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## **Impact of COVID-19 and Influenza on Workplace Absenteeism: A Mathematical Model Approach**

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In this study, we develop a mathematical compartmental model to quantify the combined impact of these two diseases (Influenza and covid-19) on workplace absenteeism, incorporating population screening and vaccination strategies.

Our findings reveal that appropriate testing and vaccination campaigns for both diseases significantly reduce absenteeism. Moreover, we show that influenza vaccination provides an indirect benefit by reducing COVID-19 transmission, highlighting the potential advantages of combined vaccination strategies. The model also suggests that increasing testing capacity beyond a certain threshold does not substantially improve absenteeism outcomes, implying the existence of an optimal testing capacity.

This research provides valuable insights for public health policy, emphasizing the importance of integrated vaccination and testing programs to mitigate the economic impact of pandemics on the workforce. The results suggest that coordinated pharmaceutical and non-pharmaceutical interventions are crucial for minimizing productivity losses during such health crises.