Identifying Ineffective Operators

Practicum100 – Final Project

By Ferdinand Dreyer

Central topics of the project

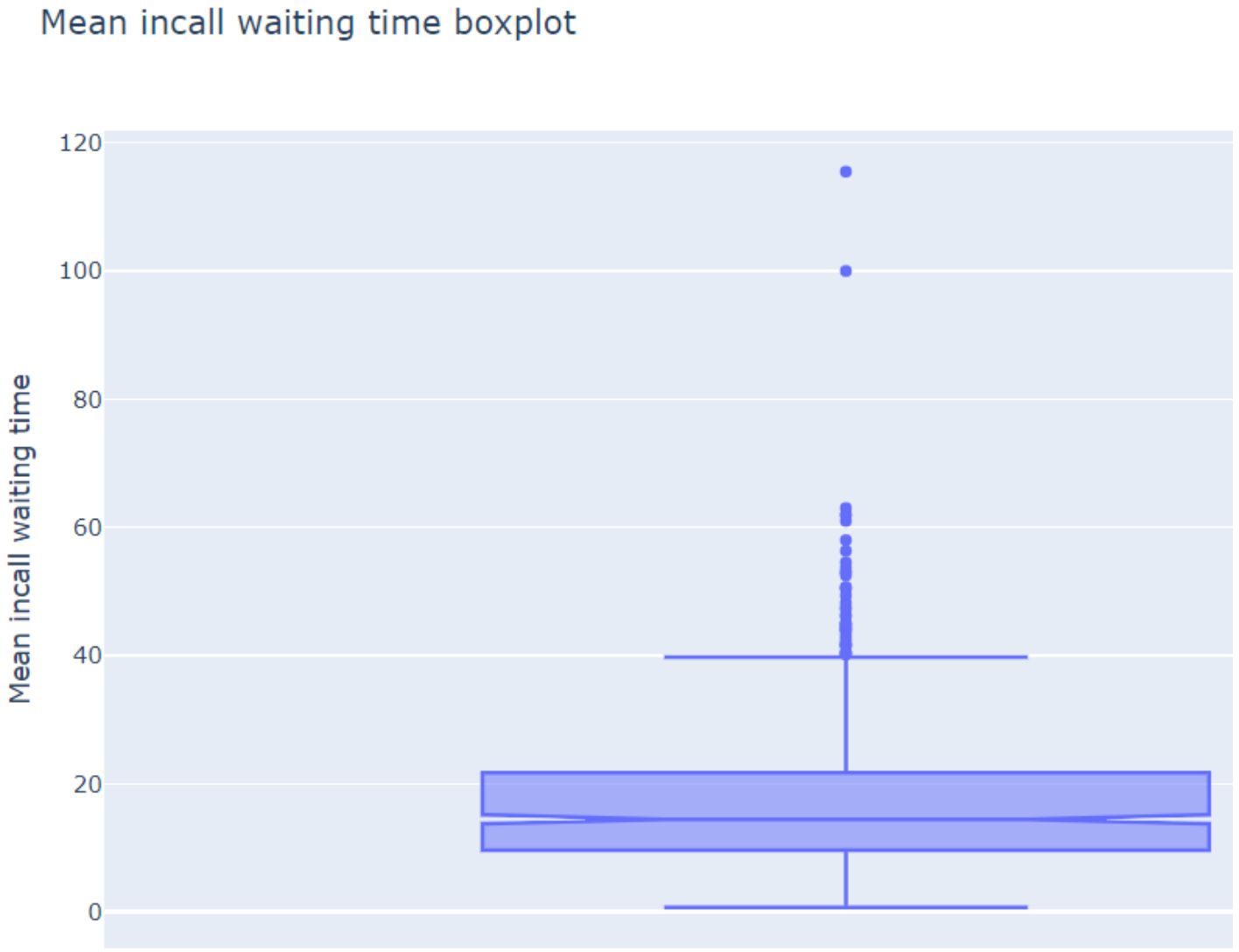
- Identify ineffective operators
- Test statistical hypotheses

Identify ineffective operators

Indicators for ineffective operators:

- Incall operators:
  - Mean waiting time
  - Rate of missed calls
- Outcall operators:
  - Number of calls

Identify ineffective operators



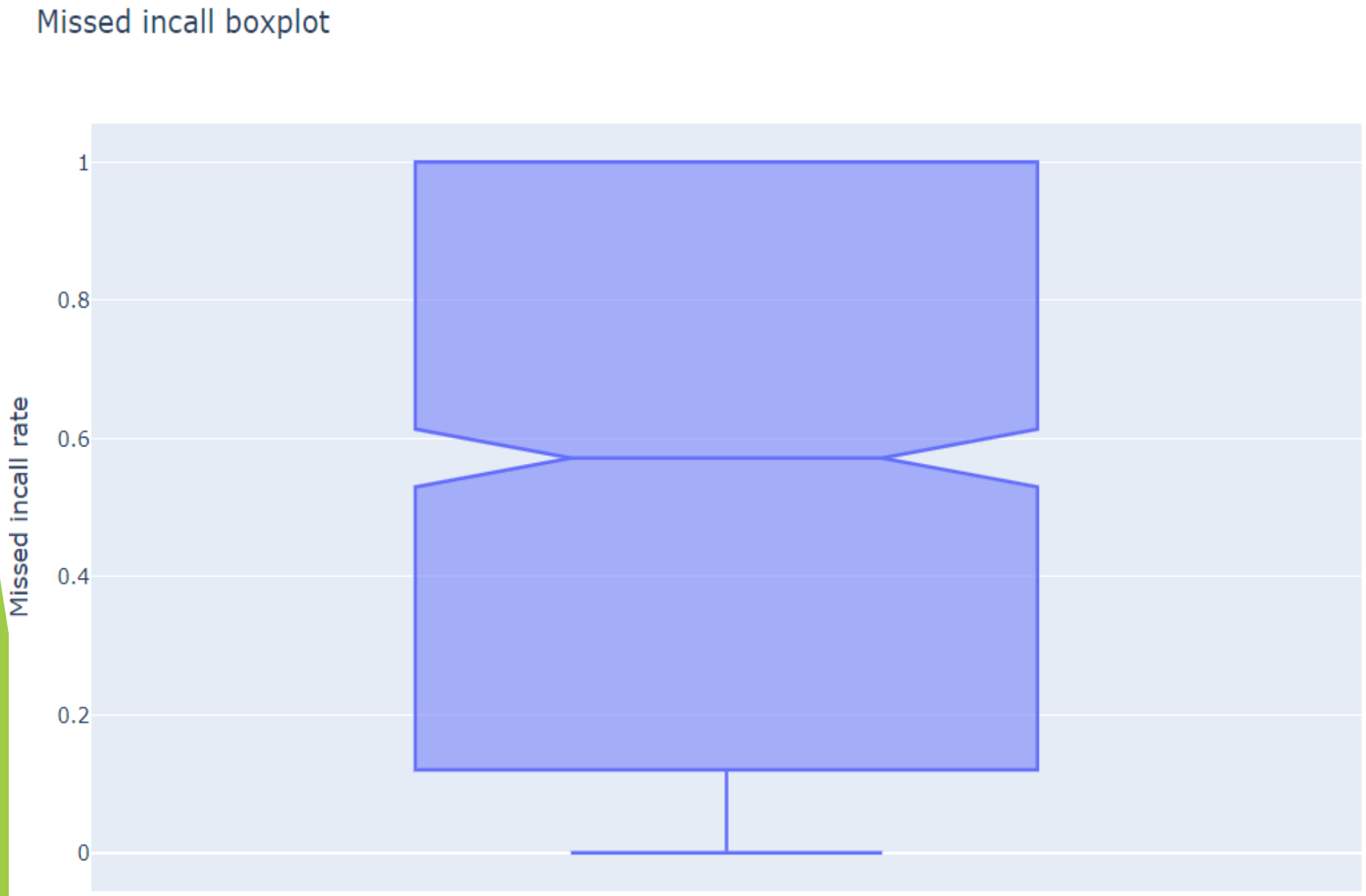
Chosen Threshold for ineffectiveness:

40 seconds waiting time

Total number:

17

Identify ineffective operators



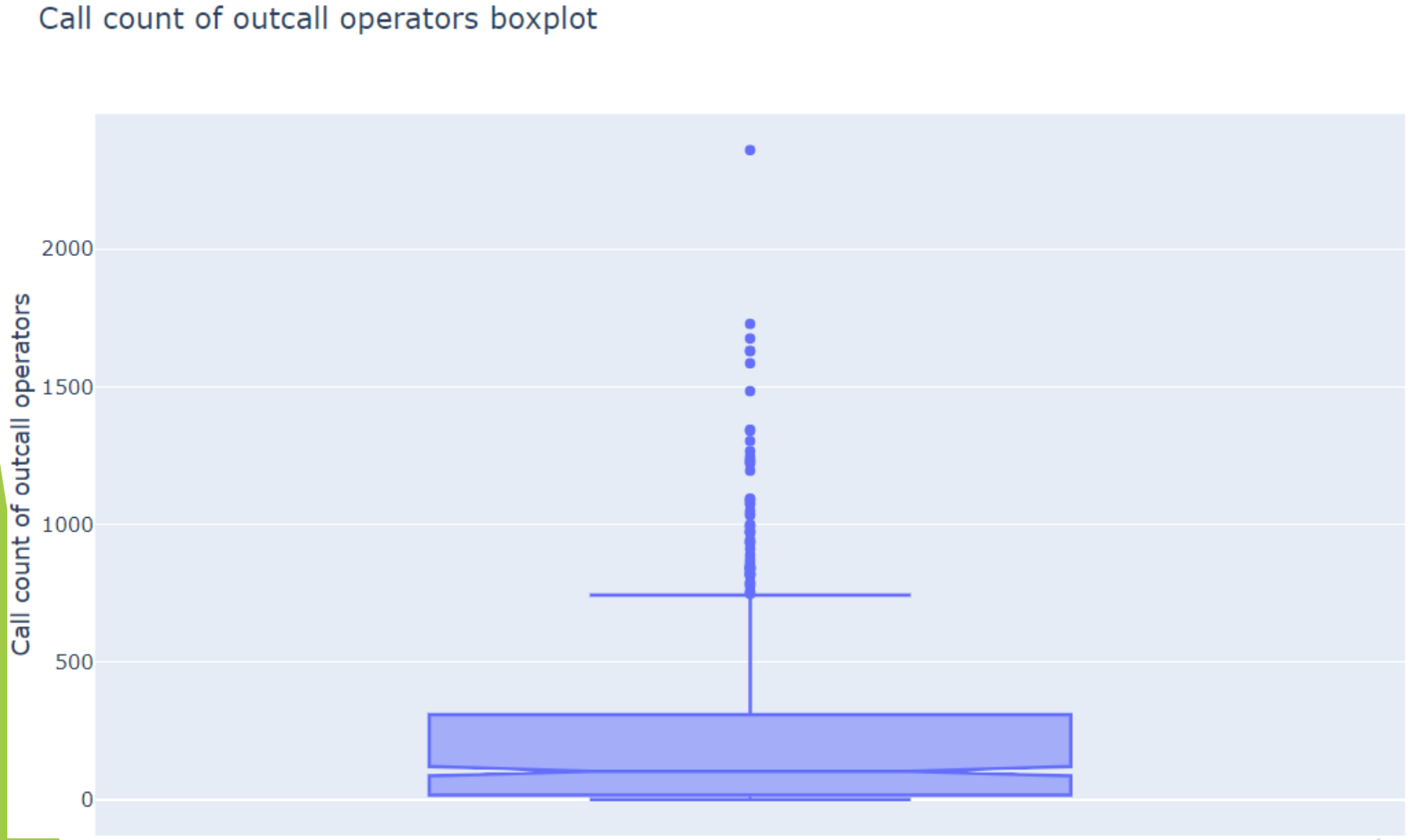
Chosen Threshold for ineffectiveness:

Miss rate of **0.8**

Total number:

143

Identify ineffective operators



Chosen Threshold for ineffectiveness:

20 calls

Total number:

73

Identify ineffective operators

Number of ineffective operators:

- Incall operators:
  - Mean waiting time: 17
  - Rate of missed calls: 143
- Outcall operators:
  - Number of calls: 73
- Total: 197 (18.09%) (Some operators appear in 2 lists)

Test statistical hypotheses

1. Operators with high waiting times are ineffective

- **H0**: "The ineffective operators with high waiting times have the same mean number of incoming calls as effective operators.“
- **H1**: "The ineffective operators with high waiting times don't have the same mean number of incoming calls as effective operators.“
- On average, the operators with high wait times have 35% of the calls of the effective operators
- **α**: 0.050 **p-value**: 0.358 → H0 can‘t get rejected!

Test statistical hypotheses

1. Operators with high waiting times are ineffective

- **H0**: "The ineffective operators with many missed calls have the same mean number of incoming calls as effective operators.
- **H1**: "The ineffective operators with many missed calls don't have the same mean number of incoming calls as effective operators."On average, the
- On average, the operators with many missed calls have 67% more calls.
- This implies the opposite of the alternative hypothesis.
- **α**: 0.050 **p-value**: 0.000 → The rejection of H0 is significant.

Summary

- 187 (18.09%) of all operators are considered as ineffective due to the selected indicators incall waiting time, missed incall rate and outcall number
- Threshold values were selected with the help of boxplots
- Operators with high waiting times don't have significantly more calls
- Operators with many missed calls even have more calls than the effective operators
- Other factors should be taken into account if a operator is ineffective

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