# ML2

December 29, 2021

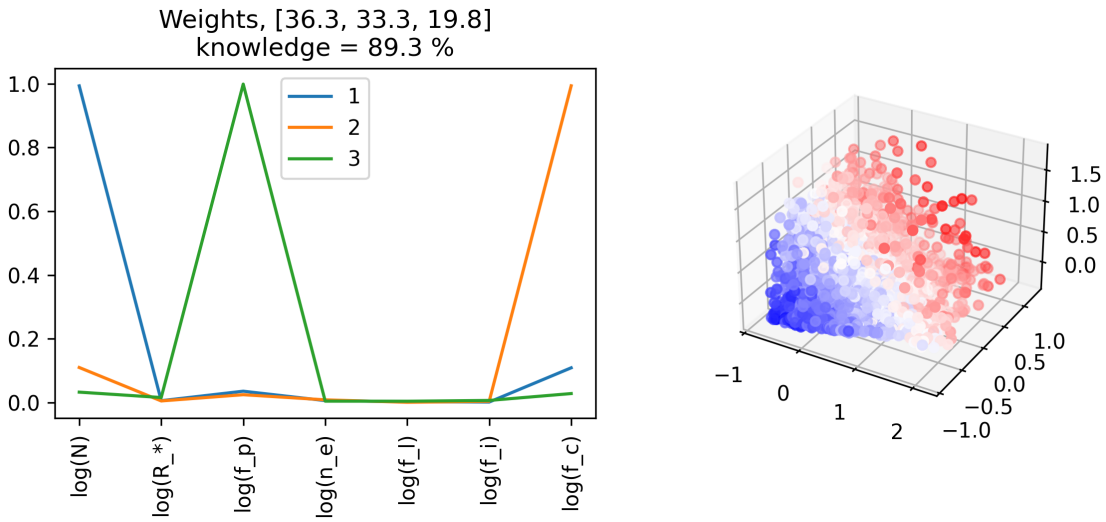
[1]:
```
from sklearn.decomposition import PCA
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
from mpl_toolkits.mplot3d import Axes3D
plt.rcParams['figure.facecolor'] = 'white'

data = pd.read_csv('collectedData/meti_tabela_csv.csv', index_col=0)
parameters = list(data.columns)[1:-4]
parameters_nomath = [p.replace("_pm", "_{pm}").replace("_me", "_{me}") if "("␣
↪in p else p.replace("_", " ") for p in parameters]
dataTotal = np.load('collectedData/meti_parameters.npy')
labelsTotal = np.load('collectedData/meti_labels.npy')[:, 0]
data = dataTotal[dataTotal[:, 0] == 1, 1:]
labels = labelsTotal[dataTotal[:, 0] == 1]
data2 = dataTotal[dataTotal[:, 0] == 2, 1:]
labels2 = labelsTotal[dataTotal[:, 0] == 2]
columns = [[4, 6, 7, 9, 10, 11, 12], [4, 5, 8], [4, 6, 7, 9, 10, 11, 12], [6,␣
↪9, 13, 14, 15, 16, 17, 18]]
podatki = [(data[data[:, 0] == 1, :][:, columns[0]], [parameters[c] for c in␣
↪columns[0]], labels[data[:, 0] == 1], 'Model I')]
podatki += [(data[data[:, 1] == 1, :][:, columns[1]], [parameters[c] for c in␣
↪columns[1]], labels[data[:, 1] == 1], 'Model II')]
podatki += [(data[data[:, 2] == 1, :][:, columns[2]], [parameters[c] for c in␣
↪columns[2]], labels[data[:, 2] == 1], 'Model III')]
podatki += [(data2[data2[:, 2] == 1, :][:, columns[2]], [parameters[c] for c in␣
↪columns[2]], labels2[data2[:, 2] == 1], 'Model III - 2')]
podatki += [(data[data[:, 3] == 1, :][:, columns[3]], [parameters[c] for c in␣
↪columns[3]], labels[data[:, 3] == 1], 'Model IV')]
```

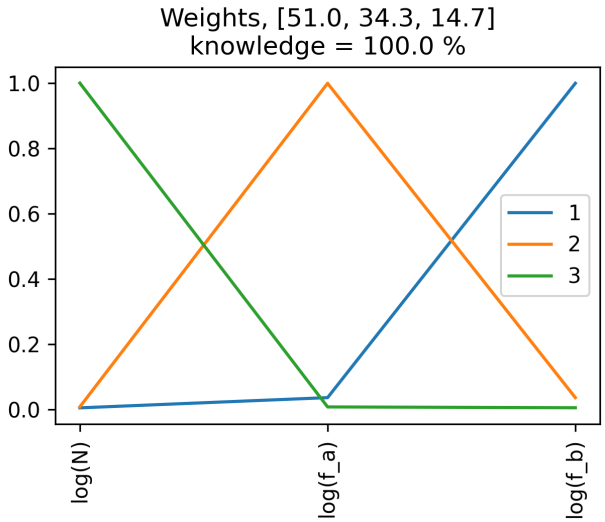
[2]:
```
for d, p, l, m in podatki:
    pca = PCA().fit(d)
    data = pca.transform(d)
    plt.figure(figsize=(8, 4), dpi=300, tight_layout=True), plt.suptitle(m)
    plt.subplot(121)
    plt.plot(np.abs(pca.components_.T[:, 0]), label="1")
    plt.plot(np.abs(pca.components_.T[:, 1]), label="2")
```

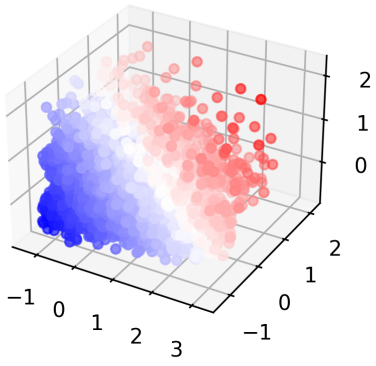
```
    plt.plot(np.abs(pca.components_.T[:, 2]), label="3")
    plt.xticks(list(range(len(p))), p, rotation=90)
    plt.title(f"Weights, {list(np.round(pca.explained_variance_[:3] / np.
 ↪sum(pca.explained_variance_) * 100, 1))}"
              f"\nknowledge = {(np.sum(pca.explained_variance_[:3]) / np.
 ↪sum(pca.explained_variance_)) * 100:.1f} %")
    plt.legend(loc="best")
    ax = plt.subplot(122, projection='3d')
    ax.scatter(data[:, 0], data[:, 1], data[:, 2], c=l, cmap="bwr")
plt.show()
from tabela_napake_p import modeli_napake
a = modeli_napake(True)
```

Model I

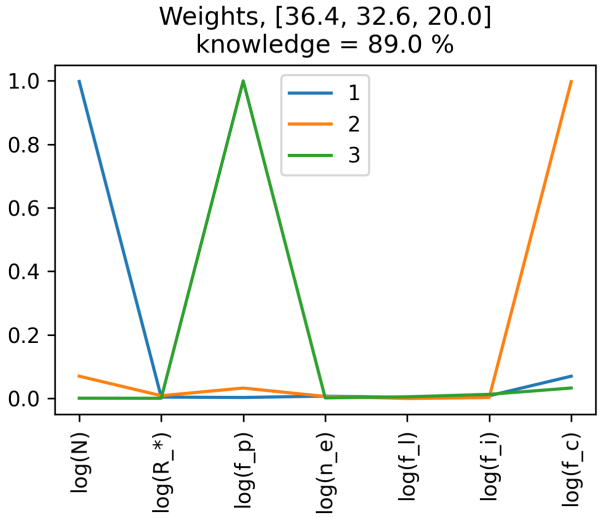


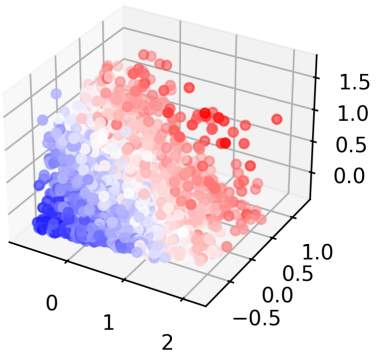
Model II



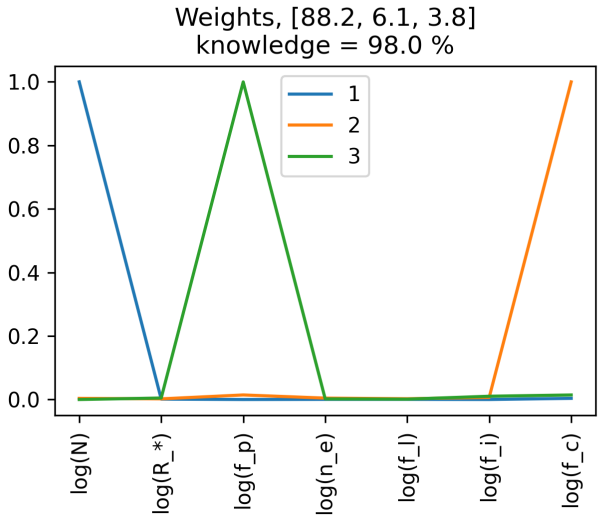



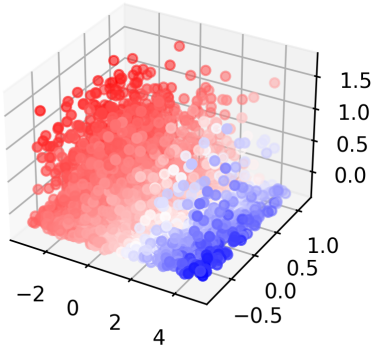

Model III



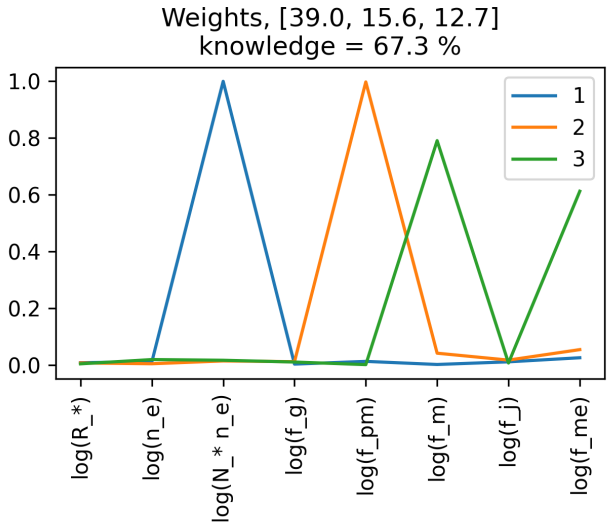



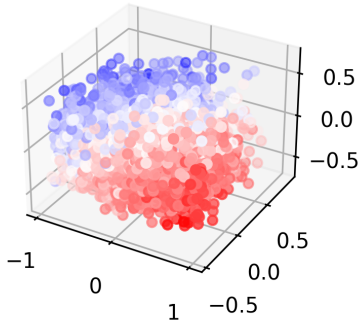
Model III - 2



Model IV



# 1 Rules

## 1.1 Model I

L:

- $(N \leq 10.0) \wedge (f_c > 20.0\ \%) \wedge (f_p > 20.0\ \%) \Rightarrow L = 4.0,$ Size=29 %, MSE=0.196
- $(f_c > 13.0\ \%) \wedge (N \leq 10.0) \wedge (f_p > 25.0\ \%) \wedge (f_c > 40.0\ \%) \Rightarrow L = 2.5,$ Size=16 %,

MSE=0.159

- $(f_c > 16.0\ \%) \wedge (N > 10.0) \wedge (N \leq 60.0) \wedge (f_p > 50.0\ \%) \Rightarrow L = 25.1$,Size=6 %, MSE=0.175
- $(N \leq 10.0) \wedge (f_c > 20.0\ \%) \wedge (f_p > 20.0\ \%) \wedge (N > 2.5) \Rightarrow L = 5.0,$ Size=20 %, MSE=0.163
- $(N \leq 6.0) \wedge (f_c > 20.0\ \%) \wedge (f_p > 20.0\ \%) \Rightarrow L = 3.2,$ Size=26 %, MSE=0.185
- $(N \leq 10.0) \wedge (f_c > 13.0\ \%) \wedge (f_p > 25.0\ \%) \wedge (f_c > 40.0\ \%) \Rightarrow L = 2.5,$ Size=16 %, MSE=0.157
- $(N \leq 10.0) \wedge (f_c > 20.0\ \%) \wedge (f_p > 20.0\ \%) \wedge (N \leq 2.5) \Rightarrow L = 2.0,$ Size=10 %, MSE=0.15
- $(f_c > 13.0\ \%) \wedge (N \leq 10.0) \wedge (f_p > 25.0\ \%) \wedge (f_c \leq 40.0\ \%) \Rightarrow L = 7.9,$ Size=21 %, MSE=0.187
- $(N \leq 10.0) \wedge (f_c \leq 20.0\ \%) \wedge (f_p > 32.0\ \%) \wedge (f_c > 6.0\ \%) \Rightarrow L = 12.6,$ Size=17 %, MSE=0.167
- $(N \leq 8.0) \wedge (f_c > 20.0\ \%) \wedge (f_p > 20.0\ \%) \Rightarrow L = 3.2,$ Size=28 %, MSE=0.187
- $(N > 10.0) \wedge (f_c \leq 8.0\ \%) \wedge (N \leq 80.0) \wedge (f_p > 50.0\ \%) \Rightarrow L = 251.2$,Size=4 %, MSE=0.144
- $(N > 10.0) \wedge (f_c \leq 8.0\ \%) \wedge (N \leq 80.0) \wedge (f_p > 80.0\ \%) \Rightarrow L = 251.2$,Size=4 %, MSE=0.171
- $(f_c > 16.0\ \%) \wedge (N > 10.0) \wedge (N > 60.0) \wedge (n_e > 2.0) \Rightarrow L = 158.5,$ Size=2 %, MSE=0.182
- $(N \leq 8.0) \wedge (f_c \leq 13.0\ \%) \wedge (f_p > 25.0\ \%) \wedge (f_c \leq 4.0\ \%) \Rightarrow L = 63.1,$ Size=10 %, MSE=0.166
- $(f_c > 16.0\ \%) \wedge (N > 13.0) \wedge (N \leq 60.0) \wedge (f_p > 80.0\ \%) \Rightarrow L = 25.1$,Size=4 %, MSE=0.167
- $(N \leq 10.0) \wedge (f_c > 20.0\ \%) \wedge (f_p > 25.0\ \%) \Rightarrow L = 4.0,$ Size=29 %, MSE=0.196
- $(f_c > 8.0\ \%) \wedge (N \leq 10.0) \wedge (f_p > 25.0\ \%) \wedge (f_c > 25.0\ \%) \Rightarrow L = 3.2,$ Size=23 %, MSE=0.175
- $(f_c > 13.0\ \%) \wedge (N > 10.0) \wedge (N > 60.0) \wedge (n_e > 2.0) \Rightarrow L = 199.5,$ Size=2 %, MSE=0.194
- $(N \leq 8.0) \wedge (f_c \leq 13.0\ \%) \wedge (f_p > 25.0\ \%) \wedge (f_c > 4.0\ \%) \Rightarrow L = 20.0,$ Size=15 %, MSE=0.168
- $(N \leq 8.0) \wedge (f_c > 13.0\ \%) \wedge (f_p > 20.0\ \%) \wedge (f_c \leq 40.0\ \%) \Rightarrow L = 6.3,$ Size=20 %, MSE=0.186
- $(N \leq 6.0) \wedge (f_c > 13.0\ \%) \wedge (f_p > 25.0\ \%) \wedge (f_c \leq 40.0\ \%) \Rightarrow L = 6.3,$ Size=18 %, MSE=0.168
- $(N \leq 10.0) \wedge (f_c > 16.0\ \%) \wedge (f_p > 25.0\ \%) \wedge (f_c > 40.0\ \%) \Rightarrow L = 2.5,$ Size=15 %, MSE=0.159
- $(N \leq 8.0) \wedge (f_c > 20.0\ \%) \wedge (f_p > 20.0\ \%) \wedge (N > 2.5) \Rightarrow L = 5.0,$ Size=18 %, MSE=0.153
- $(f_c > 16.0\ \%) \wedge (N \leq 10.0) \wedge (f_p > 25.0\ \%) \wedge (f_c \leq 40.0\ \%) \Rightarrow L = 6.3,$ Size=18 %, MSE=0.169
- $(f_c > 16.0\ \%) \wedge (N \leq 10.0) \wedge (f_p > 25.0\ \%) \wedge (f_c > 40.0\ \%) \Rightarrow L = 2.5,$ Size=14 %, MSE=0.154

### 1.2 Model I

P(L < 1000):

- $(T) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=100 %, MSE=0.053
- $(N \leq 100.0) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=95 %, MSE=0.033
- $(N \leq 100.0) \wedge (f_p > 5.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=92 %, MSE=0.019
- $(N \leq 80.0) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=94 %, MSE=0.031
- $(N \leq 80.0) \wedge (f_p > 5.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=91 %, MSE=0.017
- $(N \leq 100.0) \wedge (f_p > 5.0\ \%) \wedge (f_c > 2.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=85 %, MSE=0.008
- $(N \leq 80.0) \wedge (f_p > 5.0\ \%) \wedge (f_c > 2.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$,Size=85 %, MSE=0.007
- $(N > 100.0) \wedge (f_c \leq 25.0\ \%) \Rightarrow P(L < 1000) = 20.0\ \%$, Size=2 %, MSE=0.159
- $(N \leq 100.0) \wedge (f_p > 5.0\ \%) \wedge (f_c \leq 2.0\ \%) \Rightarrow P(L < 1000) = 80.0\ \%$, Size=6 %, MSE=0.145
- $(N > 100.0) \wedge (f_c > 25.0\ \%) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=2 %, MSE=0.096
- $(N \leq 130.0) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=96 %, MSE=0.033
- $(N \leq 50.0) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=92 %, MSE=0.029
- $(N \leq 80.0) \wedge (f_p > 5.0\ \%) \wedge (f_c \leq 2.0\ \%) \Rightarrow P(L < 1000) = 80.0\ \%$, Size=6 %, MSE=0.147
- $(N \leq 100.0) \wedge (f_p > 5.0\ \%) \wedge (f_c > 2.5\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=83 %, MSE=0.007
- $(N \leq 130.0) \wedge (f_p > 5.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=92 %, MSE=0.019
- $(N > 80.0) \wedge (f_c \leq 13.0\ \%) \Rightarrow P(L < 1000) = 10.0\ \%$, Size=2 %, MSE=0.089
- $(T) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=100 %, MSE=0.046
- $(N > 80.0) \wedge (f_c > 13.0\ \%) \Rightarrow P(L < 1000) = 80.0\ \%$, Size=4 %, MSE=0.16
- $(N \leq 80.0) \wedge (f_p > 5.0\ \%) \wedge (f_c \leq 2.0\ \%) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=6 %, MSE=0.118
- $(N > 100.0) \wedge (f_c > 16.0\ \%) \Rightarrow P(L < 1000) = 80.0\ \%$, Size=2 %, MSE=0.153
- $(N \leq 50.0) \wedge (f_p > 5.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=88 %, MSE=0.015
- $(N \leq 100.0) \wedge (f_p \leq 5.0\ \%) \wedge (f_c > 13.0\ \%) \Rightarrow P(L < 1000) = 90.0\ \%$,Size=2 %, MSE=0.096
- $(N \leq 80.0) \wedge (f_p \leq 5.0\ \%) \wedge (f_c > 13.0\ \%) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=2 %, MSE=0.088
- $(N \leq 100.0) \wedge (f_p > 5.0\ \%) \wedge (f_c \leq 2.0\ \%) \wedge (N \leq 8.0) \Rightarrow P(L < 1000) = 100.0\ \%$,Size=5 %, MSE=0.035
- $(N \leq 80.0) \wedge (f_p > 5.0\ \%) \wedge (f_c > 2.0\ \%) \wedge (f_p > 20.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$,Size=76 %, MSE=0.001

### 1.3 Model I

P(L < 10 000):

- $(T) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=100 %, MSE=0.007
- $(N \leq 130.0) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=96 %, MSE=0.002
- $(N \leq 130.0) \wedge (f_p > 4.0\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=94 %, MSE=0.0
- $(N > 130.0) \wedge (f_c > 16.0\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=2 %, MSE=0.0
- $(N > 130.0) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=4 %, MSE=0.109
- $(N \leq 130.0) \wedge (f_p \leq 4.0\ \%) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=3 %, MSE=0.069
- $(N > 130.0) \Rightarrow P(L < 10000) = 80.0\ \%$, Size=4 %, MSE=0.14
- $(N \leq 160.0) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=97 %, MSE=0.002
- $(N \leq 130.0) \wedge (f_p \leq 4.0\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=3 %, MSE=0.037
- $(N \leq 160.0) \wedge (f_p > 4.0\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=94 %, MSE=0.0
- $(N > 160.0) \Rightarrow P(L < 10000) = 80.0\ \%$, Size=3 %, MSE=0.147
- $(N > 130.0) \wedge (f_c > 20.0\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=2 %, MSE=0.0
- $(N \leq 160.0) \wedge (f_p \leq 4.0\ \%) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=3 %, MSE=0.067
- $(N \leq 130.0) \wedge (f_p > 4.0\ \%) \wedge (f_c > 1.3\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$,Size=92 %, MSE=0.0
- $(N \leq 130.0) \wedge (f_p > 4.0\ \%) \wedge (f_c \leq 1.3\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=2 %, MSE=0.021
- $(N \leq 160.0) \wedge (f_p > 4.0\ \%) \wedge (N \leq 100.0) \Rightarrow P(L < 10000) = 100.0\ \%$,Size=93 %, MSE=0.0
- $(N > 160.0) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=3 %, MSE=0.113
- $(N > 130.0) \wedge (f_c > 13.0\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=2 %, MSE=0.009
- $(N \leq 160.0) \wedge (f_p > 4.0\ \%) \wedge (N > 100.0) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=2 %, MSE=0.029
- $(N \leq 130.0) \wedge (f_p > 2.5\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=95 %, MSE=0.0
- $(N \leq 130.0) \wedge (f_p > 3.2\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=95 %, MSE=0.0
- $(N \leq 130.0) \wedge (f_p \leq 2.5\ \%) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=2 %, MSE=0.085
- $(N \leq 130.0) \wedge (f_p \leq 3.2\ \%) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=2 %, MSE=0.08
- $(N > 160.0) \wedge (f_c > 20.0\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=2 %, MSE=0.0
- $(N \leq 130.0) \wedge (f_p > 4.0\ \%) \wedge (N > 80.0) \Rightarrow P(L < 10000) = 100.0\ \%$,Size=2 %, MSE=0.018

### 1.4 Model I

P(L < 100 000):

- $(T) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=100 %, MSE=0.0

### 1.5 Model II

L:

- $(f_b > 2.0\ \%) \wedge (f_a > 80.0\ \%) \wedge (N \leq 10.0) \wedge (f_b > 25.0\ \%) \Rightarrow L = 2.0,$ Size=17 %, MSE=0.199
- $(f_b > 2.0\ \%) \wedge (f_a > 80.0\ \%) \wedge (N \leq 10.0) \wedge (f_b \leq 10.0\ \%) \Rightarrow L = 20.0,$ Size=12 %, MSE=0.196
- $(f_b > 2.0\ \%) \wedge (f_a > 80.0\ \%) \wedge (f_b > 20.0\ \%) \wedge (N \leq 6.0) \Rightarrow L = 1.6$,Size=16 %, MSE=0.195
- $(f_b > 6.0\ \%) \wedge (f_a > 40.0\ \%) \wedge (N \leq 10.0) \wedge (f_a \leq 200.0\ \%) \Rightarrow L = 12.6,$ Size=11 %, MSE=0.198
- $(f_b > 2.0\ \%) \wedge (f_a > 80.0\ \%) \wedge (f_b > 20.0\ \%) \wedge (N \leq 5.0) \Rightarrow L = 1.6$,Size=14 %, MSE=0.175
- $(f_b > 2.0\ \%) \wedge (f_a > 80.0\ \%) \wedge (f_b > 20.0\ \%) \wedge (N \leq 8.0) \Rightarrow L = 1.6$, Size=17 %, MSE=0.19
- $(f_b > 6.0\ \%) \wedge (f_a \leq 40.0\ \%) \wedge (N \leq 13.0) \wedge (f_a \leq 5.0\ \%) \Rightarrow L = 501.2,$ Size=3 %, MSE=0.186
- $(f_b > 6.0\ \%) \wedge (f_a > 40.0\ \%) \wedge (N \leq 6.0) \wedge (f_a > 250.0\ \%) \Rightarrow L = 2.0,$ Size=17 %, MSE=0.196
- $(f_b > 2.0\ \%) \wedge (f_a > 80.0\ \%) \wedge (N \leq 8.0) \wedge (f_b \leq 16.0\ \%) \Rightarrow L = 15.8,$ Size=13 %, MSE=0.177
- $(f_b > 2.0\ \%) \wedge (f_a \leq 40.0\ \%) \wedge (N > 16.0) \wedge (f_a \leq 8.0\ \%) \Rightarrow L = 10000.0,$ Size=2 %, MSE=0.194
- $(f_b > 2.0\ \%) \wedge (f_a > 80.0\ \%) \wedge (N \leq 10.0) \wedge (f_b \leq 13.0\ \%) \Rightarrow L = 20.0,$ Size=12 %, MSE=0.187
- $(f_b > 6.0\ \%) \wedge (f_a > 80.0\ \%) \wedge (N \leq 8.0) \wedge (f_a > 300.0\ \%) \Rightarrow L = 1.6,$ Size=14 %, MSE=0.184
- $(f_b > 6.0\ \%) \wedge (f_a > 40.0\ \%) \wedge (N \leq 6.0) \wedge (f_a \leq 250.0\ \%) \Rightarrow L = 10.0,$ Size=12 %, MSE=0.199
- $(f_b > 2.0\ \%) \wedge (f_a > 80.0\ \%) \wedge (N > 20.0) \wedge (f_b > 40.0\ \%) \Rightarrow L = 20.0,$ Size=2 %, MSE=0.138
- $(f_b > 2.0\ \%) \wedge (f_a > 80.0\ \%) \wedge (f_b > 16.0\ \%) \wedge (N \leq 6.0) \Rightarrow L = 2.0$,Size=19 %, MSE=0.194
- $(f_b > 2.0\ \%) \wedge (f_a \leq 80.0\ \%) \wedge (N > 13.0) \wedge (f_a \leq 8.0\ \%) \Rightarrow L = 10000.0,$ Size=2 %, MSE=0.183
- $(f_b > 6.0\ \%) \wedge (f_a > 80.0\ \%) \wedge (N \leq 8.0) \wedge (f_a > 320.0\ \%) \Rightarrow L = 2.0,$ Size=17 %, MSE=0.184
- $(f_b > 1.6\ \%) \wedge (f_a > 80.0\ \%) \wedge (f_b \leq 13.0\ \%) \wedge (N \leq 10.0) \Rightarrow L = 20.0,$ Size=14 %, MSE=0.199
- $(f_b > 4.0\ \%) \wedge (f_a > 80.0\ \%) \wedge (N \leq 8.0) \wedge (f_b > 25.0\ \%) \Rightarrow L = 1.6$, Size=16 %, MSE=0.19
- $(f_b > 6.0\ \%) \wedge (f_a \leq 30.0\ \%) \wedge (N \leq 8.0) \wedge (f_a \leq 4.0\ \%) \Rightarrow L = 631.0$, Size=2 %, MSE=0.17

- $(f_b > 6.0\ \%) \wedge (f_a > 40.0\ \%) \wedge (N \leq 8.0) \wedge (f_a \leq 250.0\ \%) \Rightarrow L = 10.0,$ Size=11 %, MSE=0.189
- $(f_b > 2.0\ \%) \wedge (f_a > 80.0\ \%) \wedge (f_b > 13.0\ \%) \wedge (N \leq 5.0) \Rightarrow L = 1.6$,Size=17 %, MSE=0.191
- $(f_b > 2.0\ \%) \wedge (f_a \leq 60.0\ \%) \wedge (N > 16.0) \wedge (f_a \leq 10.0\ \%) \Rightarrow L = 10000.0,$ Size=2 %, MSE=0.185
- $(f_b > 2.0\ \%) \wedge (f_a > 80.0\ \%) \wedge (N \leq 8.0) \wedge (f_b \leq 10.0\ \%) \Rightarrow L = 15.8,$ Size=10 %, MSE=0.178
- $(f_b > 2.0\ \%) \wedge (f_a \leq 30.0\ \%) \wedge (N \leq 6.0) \wedge (f_b \leq 13.0\ \%) \Rightarrow L = 794.3$,Size=4 %, MSE=0.17

### 1.6 Model II

P(L < 1000):

- $(T) \Rightarrow P(L < 1000) = 80.0\ \%,$ Size=100 %, MSE=0.173
- $(f_b > 0.6\ \%) \Rightarrow P(L < 1000) = 90.0\ \%,$ Size=82 %, MSE=0.108
- $(f_b > 1.3\ \%) \Rightarrow P(L < 1000) = 90.0\ \%,$ Size=75 %, MSE=0.09
- $(f_b > 0.8\ \%) \Rightarrow P(L < 1000) = 90.0\ \%,$ Size=80 %, MSE=0.103
- $(f_b > 1.6\ \%) \Rightarrow P(L < 1000) = 90.0\ \%,$ Size=74 %, MSE=0.087
- $(f_b > 0.6\ \%) \wedge (f_a > 20.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%,$ Size=67 %, MSE=0.04
- $(f_b > 1.3\ \%) \wedge (f_a > 16.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%,$ Size=63 %, MSE=0.031
- $(f_b > 1.0\ \%) \Rightarrow P(L < 1000) = 90.0\ \%,$ Size=78 %, MSE=0.096
- $(f_b \leq 1.3\ \%) \wedge (f_a \leq 130.0\ \%) \Rightarrow P(L < 1000) = 10.0\ \%,$ Size=10 %, MSE=0.094
- $(f_b \leq 1.3\ \%) \wedge (f_a \leq 100.0\ \%) \Rightarrow P(L < 1000) = 10.0\ \%,$ Size=10 %, MSE=0.082
- $(f_b > 0.8\ \%) \wedge (f_a > 16.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%,$ Size=67 %, MSE=0.042
- $(f_b \leq 0.6\ \%) \wedge (f_a \leq 130.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%,$ Size=7 %, MSE=0.025
- $(f_b > 0.6\ \%) \wedge (f_a > 25.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%,$ Size=65 %, MSE=0.037
- $(f_b \leq 1.3\ \%) \wedge (f_a \leq 160.0\ \%) \Rightarrow P(L < 1000) = 10.0\ \%,$ Size=11 %, MSE=0.099
- $(f_b > 0.8\ \%) \wedge (f_a > 20.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%,$ Size=65 %, MSE=0.039
- $(f_b > 2.0\ \%) \Rightarrow P(L < 1000) = 90.0\ \%,$ Size=70 %, MSE=0.079
- $(f_b \leq 0.6\ \%) \wedge (f_a \leq 400.0\ \%) \Rightarrow P(L < 1000) = 10.0\ \%,$ Size=11 %, MSE=0.113
- $(f_b > 1.3\ \%) \wedge (f_a > 8.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%,$ Size=67 %, MSE=0.041
- $(f_b > 1.6\ \%) \wedge (f_a > 16.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%,$ Size=61 %, MSE=0.03
- $(f_b \leq 0.6\ \%) \wedge (f_a \leq 160.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%,$ Size=8 %, MSE=0.029
- $(f_b \leq 1.6\ \%) \wedge (f_a \leq 100.0\ \%) \Rightarrow P(L < 1000) = 10.0\ \%,$ Size=10 %, MSE=0.085
- $(f_b \leq 1.6\ \%) \wedge (f_a \leq 130.0\ \%) \Rightarrow P(L < 1000) = 10.0\ \%,$ Size=12 %, MSE=0.119

- $(f_b \leq 0.6\ \%) \wedge (f_a \leq 250.0\ \%) \Rightarrow P(L < 1000) = 10.0\ \%$, Size=10 %, MSE=0.076
- $(f_b \leq 0.8\ \%) \wedge (f_a \leq 400.0\ \%) \Rightarrow P(L < 1000) = 20.0\ \%$, Size=13 %, MSE=0.136
- $(f_b > 0.8\ \%) \wedge (f_a > 25.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=64 %, MSE=0.035

### 1.7 Model II

P(L < 10 000):

- $(T) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=100 %, MSE=0.079
- $(f_b > 0.06\ \%) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=94 %, MSE=0.054
- $(f_b > 0.06\ \%) \wedge (f_a > 8.0\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=84 %, MSE=0.024
- $(f_b > 0.8\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=80 %, MSE=0.027
- $(f_b > 0.1\ \%) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=93 %, MSE=0.051
- $(f_b > 0.1\ \%) \wedge (f_a > 8.0\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=83 %, MSE=0.02
- $(f_b > 0.08\ \%) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=94 %, MSE=0.052
- $(f_b \leq 0.8\ \%) \wedge (f_a \leq 40.0\ \%) \Rightarrow P(L < 10000) = 20.0\ \%$, Size=5 %, MSE=0.16
- $(f_b > 0.6\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=82 %, MSE=0.031
- $(f_b > 0.08\ \%) \wedge (f_a > 8.0\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=83 %, MSE=0.022
- $(f_b \leq 0.8\ \%) \wedge (f_a > 40.0\ \%) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=14 %, MSE=0.118
- $(f_b > 0.06\ \%) \wedge (f_a \leq 8.0\ \%) \wedge (f_b \leq 2.0\ \%) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=3 %, MSE=0.104
- $(f_b > 0.06\ \%) \wedge (f_a \leq 8.0\ \%) \wedge (f_b > 2.0\ \%) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=8 %, MSE=0.108
- $(f_b \leq 0.06\ \%) \wedge (f_a \leq 320.0\ \%) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=3 %, MSE=0.104
- $(f_b \leq 0.06\ \%) \wedge (f_a > 320.0\ \%) \Rightarrow P(L < 10000) = 80.0\ \%$, Size=2 %, MSE=0.17
- $(f_b > 0.06\ \%) \wedge (f_a > 8.0\ \%) \wedge (N \leq 50.0) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=78 %, MSE=0.011
- $(f_b > 0.06\ \%) \wedge (f_a > 8.0\ \%) \wedge (N > 50.0) \Rightarrow P(L < 10000) = 80.0\ \%$,Size=6 %, MSE=0.156
- $(f_b > 0.1\ \%) \wedge (f_a \leq 8.0\ \%) \wedge (f_b > 2.0\ \%) \Rightarrow P(L < 10000) = 90.0\ \%$,Size=8 %, MSE=0.101
- $(f_b > 0.08\ \%) \wedge (f_a \leq 8.0\ \%) \wedge (f_b > 2.0\ \%) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=7 %, MSE=0.106
- $(f_b > 0.8\ \%) \wedge (f_a \leq 5.0\ \%) \Rightarrow P(L < 10000) = 80.0\ \%$, Size=7 %, MSE=0.17
- $(f_b > 0.8\ \%) \wedge (f_a > 5.0\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=74 %, MSE=0.01
- $(f_b > 0.06\ \%) \wedge (f_a \leq 8.0\ \%) \wedge (f_b > 2.0\ \%) \wedge (N \leq 13.0) \Rightarrow P(L < 10000) = 100.0\ \%$,Size=6 %, MSE=0.016
- $(f_b > 0.1\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=93 %, MSE=0.046

- $(f_b \leq 0.08\ \%) \wedge (f_a \leq 60.0\ \%) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=2 %, MSE=0.019
- $(f_b > 0.8\ \%) \wedge (f_a \leq 6.0\ \%) \Rightarrow P(L < 10000) = 80.0\ \%$, Size=8 %, MSE=0.161

### 1.8 Model II

P(L < 100 000):

- $(T) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=100 %, MSE=0.021
- $(f_b > 0.06\ \%) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=94 %, MSE=0.008
- $(f_b > 0.1\ \%) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=93 %, MSE=0.006
- $(f_b \leq 0.1\ \%) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=7 %, MSE=0.167
- $(f_b \leq 0.06\ \%) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=6 %, MSE=0.177
- $(f_b > 0.05\ \%) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=95 %, MSE=0.008
- $(f_b \leq 0.06\ \%) \Rightarrow P(L < 100000) = 70.0\ \%$, Size=6 %, MSE=0.198
- $(f_b \leq 0.06\ \%) \wedge (f_a > 40.0\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=4 %, MSE=0.07
- $(f_b > 0.06\ \%) \wedge (f_a > 6.0\ \%) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=85 %, MSE=0.001
- $(f_b > 0.06\ \%) \wedge (f_a \leq 6.0\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=9 %, MSE=0.066
- $(f_b \leq 0.1\ \%) \wedge (f_a > 40.0\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=5 %, MSE=0.065
- $(f_b \leq 0.06\ \%) \wedge (f_a > 40.0\ \%) \wedge (N \leq 5.0) \Rightarrow P(L < 100000) = 100.0\ \%$,Size=2 %, MSE=0.0
- $(f_b > 0.05\ \%) \wedge (f_a > 6.0\ \%) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=86 %, MSE=0.001
- $(f_b \leq 0.1\ \%) \wedge (f_a > 40.0\ \%) \wedge (N \leq 6.0) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=4 %, MSE=0.0
- $(f_b > 0.05\ \%) \wedge (f_a \leq 6.0\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=9 %, MSE=0.072
- $(f_b \leq 0.06\ \%) \wedge (f_a > 60.0\ \%) \wedge (N \leq 5.0) \Rightarrow P(L < 100000) = 100.0\ \%$,Size=2 %, MSE=0.0
- $(f_b > 0.1\ \%) \wedge (f_a > 6.0\ \%) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=84 %, MSE=0.0
- $(f_b \leq 0.06\ \%) \wedge (f_a > 60.0\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=4 %, MSE=0.062
- $(f_b > 0.08\ \%) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=93 %, MSE=0.007
- $(f_b \leq 0.1\ \%) \wedge (f_a > 40.0\ \%) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=5 %, MSE=0.037
- $(f_b \leq 0.06\ \%) \wedge (f_a > 40.0\ \%) \wedge (N \leq 6.0) \Rightarrow P(L < 100000) = 100.0\ \%$,Size=3 %, MSE=0.0
- $(f_b \leq 0.05\ \%) \wedge (f_a > 80.0\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=3 %, MSE=0.071
- $(f_b > 0.1\ \%) \wedge (f_a \leq 6.0\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=9 %, MSE=0.064
- $(f_b \leq 0.06\ \%) \wedge (f_a > 40.0\ \%) \wedge (N > 5.0) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=2 %, MSE=0.151
- $(f_b \leq 0.1\ \%) \wedge (f_a > 40.0\ \%) \wedge (N \leq 8.0) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=4 %, MSE=0.0

### 1.9 Model III

L:

- $(f_c \leq 16.0\ \%) \wedge (N > 20.0) \wedge (f_p > 40.0\ \%) \wedge (N > 100.0) \Rightarrow L = 1258.9,$ Size=2 %, MSE=0.144
- $(f_c > 16.0\ \%) \wedge (N > 13.0) \wedge (N \leq 50.0) \wedge (f_p > 50.0\ \%) \Rightarrow L = 25.1,$ Size=5 %, MSE=0.14
- $(f_c \leq 16.0\ \%) \wedge (N > 20.0) \wedge (f_p > 40.0\ \%) \wedge (N \leq 100.0) \Rightarrow L = 316.2,$ Size=4 %, MSE=0.171
- $(f_c > 16.0\ \%) \wedge (N > 13.0) \wedge (N > 50.0) \wedge (f_p > 80.0\ \%) \Rightarrow L = 158.5,$Size=2 %, MSE=0.15
- $(f_c > 16.0\ \%) \wedge (N > 13.0) \wedge (N \leq 50.0) \wedge (f_p > 60.0\ \%) \Rightarrow L = 25.1,$ Size=5 %, MSE=0.14
- $(f_c > 16.0\ \%) \wedge (N > 10.0) \wedge (N \leq 50.0) \wedge (f_p > 50.0\ \%) \Rightarrow L = 25.1,$Size=6 %, MSE=0.154
- $(f_c > 13.0\ \%) \wedge (N \leq 10.0) \wedge (f_p > 25.0\ \%) \wedge (f_c \leq 30.0\ \%) \Rightarrow L = 7.9,$ Size=19 %, MSE=0.16
- $(f_c > 13.0\ \%) \wedge (N \leq 10.0) \wedge (f_p > 25.0\ \%) \wedge (f_c > 30.0\ \%) \Rightarrow L = 2.5,$ Size=19 %, MSE=0.17
- $(f_c > 13.0\ \%) \wedge (N > 10.0) \wedge (N \leq 50.0) \wedge (f_p > 50.0\ \%) \Rightarrow L = 25.1,$Size=7 %, MSE=0.172
- $(N \leq 10.0) \wedge (f_c \leq 10.0\ \%) \wedge (f_p > 20.0\ \%) \wedge (f_c > 4.0\ \%) \Rightarrow L = 25.1,$ Size=15 %, MSE=0.17
- $(f_c > 10.0\ \%) \wedge (N > 10.0) \wedge (N > 50.0) \wedge (f_p > 80.0\ \%) \Rightarrow L = 199.5,$Size=3 %, MSE=0.163
- $(f_c > 13.0\ \%) \wedge (N > 10.0) \wedge (N > 50.0) \wedge (f_p > 80.0\ \%) \Rightarrow L = 158.5,$Size=2 %, MSE=0.16
- $(f_c > 10.0\ \%) \wedge (N \leq 10.0) \wedge (f_p \leq 20.0\ \%) \wedge (f_c > 32.0\ \%) \Rightarrow L = 25.1,$ Size=4 %, MSE=0.174
- $(f_c > 10.0\ \%) \wedge (N > 13.0) \wedge (N \leq 50.0) \wedge (f_p > 50.0\ \%) \Rightarrow L = 31.6,$Size=7 %, MSE=0.156
- $(f_c \leq 16.0\ \%) \wedge (N \leq 8.0) \wedge (f_p \leq 25.0\ \%) \wedge (f_p > 6.0\ \%) \Rightarrow L = 158.5,$ Size=4 %, MSE=0.194
- $(f_c > 13.0\ \%) \wedge (N > 10.0) \wedge (N > 50.0) \wedge (f_p > 80.0\ \%) \Rightarrow L = 199.5,$Size=2 %, MSE=0.159
- $(N \leq 10.0) \wedge (f_c > 10.0\ \%) \wedge (f_p > 32.0\ \%) \wedge (f_c > 30.0\ \%) \Rightarrow L = 2.5,$ Size=19 %, MSE=0.16
- $(N \leq 8.0) \wedge (f_c > 10.0\ \%) \wedge (f_p > 25.0\ \%) \wedge (f_c > 30.0\ \%) \Rightarrow L = 2.5,$ Size=19 %, MSE=0.152
- $(f_c > 16.0\ \%) \wedge (N \leq 13.0) \wedge (f_p > 25.0\ \%) \wedge (f_c > 40.0\ \%) \Rightarrow L = 2.5,$ Size=16 %, MSE=0.162
- $(N \leq 8.0) \wedge (f_c > 10.0\ \%) \wedge (f_p > 25.0\ \%) \wedge (f_c \leq 30.0\ \%) \Rightarrow L = 7.9,$ Size=19 %, MSE=0.153
- $(N > 10.0) \wedge (f_c > 13.0\ \%) \wedge (N > 50.0) \wedge (f_p > 80.0\ \%) \Rightarrow L = 158.5,$Size=2 %, MSE=0.169
- $(f_c \leq 13.0\ \%) \wedge (N \leq 8.0) \wedge (f_p > 25.0\ \%) \wedge (f_c \leq 4.0\ \%) \Rightarrow L = 63.1,$Size=10 %, MSE=0.15

- $(f_c \leq 13.0\ \%) \wedge (N \leq 8.0) \wedge (f_p > 30.0\ \%) \wedge (f_c \leq 4.0\ \%) \Rightarrow L = 63.1$, Size=10 %, MSE=0.156
- $(f_c \leq 16.0\ \%) \wedge (N \leq 8.0) \wedge (f_p > 25.0\ \%) \wedge (f_c \leq 4.0\ \%) \Rightarrow L = 63.1$, Size=10 %, MSE=0.154
- $(f_c > 10.0\ \%) \wedge (N > 10.0) \wedge (N \leq 50.0) \wedge (f_p > 32.0\ \%) \Rightarrow L = 31.6$,Size=8 %, MSE=0.183

### 1.10 Model III

P(L < 1000):

- $(T) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=100 %, MSE=0.044
- $(T) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=100 %, MSE=0.05
- $(N \leq 100.0) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=96 %, MSE=0.029
- $(N \leq 100.0) \wedge (f_p > 6.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=91 %, MSE=0.013
- $(N \leq 50.0) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=92 %, MSE=0.024
- $(N \leq 160.0) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=97 %, MSE=0.032
- $(N > 100.0) \wedge (f_c > 10.0\ \%) \Rightarrow P(L < 1000) = 80.0\ \%$, Size=3 %, MSE=0.167
- $(f_p > 6.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=94 %, MSE=0.027
- $(N \leq 130.0) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=97 %, MSE=0.031
- $(N > 100.0) \wedge (f_c \leq 10.0\ \%) \Rightarrow P(L < 1000) = 10.0\ \%$, Size=2 %, MSE=0.1
- $(N \leq 100.0) \wedge (f_p > 6.0\ \%) \wedge (N \leq 25.0) \Rightarrow P(L < 1000) = 100.0\ \%$,Size=83 %, MSE=0.003
- $(N \leq 50.0) \wedge (f_p > 6.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=87 %, MSE=0.007
- $(N \leq 100.0) \wedge (f_p > 6.0\ \%) \wedge (N > 25.0) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=8 %, MSE=0.095
- $(N \leq 60.0) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=94 %, MSE=0.027
- $(N > 50.0) \wedge (f_c > 10.0\ \%) \wedge (f_p > 80.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=3 %, MSE=0.019
- $(N \leq 80.0) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=94 %, MSE=0.027
- $(N \leq 100.0) \wedge (f_p \leq 6.0\ \%) \wedge (f_c > 8.0\ \%) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=3 %, MSE=0.098
- $(N \leq 130.0) \wedge (f_p > 6.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=91 %, MSE=0.013
- $(N \leq 160.0) \wedge (f_p > 6.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=92 %, MSE=0.014
- $(f_p > 13.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=90 %, MSE=0.021
- $(N \leq 100.0) \wedge (f_p > 6.0\ \%) \wedge (N \leq 25.0) \wedge (f_p > 13.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$,Size=79 %, MSE=0.001
- $(N > 100.0) \wedge (f_c \leq 20.0\ \%) \Rightarrow P(L < 1000) = 20.0\ \%$, Size=2 %, MSE=0.171
- $(N > 100.0) \wedge (f_c > 20.0\ \%) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=2 %, MSE=0.101
- $(N \leq 50.0) \wedge (f_p \leq 6.0\ \%) \wedge (f_c > 8.0\ \%) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=3 %, MSE=0.084

- $(N > 50.0) \wedge (f_c > 10.0\ \%) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=4 %, MSE=0.11

### 1.11 Model III

P(L < 10 000):

- $(T) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=100 %, MSE=0.005
- $(N \leq 250.0) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=98 %, MSE=0.003
- $(N \leq 60.0) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=94 %, MSE=0.001
- $(N > 60.0) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=6 %, MSE=0.07
- $(N > 250.0) \Rightarrow P(L < 10000) = 80.0\ \%$, Size=2 %, MSE=0.149
- $(f_p > 3.2\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=98 %, MSE=0.003
- $(N \leq 250.0) \wedge (f_p > 3.2\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=97 %, MSE=0.001
- $(N \leq 250.0) \wedge (f_p \leq 3.2\ \%) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=2 %, MSE=0.091
- $(N \leq 50.0) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=93 %, MSE=0.001
- $(N \leq 60.0) \wedge (f_p > 3.2\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=92 %, MSE=0.0
- $(N > 50.0) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=7 %, MSE=0.069
- $(f_p \leq 3.2\ \%) \Rightarrow P(L < 10000) = 80.0\ \%$, Size=2 %, MSE=0.148
- $(N > 250.0) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=2 %, MSE=0.114
- $(N \leq 50.0) \wedge (f_p > 3.2\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=91 %, MSE=0.0
- $(N \leq 60.0) \wedge (f_p \leq 3.2\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=2 %, MSE=0.034
- $(f_p > 3.2\ \%) \wedge (N \leq 250.0) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=97 %, MSE=0.001
- $(f_p \leq 3.2\ \%) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=2 %, MSE=0.111
- $(N \leq 50.0) \wedge (f_p \leq 3.2\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=2 %, MSE=0.032
- $(f_p > 3.2\ \%) \wedge (N > 250.0) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=2 %, MSE=0.087
- $(N > 60.0) \wedge (f_p > 50.0\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=5 %, MSE=0.007
- $(N > 60.0) \wedge (f_p > 40.0\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=5 %, MSE=0.006
- $(N \leq 250.0) \wedge (f_p > 3.2\ \%) \wedge (N > 60.0) \Rightarrow P(L < 10000) = 100.0\ \%$,Size=5 %, MSE=0.024
- $(f_p > 3.0\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=98 %, MSE=0.003
- $(N \leq 250.0) \wedge (f_p > 3.2\ \%) \wedge (N \leq 60.0) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=92 %, MSE=0.0
- $(N > 50.0) \wedge (f_p > 40.0\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=6 %, MSE=0.006

### 1.12 Model III

P(L < 100 000):

- $(T) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=100 %, MSE=0.0

### 1.13 Model III - 2

L:

- $(N > 500.0) \wedge (N > 0.0 * 10^{10}) \Rightarrow L = 79432.8,$ Size=55 %, MSE=0.169
- $(N > 500.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p > 25.0\ \%) \Rightarrow L = 63095.7,$ Size=45 %, MSE=0.11
- $(N > 500.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p \leq 25.0\ \%) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow L = 199526.2,$ Size=7 %, MSE=0.094
- $(N > 500.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p \leq 25.0\ \%) \Rightarrow L = 251188.6,$ Size=10 %, MSE=0.142
- $(N > 500.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p > 25.0\ \%) \wedge (N > 0.0 * 10^{10}) \Rightarrow L = 125892.5,$ Size=19 %, MSE=0.071
- $(N > 1600.0) \wedge (N > 0.0 * 10^{10}) \Rightarrow L = 100000.0,$ Size=50 %, MSE=0.162
- $(N > 500.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p > 25.0\ \%) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow L = 50118.7,$ Size=25 %, MSE=0.066
- $(N > 1600.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p > 25.0\ \%) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow L = 50118.7,$ Size=24 %, MSE=0.065
- $(N > 500.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p > 25.0\ \%) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow L = 39810.7,$ Size=25 %, MSE=0.067
- $(N > 500.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p \leq 25.0\ \%) \wedge (N > 0.0 * 10^{10}) \Rightarrow L = 630957.3,$ Size=3 %, MSE=0.098
- $(N > 1600.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p > 25.0\ \%) \wedge (N > 0.0 * 10^{10}) \Rightarrow L = 125892.5,$Size=17 %, MSE=0.069
- $(N > 500.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p \leq 20.0\ \%) \Rightarrow L = 316227.8,$ Size=8 %, MSE=0.14
- $(N > 500.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p \leq 25.0\ \%) \wedge (N > 0.0 * 10^{10}) \Rightarrow L = 501187.2,$ Size=4 %, MSE=0.102
- $(N > 500.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p > 20.0\ \%) \Rightarrow L = 63095.7,$ Size=46 %, MSE=0.111
- $(N > 500.0) \wedge (N \leq 0.0 * 10^{10}) \wedge (f_p > 25.0\ \%) \Rightarrow L = 10000.0,$ Size=25 %, MSE=0.199
- $(N > 500.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p > 20.0\ \%) \wedge (N > 0.0 * 10^{10}) \Rightarrow L = 125892.5,$ Size=20 %, MSE=0.073
- $(N > 400.0) \wedge (N > 0.0 * 10^{10}) \Rightarrow L = 79432.8,$ Size=55 %, MSE=0.171
- $(N > 1000.0) \wedge (N > 0.0 * 10^{10}) \Rightarrow L = 79432.8,$ Size=54 %, MSE=0.167
- $(N > 1600.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p \leq 25.0\ \%) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow L = 199526.2,$ Size=6 %, MSE=0.092
- $(N > 1600.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p \leq 25.0\ \%) \Rightarrow L = 316227.8,$ Size=9 %, MSE=0.136
- $(N > 1000.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p > 25.0\ \%) \wedge (N > 0.0 * 10^{10}) \Rightarrow L = 125892.5,$Size=18 %, MSE=0.07
- $(N > 1600.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p > 25.0\ \%) \Rightarrow L = 63095.7,$ Size=43 %, MSE=0.105

- $(N > 500.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p > 20.0\ \%) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow L = 50118.7$, Size=26 %, MSE=0.067
- $(N > 1600.0) \wedge (N \leq 0.0 * 10^{10}) \wedge (f_p > 25.0\ \%) \Rightarrow L = 12589.3$, Size=23 %, MSE=0.135
- $(N > 500.0) \wedge (N > 0.0 * 10^{10}) \wedge (f_p > 25.0\ \%) \wedge (N > 0.0 * 10^{10}) \Rightarrow L = 100000.0$, Size=21 %, MSE=0.071

### 1.14 Model III - 2

P(L < 1000):

- $(T) \Rightarrow P(L < 1000) = 10.0\ \%$, Size=100 %, MSE=0.123
- $(N > 400.0) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=84 %, MSE=0.015
- $(N > 160.0) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=87 %, MSE=0.027
- $(N \leq 160.0) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=13 %, MSE=0.081
- $(N \leq 400.0) \Rightarrow P(L < 1000) = 80.0\ \%$, Size=16 %, MSE=0.138
- $(N > 400.0) \wedge (N > 1600.0) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=79 %, MSE=0.002
- $(N > 160.0) \wedge (N > 1600.0) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=79 %, MSE=0.002
- $(T) \Rightarrow P(L < 1000) = 20.0\ \%$, Size=100 %, MSE=0.13
- $(N > 400.0) \wedge (N > 1600.0) \wedge (N > 3200.0) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=77 %, MSE=0.0
- $(N > 320.0) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=85 %, MSE=0.019
- $(N > 250.0) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=86 %, MSE=0.021
- $(N > 400.0) \wedge (N \leq 1600.0) \Rightarrow P(L < 1000) = 30.0\ \%$, Size=5 %, MSE=0.199
- $(N > 400.0) \wedge (N \leq 1600.0) \wedge (f_c \leq 25.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$,Size=3 %, MSE=0.025
- $(N \leq 250.0) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=14 %, MSE=0.107
- $(N > 160.0) \wedge (N \leq 1600.0) \wedge (f_c \leq 25.0\ \%) \Rightarrow P(L < 1000) = 10.0\ \%$, Size=5 %, MSE=0.091
- $(N > 160.0) \wedge (N > 1600.0) \wedge (N > 3200.0) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=77 %, MSE=0.0
- $(N \leq 320.0) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=15 %, MSE=0.114
- $(N \leq 400.0) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=16 %, MSE=0.122
- $(N \leq 400.0) \wedge (N > 80.0) \wedge (f_c > 13.0\ \%) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=2 %, MSE=0.084
- $(N > 400.0) \wedge (N > 1600.0) \wedge (N \leq 3200.0) \Rightarrow P(L < 1000) = 10.0\ \%$,Size=2 %, MSE=0.066
- $(N \leq 400.0) \wedge (N \leq 80.0) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=11 %, MSE=0.039
- $(N > 400.0) \wedge (N > 2000.0) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=79 %, MSE=0.001
- $(N > 400.0) \wedge (N \leq 1600.0) \Rightarrow P(L < 1000) = 20.0\ \%$, Size=5 %, MSE=0.169
- $(N > 160.0) \wedge (N > 1600.0) \wedge (N > 2500.0) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=77 %, MSE=0.0

- $(N \leq 160.0) \wedge (f_c > 8.0\ \%) \Rightarrow P(L < 1000) = 100.0\ \%$, Size=9 %, MSE=0.016

### 1.15 Model III - 2

P(L < 10 000):

- $(T) \Rightarrow P(L < 10000) = 30.0\ \%$, Size=100 %, MSE=0.199
- $(N > 8000.0) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=63 %, MSE=0.01
- $(N > 8000.0) \wedge (N > 0.0 * 10^{10}) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=57 %, MSE=0.001
- $(N > 8000.0) \wedge (N > 0.0 * 10^{10}) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=6 %, MSE=0.085
- $(N \leq 8000.0) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=27 %, MSE=0.114
- $(N > 10000.0) \wedge (N > 0.0 * 10^{10}) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=57 %, MSE=0.001
- $(N > 10000.0) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=63 %, MSE=0.01
- $(N > 8000.0) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=73 %, MSE=0.052
- $(N > 10000.0) \wedge (N > 0.0 * 10^{10}) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=6 %, MSE=0.086
- $(N \leq 10000.0) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=28 %, MSE=0.122
- $(N > 8000.0) \wedge (N > 0.0 * 10^{10}) \wedge (N > 0.0 * 10^{10}) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=55 %, MSE=0.0
- $(N > 8000.0) \wedge (N > 0.0 * 10^{10}) \wedge (N > 0.0 * 10^{10}) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=2 %, MSE=0.025
- $(N > 8000.0) \wedge (N > 0.0 * 10^{10}) \wedge (N \leq 0.0 * 10^{10}) \wedge (f_c \leq 40.0\ \%) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=6 %, MSE=0.014
- $(N > 8000.0) \wedge (N \leq 0.0 * 10^{10}) \wedge (f_c \leq 25.0\ \%) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=7 %, MSE=0.109
- $(N > 10000.0) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=72 %, MSE=0.044
- $(N > 10000.0) \wedge (N \leq 0.0 * 10^{10}) \wedge (f_c \leq 25.0\ \%) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=6 %, MSE=0.105
- $(N > 0.0 * 10^{10}) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=63 %, MSE=0.009
- $(N > 10000.0) \wedge (N > 0.0 * 10^{10}) \wedge (N \leq 0.0 * 10^{10}) \wedge (f_c \leq 40.0\ \%) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=6 %, MSE=0.014
- $(N > 0.0 * 10^{10}) \wedge (N > 0.0 * 10^{10}) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=57 %, MSE=0.001
- $(N > 10000.0) \wedge (N > 0.0 * 10^{10}) \wedge (N > 0.0 * 10^{10}) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=55 %, MSE=0.0

- $(N > 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 0.0$ %, Size=70 %, MSE=0.037
- $(N > 8000.0) \wedge (N \leq 0.0 * 10^{10}) \wedge (f_c \leq 25.0$ %$) \wedge (n_e \leq 2.5) \Rightarrow P(L < 10000) = 0.0$ %,Size=4 %, MSE=0.032
- $(N \leq 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 80.0$ %, Size=30 %, MSE=0.145
- $(N \leq 8000.0) \wedge (N \leq 1600.0) \Rightarrow P(L < 10000) = 100.0$ %, Size=20 %, MSE=0.039
- $(N > 0.0 * 10^{10}) \wedge (N > 0.0 * 10^{10}) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 10.0$ %, Size=6 %, MSE=0.087

### 1.16 Model III - 2

P(L < 100 000):

- $(N \leq 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 90.0$ %, Size=76 %, MSE=0.095
- $(T) \Rightarrow P(L < 100000) = 80.0$ %, Size=100 %, MSE=0.179
- $(N \leq 0.0 * 10^{10}) \wedge (f_p > 20.0$ %$) \Rightarrow P(L < 100000) = 100.0$ %, Size=65 %, MSE=0.038
- $(N \leq 0.0 * 10^{10}) \wedge (f_p > 20.0$ %$) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 100.0$ %,Size=52 %, MSE=0.01
- $(N \leq 0.0 * 10^{10}) \wedge (f_p > 20.0$ %$) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 80.0$ %, Size=13 %, MSE=0.146
- $(N \leq 0.0 * 10^{10}) \wedge (f_p \leq 20.0$ %$) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 20.0$ %, Size=6 %, MSE=0.155
- $(N \leq 0.0 * 10^{10}) \wedge (f_p \leq 20.0$ %$) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 90.0$ %, Size=5 %, MSE=0.095
- $(N \leq 0.0 * 10^{10}) \wedge (f_p > 20.0$ %$) \wedge (N > 0.0 * 10^{10}) \wedge (f_c > 5.0$ %$) \Rightarrow P(L < 100000) = 90.0$ %, Size=10 %, MSE=0.072
- $(N > 0.0 * 10^{10}) \wedge (f_c \leq 20.0$ %$) \Rightarrow P(L < 100000) = 20.0$ %, Size=13 %, MSE=0.147
- $(N > 0.0 * 10^{10}) \wedge (f_c \leq 20.0$ %$) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 10.0$ %, Size=8 %, MSE=0.064
- $(N \leq 0.0 * 10^{10}) \wedge (f_p \leq 20.0$ %$) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 80.0$ %, Size=6 %, MSE=0.147
- $(N \leq 0.0 * 10^{10}) \wedge (f_p > 25.0$ %$) \Rightarrow P(L < 100000) = 100.0$ %, Size=65 %, MSE=0.039
- $(N \leq 0.0 * 10^{10}) \wedge (f_p \leq 20.0$ %$) \wedge (N \leq 0.0 * 10^{10}) \wedge (N \leq 4000.0) \Rightarrow P(L < 100000) = 100.0$ %, Size=3 %, MSE=0.009
- $(N \leq 0.0 * 10^{10}) \wedge (f_p \leq 25.0$ %$) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 20.0$ %, Size=7 %, MSE=0.161
- $(N \leq 0.0 * 10^{10}) \wedge (f_p > 25.0$ %$) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 100.0$ %,Size=51 %, MSE=0.009
- $(N > 0.0 * 10^{10}) \wedge (f_c \leq 20.0$ %$) \wedge (N > 0.0 * 10^{10}) \wedge (f_c \leq 8.0$ %$) \Rightarrow P(L < 100000) = 0.0$ %, Size=5 %, MSE=0.004

- $(N \leq 0.0{*}10^{10}) \wedge (f_p \leq 20.0\ \%) \wedge (N \leq 0.0{*}10^{10}) \wedge (N \leq 3000.0) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=3 %, MSE=0.006
- $(N \leq 0.0 * 10^{10}) \wedge (f_p \leq 25.0\ \%) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=6 %, MSE=0.104
- $(N > 0.0 * 10^{10}) \wedge (f_c \leq 25.0\ \%) \Rightarrow P(L < 100000) = 20.0\ \%$, Size=14 %, MSE=0.149
- $(N \leq 0.0 * 10^{10}) \wedge (f_p \leq 20.0\ \%) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 10.0\ \%$, Size=5 %, MSE=0.111
- $(N \leq 0.0{*}10^{10}) \wedge (f_p > 20.0\ \%) \wedge (N > 0.0{*}10^{10}) \wedge (f_c > 6.0\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=9 %, MSE=0.062
- $(N > 0.0 * 10^{10}) \wedge (f_c \leq 16.0\ \%) \Rightarrow P(L < 100000) = 20.0\ \%$, Size=12 %, MSE=0.141
- $(N \leq 0.0 * 10^{10}) \wedge (f_p > 20.0\ \%) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=14 %, MSE=0.12
- $(N > 0.0 * 10^{10}) \wedge (f_c > 20.0\ \%) \wedge (f_p \leq 30.0\ \%) \Rightarrow P(L < 100000) = 0.0\ \%$, Size=2 %, MSE=0.015
- $(N \leq 0.0{*}10^{10}) \wedge (f_p > 20.0\ \%) \wedge (N \leq 0.0{*}10^{10}) \wedge (f_c \leq 2.5\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=5 %, MSE=0.07

### 1.17 Model IV

L:

- $(N_* n_e \leq 50.1 * 10^{10}) \wedge (N_* n_e \leq 12.6 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (f_m e \leq 1.0\ \%) \Rightarrow L = 7943.3$, Size=4 %, MSE=0.167
- $(N_* n_e \leq 50.1 * 10^{10}) \wedge (N_* n_e \leq 12.6 * 10^{10}) \wedge (f_p m > 5.0\ \%) \wedge (f_m e > 1.0\ \%) \Rightarrow L = 19952.6$, Size=5 %, MSE=0.172
- $(N_* n_e \leq 50.1 * 10^{10}) \wedge (N_* n_e \leq 12.6 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (f_m e > 1.0\ \%) \Rightarrow L = 19952.6$, Size=4 %, MSE=0.171
- $(N_* n_e \leq 50.1 * 10^{10}) \wedge (N_* n_e \leq 12.6 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (f_m e > 1.0\ \%) \Rightarrow L = 25118.9$, Size=4 %, MSE=0.156
- $(N_* n_e \leq 39.8 * 10^{10}) \wedge (N_* n_e > 12.6 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (f_m \leq 1.0\ \%) \Rightarrow L = 25118.9$, Size=8 %, MSE=0.193
- $(N_* n_e \leq 39.8 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (N_* n_e > 12.6 * 10^{10}) \wedge (f_m \leq 1.0\ \%) \Rightarrow L = 25118.9$, Size=8 %, MSE=0.195
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (N_* n_e \leq 12.6 * 10^{10}) \wedge (f_p m > 5.0\ \%) \wedge (f_m e \leq 1.0\ \%) \Rightarrow L = 6309.6$, Size=5 %, MSE=0.182
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (N_* n_e \leq 12.6 * 10^{10}) \wedge (f_p m > 5.0\ \%) \wedge (f_m e > 1.0\ \%) \Rightarrow L = 19952.6$, Size=5 %, MSE=0.17
- $(N_* n_e \leq 50.1 * 10^{10}) \wedge (N_* n_e \leq 12.6 * 10^{10}) \wedge (f_p m > 5.0\ \%) \wedge (f_m e \leq 1.0\ \%) \Rightarrow L = 6309.6$, Size=5 %, MSE=0.171

- $(N_* n_e \leq 39.8 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (N_* n_e > 12.6 * 10^{10}) \wedge (f_m > 1.0\ \%) \Rightarrow L = 63095.7$, Size=10 %, MSE=0.183
- $(N_* n_e \leq 39.8 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (N_* n_e \leq 12.6 * 10^{10}) \wedge (f_m e \leq 1.0\ \%) \Rightarrow L = 7943.3$, Size=4 %, MSE=0.172
- $(N_* n_e > 50.1 * 10^{10}) \wedge (f_p m > 5.0\ \%) \wedge (f_m > 1.0\ \%) \wedge (f_m e \leq 0.8\ \%) \Rightarrow L = 125892.5$,Size=6 %, MSE=0.182
- $(N_* n_e \leq 50.1 * 10^{10}) \wedge (N_* n_e > 12.6 * 10^{10}) \wedge (f_m \leq 1.0\ \%) \wedge (f_m e > 0.8\ \%) \Rightarrow L = 25118.9$, Size=12 %, MSE=0.199
- $(N_* n_e > 39.8 * 10^{10}) \wedge (f_p m > 5.0\ \%) \wedge (f_m > 1.0\ \%) \wedge (f_m e \leq 0.8\ \%) \Rightarrow L = 100000.0$,Size=7 %, MSE=0.191
- $(N_* n_e \leq 39.8 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (N_* n_e \leq 12.6 * 10^{10}) \wedge (f_m e > 1.0\ \%) \Rightarrow L = 25118.9$, Size=4 %, MSE=0.142
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (N_* n_e \leq 15.8 * 10^{10}) \wedge (f_p m > 5.0\ \%) \wedge (f_m \leq 1.3\ \%) \Rightarrow L = 7943.3$, Size=7 %, MSE=0.17
- $(N_* n_e \leq 50.1 * 10^{10}) \wedge (N_* n_e > 12.6 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (f_m \leq 1.0\ \%) \Rightarrow L = 25118.9$, Size=10 %, MSE=0.191
- $(N_* n_e \leq 50.1 * 10^{10}) \wedge (N_* n_e > 12.6 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (f_m > 1.0\ \%) \Rightarrow L = 79432.8$, Size=13 %, MSE=0.193
- $(N_* n_e > 50.1 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (f_m \leq 1.0\ \%) \wedge (f_m e > 1.0\ \%) \Rightarrow L = 158489.3$,Size=9 %, MSE=0.182
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (N_* n_e \leq 15.8 * 10^{10}) \wedge (f_p m > 5.0\ \%) \wedge (f_m > 1.3\ \%) \Rightarrow L = 25118.9$, Size=4 %, MSE=0.195
- $(N_* n_e > 39.8 * 10^{10}) \wedge (N_* n_e \leq 100.0 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (f_m > 1.0\ \%) \Rightarrow L = 158489.3$, Size=16 %, MSE=0.179
- $(N_* n_e \leq 39.8 * 10^{10}) \wedge (N_* n_e \leq 12.6 * 10^{10}) \wedge (f_p m > 4.0\ \%) \wedge (f_m e \leq 1.0\ \%) \Rightarrow L = 6309.6$, Size=5 %, MSE=0.172
- $(N_* n_e \leq 39.8 * 10^{10}) \wedge (N_* n_e \leq 12.6 * 10^{10}) \wedge (f_p m > 5.0\ \%) \wedge (f_m e \leq 1.0\ \%) \Rightarrow L = 6309.6$, Size=5 %, MSE=0.175
- $(N_* n_e \leq 39.8 * 10^{10}) \wedge (N_* n_e \leq 12.6 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (f_m e \leq 1.0\ \%) \Rightarrow L = 6309.6$, Size=5 %, MSE=0.176
- $(N_* n_e \leq 50.1 * 10^{10}) \wedge (N_* n_e > 12.6 * 10^{10}) \wedge (f_m > 1.0\ \%) \wedge (f_p m \leq 4.0\ \%) \Rightarrow L = 15848.9$, Size=4 %, MSE=0.168

### 1.18 Model IV

P(L < 1000):

- $(T) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=100 %, MSE=0.01
- $(N_* n_e > 10.0 * 10^{10}) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=92 %, MSE=0.003
- $(N_* n_e \leq 10.0 * 10^{10}) \Rightarrow P(L < 1000) = 10.0\ \%$, Size=8 %, MSE=0.086

- $(N_* n_e > 10.0 * 10^{10}) \wedge (f_p m > 1.6\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=90 %, MSE=0.001
- $(N_* n_e > 10.0 * 10^{10}) \wedge (f_p m \leq 1.6\ \%) \Rightarrow P(L < 1000) = 10.0\ \%$, Size=2 %, MSE=0.078
- $(N_* n_e > 10.0 * 10^{10}) \wedge (f_j > 16.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=89 %, MSE=0.001
- $(N_* n_e \leq 12.6 * 10^{10}) \Rightarrow P(L < 1000) = 10.0\ \%$, Size=10 %, MSE=0.079
- $(N_* n_e > 12.6 * 10^{10}) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=90 %, MSE=0.002
- $(N_* n_e > 10.0 * 10^{10}) \wedge (f_j \leq 16.0\ \%) \Rightarrow P(L < 1000) = 10.0\ \%$, Size=2 %, MSE=0.065
- $(N_* n_e > 10.0 * 10^{10}) \wedge (f_p m > 2.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=89 %, MSE=0.001
- $(N_* n_e > 10.0 * 10^{10}) \wedge (f_p m > 1.6\ \%) \wedge (f_j > 16.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=88 %, MSE=0.0
- $(N_* n_e \leq 10.0 * 10^{10}) \wedge (f_p m > 4.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=8 %, MSE=0.03
- $(N_* n_e \leq 10.0 * 10^{10}) \wedge (f_p m > 5.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=7 %, MSE=0.028
- $(N_* n_e > 10.0 * 10^{10}) \wedge (f_p m > 1.6\ \%) \wedge (f_j \leq 16.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=2 %, MSE=0.032
- $(N_* n_e \leq 10.0 * 10^{10}) \wedge (R_* \leq 3.2) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=7 %, MSE=0.032
- $(N_* n_e \leq 10.0 * 10^{10}) \wedge (R_* \leq 3.0) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=8 %, MSE=0.034
- $(N_* n_e > 10.0 * 10^{10}) \wedge (f_p m \leq 2.0\ \%) \Rightarrow P(L < 1000) = 10.0\ \%$, Size=3 %, MSE=0.065
- $(N_* n_e > 10.0 * 10^{10}) \wedge (f_j > 16.0\ \%) \wedge (f_p m > 1.6\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=87 %, MSE=0.0
- $(N_* n_e > 10.0 * 10^{10}) \wedge (f_j > 16.0\ \%) \wedge (f_p m \leq 2.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=3 %, MSE=0.031
- $(N_* n_e > 10.0 * 10^{10}) \wedge (f_j > 16.0\ \%) \wedge (f_p m > 2.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=86 %, MSE=0.0
- $(N_* n_e \leq 10.0 * 10^{10}) \wedge (f_m e > 0.6\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=6 %, MSE=0.029
- $(N_* n_e > 10.0 * 10^{10}) \wedge (f_p m > 2.0\ \%) \wedge (f_j > 16.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=87 %, MSE=0.0
- $(N_* n_e > 10.0 * 10^{10}) \wedge (f_p m > 2.0\ \%) \wedge (f_j \leq 16.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=2 %, MSE=0.029
- $(N_* n_e \leq 10.0 * 10^{10}) \wedge (f_p m > 6.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=6 %, MSE=0.018
- $(N_* n_e > 12.6 * 10^{10}) \wedge (f_p m > 1.6\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=88 %, MSE=0.001

### 1.19 Model IV

P(L < 10 000):

- $(T) \Rightarrow P(L < 10000) = 20.0\ \%$, Size=100 %, MSE=0.137
- $(N_* n_e > 15.8 * 10^{10}) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=86 %, MSE=0.092
- $(N_* n_e > 15.8 * 10^{10}) \wedge (f_p m > 4.0\ \%) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=68 %, MSE=0.055

- $(N_* n_e > 12.6 * 10^{10}) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=87 %, MSE=0.093
- $(N_* n_e \leq 15.8 * 10^{10}) \wedge (f_p m \leq 6.0\ \%) \Rightarrow P(L < 10000) = 80.0\ \%$, Size=5 %, MSE=0.16
- $(N_* n_e > 25.1 * 10^{10}) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=73 %, MSE=0.069
- $(N_* n_e > 15.8 * 10^{10}) \wedge (f_p m > 4.0\ \%) \wedge (f_j > 25.0\ \%) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=64 %, MSE=0.04
- $(N_* n_e > 15.8 * 10^{10}) \wedge (f_p m > 2.5\ \%) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=79 %, MSE=0.071
- $(N_* n_e \leq 15.8 * 10^{10}) \wedge (f_m e > 1.0\ \%) \wedge (f_p m > 6.0\ \%) \Rightarrow P(L < 10000) = 20.0\ \%$,Size=5 %, MSE=0.153
- $(N_* n_e > 15.8 * 10^{10}) \wedge (f_p m > 3.0\ \%) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=75 %, MSE=0.062
- $(N_* n_e > 15.8 * 10^{10}) \wedge (f_p m \leq 2.5\ \%) \wedge (N_* n_e > 79.4 * 10^{10}) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=2 %, MSE=0.075
- $(N_* n_e \leq 15.8 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (f_m e > 1.0\ \%) \Rightarrow P(L < 10000) = 20.0\ \%$,Size=5 %, MSE=0.149
- $(N_* n_e > 15.8 * 10^{10}) \wedge (f_p m > 5.0\ \%) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=66 %, MSE=0.053
- $(N_* n_e > 15.8 * 10^{10}) \wedge (N_* n_e \leq 39.8 * 10^{10}) \Rightarrow P(L < 10000) = 20.0\ \%$, Size=29 %, MSE=0.17
- $(N_* n_e > 15.8 * 10^{10}) \wedge (f_p m \leq 4.0\ \%) \wedge (N_* n_e > 50.1 * 10^{10}) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=11 %, MSE=0.104
- $(N_* n_e \leq 15.8 * 10^{10}) \wedge (f_p m \leq 5.0\ \%) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=3 %, MSE=0.104
- $(N_* n_e > 15.8 * 10^{10}) \wedge (N_* n_e > 39.8 * 10^{10}) \Rightarrow P(L < 10000) = 0.0\ \%$,Size=57 %, MSE=0.04
- $(N_* n_e > 15.8 * 10^{10}) \wedge (f_p m \leq 5.0\ \%) \Rightarrow P(L < 10000) = 30.0\ \%$, Size=20 %, MSE=0.197
- $(N_* n_e > 12.6 * 10^{10}) \wedge (f_p m > 4.0\ \%) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=70 %, MSE=0.059
- $(N_* n_e > 15.8 * 10^{10}) \wedge (f_p m \leq 4.0\ \%) \wedge (f_m e > 1.0\ \%) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=10 %, MSE=0.1
- $(N_* n_e \leq 15.8 * 10^{10}) \wedge (f_m e \leq 1.0\ \%) \wedge (f_p m \leq 13.0\ \%) \Rightarrow P(L < 10000) = 80.0\ \%$, Size=6 %, MSE=0.148
- $(N_* n_e \leq 25.1 * 10^{10}) \wedge (f_m e > 1.0\ \%) \Rightarrow P(L < 10000) = 20.0\ \%$, Size=14 %, MSE=0.172
- $(N_* n_e > 15.8 * 10^{10}) \wedge (f_p m \leq 4.0\ \%) \wedge (f_m e > 0.8\ \%) \Rightarrow P(L < 10000) = 20.0\ \%$, Size=12 %, MSE=0.135
- $(N_* n_e \leq 15.8 * 10^{10}) \wedge (f_m e \leq 1.0\ \%) \wedge (R_* > 2.5) \Rightarrow P(L < 10000) = 90.0\ \%$, Size=3 %, MSE=0.071
- $(N_* n_e > 15.8 * 10^{10}) \wedge (f_p m > 4.0\ \%) \wedge (N_* n_e > 39.8 * 10^{10}) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=46 %, MSE=0.017

### 1.20 Model IV

P(L < 100 000):

- $(N_* n_e \leq 63.1 * 10^{10}) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=59 %, MSE=0.145
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (f_m e \leq 2.0\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=47 %, MSE=0.101
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (f_m e \leq 1.6\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=40 %, MSE=0.089
- $(N_* n_e > 63.1 * 10^{10}) \wedge (f_p m \leq 6.0\ \%) \wedge (N_* n_e \leq 158.5 * 10^{10}) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=10 %, MSE=0.174
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (f_m e > 2.0\ \%) \wedge (f_p m \leq 8.0\ \%) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=6 %, MSE=0.149
- $(N_* n_e \leq 79.4 * 10^{10}) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=66 %, MSE=0.16
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (f_m e \leq 1.3\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=34 %, MSE=0.069
- $(N_* n_e > 63.1 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (f_m e > 1.0\ \%) \Rightarrow P(L < 100000) = 10.0\ \%$, Size=16 %, MSE=0.113
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (f_m e > 2.0\ \%) \wedge (N_* n_e \leq 15.8 * 10^{10}) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=3 %, MSE=0.025
- $(N_* n_e > 63.1 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (f_m e > 0.8\ \%) \Rightarrow P(L < 100000) = 20.0\ \%$, Size=19 %, MSE=0.138
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (N_* n_e \leq 25.1 * 10^{10}) \wedge (f_m e \leq 2.0\ \%) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=22 %, MSE=0.023
- $(N_* n_e > 63.1 * 10^{10}) \wedge (f_p m > 4.0\ \%) \wedge (f_m e > 0.8\ \%) \Rightarrow P(L < 100000) = 20.0\ \%$, Size=22 %, MSE=0.15
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (f_m e \leq 2.0\ \%) \wedge (N_* n_e \leq 25.1 * 10^{10}) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=21 %, MSE=0.02
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (f_m e \leq 2.0\ \%) \wedge (N_* n_e > 25.1 * 10^{10}) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=26 %, MSE=0.158
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (N_* n_e \leq 25.1 * 10^{10}) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=27 %, MSE=0.054
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (f_m \leq 1.0\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=28 %, MSE=0.059
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (f_m e \leq 2.0\ \%) \wedge (f_p m \leq 13.0\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$,Size=38 %, MSE=0.067
- $(N_* n_e > 63.1 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (f_m > 1.0\ \%) \Rightarrow P(L < 100000) = 10.0\ \%$, Size=14 %, MSE=0.1
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (N_* n_e \leq 25.1 * 10^{10}) \wedge (f_m e > 2.0\ \%) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=4 %, MSE=0.156
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (N_* n_e \leq 25.1 * 10^{10}) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=26 %, MSE=0.042
- $(N_* n_e > 63.1 * 10^{10}) \wedge (f_p m \leq 5.0\ \%) \wedge (N_* n_e \leq 158.5 * 10^{10}) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=8 %, MSE=0.163

- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (N_* n_e > 25.1 * 10^{10}) \wedge (f_m \leq 1.0\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=15 %, MSE=0.088
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (f_m > 1.0\ \%) \wedge (N_* n_e \leq 25.1 * 10^{10}) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=14 %, MSE=0.097
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (f_m e > 2.0\ \%) \wedge (N_* n_e > 15.8 * 10^{10}) \wedge (f_p m > 8.0\ \%) \Rightarrow P(L < 100000) = 30.0\ \%$, Size=5 %, MSE=0.198
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (N_* n_e \leq 25.1 * 10^{10}) \wedge (f_m e \leq 2.0\ \%) \wedge (f_m \leq 2.0\ \%) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=19 %, MSE=0.008

### 1.21 Supermodel

L:

- $(ModelIV) \wedge (N_* n_e \leq 39.8 * 10^{10}) \wedge (N_* n_e > 15.8 * 10^{10}) \wedge (f_m e > 1.6\ \%) \Rightarrow L = 79432.8$, Size=2 %, MSE=0.193
- $(f_j \leq 100.0\ \%) \wedge (N_* n_e > 50.1 * 10^{10}) \wedge (f_p m > 8.0\ \%) \wedge (f_m e \leq 0.8\ \%) \Rightarrow L = 100000.0$, Size=2 %, MSE=0.191
- $(f_m e \leq 16.0\ \%) \wedge (N_* n_e \leq 39.8 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (N_* n_e \leq 12.6 * 10^{10}) \Rightarrow L = 12589.3$, Size=2 %, MSE=0.18
- $(f_j \leq 100.0\ \%) \wedge (N_* n_e \leq 50.1 * 10^{10}) \wedge (N_* n_e \leq 25.1 * 10^{10}) \wedge (f_m \leq 0.8\ \%) \Rightarrow L = 5011.9$, Size=2 %, MSE=0.194
- $(f_g \leq 40.0\ \%) \wedge (N_* n_e \leq 31.6 * 10^{10}) \wedge (f_p m \leq 6.0\ \%) \wedge (N_* n_e > 20.0 * 10^{10}) \Rightarrow L = 12589.3$, Size=2 %, MSE=0.199
- $(f_m e \leq 16.0\ \%) \wedge (N_* n_e > 63.1 * 10^{10}) \wedge (f_p m > 4.0\ \%) \wedge (f_m e \leq 0.8\ \%) \Rightarrow L = 100000.0$, Size=3 %, MSE=0.194
- $(f_m e \leq 16.0\ \%) \wedge (N_* n_e > 63.1 * 10^{10}) \wedge (f_m > 1.0\ \%) \wedge (f_p m > 5.0\ \%) \Rightarrow L = 316227.8$, Size=4 %, MSE=0.189
- $(f_m e \leq 16.0\ \%) \wedge (N_* n_e > 50.1 * 10^{10}) \wedge (f_p m \leq 6.0\ \%) \wedge (f_j > 80.0\ \%) \Rightarrow L = 79432.8$, Size=2 %, MSE=0.194
- $(f_g \leq 40.0\ \%) \wedge (N_* n_e > 63.1 * 10^{10}) \wedge (f_m > 1.3\ \%) \wedge (f_p m > 8.0\ \%) \Rightarrow L = 501187.2$,Size=2 %, MSE=0.197
- $(f_p m \leq 40.0\ \%) \wedge (N_* n_e > 50.1 * 10^{10}) \wedge (f_p m > 6.0\ \%) \wedge (f_m e > 1.0\ \%) \Rightarrow L = 251188.6$, Size=4 %, MSE=0.193
- $(f_m e \leq 16.0\ \%) \wedge (N_* n_e > 63.1 * 10^{10}) \wedge (f_m e \leq 1.0\ \%) \wedge (f_m > 1.0\ \%) \Rightarrow L = 125892.5$, Size=2 %, MSE=0.179
- $(f_p m \leq 50.0\ \%) \wedge (N_* n_e \leq 31.6 * 10^{10}) \wedge (f_m > 1.0\ \%) \wedge (N_* n_e > 20.0 * 10^{10}) \Rightarrow L = 50118.7$, Size=2 %, MSE=0.192
- $(N_* n_e > 0.0 * 10^{10}) \wedge (N_* n_e > 63.1 * 10^{10}) \wedge (f_p m > 4.0\ \%) \wedge (f_m e \leq 0.8\ \%) \Rightarrow L = 79432.8$, Size=3 %, MSE=0.182

- $(f_m e \leq 16.0\ \%) \wedge (N_* n_e > 63.1 * 10^{10}) \wedge (f_p m > 5.0\ \%) \wedge (f_m e \leq 0.8\ \%) \Rightarrow L = 79432.8$, Size=2 %, MSE=0.188
- $(f_g \leq 40.0\ \%) \wedge (N_* n_e \leq 39.8 * 10^{10}) \wedge (f_m \leq 0.8\ \%) \wedge (f_p m > 8.0\ \%) \Rightarrow L = 12589.3$,Size=2 %, MSE=0.197
- $(N_* n_e > 0.0 * 10^{10}) \wedge (N_* n_e > 63.1 * 10^{10}) \wedge (f_m > 1.3\ \%) \wedge (f_p m \leq 6.0\ \%) \Rightarrow L = 125892.5$, Size=2 %, MSE=0.185
- $(f_p m \leq 40.0\ \%) \wedge (N_* n_e > 63.1 * 10^{10}) \wedge (f_p m > 5.0\ \%) \wedge (f_m e > 1.0\ \%) \Rightarrow L = 316227.8$, Size=4 %, MSE=0.196
- $(f_p m \leq 50.0\ \%) \wedge (N_* n_e > 63.1 * 10^{10}) \wedge (f_p m > 5.0\ \%) \wedge (f_m e \leq 0.8\ \%) \Rightarrow L = 100000.0$, Size=3 %, MSE=0.197
- $(f_g \leq 40.0\ \%) \wedge (N_* n_e > 63.1 * 10^{10}) \wedge (f_p m > 5.0\ \%) \wedge (f_m > 1.3\ \%) \Rightarrow L = 316227.8$,Size=3 %, MSE=0.182

### 1.22 Supermodel

P(L < 1000):

- $(f_g \leq 40.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=25 %, MSE=0.01
- $(f_g > 40.0\ \%) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=75 %, MSE=0.097
- $(f_m \leq 16.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=25 %, MSE=0.011
- $(f_m > 16.0\ \%) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=75 %, MSE=0.098
- $(f_g \leq 40.0\ \%) \wedge (N_* n_e > 10.0 * 10^{10}) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=23 %, MSE=0.003
- $(f_g \leq 40.0\ \%) \wedge (N_* n_e \leq 10.0 * 10^{10}) \Rightarrow P(L < 1000) = 10.0\ \%$, Size=2 %, MSE=0.089
- $(N_* n_e \leq 0.0 * 10^{10}) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=75 %, MSE=0.097
- $(N_* n_e > 0.0 * 10^{10}) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=25 %, MSE=0.01
- $(f_m e > 16.0\ \%) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=75 %, MSE=0.098
- $(f_m e \leq 16.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=25 %, MSE=0.01
- $(notModelIV) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=75 %, MSE=0.097
- $(ModelIV) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=25 %, MSE=0.011
- $(f_j \leq 100.0\ \%) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=25 %, MSE=0.01
- $(f_j > 100.0\ \%) \Rightarrow P(L < 1000) = 90.0\ \%$, Size=75 %, MSE=0.097
- $(f_m e \leq 16.0\ \%) \wedge (N_* n_e \leq 10.0 * 10^{10}) \Rightarrow P(L < 1000) = 10.0\ \%$, Size=2 %, MSE=0.086
- $(f_m \leq 16.0\ \%) \wedge (N_* n_e > 10.0 * 10^{10}) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=23 %, MSE=0.003
- $(f_m e \leq 16.0\ \%) \wedge (N_* n_e > 10.0 * 10^{10}) \Rightarrow P(L < 1000) = 0.0\ \%$, Size=23 %, MSE=0.003
- $(f_m \leq 16.0\ \%) \wedge (N_* n_e \leq 10.0 * 10^{10}) \Rightarrow P(L < 1000) = 10.0\ \%$, Size=2 %, MSE=0.089
- $(N_* n_e > 0.0 * 10^{10}) \wedge (N_* n_e \leq 10.0 * 10^{10}) \Rightarrow P(L < 1000) = 10.0\ \%$, Size=2 %, MSE=0.083

- $(N_* n_e > 0.0 * 10^{10}) \wedge (N_* n_e > 10.0 * 10^{10}) \Rightarrow P(L < 1000) = 0.0$ %, Size=23 %, MSE=0.003
- $(f_g \leq 40.0$ %$) \wedge (N_* n_e > 10.0 * 10^{10}) \wedge (f_p m \leq 3.0$ %$) \Rightarrow P(L < 1000) = 0.0$ %, Size=3 %, MSE=0.022
- $(f_g \leq 40.0$ %$) \wedge (N_* n_e > 10.0 * 10^{10}) \wedge (f_p m > 3.0$ %$) \Rightarrow P(L < 1000) = 0.0$ %, Size=20 %, MSE=0.0
- $(ModelIV) \wedge (N_* n_e \leq 10.0 * 10^{10}) \Rightarrow P(L < 1000) = 10.0$ %, Size=2 %, MSE=0.091
- $(ModelIV) \wedge (N_* n_e > 10.0 * 10^{10}) \Rightarrow P(L < 1000) = 0.0$ %, Size=23 %, MSE=0.003
- $(f_j \leq 100.0$ %$) \wedge (N_* n_e > 10.0 * 10^{10}) \Rightarrow P(L < 1000) = 0.0$ %, Size=23 %, MSE=0.003

### 1.23 Supermodel

P(L < 10 000):

- $(T) \Rightarrow P(L < 10000) = 80.0$ %, Size=100 %, MSE=0.18
- $(N_* n_e \leq 7.9 * 10^{10}) \Rightarrow P(L < 10000) = 100.0$ %, Size=76 %, MSE=0.036
- $(N_* n_e > 7.9 * 10^{10}) \Rightarrow P(L < 10000) = 10.0$ %, Size=24 %, MSE=0.119
- $(N_* n_e \leq 6.3 * 10^{10}) \Rightarrow P(L < 10000) = 100.0$ %, Size=75 %, MSE=0.033
- $(N_* n_e > 7.9 * 10^{10}) \wedge (N_* n_e > 25.1 * 10^{10}) \Rightarrow P(L < 10000) = 10.0$ %, Size=18 %, MSE=0.067
- $(N_* n_e \leq 7.9 * 10^{10}) \wedge (f_b > 0.8$ %$) \Rightarrow P(L < 10000) = 100.0$ %, Size=71 %, MSE=0.017
- $(N_* n_e > 6.3 * 10^{10}) \Rightarrow P(L < 10000) = 10.0$ %, Size=25 %, MSE=0.124
- $(N_* n_e > 7.9 * 10^{10}) \wedge (N_* n_e > 31.6 * 10^{10}) \Rightarrow P(L < 10000) = 10.0$ %, Size=17 %, MSE=0.059
- $(N_* n_e \leq 7.9 * 10^{10}) \wedge (f_b > 0.1$ %$) \Rightarrow P(L < 10000) = 100.0$ %, Size=74 %, MSE=0.024
- $(N_* n_e > 10.0 * 10^{10}) \Rightarrow P(L < 10000) = 10.0$ %, Size=23 %, MSE=0.108
- $(N_* n_e \leq 10.0 * 10^{10}) \Rightarrow P(L < 10000) = 100.0$ %, Size=77 %, MSE=0.04
- $(N_* n_e > 7.9 * 10^{10}) \wedge (N_* n_e > 25.1 * 10^{10}) \wedge (f_p m > 3.0$ %$) \Rightarrow P(L < 10000) = 0.0$ %,Size=16 %, MSE=0.04
- $(N_* n_e > 6.3 * 10^{10}) \wedge (N_* n_e > 25.1 * 10^{10}) \Rightarrow P(L < 10000) = 10.0$ %, Size=18 %, MSE=0.069
- $(N_* n_e \leq 6.3 * 10^{10}) \wedge (f_b > 0.8$ %$) \Rightarrow P(L < 10000) = 100.0$ %, Size=70 %, MSE=0.014
- $(N_* n_e > 7.9 * 10^{10}) \wedge (N_* n_e > 39.8 * 10^{10}) \Rightarrow P(L < 10000) = 0.0$ %,Size=14 %, MSE=0.042
- $(N_* n_e \leq 7.9 * 10^{10}) \wedge (f_b \leq 0.8$ %$) \wedge (f_a > 60.0$ %$) \Rightarrow P(L < 10000) = 90.0$ %, Size=3 %, MSE=0.113
- $(N_* n_e \leq 7.9 * 10^{10}) \wedge (f_b > 0.1$ %$) \wedge (f_a > 8.0$ %$) \Rightarrow P(L < 10000) = 100.0$ %, Size=72 %, MSE=0.015

- $(N_* n_e > 7.9 * 10^{10}) \wedge (N_* n_e > 31.6 * 10^{10}) \wedge (f_p m > 3.0\ \%) \Rightarrow P(L < 10000) = 0.0\ \%$,Size=14 %, MSE=0.034
- $(N_* n_e > 7.9 * 10^{10}) \wedge (N_* n_e > 39.8 * 10^{10}) \wedge (f_p m > 3.0\ \%) \Rightarrow P(L < 10000) = 0.0\ \%$,Size=13 %, MSE=0.024
- $(N_* n_e > 6.3 * 10^{10}) \Rightarrow P(L < 10000) = 20.0\ \%$, Size=24 %, MSE=0.131
- $(N_* n_e > 7.9 * 10^{10}) \wedge (N_* n_e > 15.8 * 10^{10}) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=22 %, MSE=0.089
- $(N_* n_e > 7.9 * 10^{10}) \wedge (N_* n_e > 39.8 * 10^{10}) \wedge (f_p m \leq 3.0\ \%) \Rightarrow P(L < 10000) = 20.0\ \%$,Size=2 %, MSE=0.164
- $(N_* n_e > 7.9 * 10^{10}) \wedge (N_* n_e \leq 25.1 * 10^{10}) \wedge (f_m e > 0.8\ \%) \Rightarrow P(L < 10000) = 20.0\ \%$,Size=4 %, MSE=0.161
- $(N_* n_e > 6.3 * 10^{10}) \wedge (N_* n_e > 15.8 * 10^{10}) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=22 %, MSE=0.091
- $(N_* n_e \leq 7.9 * 10^{10}) \wedge (f_b > 0.8\ \%) \wedge (f_a > 5.0\ \%) \Rightarrow P(L < 10000) = 100.0\ \%$, Size=69 %, MSE=0.012

### 1.24 Supermodel

P(L < 100 000):

- $(T) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=100 %, MSE=0.085
- $(N_* n_e \leq 39.8 * 10^{10}) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=85 %, MSE=0.02
- $(N_* n_e \leq 31.6 * 10^{10}) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=84 %, MSE=0.016
- $(N_* n_e \leq 50.1 * 10^{10}) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=87 %, MSE=0.026
- $(N_* n_e \leq 63.1 * 10^{10}) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=89 %, MSE=0.03
- $(N_* n_e \leq 50.1 * 10^{10}) \wedge (N_* n_e \leq 25.1 * 10^{10}) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=81 %, MSE=0.011
- $(N_* n_e \leq 50.1 * 10^{10}) \wedge (N_* n_e > 25.1 * 10^{10}) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=6 %, MSE=0.178
- $(N_* n_e \leq 39.8 * 10^{10}) \wedge (N_* n_e \leq 15.8 * 10^{10}) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=79 %, MSE=0.008
- $(N_* n_e \leq 39.8 * 10^{10}) \wedge (N_* n_e > 15.8 * 10^{10}) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=6 %, MSE=0.142
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (N_* n_e \leq 25.1 * 10^{10}) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=81 %, MSE=0.011
- $(N_* n_e \leq 39.8 * 10^{10}) \wedge (N_* n_e > 20.0 * 10^{10}) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=5 %, MSE=0.162
- $(N_* n_e \leq 39.8 * 10^{10}) \wedge (N_* n_e \leq 20.0 * 10^{10}) \Rightarrow P(L < 100000) = 100.0\ \%$, Size=80 %, MSE=0.009

- $(N_* n_e \leq 31.6 * 10^{10}) \wedge (N_* n_e \leq 15.8 * 10^{10}) \Rightarrow P(L < 100000) = 100.0$ %, Size=78 %, MSE=0.008
- $(N_* n_e \leq 39.8 * 10^{10}) \wedge (N_* n_e > 25.1 * 10^{10}) \Rightarrow P(L < 100000) = 80.0$ %, Size=4 %, MSE=0.169
- $(N_* n_e \leq 39.8 * 10^{10}) \wedge (N_* n_e \leq 25.1 * 10^{10}) \Rightarrow P(L < 100000) = 100.0$ %, Size=81 %, MSE=0.01
- $(N_* n_e \leq 50.1 * 10^{10}) \wedge (N_* n_e \leq 25.1 * 10^{10}) \wedge (f_b > 0.1$ %$) \Rightarrow P(L < 100000) = 100.0$ %, Size=80 %, MSE=0.006
- $(N_* n_e \leq 50.1 * 10^{10}) \wedge (N_* n_e \leq 25.1 * 10^{10}) \wedge (f_b \leq 0.1$ %$) \Rightarrow P(L < 100000) = 80.0$ %,Size=2 %, MSE=0.166
- $(N_* n_e > 31.6 * 10^{10}) \wedge (N_* n_e > 100.0 * 10^{10}) \Rightarrow P(L < 100000) = 30.0$ %, Size=5 %, MSE=0.197
- $(N_* n_e \leq 39.8 * 10^{10}) \wedge (N_* n_e \leq 15.8 * 10^{10}) \wedge (f_b > 0.1$ %$) \Rightarrow P(L < 100000) = 100.0$ %, Size=77 %, MSE=0.003
- $(N_* n_e > 39.8 * 10^{10}) \wedge (f_p m > 6.0$ %$) \wedge (f_m e > 1.0$ %$) \Rightarrow P(L < 100000) = 20.0$ %, Size=6 %, MSE=0.164
- $(N_* n_e \leq 31.6 * 10^{10}) \wedge (N_* n_e \leq 15.8 * 10^{10}) \wedge (f_b > 0.1$ %$) \Rightarrow P(L < 100000) = 100.0$ %, Size=77 %, MSE=0.003
- $(N_* n_e \leq 39.8 * 10^{10}) \wedge (N_* n_e \leq 15.8 * 10^{10}) \wedge (f_b \leq 0.1$ %$) \Rightarrow P(L < 100000) = 80.0$ %,Size=2 %, MSE=0.167
- $(N_* n_e > 31.6 * 10^{10}) \wedge (f_p m \leq 6.0$ %$) \Rightarrow P(L < 100000) = 70.0$ %, Size=6 %, MSE=0.198
- $(N_* n_e \leq 63.1 * 10^{10}) \wedge (N_* n_e > 25.1 * 10^{10}) \Rightarrow P(L < 100000) = 80.0$ %, Size=8 %, MSE=0.183
- $(N_* n_e \leq 31.6 * 10^{10}) \wedge (N_* n_e \leq 15.8 * 10^{10}) \wedge (f_b \leq 0.1$ %$) \Rightarrow P(L < 100000) = 80.0$ %,Size=2 %, MSE=0.168

### 1.25 Supermodel 2

P(L < 1000):

- $(T) \Rightarrow P(L < 1000) = 10.0$ %, Size=100 %, MSE=0.089
- $(N > 320.0) \Rightarrow P(L < 1000) = 0.0$ %, Size=86 %, MSE=0.016
- $(N > 320.0) \wedge (N \leq 1600.0) \Rightarrow P(L < 1000) = 20.0$ %, Size=6 %, MSE=0.154
- $(N > 320.0) \wedge (N > 1600.0) \Rightarrow P(L < 1000) = 0.0$ %, Size=80 %, MSE=0.004
- $(N > 250.0) \Rightarrow P(L < 1000) = 0.0$ %, Size=86 %, MSE=0.018
- $(N > 320.0) \wedge (N > 1600.0) \wedge (N > 3200.0) \Rightarrow P(L < 1000) = 0.0$ %,Size=78 %, MSE=0.002
- $(N > 250.0) \wedge (N > 1600.0) \Rightarrow P(L < 1000) = 0.0$ %, Size=80 %, MSE=0.004
- $(N > 250.0) \wedge (N \leq 1600.0) \Rightarrow P(L < 1000) = 20.0$ %, Size=6 %, MSE=0.157

- $(N > 320.0) \wedge (N > 1600.0) \wedge (N \leq 3200.0) \Rightarrow P(L < 1000) = 10.0$ %,Size=2 %, MSE=0.062
- $(N > 250.0) \wedge (N > 1600.0) \wedge (N > 3200.0) \Rightarrow P(L < 1000) = 0.0$ %,Size=78 %, MSE=0.002
- $(N > 250.0) \wedge (N > 1600.0) \wedge (N \leq 3200.0) \Rightarrow P(L < 1000) = 10.0$ %,Size=2 %, MSE=0.064
- $(N > 320.0) \wedge (N \leq 1600.0) \wedge (f_i > 100.0\ \%) \Rightarrow P(L < 1000) = 10.0$ %, Size=3 %, MSE=0.092
- $(N > 320.0) \wedge (N > 1600.0) \wedge (N > 3200.0) \wedge (f_p m > 3.2\ \%) \Rightarrow P(L < 1000) = 0.0$ %, Size=75 %, MSE=0.001
- $(N > 320.0) \wedge (N > 1600.0) \wedge (N > 3200.0) \wedge (f_p m \leq 3.2\ \%) \Rightarrow P(L < 1000) = 0.0$ %,Size=2 %, MSE=0.039
- $(N > 320.0) \wedge (N > 1600.0) \wedge (N > 3200.0) \wedge (f_p m > 2.5\ \%) \Rightarrow P(L < 1000) = 0.0$ %, Size=76 %, MSE=0.001
- $(N > 320.0) \wedge (N \leq 1600.0) \wedge (f_c \leq 25.0\ \%) \Rightarrow P(L < 1000) = 10.0$ %, Size=2 %, MSE=0.058
- $(N > 250.0) \wedge (N \leq 1600.0) \wedge (f_i > 100.0\ \%) \Rightarrow P(L < 1000) = 10.0$ %, Size=3 %, MSE=0.092
- $(N \leq 320.0) \wedge (f_j \leq 100.0\ \%) \Rightarrow P(L < 1000) = 0.0$ %, Size=4 %, MSE=0.007
- $(N \leq 320.0) \wedge (f_j > 100.0\ \%) \Rightarrow P(L < 1000) = 80.0$ %, Size=11 %, MSE=0.168
- $(N > 250.0) \wedge (N > 1600.0) \wedge (N > 3200.0) \wedge (f_p m > 2.5\ \%) \Rightarrow P(L < 1000) = 0.0$ %, Size=76 %, MSE=0.001
- $(N > 320.0) \wedge (N \leq 1600.0) \wedge (f_c > 25.0\ \%) \wedge (n_e \leq 2.0) \Rightarrow P(L < 1000) = 20.0$ %, Size=2 %, MSE=0.151
- $(N \leq 320.0) \wedge (f_m e \leq 16.0\ \%) \Rightarrow P(L < 1000) = 0.0$ %, Size=4 %, MSE=0.007
- $(N \leq 320.0) \wedge (f_g > 40.0\ \%) \Rightarrow P(L < 1000) = 80.0$ %, Size=11 %, MSE=0.166
- $(N \leq 320.0) \wedge (f_g \leq 40.0\ \%) \Rightarrow P(L < 1000) = 0.0$ %, Size=4 %, MSE=0.007
- $(N \leq 320.0) \wedge (f_m e > 16.0\ \%) \Rightarrow P(L < 1000) = 80.0$ %, Size=11 %, MSE=0.168

### 1.26 Supermodel 2

P(L < 10 000):

- $(T) \Rightarrow P(L < 10000) = 20.0$ %, Size=100 %, MSE=0.165
- $(N > 3000.0) \Rightarrow P(L < 10000) = 10.0$ %, Size=77 %, MSE=0.069
- $(N > 4000.0) \Rightarrow P(L < 10000) = 10.0$ %, Size=76 %, MSE=0.067
- $(N > 3200.0) \Rightarrow P(L < 10000) = 10.0$ %, Size=77 %, MSE=0.069
- $(N \leq 3000.0) \wedge (N_* n_e > 7.9 * 10^{10}) \Rightarrow P(L < 10000) = 10.0$ %, Size=6 %, MSE=0.103
- $(N \leq 3000.0) \wedge (N_* n_e \leq 7.9 * 10^{10}) \Rightarrow P(L < 10000) = 80.0$ %, Size=17 %, MSE=0.141
- $(N \leq 4000.0) \wedge (N_* n_e > 7.9 * 10^{10}) \Rightarrow P(L < 10000) = 10.0$ %, Size=6 %, MSE=0.103

- $(N \leq 4000.0) \wedge (N_* n_e \leq 7.9 * 10^{10}) \Rightarrow P(L < 10000) = 80.0\ \%$, Size=18 %, MSE=0.149
- $(N > 2500.0) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=78 %, MSE=0.072
- $(N \leq 4000.0) \wedge (N_* n_e > 10.0 * 10^{10}) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=6 %, MSE=0.096
- $(N > 4000.0) \wedge (f_p m > 5.0\ \%) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 20.0\ \%$, Size=10 %, MSE=0.173
- $(N \leq 4000.0) \wedge (N_* n_e \leq 10.0 * 10^{10}) \Rightarrow P(L < 10000) = 80.0\ \%$, Size=18 %, MSE=0.152
- $(N > 4000.0) \wedge (f_m > 1.0\ \%) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=68 %, MSE=0.044
- $(N > 4000.0) \wedge (f_m > 1.0\ \%) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=58 %, MSE=0.018
- $(N > 4000.0) \wedge (f_p m > 5.0\ \%) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=62 %, MSE=0.026
- $(N > 4000.0) \wedge (f_p m > 5.0\ \%) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=72 %, MSE=0.051
- $(N > 3000.0) \wedge (f_m > 1.0\ \%) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=59 %, MSE=0.019
- $(N \leq 4000.0) \wedge (N_* n_e > 15.8 * 10^{10}) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=5 %, MSE=0.082
- $(N > 3000.0) \wedge (f_p m > 5.0\ \%) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=73 %, MSE=0.052
- $(N \leq 4000.0) \wedge (N_* n_e \leq 15.8 * 10^{10}) \Rightarrow P(L < 10000) = 80.0\ \%$, Size=18 %, MSE=0.155
- $(N \leq 3200.0) \wedge (N_* n_e \leq 7.9 * 10^{10}) \Rightarrow P(L < 10000) = 80.0\ \%$, Size=17 %, MSE=0.138
- $(N > 3000.0) \wedge (f_p m > 5.0\ \%) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 0.0\ \%$, Size=62 %, MSE=0.026
- $(N > 3000.0) \wedge (f_p m > 5.0\ \%) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 20.0\ \%$, Size=11 %, MSE=0.173
- $(N > 4000.0) \wedge (f_m > 1.0\ \%) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow P(L < 10000) = 20.0\ \%$, Size=9 %, MSE=0.171
- $(N \leq 3200.0) \wedge (N_* n_e > 7.9 * 10^{10}) \Rightarrow P(L < 10000) = 10.0\ \%$, Size=6 %, MSE=0.101

### 1.27 Supermodel 2

P(L < 100 000):

- $(N \leq 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=37 %, MSE=0.158
- $(N > 0.0 * 10^{10}) \wedge (f_p m > 16.0\ \%) \wedge (Model_E xpand \leq 0.0) \Rightarrow P(L < 100000) = 10.0\ \%$, Size=34 %, MSE=0.057
- $(N \leq 0.0 * 10^{10}) \wedge (N_* n_e \leq 63.1 * 10^{10}) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=32 %, MSE=0.123
- $(N > 0.0 * 10^{10}) \wedge (f_p m > 16.0\ \%) \Rightarrow P(L < 100000) = 20.0\ \%$, Size=49 %, MSE=0.183
- $(N > 0.0 * 10^{10}) \wedge (f_p m \leq 16.0\ \%) \wedge (N_* n_e \leq 63.1 * 10^{10}) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=8 %, MSE=0.115

- $(N > 0.0 * 10^{10}) \wedge (f_pm > 16.0\ \%) \wedge (Model_Expand \leq 0.0) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 0.0\ \%$, Size=27 %, MSE=0.02
- $(N \leq 0.0 * 10^{10}) \wedge (N_*n_e \leq 39.8 * 10^{10}) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=31 %, MSE=0.118
- $(N > 0.0 * 10^{10}) \wedge (f_pm > 16.0\ \%) \wedge (Model_Expand \leq 0.0) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 20.0\ \%$, Size=6 %, MSE=0.161
- $(N > 0.0 * 10^{10}) \wedge (f_pm > 16.0\ \%) \wedge (Model_Expand > 0.0) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=10 %, MSE=0.16
- $(N \leq 0.0 * 10^{10}) \wedge (N_*n_e \leq 63.1 * 10^{10}) \wedge (f_b > 2.5\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=30 %, MSE=0.096
- $(N > 0.0 * 10^{10}) \wedge (f_pm \leq 16.0\ \%) \wedge (N_*n_e \leq 63.1 * 10^{10}) \wedge (f_m \leq 1.6\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=6 %, MSE=0.069
- $(N > 0.0 * 10^{10}) \wedge (Model_Drake > 0.0) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 0.0\ \%$,Size=14 %, MSE=0.008
- $(N > 0.0 * 10^{10}) \wedge (Model_Drake > 0.0) \Rightarrow P(L < 100000) = 0.0\ \%$, Size=17 %, MSE=0.036
- $(N \leq 0.0 * 10^{10}) \wedge (N_*n_e \leq 63.1 * 10^{10}) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=33 %, MSE=0.131
- $(N \leq 0.0 * 10^{10}) \wedge (N_*n_e \leq 63.1 * 10^{10}) \wedge (f_b > 3.2\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=30 %, MSE=0.096
- $(N \leq 0.0 * 10^{10}) \wedge (N_*n_e > 63.1 * 10^{10}) \wedge (f_pm > 8.0\ \%) \Rightarrow P(L < 100000) = 20.0\ \%$, Size=2 %, MSE=0.172
- $(N > 0.0 * 10^{10}) \wedge (f_pm > 16.0\ \%) \wedge (Model_Expand > 0.0) \wedge (f_p \leq 50.0\ \%) \Rightarrow P(L < 100000) = 20.0\ \%$, Size=4 %, MSE=0.174
- $(N > 0.0 * 10^{10}) \wedge (f_pm > 16.0\ \%) \wedge (Model_Expand > 0.0) \wedge (f_p > 50.0\ \%) \Rightarrow P(L < 100000) = 80.0\ \%$, Size=12 %, MSE=0.181
- $(N \leq 0.0 * 10^{10}) \wedge (N_*n_e > 63.1 * 10^{10}) \wedge (f_m > 1.0\ \%) \Rightarrow P(L < 100000) = 20.0\ \%$, Size=2 %, MSE=0.179
- $(N > 0.0 * 10^{10}) \wedge (Model_Drake > 0.0) \wedge (N \leq 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 20.0\ \%$,Size=3 %, MSE=0.156
- $(N > 0.0 * 10^{10}) \wedge (f_pm > 13.0\ \%) \wedge (Model_Expand \leq 0.0) \Rightarrow P(L < 100000) = 10.0\ \%$, Size=35 %, MSE=0.071
- $(N > 0.0 * 10^{10}) \wedge (f_me > 2.0\ \%) \wedge (Model_Expand \leq 0.0) \Rightarrow P(L < 100000) = 10.0\ \%$, Size=34 %, MSE=0.067
- $(N \leq 0.0 * 10^{10}) \wedge (N_*n_e \leq 39.8 * 10^{10}) \wedge (f_b > 2.5\ \%) \Rightarrow P(L < 100000) = 90.0\ \%$, Size=28 %, MSE=0.086
- $(N > 0.0 * 10^{10}) \wedge (f_pm \leq 13.0\ \%) \wedge (N_*n_e \leq 63.1 * 10^{10}) \Rightarrow P(L < 100000) = 90.0\ \%$,Size=8 %, MSE=0.104
- $(N > 0.0 * 10^{10}) \wedge (Model_Drake > 0.0) \wedge (N > 0.0 * 10^{10}) \wedge (N > 0.0 * 10^{10}) \Rightarrow P(L < 100000) = 0.0\ \%$, Size=12 %, MSE=0.001

[3]:
```
with open("rules_exact.txt", "r") as f:
    rules_list = eval(f.read())
```

[4]:
```
"""
data = []
for model, label, rules in rules_list:
    parameters = {}
    params = set()
    depths = set()
    for rule in rules:
        for depth, r in enumerate(rule[:-1]):
            parameters[(r[0], depth)] = parameters.get((r[0], depth), []) +␣
 ↪[r[2]]
            params.add(r[0])
            depths.add(depth)
    params = sorted(list(params))
    depths = sorted(list(depths))
    data.append((model, label, parameters, params, depths))
for model, label, parameters, params, depths in data:
    if "Super" in model:
        continue
    lens = [p for p in params if sum([len(parameters.get((p, d), [])) > 50 for␣
 ↪d in depths]) > 0]
    if len(lens) > 0:
        plt.figure(figsize=(12, 4))
        plt.suptitle(f"{model}, {label}")
        for i, p in enumerate(lens):
            plt.subplot(1, len(lens), i+1)
            plt.title(f"${p}$")
            for d in depths:
                thres = parameters.get((p, d), [])
                if len(thres) > 50:
                    h, b = np.histogram(thres, 100)
                    plt.plot(b[:-1], h, label=d)
            plt.legend()
        plt.show()
# key je lahko seznam parametrov in na katero stran gre, potem pa opazuj kako␣
 ↪se vsakemu parametru spreminjajo meje in rezultat, impurity ...
"""
print("")
```