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### Riding through the silver tsunami: A data driven approach to improve senior citizens' engagement with community senior activity centres

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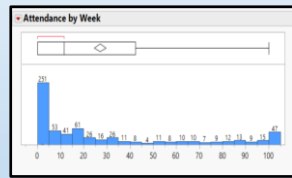
Joshua LAM Jie Feng (Singapore Management University)  
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## Rationale

In Singapore, 1 in 4 persons will be elderly by 2030. In preparation for the Silver Tsunami, the Singapore government and community care providers have collaborations to promote active, independent living amongst elders.

Current implementation of data-driven population health is focused on well-being indices using data collected from the general population. There is no literature on the use of data analytics in assessing elder engagement with community care activities.

## General Trends



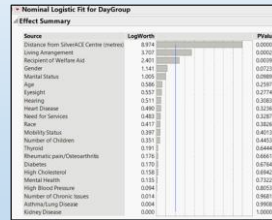
Quartile	Weekly Aggregate Attendance
Maximum	100%
3 <sup>rd</sup> Quartile	42.3%
Median	11.5%
1 <sup>st</sup> Quartile	0%

Attendance rates in Centres were low, with many elders not attending activities despite being registered.

Most elders (61.6%) stayed with their family, while a third (30.2%) of them live alone. Elders were generally mobile, with 81.7% of them able to walk unassisted. Most elders were healthy with 50.3% of them having no declared chronic disease.

Elders generally do not visit Senior Activity Centres during weekends and public holidays.

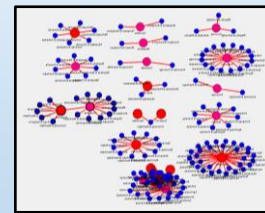
## Logistic Regression



The closer the proximity of elder's residence to Centres, the more likely the elder will participate in Centre activities.

If an elder was staying with family members, or was a recipient of welfare aid, he/she was also more likely to attend Centre activities.

## Association Analysis



Association analysis, a wide variation of social networks were identified (depicted in Network Diagrams)

There is potential for low attendance elders to be inserted into existing social networks to improve their engagement with Senior Activity Centres.

## Research Sponsor



The National Trade Union Congress Health Co-operative Limited (NTUC Health) is a social enterprise implementing community eldercare services in Singapore. They run Senior Activity Centres aimed at promoting mobility and social interactions amongst low-income elders, but currently face low attendance rates in many of the elderly persons registered.

## Research Objectives & Methodology

This project uses attendance, sociodemographic, functional status and health data of 648 elders from 2 NTUC Health Senior Activity Centres to develop insights through data analytics to improve elder engagement.



## Latent Class Analysis



Categorical variables such as mobility status, number of chronic diseases, and frequency of attendance were used. Clusters formed with lowest Bayesian Information Criteria (BIC) and Akaike Information Criteria (AIC) were analysed.

A cluster of relatively older elders with poor mobility and low attendance may benefit from home visits. Also, elders with chronic diseases and low attendance could be offered community care services such as nurse consultations to increase engagement with Centres.

## Recommendations

1. The strategic placement of community eldercare services near elders' residences is the most important factor in engagement of geriatric population.
2. There is a wide variety of existing social networks within Senior Activity Centres for isolated elderly persons to be matched with other elder to establish new social connections.
3. Offering services related to chronic disease treatment and follow-up (such as community nurse reviews) could improve elder engagement with Senior Activity Centres.
4. The oldest elderly have exceptionally low engagement. This may be attributable to frailty and functional decline and home visits and volunteer assistance may be useful.