



## PREDICTION OF PATIENT REPORTED OUTCOME MEASURES VIA MULTIVARIATE ORDERED PROBIT MODELS

Caterina Conigliani<sup>1</sup>, Andrea Manca<sup>2</sup>, Andrea Tancredi<sup>3</sup>

### ABSTRACT

*The assessment of patient reported outcome measures (PROMs) is of central importance in many areas of research and public policy. Unfortunately, it is not uncommon for clinical studies to employ different PROMs, thus limiting the comparability of the evidence-base they contribute to. This issue is exacerbated by the fact that some national agencies are now explicit about which PROMs must be used to generate evidence in support of reimbursement claims. The National Institute for Health and Clinical Excellence for England and Wales, for instance, has identified in the EuroQoL-5D (EQ-5D) the PROM to be used, and recognizes the possibility to use a 'mapping' approach to predict EQ-5D from other PROMs when EQ-5D have not been collected. Here we consider the problem of directly predicting EQ-5D responses from the Short Form 12 (SF-12), while recognising both the likely dependence between the five dimensions of the EQ5D responses at the patient level, and the fact that the levels of each health dimension are naturally ordered. We also address the key problem of choosing an appropriate summary measure of agreement between predicted and actual results when analysing PROMs. We carry out the analysis within a Bayesian framework employing Markov chain Monte Carlo techniques.*

**Classification JEL:** C11, C31.

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<sup>1</sup> Department of Economics, Università Roma Tre, Via Silvio D'Amico 111, 00145 Rome, Italy (email: caterina.conigliani@uniroma3.it).

<sup>2</sup> Centre for Health Economics - University of York - Heslington, York, YO10 5DD, UK (email: andrea.manca@york.ac.uk).

<sup>3</sup> Department of Methods and Models for Economics, Territory and Finance, Sapienza University of Rome - Via del Castro Laurenziano 9, 00161 Rome, Italy (email: andrea.tancredi@uniroma1.it).