



The Effect of Shift Structure on Performance: the Role of Fatigue for Paramedics

Tanguy BRACHET

brachet@upenn.edu

University of Pennsylvania

The effect of shift structure on worker performance and productivity has been an issue of increasing interest among firms and regulatory bodies, motivated by the belief that fatigue is a critical mediator. We study this issue using approximately 742,000 emergency trauma and medical incidents attended by 2,400 paramedics in the state of Mississippi between 2001 and 2005. Using the universe of emergent and non emergent incidents over this period, we first elicit the approximate shift length of each paramedic. We then exploit within paramedic variation in shift structure (12 hour vs. 24 hour shifts) to evaluate the extent to which performance towards the end of a shift is impacted by its length. We find that performance indeed deteriorates toward the end of long shifts, with paramedics taking roughly a minute longer to get to patients (off of a base of 8 minutes) and performing fewer prehospital medical interventions in the last 6 hours of long shifts relative to when they are on shorter shifts. We argue that the mediating factor in the observed decline in performance is fatigue. These findings thereby shed light on the deleterious effects of sustained wakefulness on performance and have implications for workforce organization, calling attention to regulations designed to limit extended work hours.