IMPROVING HEALTHCARE THROUGH DATA

At a recent Singapore Management University's (SMU) Healthcare Analytics and Operations Workshop, researchers, practitioners and policymakers shared their views on the Healthier SG movement and how investing in regular screening, counselling and vaccination can support preventative care. Read more here.

MAPPING THE IDEAL TEST THRESHOLD

SMU Assistant Professor of Operations Management Sarah Yini Gao explained that there is a low compliance rate to the colorectal cancer screening guideline in Singapore, which hinders cancer detection.

The current screening procedure – a preliminary Faecal Immunochemical Test (FIT) – is also not completely accurate, and many healthy citizens follow up with invasive and expensive colonoscopies.

Through harnessing patient behaviour data to propose an optimal screening test design, Prof Gao's research has reaped benefits: maximising cancer cases detected with minimal colonoscopies. There is an increase of 104% in number of cancer cases detected and a 77% reduction in unnecessary colonoscopies compared with the current practice.

DECODING DATA FOR BETTER DECISION MAKING

According to SMU Associate Professor of Operations Management Daniel Zheng, electronic health record data can be distorted by treatment effect-based policies employed by physicians. Often, only favourable treatment outcomes can be observed, as treatments would not have been administered if they are predicted to fail.

Due to censored observations, the estimation and probability calculations that are the backbone of many models behind personalised medicine are distorted.

A structural model and econometrics theories, that can recover true patient health transition probabilities from censored observations, have been developed by Prof Zheng and team.

The model can derive estimates that are comparable to, or even surpass, an almost flawless prediction model capable of predicting ICU patients' risk levels with an accuracy of over 95%. This is noteworthy considering the prediction accuracy of an advanced machine learning model is typically between 70% and 80%.