Compitino Extra

DATA VISUALIZATION A.A. 2021/2022

Introduction and Setting

PROMS, or codified patients' perceptions of their own health conditions following a treatment collected by means of validated questionnaires, are important data that allow to reach multiple and complementary goals, among which to appraise the effectiveness of treatments over time.

PROMs' reliability is assumed when they are properly collected , as a basis for individualized shared decision making, health technology assessment, clinical research, and value-based policing.

Their use is increasing also with respect to DSS: ML systems based on PROMS can be used to determine the best treatment, and hence be a valid tool to either guarantee or improve the appropriateness of health care interventions.

Are PROMs reliable and useful?

However, proper collection is not enough, as contextual conditions could have relevant effects on PROM scores, and hence on the perceived outcome!

Here we will question whether weather or light conditions can affect scores, and hence, indirectly but yet significantly, healthcare outcomes.

What is the research question?

Do weather or light conditions affect post-operatory scores?

For example, does having a high Heat Index (HI > 27) make patient report worse conditions overall?

Are patients more likely to report better outcomes during daytime rather than nighttime?

Do patients' bones ache more with high umidity?

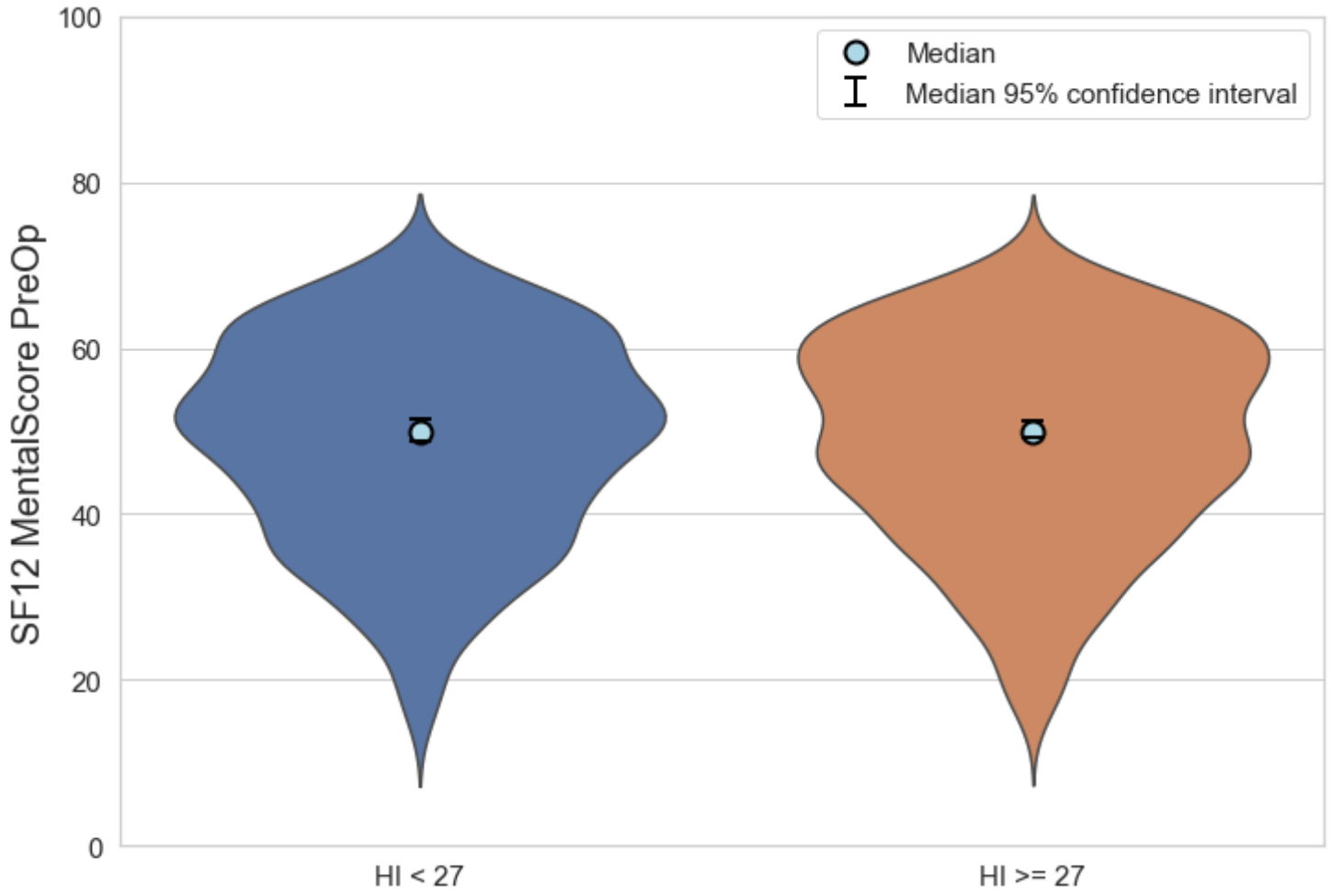
Feel free to find your own research question!

Data Summary

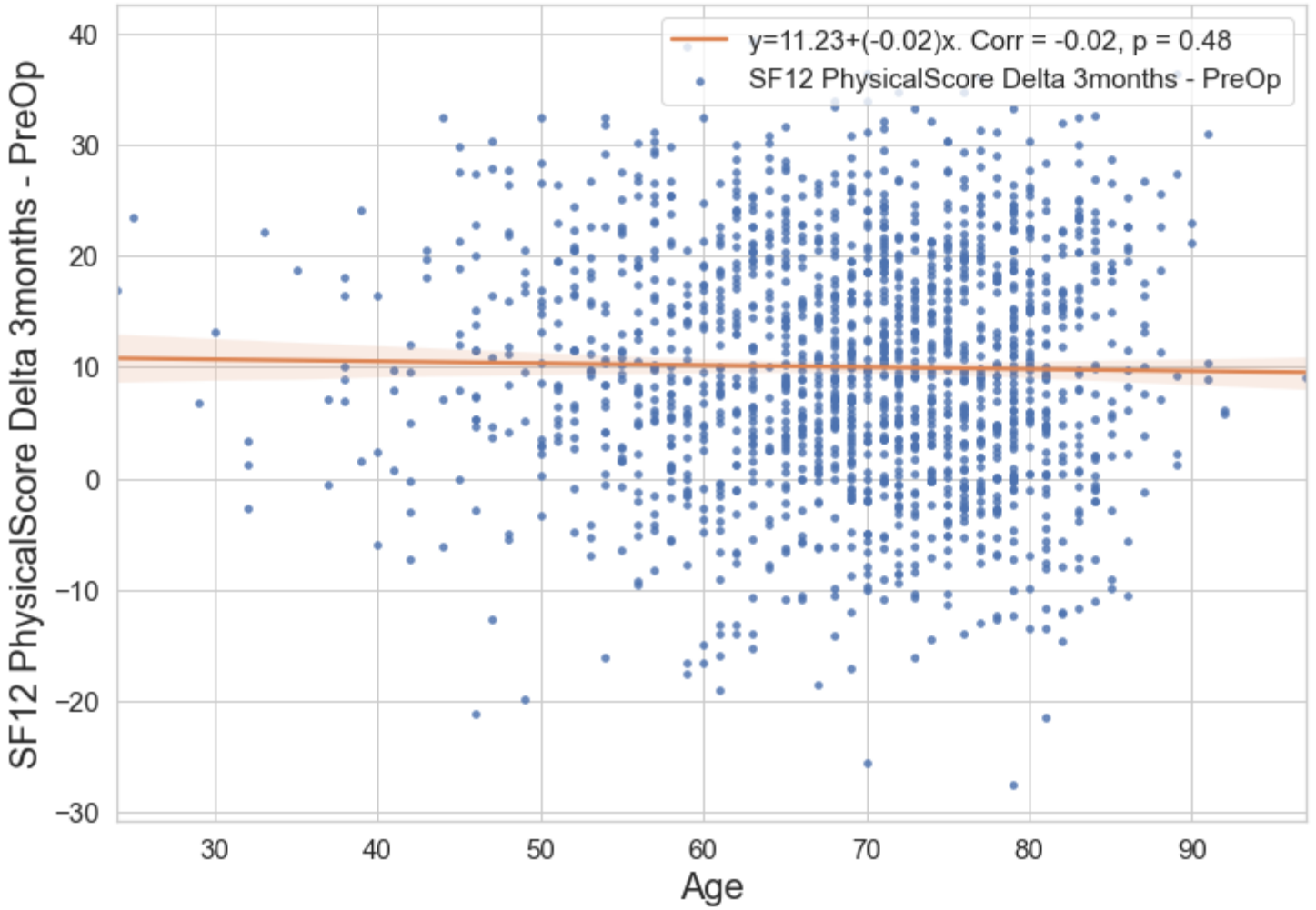
The data provided includes 2000+ questionnaires results from who underwent hip, ankle or knee surgery.

1. Two different PROMs: Physical and Mental score. 0 means lowest score, 100 highest (best) condition.
2. Each row is a patient's questionnaire. We included scores before and after the operation.
3. Sex and age of the patient.
4. Metereological variables on the day of the follow-up questionnaire: temperature, humidity, whether the heat index was high (>27) or not, whether it was daytime or nighttime.

nome_modulistica	score_preop	score_postop	condizioni_meteo	sesso	anni_ricovero	temperatura_media	umidita_media	HI > 27	natural_light
SF12 PhysicalScore	27.60	37.40	poco nuvoloso	F	70	20.0	69.0	False	True
SF12 MentalScore	54.36	58.46	poco nuvoloso	F	70	20.0	69.0	False	True
SF12 PhysicalScore	28.15	38.25	poco nuvoloso	M	69	18.0	65.0	False	True
SF12 MentalScore	57.02	64.62	poco nuvoloso	M	69	18.0	65.0	False	True
SF12 PhysicalScore	31.57	55.67	poco nuvoloso	M	70	23.0	74.0	False	True



Esempi: Violin plot



Esempi: reg plot