



OBJECTIVE

- To quantitatively track the longitudinal change in patient-reported problems in Parkinson’s Disease (PD), using the the Parkinson’s Disease--Patient Report of Problems (PROP™) [1].

BACKGROUND

- The PD-PROP is an instrument that asks participants with PD:
 - What is the most bothersome problem for you due to your PD?
 - In what way does this problem bother you by affecting your everyday functioning or ability to accomplish what needs to be done?
- The feasibility and clinical utility of PD-PROP has been demonstrated in over 30,000 participants from the Fox Insight (FI) study [1], where over 300,000 verbatim PD-PROP responses were classified into 14 clinical domains and 65 symptoms of PD using an established Human-in-the-loop curation methodology with machine learning and natural language processing [2].
- We investigated longitudinal relationships with these data among motor and non-motor domains towards using more quantitative metrics to complement the descriptive utility of PD-PROP.

Motor Domains		Non-Motor Domains	
Tremor		Fluctuations	
Rigidity		Dyskinesias	
Bradykinesia	Motor Triad	Fatigue	Non-Motor Triad
Postural Instability		Sleep	
Gait		Psychiatric	
Other Motor (Impaired Dexterity, Speech, Dystonia, Posture)		Cognition	
		Pain/Discomfort	
		Autonomic Dysfunction	

Table 1. The 14 Motor and Non-Motor Clinical Domains into which the PD-PROP verbatims were classified

METHODS

- A subset of 664 participants with PD [years since diagnosis 0-3; age: 65.36±8.56; males: 57%] who provided 24 months of data were selected from the FI cohort.
- Occurrence probabilities (%) of a specific triad of reported motor (Gait, Postural Instability, Bradykinesia) and non-motor (Psychiatric, Fatigue, Sleep) domains were compared between baseline and 24 months.
- For each triad, three indices were calculated between time points at baseline and 24 months:

Similar	Captures the domains that remained unchanged
Worsening	Captures increase in domains reported
Reduction	Captures decrease in domains reported

Figure 1. The three indices of the Change Index

RESULT

- The most likely outcome is ‘Similarity’ for both triads suggesting relatively stable disease progression during this stage of PD over the observed time frame.
- Examining the total change in burden index from baseline to 24 months revealed:
 - The ‘Reduction’ index was comparable between motor (0.28) and non-motor (0.30) triad domains.
 - The ‘Worsening’ index was higher for the non-motor triad (0.29) than for the motor triad (0.23). This is in line with clinical observations that motor features remain relatively stable in this time frame, likely due to the initiation of dopaminergic medications.
 - This challenges the traditional belief that non-motor symptoms develop later in PD, and suggests they may have a greater impact on disability as motor symptoms stabilize, emphasizing the need for early treatment.

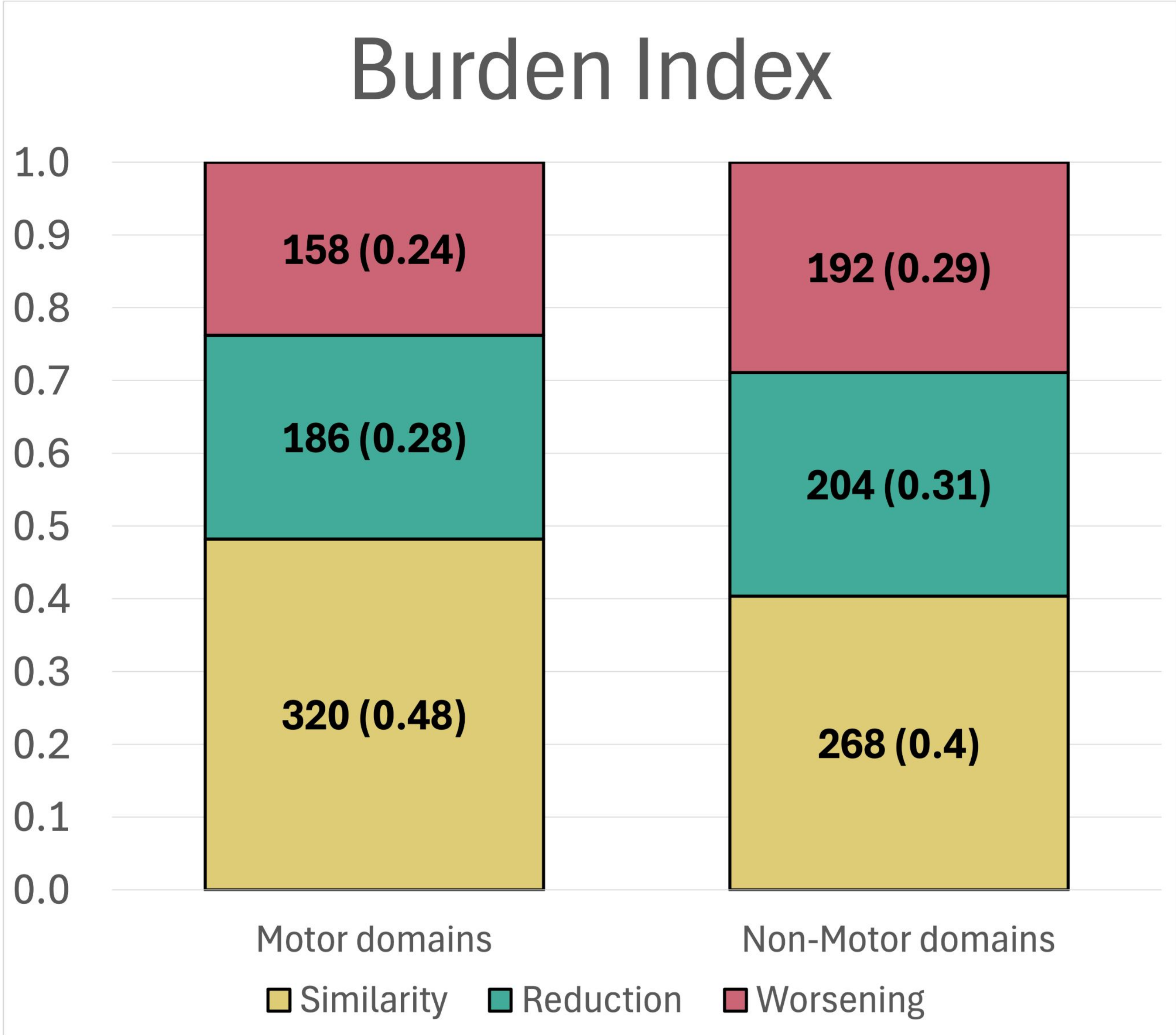


Figure 2. Change Index as observed in the Motor and Non-Motor triads highlighting change from baseline to 24 months.

CONCLUSION

- Quantitative methods applied to patient-reported problems collected over time offer opportunities to detect change in elements of PD meaningful to patients, and can potentially serve as endpoints for clinical trials.

REFERENCES

[1] L. Smolensky *et al.*, “Fox Insight collects online, longitudinal patient-reported outcomes and genetic data on Parkinson’s disease,” *Scientific Data*, vol. 7, no. 1, Art. no. 1, Feb. 2020, doi: 10.1038/s41597-020-0401-2.

[2] C. Marras *et al.*, “What Patients Say: Large-Scale Analyses of Replies to the Parkinson’s Disease Patient Report of Problems (PD-PROP),” *J Parkinsons Dis*, vol. 13, no. 5, pp. 757–767, 2023, doi: 10.3233/JPD-225083.

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