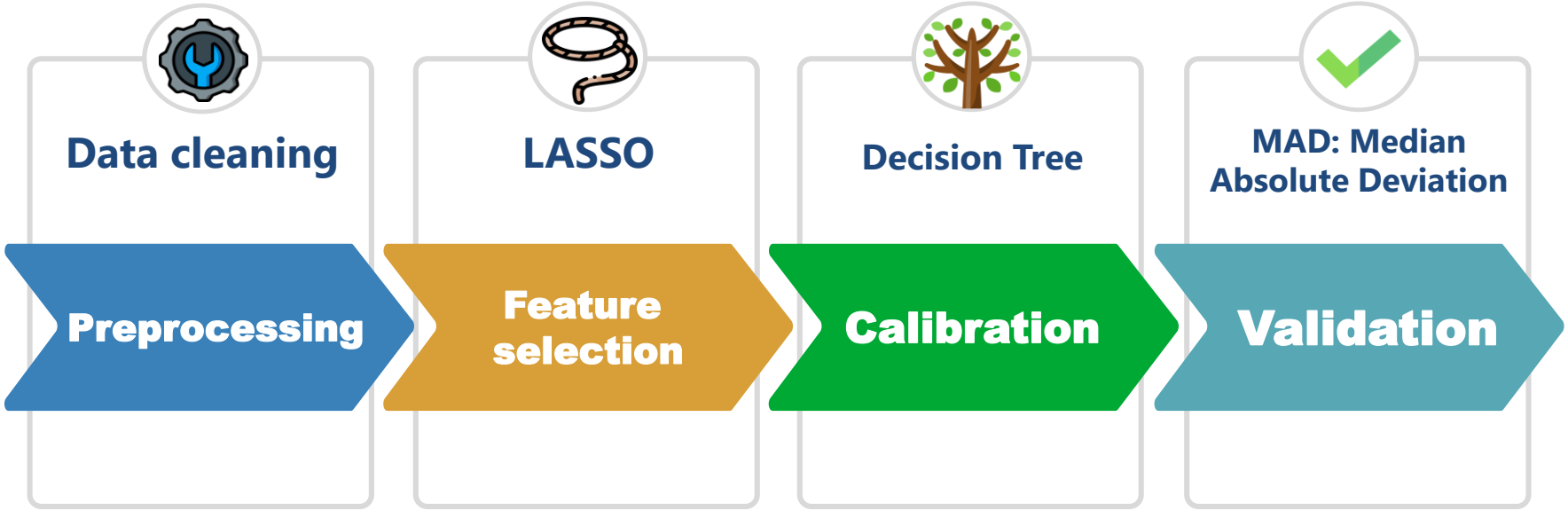




27% men,
73% women

Mean BMI (± sd):
46.9 (± 7.7)

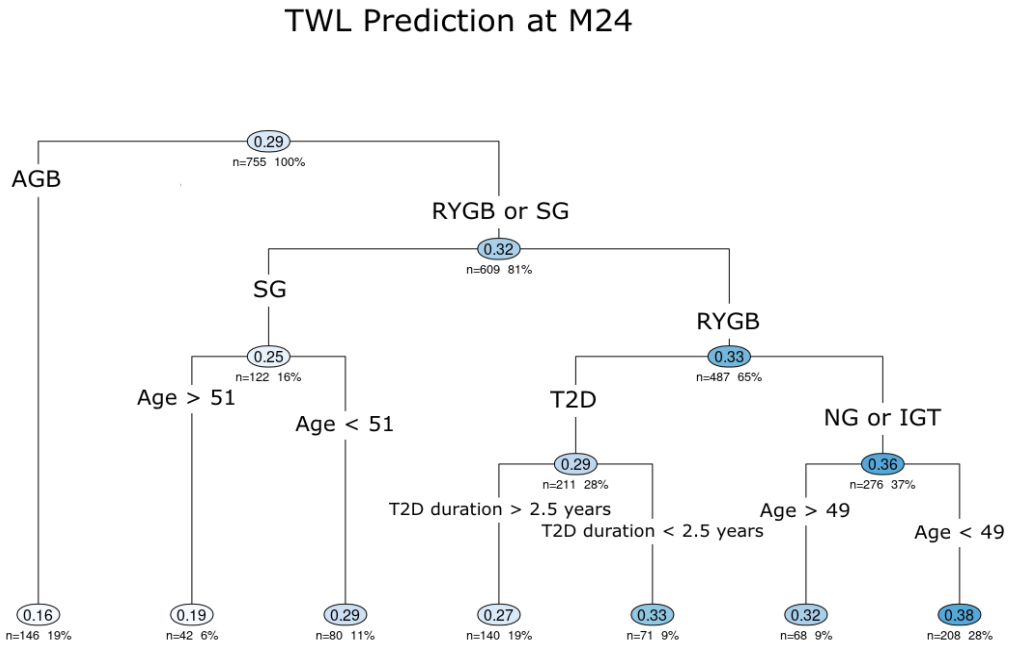
Machine Learning model



Weight loss prediction model

7 selected variables (among > 500)

- ✓ Type of intervention
- ✓ Weight
- ✓ Height
- ✓ Age
- ✓ Type II diabetes
- ✓ Diabetes duration
- ✓ Smoking



Validation: 10 cohorts in Europe, Asia, America

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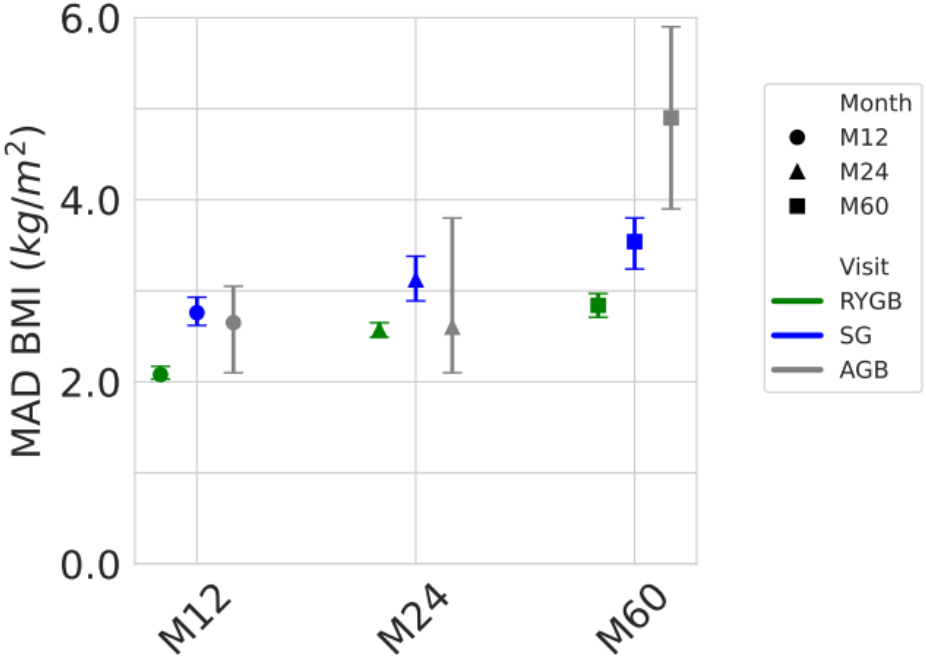
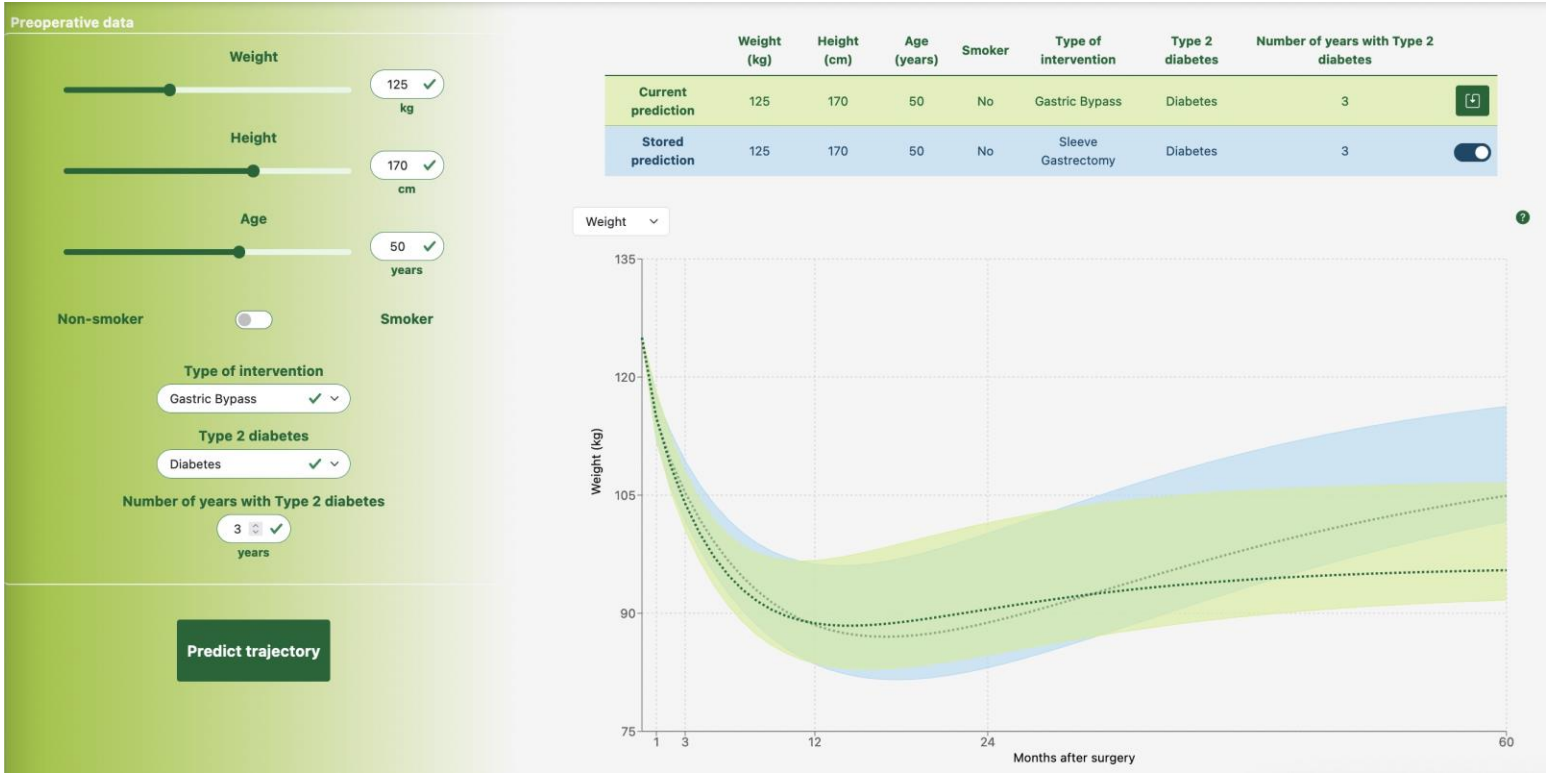
n=10,231 patients included

Performances



5-year weight loss trajectory



Bariatric Weight Trajectory Prediction

https://bwtp.univ-lille.fr/

Acknowledgements

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CRIStAL
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Pierre Bauvin

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Julien Teigny

Patrick Saux

...and also Violeta Raverdy, Hélène Verkindt, Maxence Debert, Tomy Soumphonphakdy (and many more!)

Bariatric Weight Trajectory Prediction

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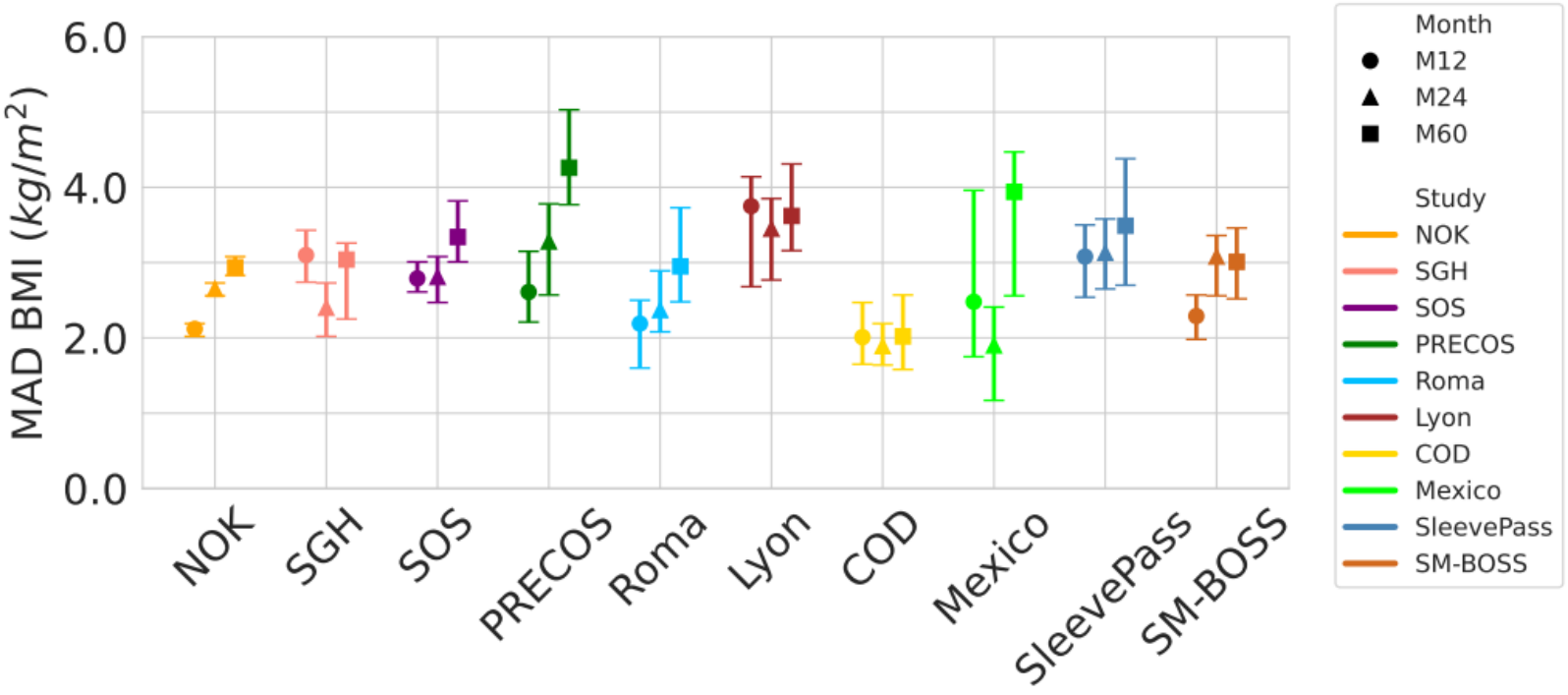
Appendix

Validation


MAD BMI (kg/m^2)
6.0
4.0
2.0
0.0
NOK
SGH
SOS
PRECOS
Roma
Lyon
COD
Mexico
SleevePass
SM-BOSS
Month
M12
M24
M60
Study
NOK
SGH
SOS
PRECOS
Roma
Lyon
COD
Mexico
SleevePass
SM-BOSS