

# Predicting A&E Attendances at MDH A Crystal Ball?

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# Health minister help to ease hos overcrowding

Remarks come as NDP releases figures showing operating at over 100 per cent capacity.

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# Mater Dei A&E visits hit new high

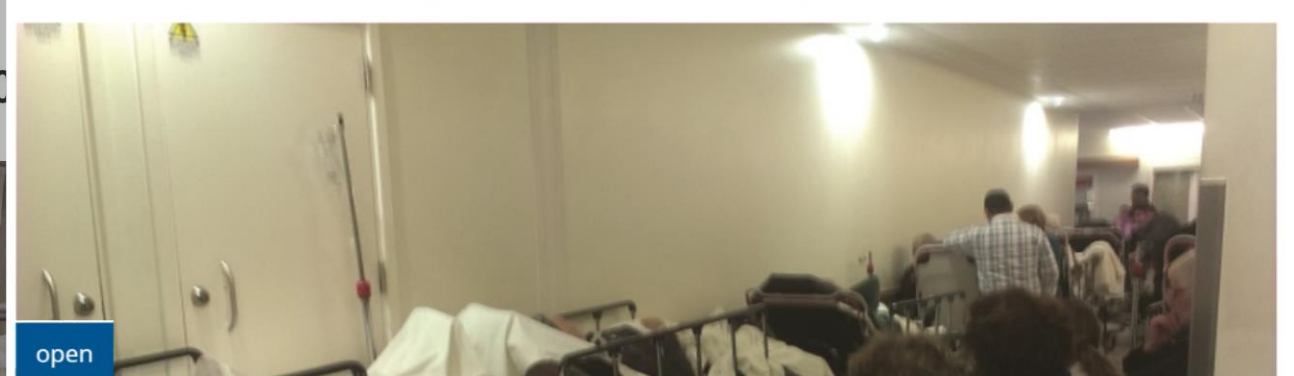
Malta Independent Thursday, 24 July 2014, 09:30 Last update: about 4 years ago

The number of patients seeking medical attention at Mater Dei Hospital's casualty department has hit a new high as the peak of summer hits in, this newspaper is informed.

Sources told this newsroom that there are no beds available so much so that beds in corridors are also scarce.

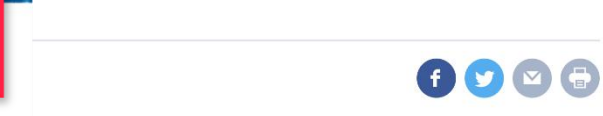
"Patients are burdened with having to wait for eight to 12 hours after being seen to by a doctor to be given a bed at the hospital.

Respiratory conditions are key factors in the ongoing surge.



- open
- > Vic euthanasia debate rise above partisan
- > Calls for crocodile cull after disappearance
- > Three men suffer suspected overdose

# Waiting for hospital bed -



NEWS NATIONAL

# ER patients waiting days fo

Updated: 4:15 pm, Thursday, 28 September 2017



## Trending

- 1 Spotlight on superstar students at awards ceremony for achievers
- 2 Players aired home truths after Portsmouth defeat
- 3 Hospital on 'Black Alert'
- 4 Ten of the best things to do in and around MK in the next few days

More from News

# WHY FORECAST IN HOSPITAL MANAGEMENT?

- Ageing population and increased demand for hospital services is pushing up utilisation of secondary health care resources.
- Peaks occur for a variety of reasons:

 Seasonal influenza

 Tourist peaks and events

 Drops in temperature

 Public holidays



# PREDICTING ALCOHOL RELATED A&E ADMISSIONS

- 🍸 Initiative by 2 Information System Strategy students at Middlesex University
- 🍸 To relate alcohol related admissions to entertainment events in Malta
- 🍸 To develop a Facebook API which would identify such events & the number of people interested
- 🍸 To relate the two datasets & develop a model to predict future alcohol related admissions



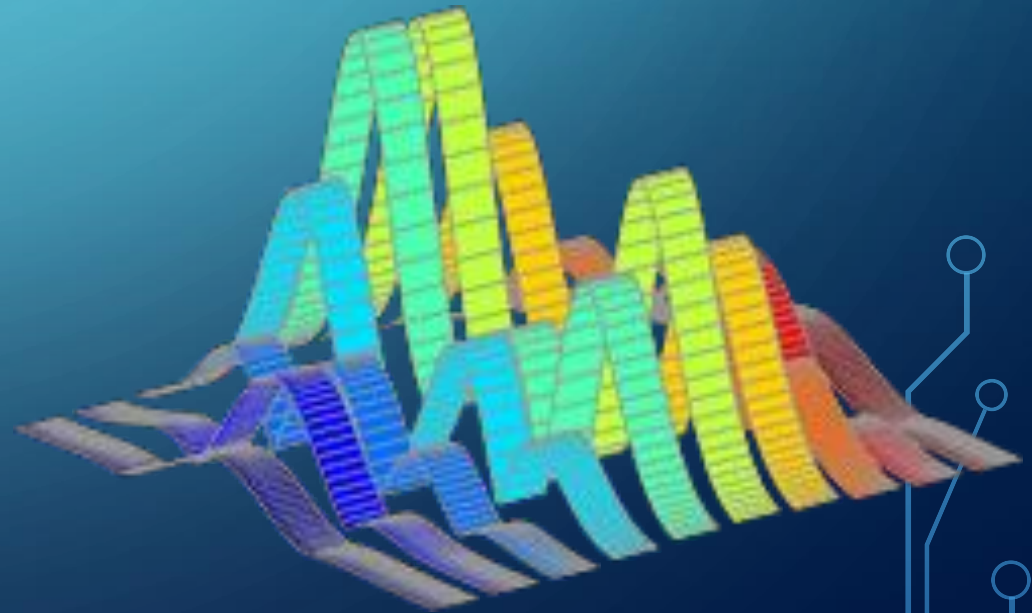
# METHODS

- Alcohol-related admissions 2012-2015 from Mater Dei Hospital
- Analysis to obtain patterns of patient intake
- Build probability model based on these patterns
- Two predictions methods tested:
  - Seasonal 3-period moving averages
  - Exponential forecasting methods

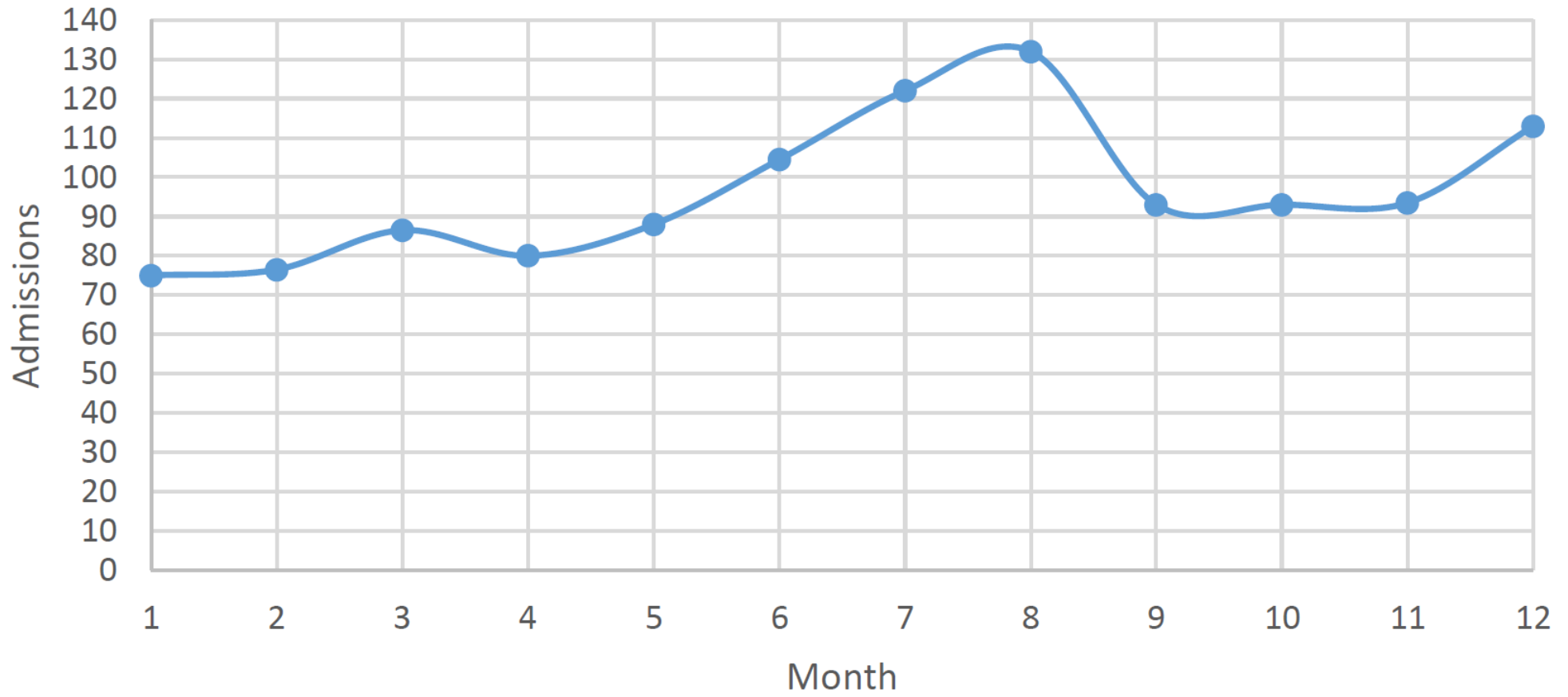


# PATTERNS

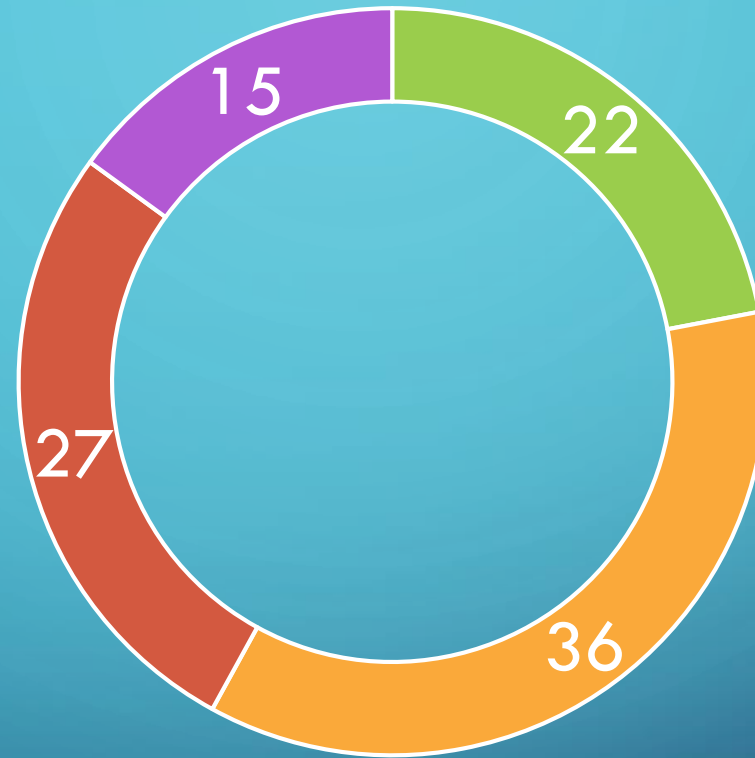
- Seasonality
- Weekdays vs weekends/public holidays
- Age group
- Gender



# Seasonal Admissions 2012-2015



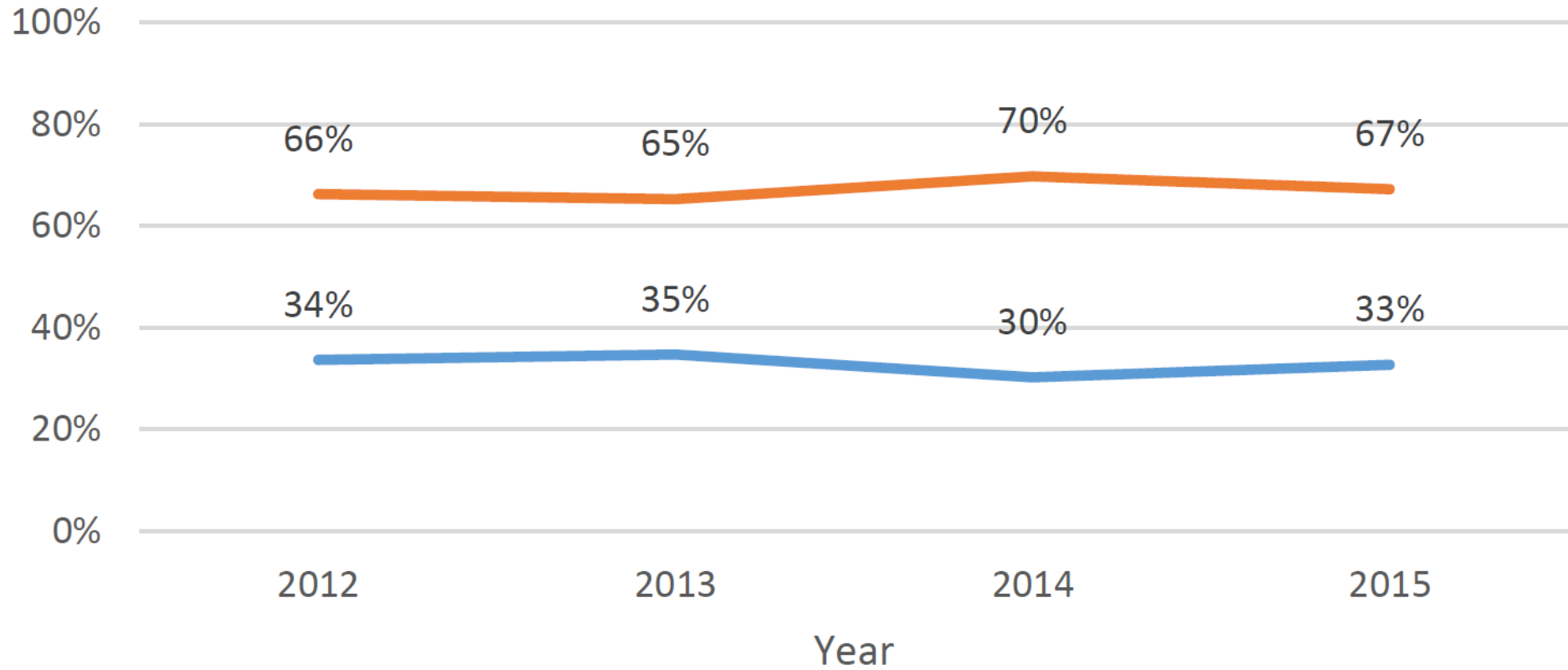
# Distribution by type of day



■ Eve of PH ■ Pub Hol  
■ Weekend ■ Weekday

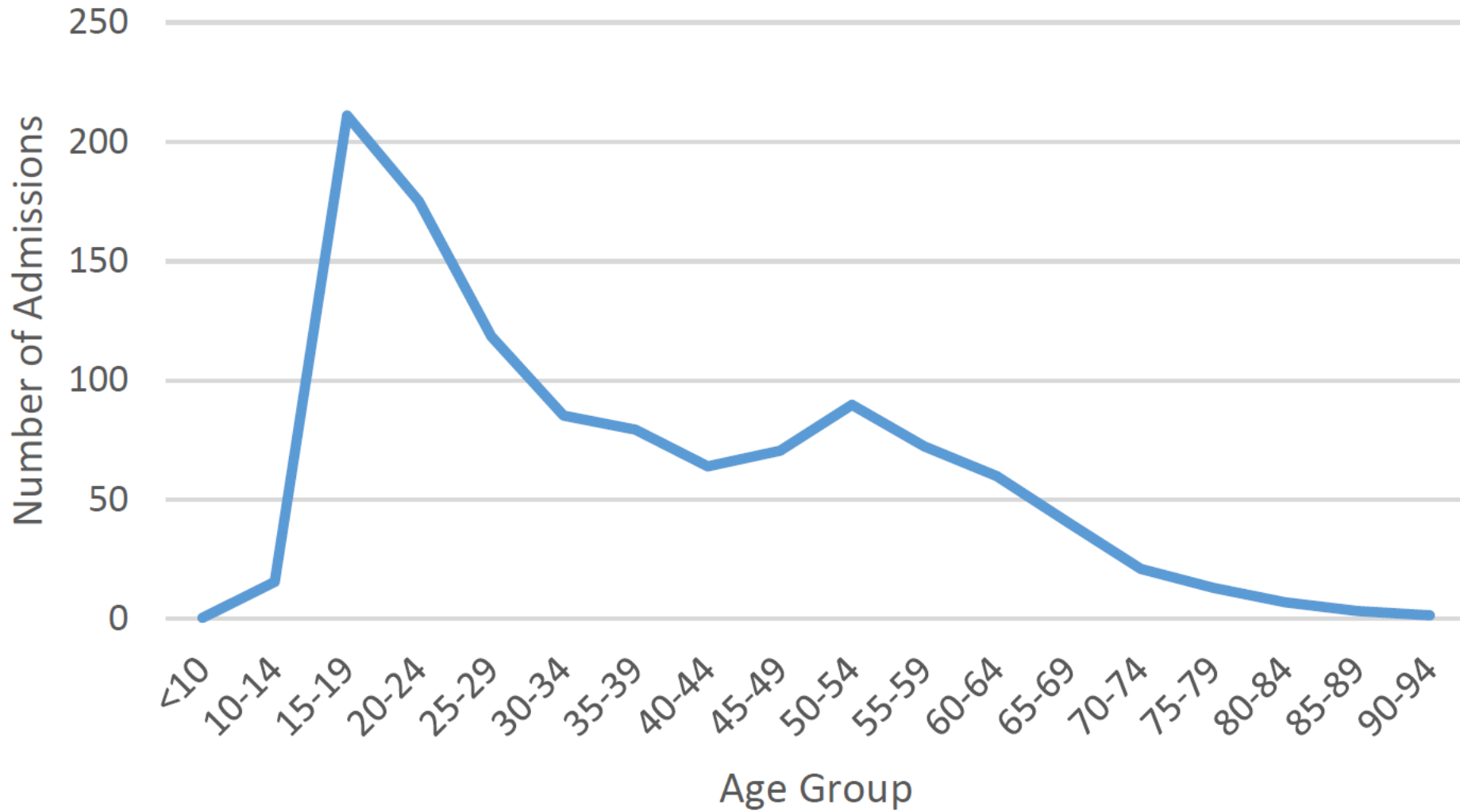


## Gender ratio

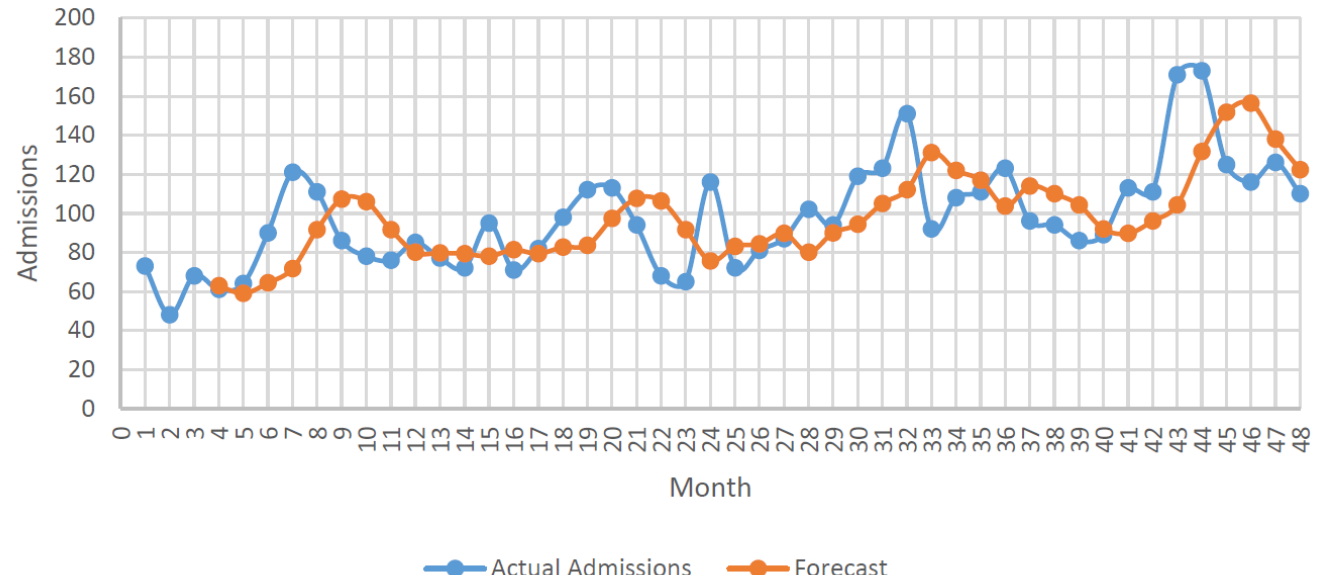


— Females — Males

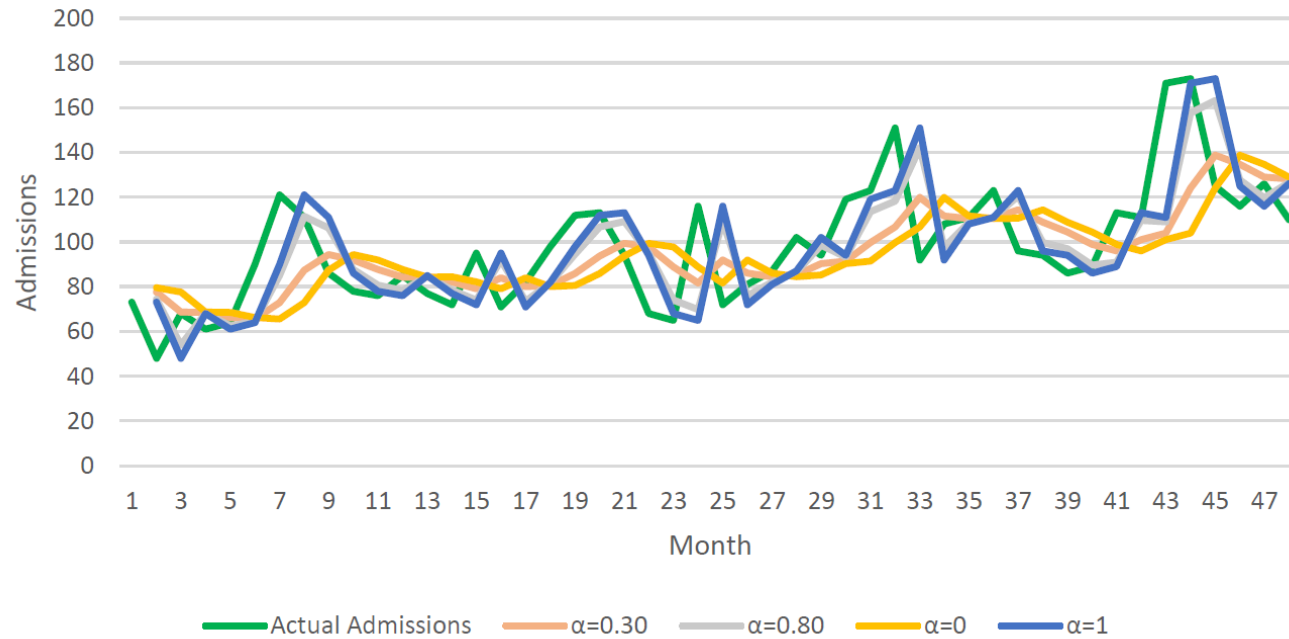
## Age group of Admissions



### 3-Period Moving Average



### Exponential Smoothing



# LIMITATIONS OF THIS EXERCISE

- Facebook API could not limit itself to activities occurring in Malta only.
- Only public events could be captured.
- Model would improve further with the inclusion of:
  - weather data and weather forecasts
  - Events publicised on websites like [visitmalta.com](http://visitmalta.com)

# IMPLICATIONS

- Admissions to A&E and hospital are largely predictable.
- Modelling could lead to better planning of elective care and resources, engaging with primary care and public health (health education, infectious diseases)
- Such modelling has a role in planning for seasonal influenza peaks, especially when adding external data such as temperature and primary care influenza surveillance data to similar models.

