

Performance impact of constraint variants on a MILP formulated hearing scheduling problem

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The courts within the judicial system involve a labour-intensive service supply chain, where planners are faced with the challenge of maintaining accessibility for litigants while balancing the workloads of court staff (clerks and judges). We focus on the tactical operational level of this planning problem. We introduce the hearing scheduling problem (HSP), which is to develop an optimised block schedule to allocate staff to court case types. The supply of hearing blocks is directly related to the availability and skill set of the staff. Apart from capacity assigned to hearing blocks, capacity is also consumed by desk activities to prepare and finalise those hearings. Given such a block schedule, cases can then be assigned to these blocks in the subsequent operational Case Booking Problem (CBP). We present an MILP formulation of the HSP for the judicial domain of family law. For other domains of law, our model can accommodate the few additional or different constraints. Our experiments focus on the computational performance of different formulations for desk time assignments, using generated instances based on real-life data. Our paper's contribution is two-fold: first, we introduce a MILP formulation of the underexposed HSP, and second, we analyse its computational performance under various constraint formulations.