

TJTSM61 Business Analytics and Big Data Management

Challenges 1&2

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Hypothesis

Barbershop chain MRoom's
Facebook likes correlate with
traffic in barbershops



Outline

- Data collection
 - Data from Mroom's API
(<https://mroom.asioi.fi/api/pob-info-with-queue>)
 - Facebook data from all ten Finnish cities which have facebook pages

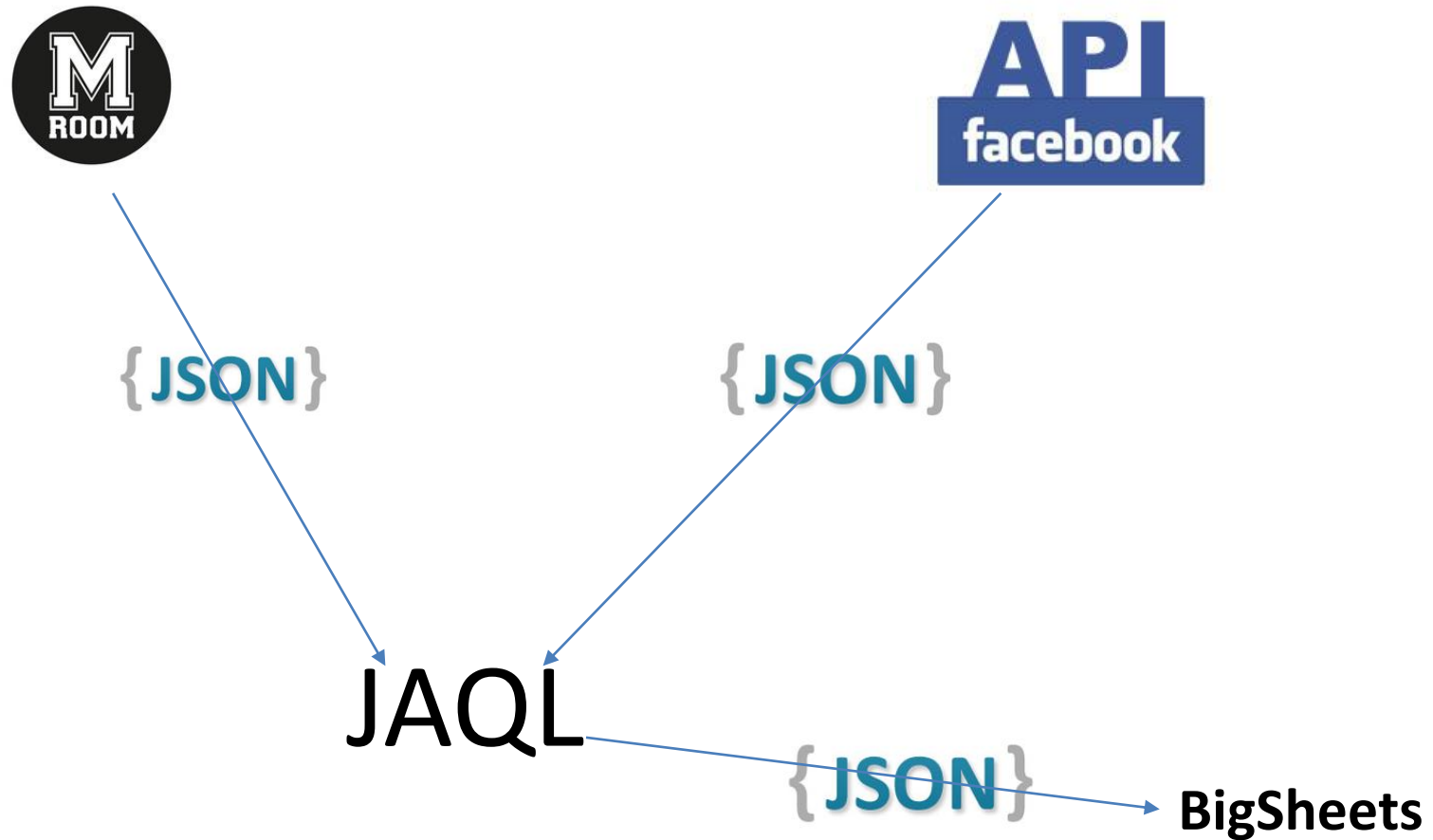
Data processing methods:

- Jaql
- BigSheets
- Javascript

File formats: JSON, XML

Visualization: Microsoft Excel

Challenge 1



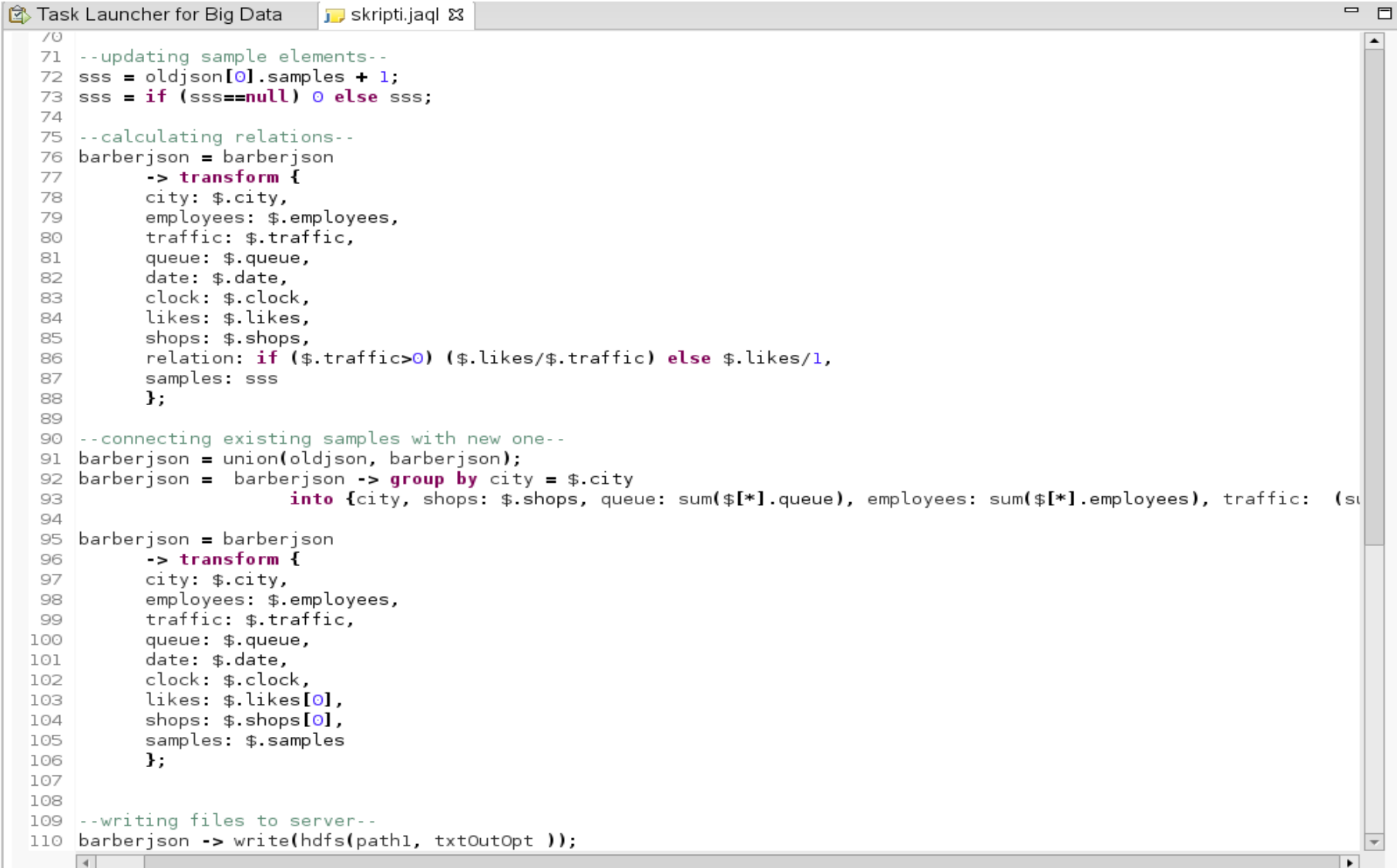
Data Collection Process

1. Data from Mroom API
2. -> Script using jaql
3. Some preparation with Facebook API to get the amount of likes for each Mroom shop in Finland which has FB page
4. Processing the data in Big Sheets
5. Creating some charts to visualize the results

Some examples of our JAQL script

```
Task Launcher for Big Data skripti.jaql
40 --getting Facebook data from each city--
41 linklist = [{ "link": "https://graph.facebook.com/v2.3/MRoomTampere?fields=likes&access_token=CAAYIfQUkCZB8BAPjG8h"
42 links = linklist ->transform $.link;
43 tampere = read(http(linklist[0].link)).likes;
44 jyvaskyla = read(http(linklist[1].link)).likes;
45 rovaniemi = read(http(linklist[2].link)).likes;
46 lahti = read(http(linklist[3].link)).likes;
47 helsinki = read(http(linklist[4].link)).likes;
48 espoo = read(http(linklist[5].link)).likes;
49 pori = read(http(linklist[6].link)).likes;
50 hameenlinna = read(http(linklist[7].link)).likes;
51 oulu = read(http(linklist[8].link)).likes;
52 turku = read(http(linklist[9].link)).likes;
53 likesjson = [{ "city": "Tampere", "likes": tampere[0] }, {city: "Jyväskylä", "likes": jyvaskyla[0] }, {city: "Rovaniemi", "likes":
54
55 --parsing MRoom data--
56 barberjson = processed[0]
57     -> transform {
58     queue: if ($.queue.count == "closed" or $.queue.count == "full" or $.queue.employees == 0) 0 else $.queue.cour
59     employees: $.queue.employees,
60     city: $.city
61     };
62 barberjson = barberjson -> group by city = $.city
63     into {city, queue: sum($[*].queue), shops: count($[*].city), employees: sum($[*].employees), tra
64
65 --connecting MRoom data and Facebook data--
66 barberjson = join barberjson, likesjson
67     where barberjson.city == likesjson.city
68     into {barberjson.city, barberjson.queue, barberjson.shops, barberjson.traffic, barberjson.employees, barberjson.da
69
70
71 --updating sample elements--
72 sss = oldjson[0].samples + 1;
73 sss = if (sss==null) 0 else sss;
74
```

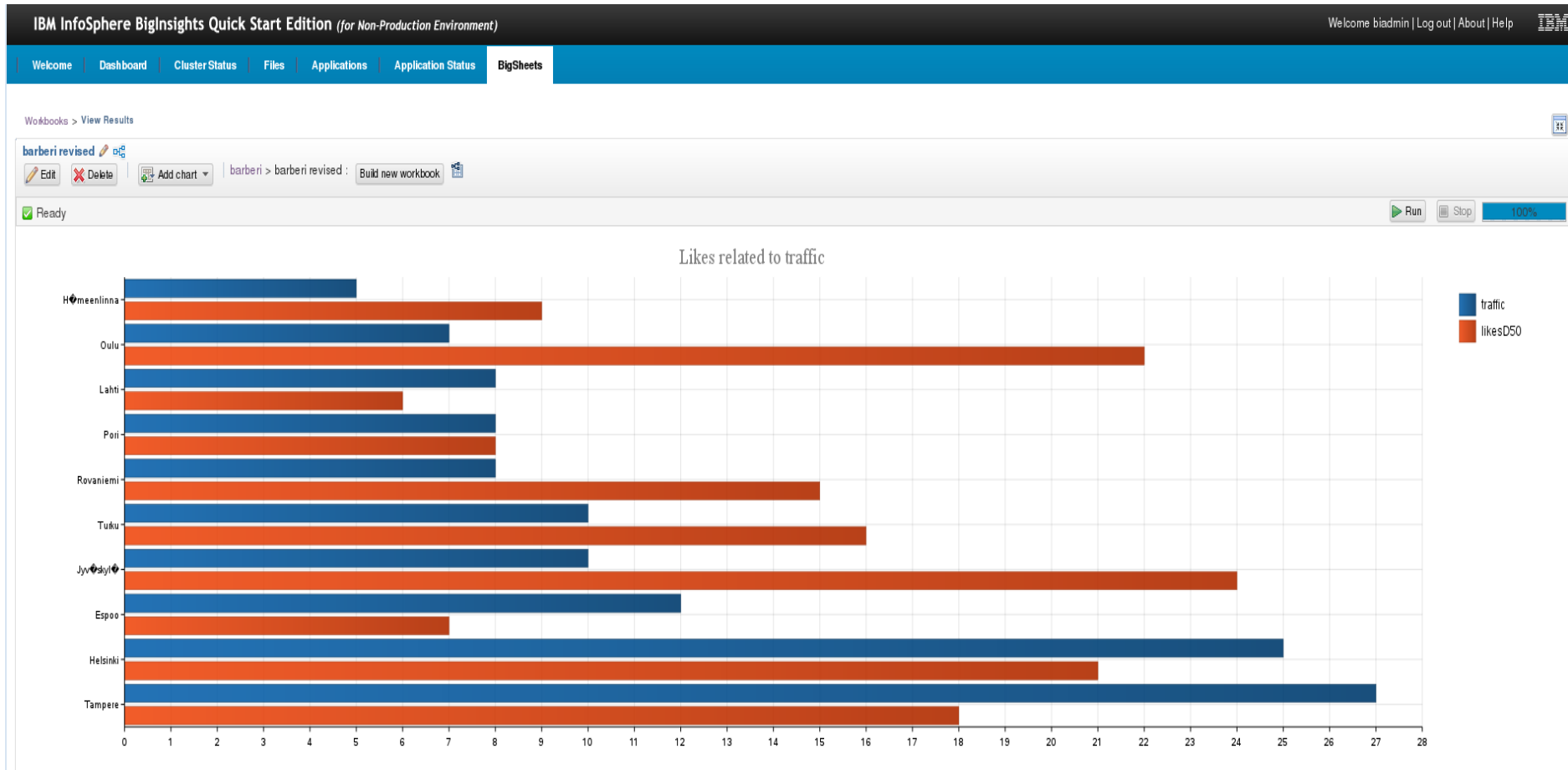
...continues



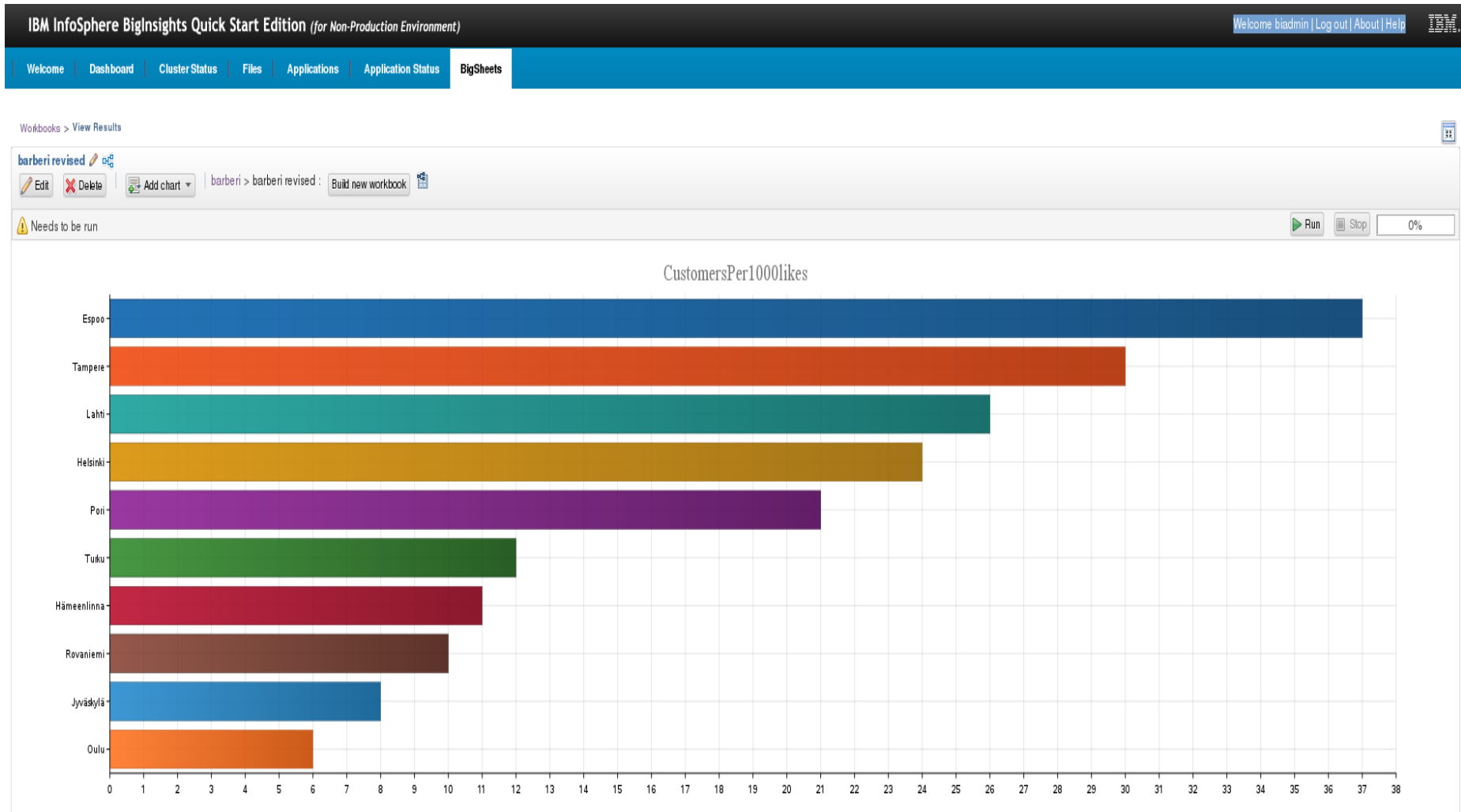
The screenshot shows a window titled "Task Launcher for Big Data" with a tab for "skripti.jaql". The window contains a Jaql script with line numbers 70 through 110. The script performs several operations: updating sample counts, calculating relations for barberjson, connecting existing samples, grouping by city, and writing the final result to a file.

```
70
71 --updating sample elements--
72 sss = oldjson[0].samples + 1;
73 sss = if (sss==null) 0 else sss;
74
75 --calculating relations--
76 barberjson = barberjson
77   -> transform {
78     city: $.city,
79     employees: $.employees,
80     traffic: $.traffic,
81     queue: $.queue,
82     date: $.date,
83     clock: $.clock,
84     likes: $.likes,
85     shops: $.shops,
86     relation: if ($.traffic>0) ($.likes/$.traffic) else $.likes/1,
87     samples: sss
88   };
89
90 --connecting existing samples with new one--
91 barberjson = union(oldjson, barberjson);
92 barberjson = barberjson -> group by city = $.city
93   into {city, shops: $.shops, queue: sum($[*].queue), employees: sum($[*].employees), traffic: (su
94
95 barberjson = barberjson
96   -> transform {
97     city: $.city,
98     employees: $.employees,
99     traffic: $.traffic,
100    queue: $.queue,
101    date: $.date,
102    clock: $.clock,
103    likes: $.likes[0],
104    shops: $.shops[0],
105    samples: $.samples
106  };
107
108
109 --writing files to server--
110 barberjson -> write(hdfs(path1, txtOutOpt ));
```

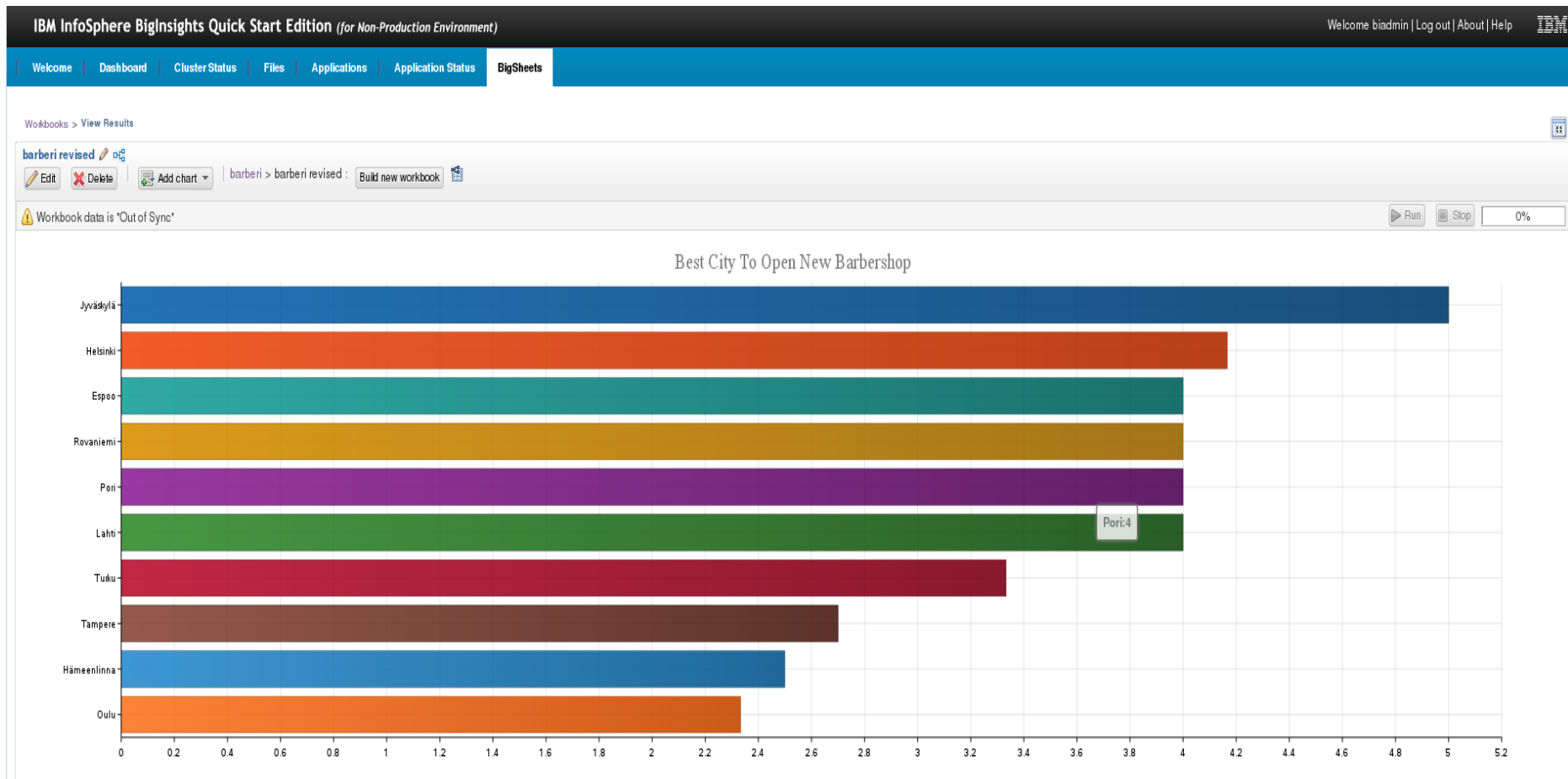
Likes related to traffic



Customers per thousand likes



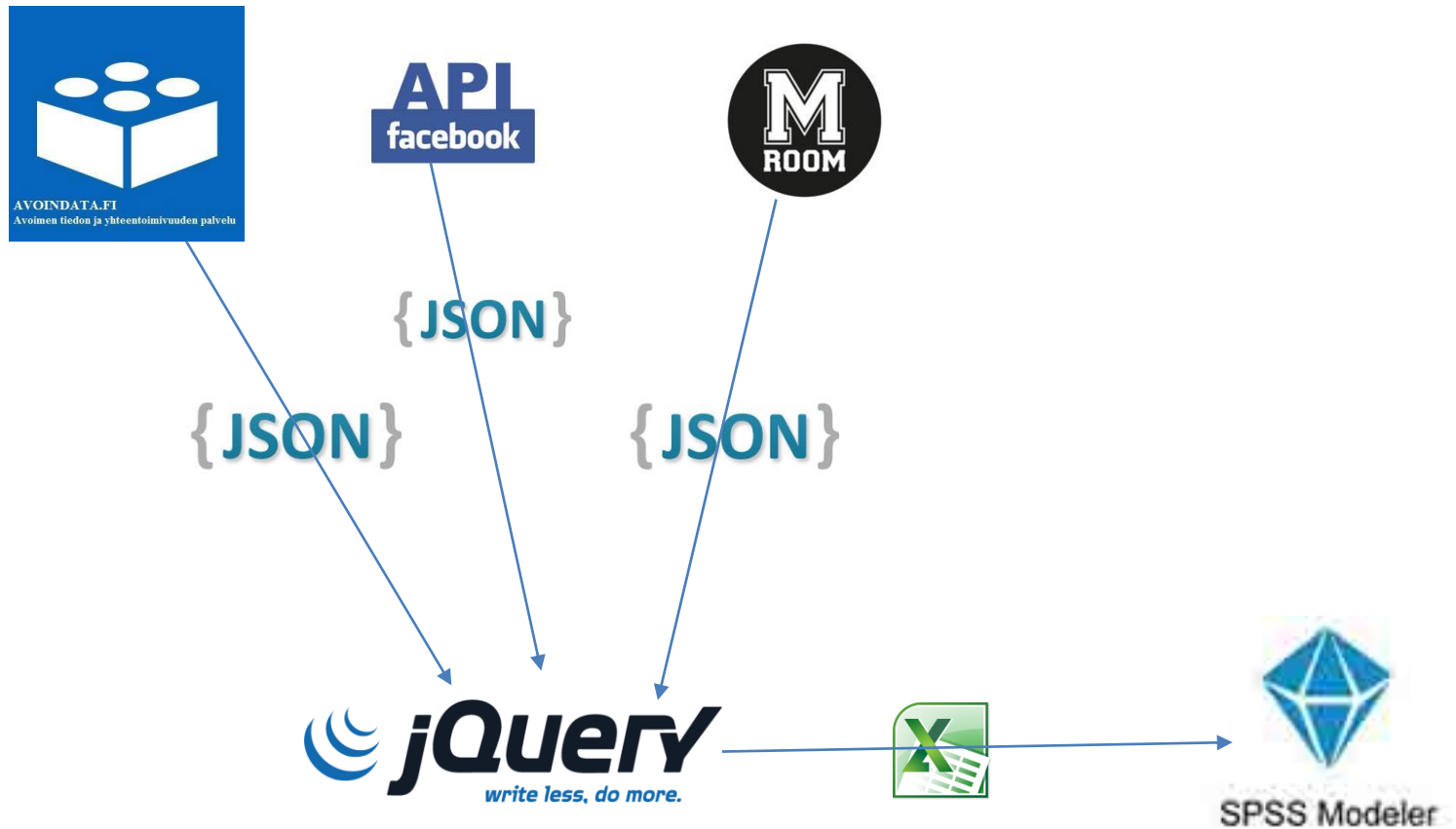
Best city to open new barbershop



Second Challenge

- We used the same data as in the first challenge but instead of 10 biggest cities we used the data of all 58 Mroom's barbershops in Finland.
- We divided cities into two groups: "big cities" (>100 000 inhabitants) true or false and does the barbershop have queue (true/false)
- We used SPSS Modeler to model predictions and results
- We used JQuery to collect data
- We got the city populations from "Väestörekisterikeskus" open database

Challenge 2

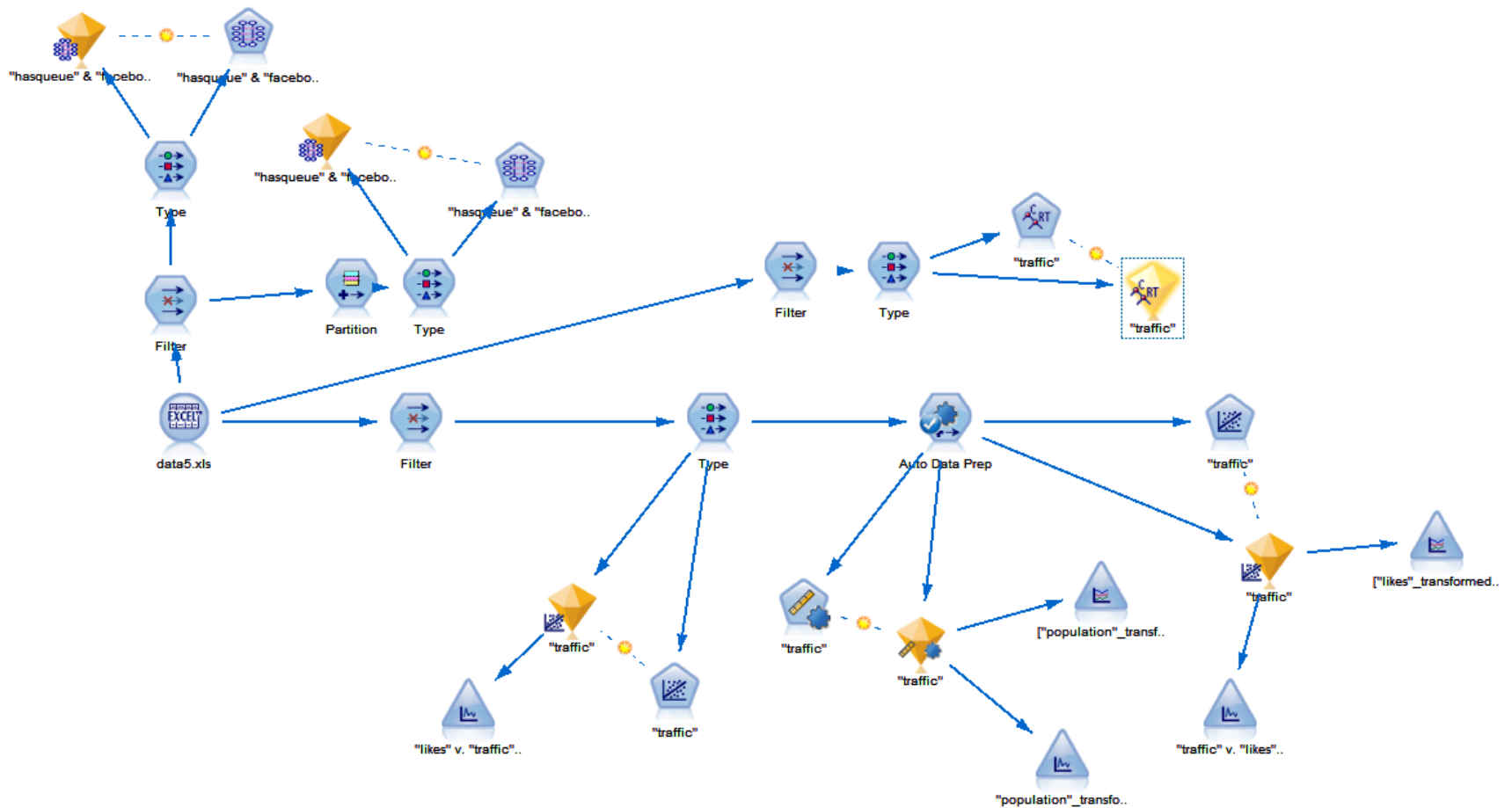


Jquery script

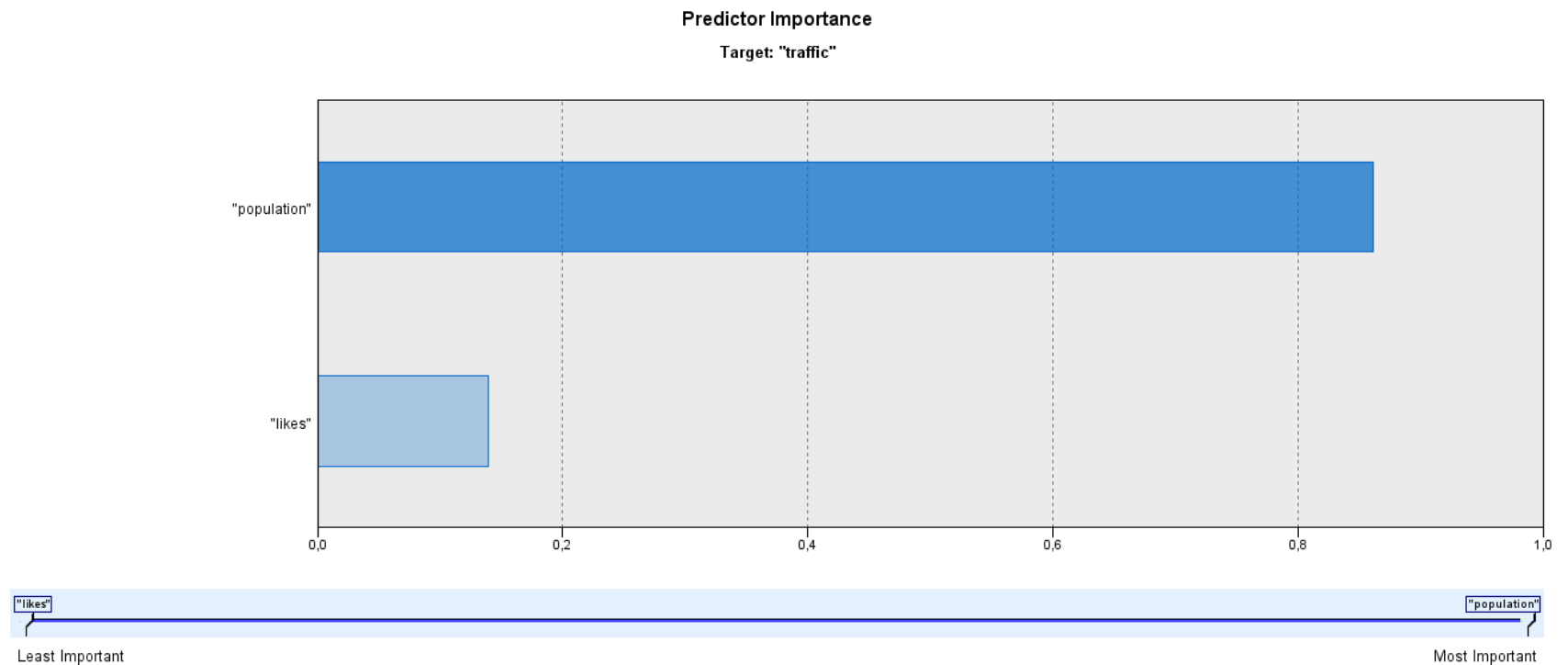
```
[{"name": "Espoo",
  Espoonrityt": {"city": "Espoo", "queue": 0, "hasqueue": false, "facebookpage": true, "likes": 326, "employees": 2}, {"traffic": 2, "bigtraffic": false, "population": 256824, "bigcity": true},
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  {"name": "Hakaniemi", "city": "Helsinki", "queue": 0, "hasqueue": false, "facebookpage": true, "likes": 1062, "employees": 1}, {"traffic": 1, "bigtraffic": false, "population": 603968, "bigcity": true},
  {"name": "Kallio", "city": "Helsinki", "queue": 1, "hasqueue": true, "facebookpage": true, "likes": 1062, "employees": 1}, {"traffic": 2, "bigtraffic": false, "population": 603968, "bigcity": true},
  {"name": "Kamppi", "city": "Helsinki", "queue": 0, "hasqueue": false, "facebookpage": true, "likes": 1062, "employees": 5}, {"traffic": 5, "bigtraffic": true, "population": 603968, "bigcity": true},
  {"name": "Punavuori", "city": "Helsinki", "queue": 2, "hasqueue": true, "facebookpage": true, "likes": 1062, "employees": 2}, {"traffic": 4, "bigtraffic": true, "population": 603968, "bigcity": true},
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  {"name": "Töölö", "city": "Helsinki", "queue": 0, "hasqueue": false, "facebookpage": true, "likes": 1062, "employees": 2}, {"traffic": 2, "bigtraffic": false, "population": 603968, "bigcity": true},
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  {"name": "Innorpark", "city": "Hämeenlinna", "queue": 0, "hasqueue": false, "facebookpage": true, "employees": 1}, {"traffic": 1, "bigtraffic": false, "population": 67497, "bigcity": false},
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  {"name": "Kauppakatu", "city": "Joensuu", "queue": 0, "hasqueue": false, "likes": 0, "facebookpage": false, "employees": 3}, {"traffic": 3, "bigtraffic": false, "population": 74168, "bigcity": false},
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  {"name": "Vapaudentkatu", "city": "Jyväskylä", "queue": 4, "hasqueue": true, "facebookpage": true, "employees": 2}, {"traffic": 6, "bigtraffic": true, "population": 133482, "bigcity": true},
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  {"name": "Kerava", "city": "Kerava", "queue": 0, "hasqueue": false, "likes": 0, "facebookpage": false, "employees": 2}, {"traffic": 2, "bigtraffic": false, "population": 34491, "bigcity": false},
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  {"name": "Kauppakatu", "city": "Kotka", "queue": 1, "hasqueue": true, "likes": 0, "facebookpage": false, "employees": 3}, {"traffic": 4, "bigtraffic": true, "population": 54873, "bigcity": false},
  {"name": "Salpauselänpätkä", "city": "Kouvola", "queue": 0, "hasqueue": false, "likes": 0, "facebookpage": false, "employees": 4}, {"traffic": 4, "bigtraffic": true, "population": 87296, "bigcity": false},
  {"name": "Ajurinkatu", "city": "Kuopio", "queue": 1, "hasqueue": true, "likes": 0, "facebookpage": false, "employees": 4}, {"traffic": 5, "bigtraffic": true, "population": 105136, "bigcity": true},
  {"name": "Maili", "city": "Lahti", "queue": 0, "hasqueue": false, "facebookpage": true, "likes": 301, "emp
```

[illegible]

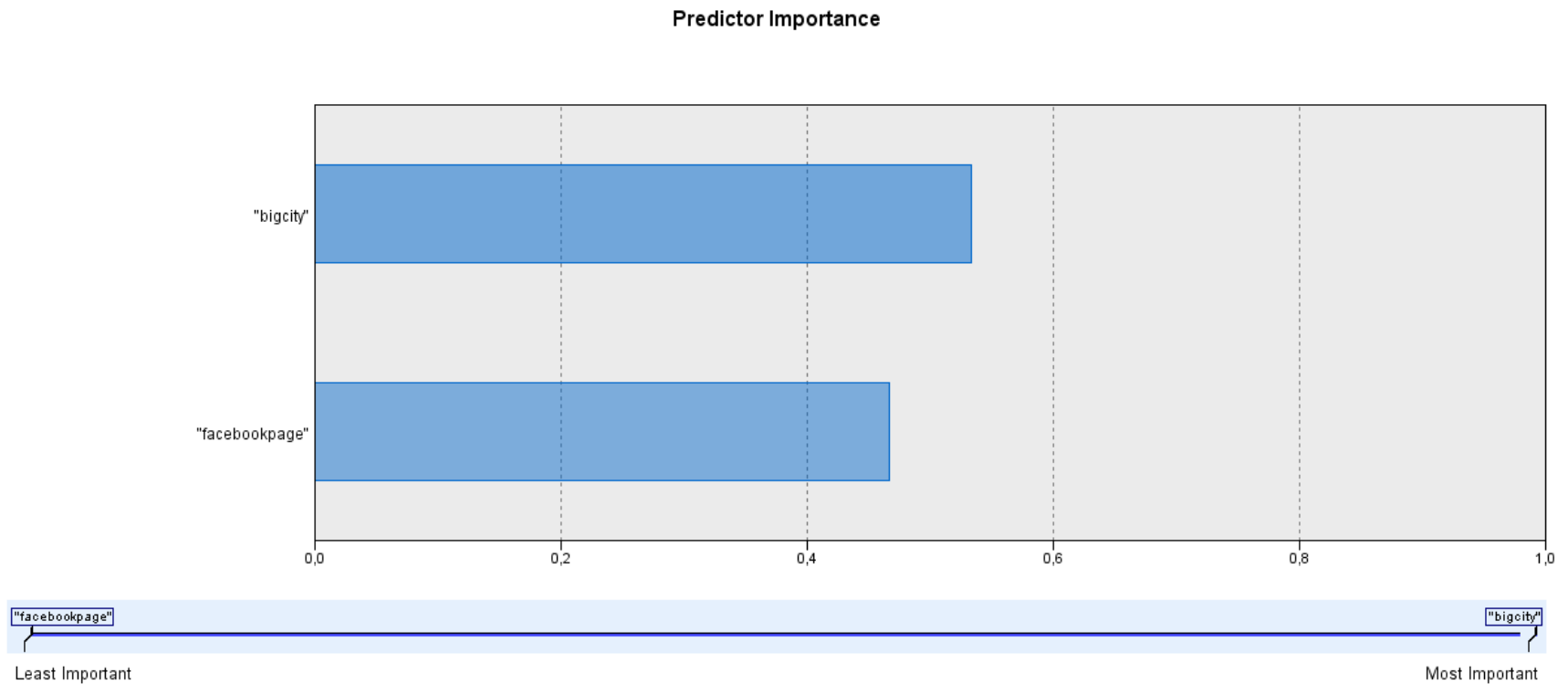
Structure of our SPSS Modeler draft



Traffic relation to population and likes

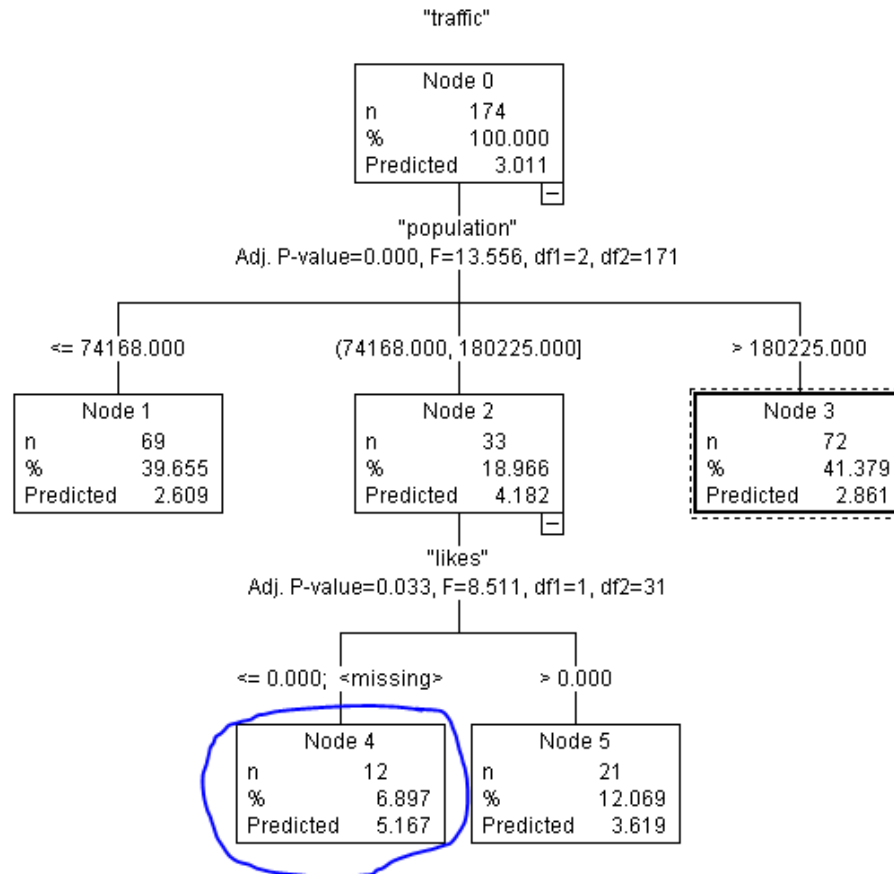


Traffic realations to big city and FB page



Some results

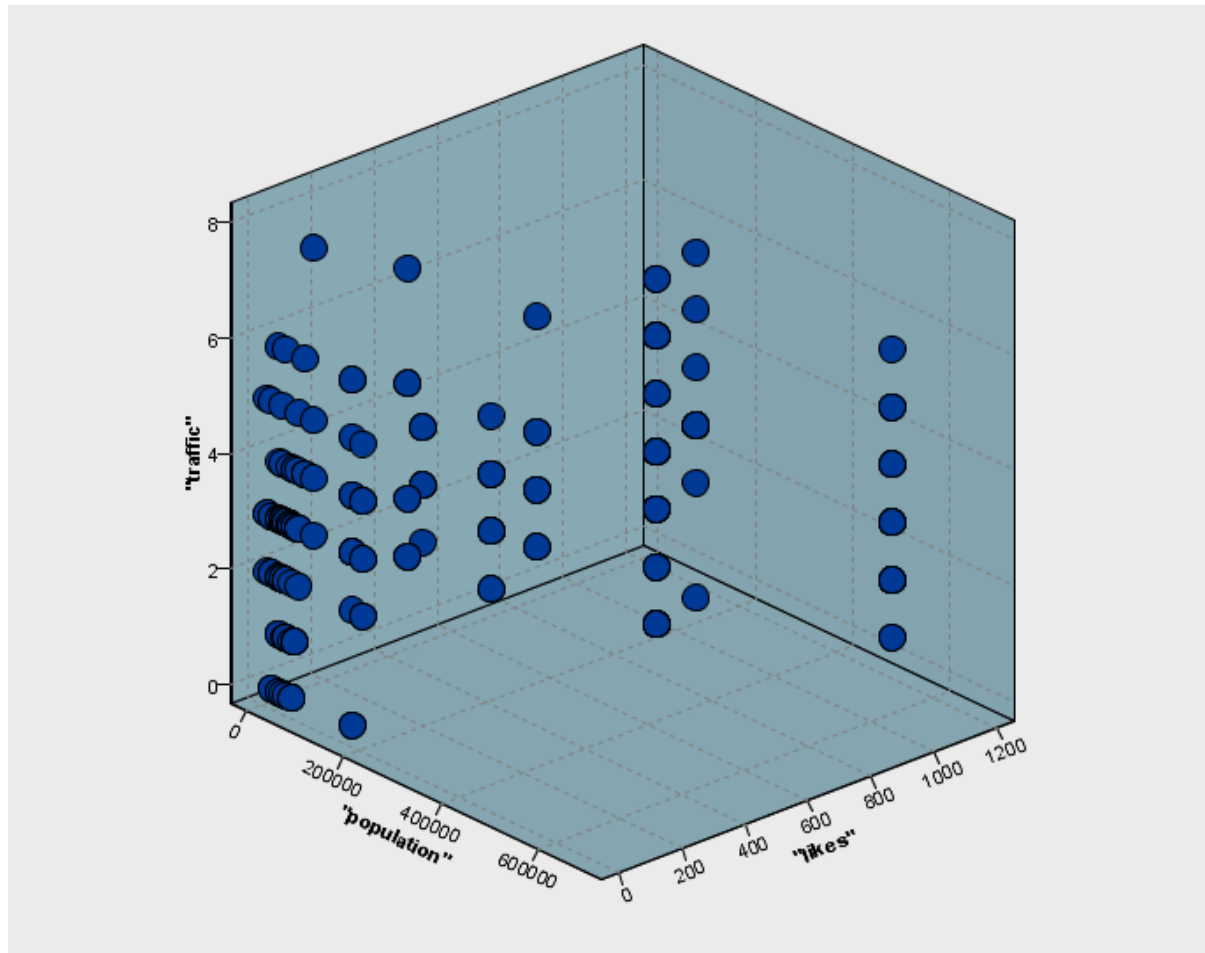
Best "type" of barbershop



Probability of queues in Barbershops

Consequent	Antecedent	Support %	Confidence %
"facebookpage"	"hasqueue" "bigcity"	40,541	92,0
"facebookpage"	"bigcity"	69,189	90,625
"bigcity"	"hasqueue" "facebookpage"	42,703	87,342
"bigcity"	"facebookpage"	75,676	82,857
"facebookpage"	"hasqueue"	63,784	66,949
"bigcity"	"hasqueue"	63,784	63,559
"hasqueue"	"facebookpage" "bigcity"	62,703	59,483
"hasqueue"	"bigcity"	69,189	58,594
"facebookpage"	"hasqueue"	63,784	58,475
"bigcity"	"hasqueue"	63,784	58,475
"hasqueue"	"facebookpage"	75,676	56,429
"hasqueue"	"bigcity"	69,189	53,906
"facebookpage"	"hasqueue"	63,784	53,906
"hasqueue"	"facebookpage"	75,676	49,286
"bigcity"	"hasqueue"	63,784	49,286

Traffic, population & likes visualized



Training data and actual data

"hasqueue" & "facebookpage" & "bigcity"

File Generate Preview

Model Settings Summary Annotations

Sort by: Confidence % 12 of 12

Consequent	Antecedent	Support %	Confidence %
"facebookpage"	"hasqueue"	41,0	92,683
"facebookpage"	"bigcity"	71,0	90,141
"bigcity"	"hasqueue"	45,0	84,444
"bigcity"	"facebookpage"	77,0	83,117
"facebookpage"	"hasqueue"	64,0	70,312
"bigcity"	"hasqueue"	64,0	64,062
"facebookpage"	"hasqueue"	64,0	59,375
"hasqueue"	"facebookpage"	64,0	59,375
"hasqueue"	"facebookpage"	77,0	58,442
"hasqueue"	"bigcity"	71,0	57,746
"hasqueue"	"bigcity"	71,0	53,521
"facebookpage"	"facebookpage"	77,0	49,351

"hasqueue" & "facebookpage" & "bigcity"

File Generate Preview

Model Settings Summary Annotations

Sort by: Confidence % 12 of 12

Consequent	Antecedent	Support %	Confidence %
"facebookpage"	"hasqueue"	40,541	92,0
"facebookpage"	"bigcity"	69,189	90,625
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"bigcity"	"facebookpage"	75,676	56,429
"hasqueue"	"bigcity"	69,189	53,906
"facebookpage"	"facebookpage"	75,676	49,286

Thank you for your attention.