PREDICTING INCIDENTS FROM RESIDENTIAL AGED CARE

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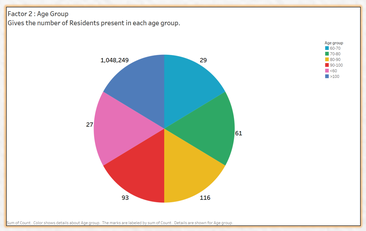
INTRODUCTION

- This project revolves around Predicting Hospital Admissions of Residents from Australian Aged Care Homes, in collaboration with Health Metrics.
- The elders present in these Aged Care Homes are at a high risk for Hospital Admissions.
- These Hospital Admissions are due to various risk factors such as age, lifestyle, meteorological factors, history of diseases, multimorbidity etc. and can also take place due to various incidents, the most common incident being falls.

DATASET

The dataset I used to analyze, explore and wrangle was the Test Sample Data – which was a test dataset of the Health Metrics Residential Aged Care Data.

A PEEK INTO DATASET : Test Sample Age Group Distribution



Age group	Count
<60	27
60-70	29
70-80	61
80-90	116
90-100	93
>100	1048249

PROBLEM STATEMENT

Thus, the problem statement and the aim of the Research Project was to :

1. Identification of the various factors which lead to Hospital Admissions from Aged Care Homes.
2. Degree of importance of each of the factors.
3. Prediction of Hospital Admissions based on each of these identified factors.

METHODOLOGY:

- Tools Used : SQL, Excel, Tableau, Python and R Programming.
- Step 1 : Aged Care Data Extraction and Data Wrangling using Python Programming.
- Step 2 : Aged Care Data Exploration and Visualizations using Tableau Public.
- Step 3 : Aged Care Data Analysis using R Programming.
- Step 4 : Further Analysis using Linear Model and P Value Analysis.

PROPOSED SOLUTION

- Identification of factors was done after going through 30-40 Research Papers which gave me an insight into the different research work which was already done in this field.
- Degree of Importance of each of the factors was done using P Value Analysis.

RESULTS

- Main factors which were identified, which lead to hospital admissions are: Age, Gender, Partnership, Functional Ability, Need for care, Family Support, Social Support, Distance to the nearest emergency department, financial status, history of smoking, history of alcohol consumption and previous history of hospital admissions.
- Most Important Factors : Age, Gender and Partnership Status.

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	1.000e+00	1.242e-15	8.049e+14	<2e-16	***
ID	-1.238e-19	7.025e-20	-1.762e+00	0.0942	.
Gender	6.856e-17	1.553e-16	4.410e-01	0.6639	
Age	-2.362e-17	1.926e-17	-1.226e+00	0.2351	
AgeGroup(70 - 80)	1.000e+00	6.775e-16	1.476e+15	<2e-16	***
AgeGroup(80 - 90)	2.000e+00	6.664e-16	3.001e+15	<2e-16	***
AgeGroup(90 - 100)	3.000e+00	7.462e-16	4.020e+15	<2e-16	***
AgeGroup< 60	-1.000e+00	1.238e-15	-8.078e+14	<2e-16	***
AgeGroup> 100	4.000e+00	9.229e-16	4.334e+15	<2e-16	***
Partner	3.059e-16	2.906e-16	1.053e+00	0.3056	

CONCLUSION AND FUTURE WORK:

- Thus, in conclusion Age and history of immediate previous hospitalization have always been the main contributing factors towards admissions.
- The identified factors can always be refined using various other statistical methods.