UNIVERSITÀ DEGLI STUDI DI PADOVA

DIPARTIMENTO DI SCIENZE STATISTICHE

Seminar

PROBABILISTIC DEMOGRAPHIC FORECASTS

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Room Benvenuti | Campus S. Caterina

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First, we discuss the shortcomings of deterministic forecasting models, and argue why probabilistic demographic forecasts are necessary for informed decision-making. Information from probabilistic forecasts allows policy makers, planners, and other forecast users in the fields of housing, energy, social security etc. to take appropriate decisions, because some demographic variables are more difficult to predict, and hence more uncertain, than others. It also guides them once actual developments start to deviate from the most likely path. New actions or updated plans are unnecessary as long as developments are likely to remain close to the expected future. Next, we review probabilistic population and household forecasts published since the turn of the century. An important issue is how to evaluate, ex-post facto, the accuracy of these probabilistic forecasts. We introduce the notion of a scoring function, the general idea of which is that a forecast that predicts the actual outcome with high probability should receive a better score than one that predicts the same outcome with lower probability. Scoring functions are useful for evaluating both interval forecasts (given in the form of prediction intervals with pre-specified coverage probability), and forecasts available in the form of a full probability distribution, either analytically or as a sample. Finally, we give empirical results for scoring functions applied to selected probabilistic population and household forecasts.