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Developing algorithm for the critical care physician scheduling¹

HYOJUN LEE, Northwestern Univ, ADAM PAH, Kellogg, School of Business, LUIS AMARAL, Northwestern Univ, NORTHWESTERN MEMORIAL HOSPITAL COLLABORATION — Understanding the social network has enabled us to quantitatively study social phenomena such as behaviors in adoption and propagation of information. However, most work has been focusing on networks of large heterogeneous communities, and little attention has been paid to how work-relevant information spreads within networks of small and homogeneous groups of highly trained individuals, such as physicians. Within the professionals, the behavior patterns and the transmission of information relevant to the job are dependent not only on the social network between the employees but also on the schedules and teams that work together. In order to systematically investigate the dependence of the spread of ideas and adoption of innovations on a work-environment network, we sought to construct a model for the interaction network of critical care physicians at Northwestern Memorial Hospital (NMH) based on their work schedules. We inferred patterns and hidden rules from past work schedules such as turnover rates. Using the characteristics of the work schedules of the physicians and their turnover rates, we were able to create multi-year synthetic work schedules for a generic intensive care unit. The algorithm for creating shift schedules can be applied to other schedule dependent networks

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