

Master Thesis

“Personnel scheduling during pandemics”

Topic MT: Personnel scheduling during pandemics

The COVID19 pandemic is a new challenge in 2020 for the complete world; it has required many companies to go into lockdown for some weeks in 2020 due to fast spreading and unknown effects of the virus. Others, such as the health service, have been continuing to operate despite the threat of infection. A main lever for risk minimization is the limitation of contact with other humans; therefore contact limitations have been enforced wherever possible. In the health service and later in other industries, new policies for contactless collaboration and personnel scheduling have been introduced. While home office works for most administrative tasks, operational tasks such as patient care or logistical operations have to be undertaken “on-site”. Adapted scheduling approaches are required to minimize risks while fulfilling the current demand for workforce.

The objectives of this thesis are to...

- introduce special requirements for personnel scheduling during a pandemic from academical and practical sources,
- provide an overview of academical work scheduling models taking the new requirements into account,
- to extend a personnel scheduling model to take new requirements into account,
- to implement an academical example of the model in Ampl or another programming language,
- to provide open research gaps and future trends.

Basic Literature:

Dennerlein, J. T., Burke, L., Sabbath, E. L., Williams, J. A., Peters, S. E., Wallace, L., Karapanos, M., & Sorensen, G. (2020): An Integrative Total Worker Health Framework for Keeping Workers Safe and Healthy During the COVID-19 Pandemic. *Human Factors*, 62 (5), 689-696

Kluger, D. M., Aizenbud, Y., Jaffe, A., Aizenbud, L., Parisi, F., Minsky-Fenick, E., Kluger, J. M., Farhadian, S., Kluger, H. M., & Kluger, Y. (2020): Impact of healthcare worker shift scheduling on workforce preservation during the COVID-19 pandemic. *medRxiv*.

Zucchi, G., Iori, M., & Subramanian, A (2020): Personnel scheduling during Covid-19 pandemic. *Working Paper*