

Forecasting future needs and optimal allocation of medical residency positions: the Emilia-Romagna Region case study

Senese F, Tubertini P, Mazzocchetti A, Lodi A, Ruozi C, Grilli R.

Abstract

OBJECTIVES:

Italian regional health authorities annually negotiate the number of residency grants to be financed by the National government and the number and mix of supplementary grants to be funded by the regional budget. This study provides regional decision-makers with a requirement model to forecast the future demand of specialists at the regional level.

METHODS:

We have developed a system dynamics (SD) model that projects the evolution of the supply of medical specialists and three demand scenarios across the planning horizon (2030). Demand scenarios account for different drivers: demography, service utilization rates (ambulatory care and hospital discharges) and hospital beds. Based on the SD outputs (occupational and training gaps), a mixed integer programming (MIP) model computes potentially effective assignments of medical specialization grants for each year of the projection.

RESULTS:

To simulate the allocation of grants, we have compared how regional and national grants can be managed in order to reduce future gaps with respect to current training patterns. The allocation of 25 supplementary grants per year does not appear as effective in reducing expected occupational gaps as the re-modulation of all regional training vacancies.