ELEKTRILEVI-2

Cables, Transformers and Poles

Muhammed Bilal Shahid, Hippolyto Fayol and Bilawal Hussain

Introduction

A brief research on the data about poles, transformers and cables from the Electric supply company call ‘Elektrilevi’. In this project the life span of a pole, reliability of a wire in term joints and at what age defects that are most likely to appear in transformers

Data Analysis

From the given data we analyzed the following:

For the cables dataset we had the information about Joints on each type of cable, there were 186 types of cables. Each joint is provided with installation date, cable reference and the cables installation date.

For the poles dataset we had the information of pole types, their age when they were changed and the observation year when they were observed. There were 4 types of poles.

For the transformers data set we were given the information about the types of the transformer, Installation date, replace date, observation date, types of faults and observation descriptions. There were 4 types of issues with transformers with 3-4 types of observations for each transformers. There were 326 types of transformers.

Data Cleaning

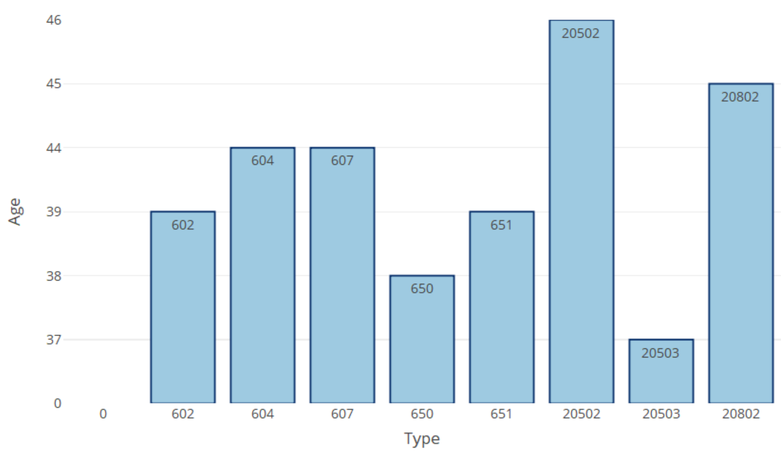
Data were cleaned appropriately by replacing the missing and suspicious values with NA

Data about poles did not require any data cleaning. Other two datasets required very minimal data cleaning

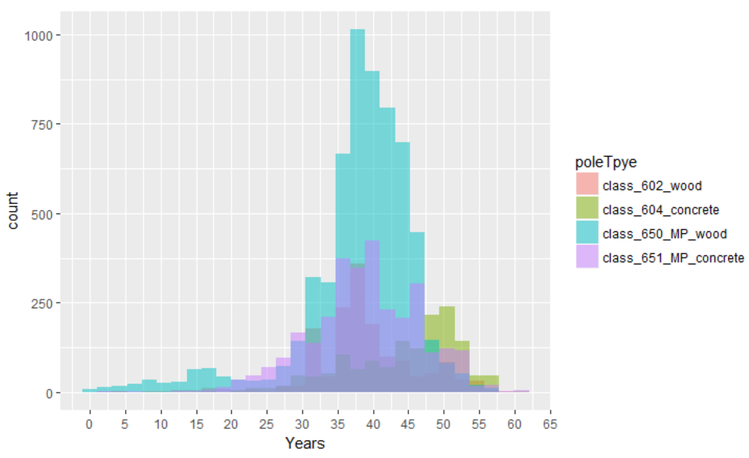
Poles

For the poles we have to identify the life span of each pole type and when to retire a pole.

The following graph shows the average life span of each pole type

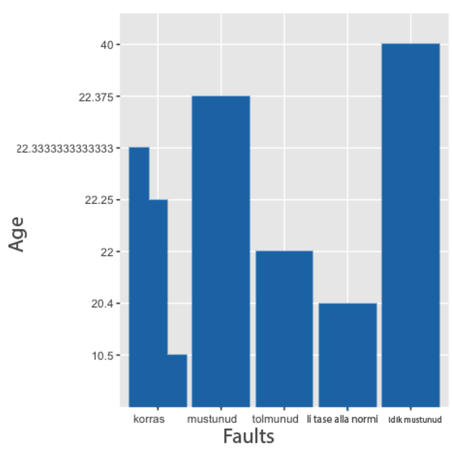


The following histogram shows that when to retire each pole type. The peek values of each pole type shows when in their age poles should be replaced with new ones.



Transformers

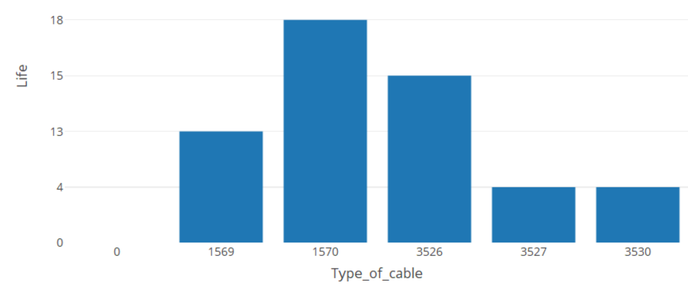
For Transformers we had 316 types of them. We find out what type of transformer get what kind of faults at what age. The faults that appear are written as observation description. Following graph shows the defects of one transformer that arises after certain years



Cables

For the cables we had to tell the reliability of each cable type in term of when the first joint should be installed. There were total 186 types of cables.

The following graph shows the top 5 best reliable cables in term of joint instalment.



Conclusion

On the bases of the given data, this project enables us to determine which pole has the highest life span and at what age they retire, The highest life span for poles is 46 years and MP_wood poles retire at the age to ~38 years

For Cables the best cable type is 1570(ASB-6.3x150) that needs on average its first patch in 18 years.

For transformers We have shown the faults that are most likely to show after couple of years

Glossary

Poles

Pole type ID - Pole type name

- 602 – Wood
- 604 – Concrete
- 650 – MP_Wood
- 651 – MP_Concrete Tower

Transformer

- The graph is shown for the transformer type “6TBN 630”

Cable

Cable Type ID – Cable Name

- 1569 - ASB-6.3x120
- 1570 - ASB-6.3x150
- 3526 - ASB-10.3x95
- 3527 – ASB-10.3x120
- 3530 – ASB-10.3x240