

SPATIAL ANALYSIS ON CONSUMER PRICE INDEX DATA IN TURKEY

Selin TEKIN

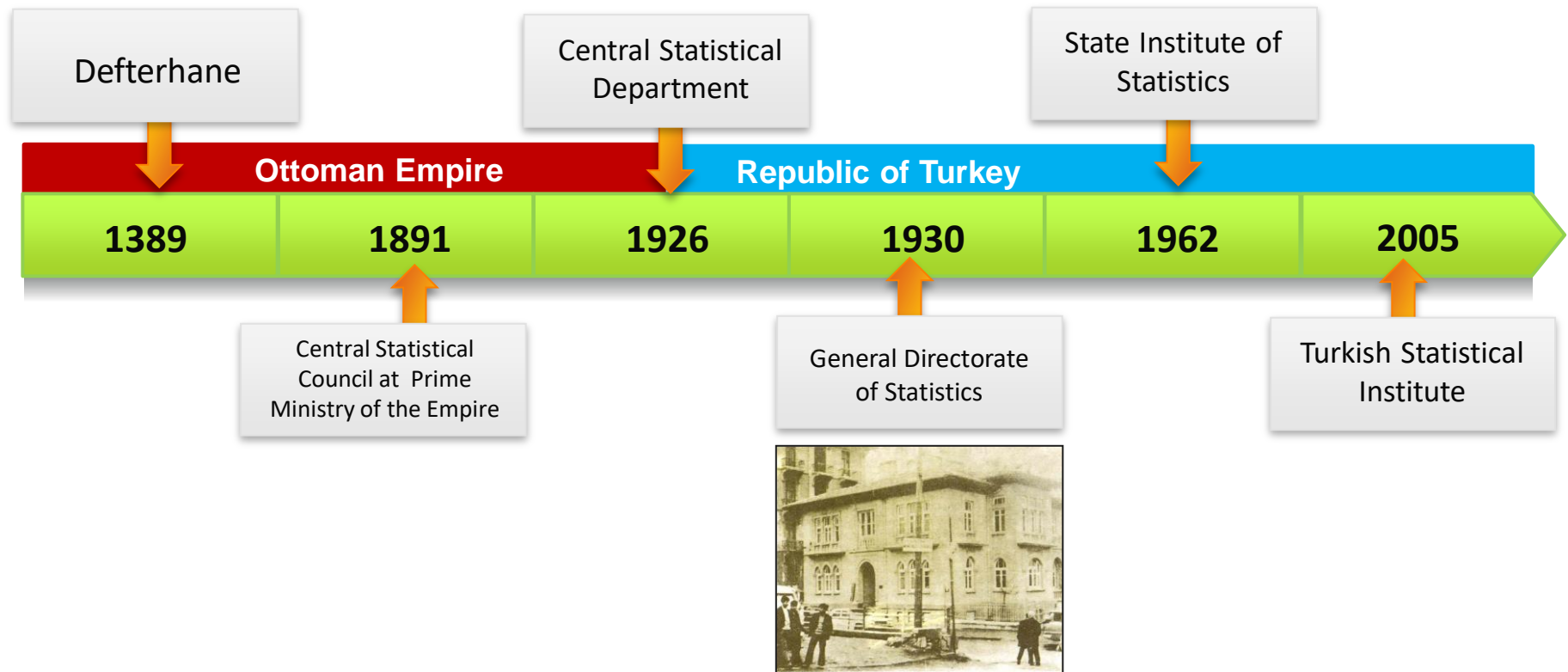
October 2020

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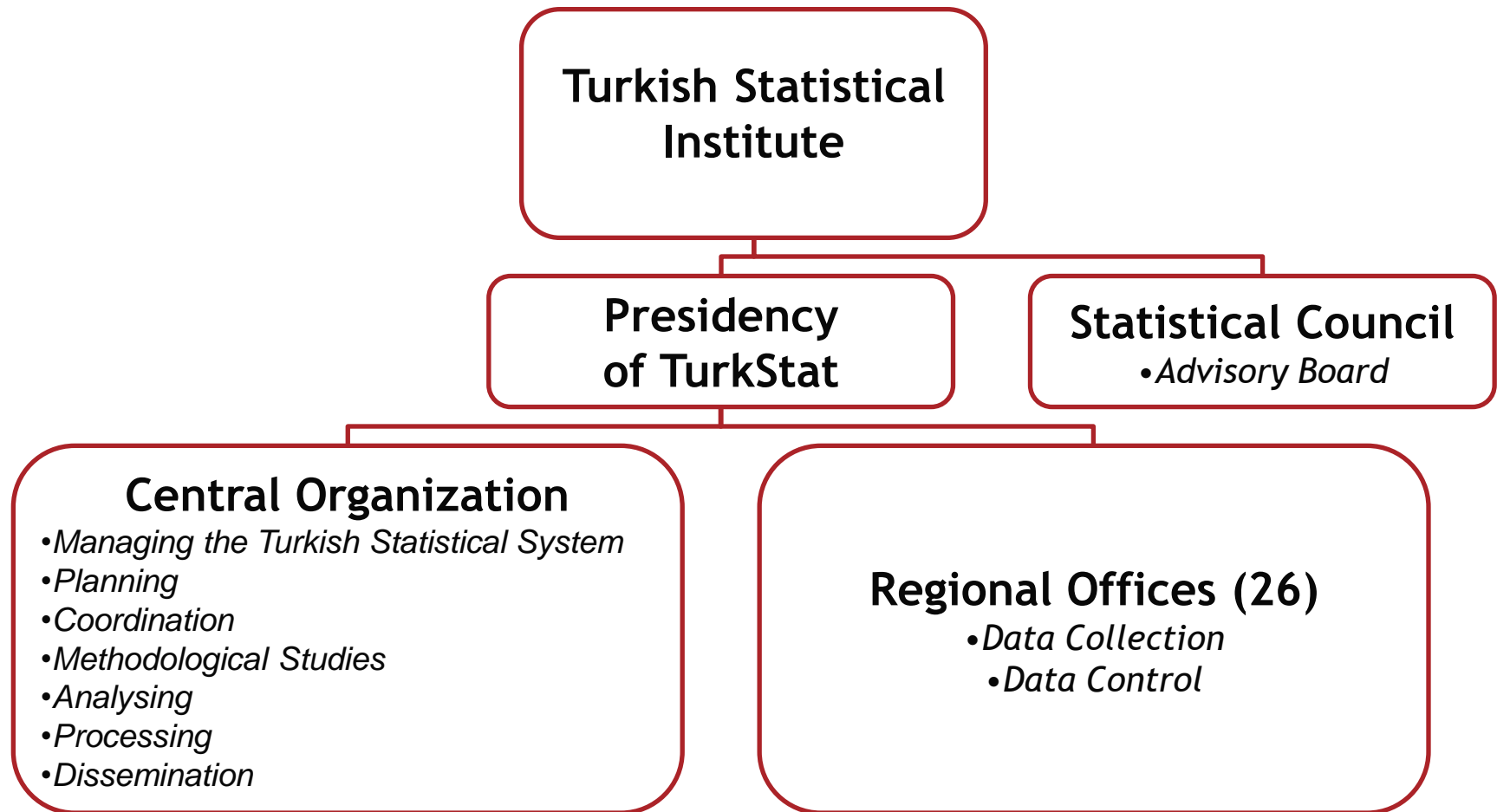
Agenda

- Brief info about Turkstat
- Objective
- Methodology
 - Surveyors and businesses
 - Spatial analysis on distances
- Results
- Discussion

Brief info about Turkstat :: Brief History

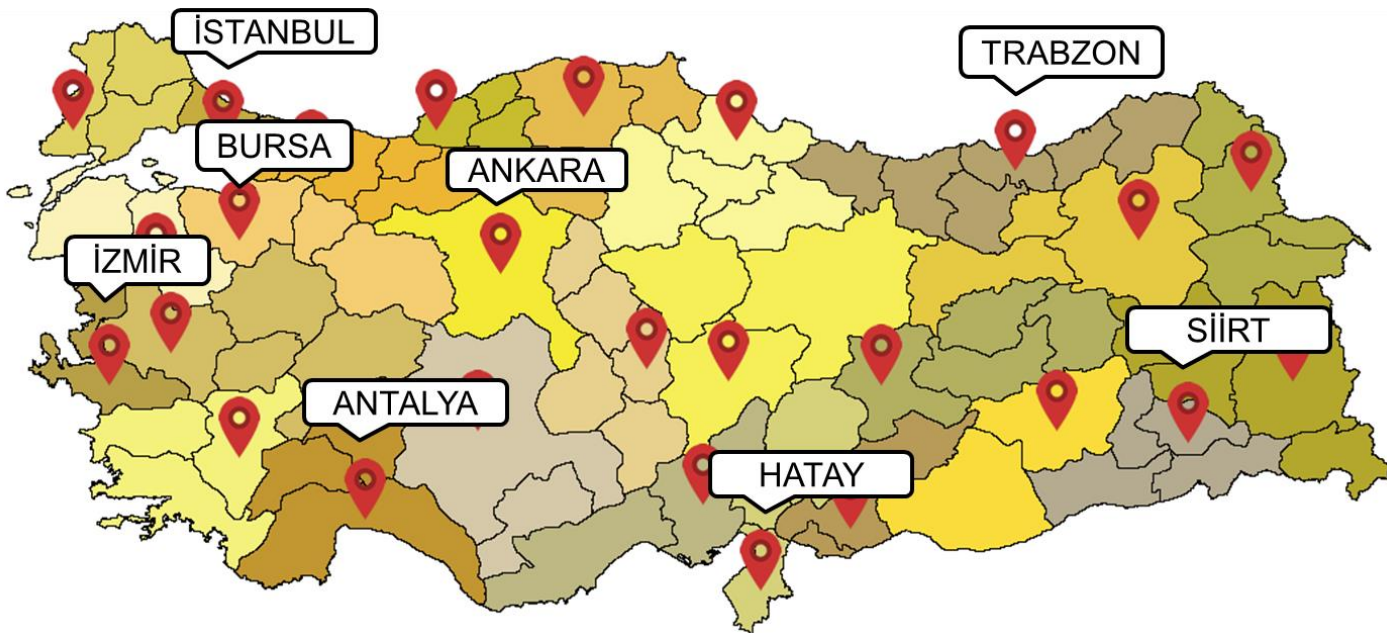


Brief info about Turkstat :: Organizational Structure



Brief info about Turkstat :: Regional Offices

- 780 043 km²
- 83 154 997 population
- 26 Regional offices



Brief info about Turkstat :: Human Resources



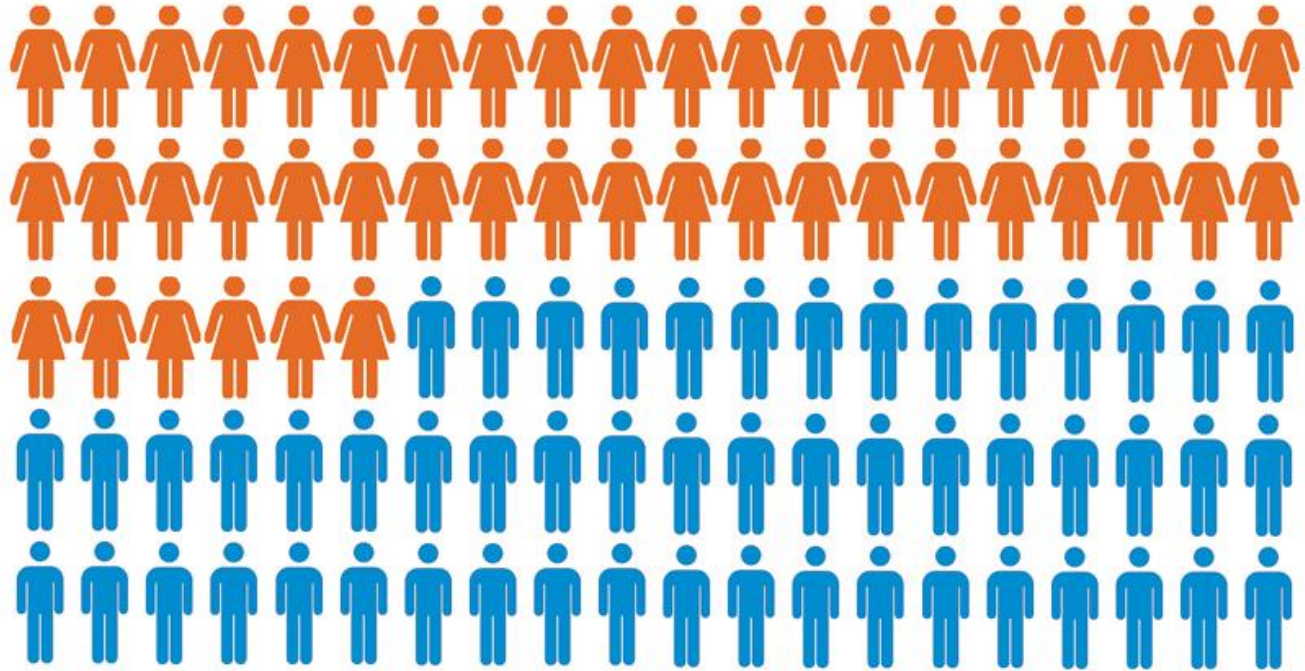
47%
FEMALE

1810 person



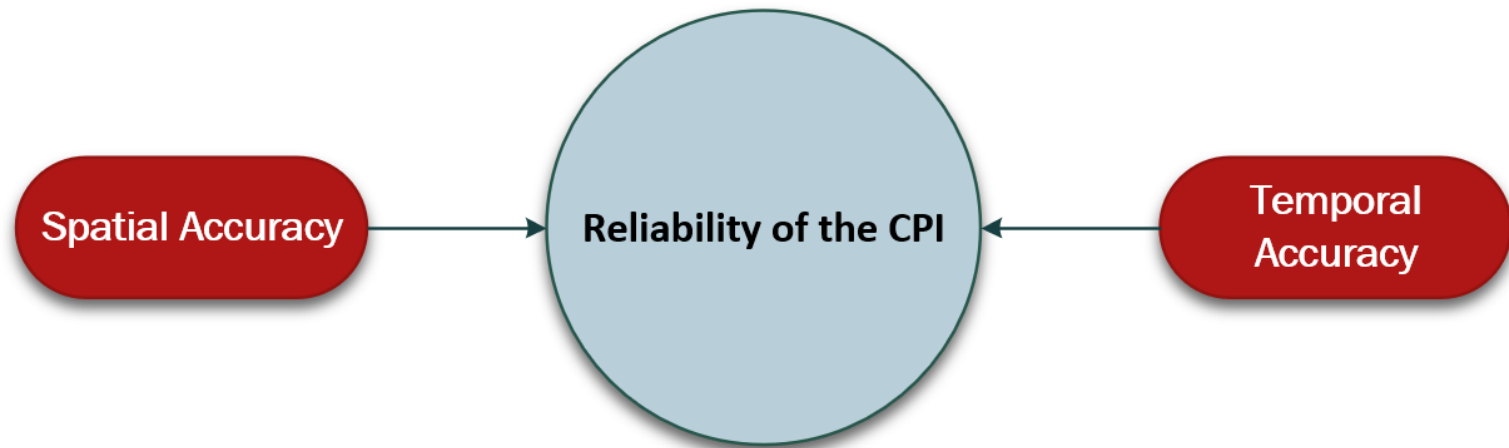
53%
MALE

2041 person



Total 3851 person

Objective



- Increase reliability of the data that collect for the calculation of CPI.

Methodology:: Data

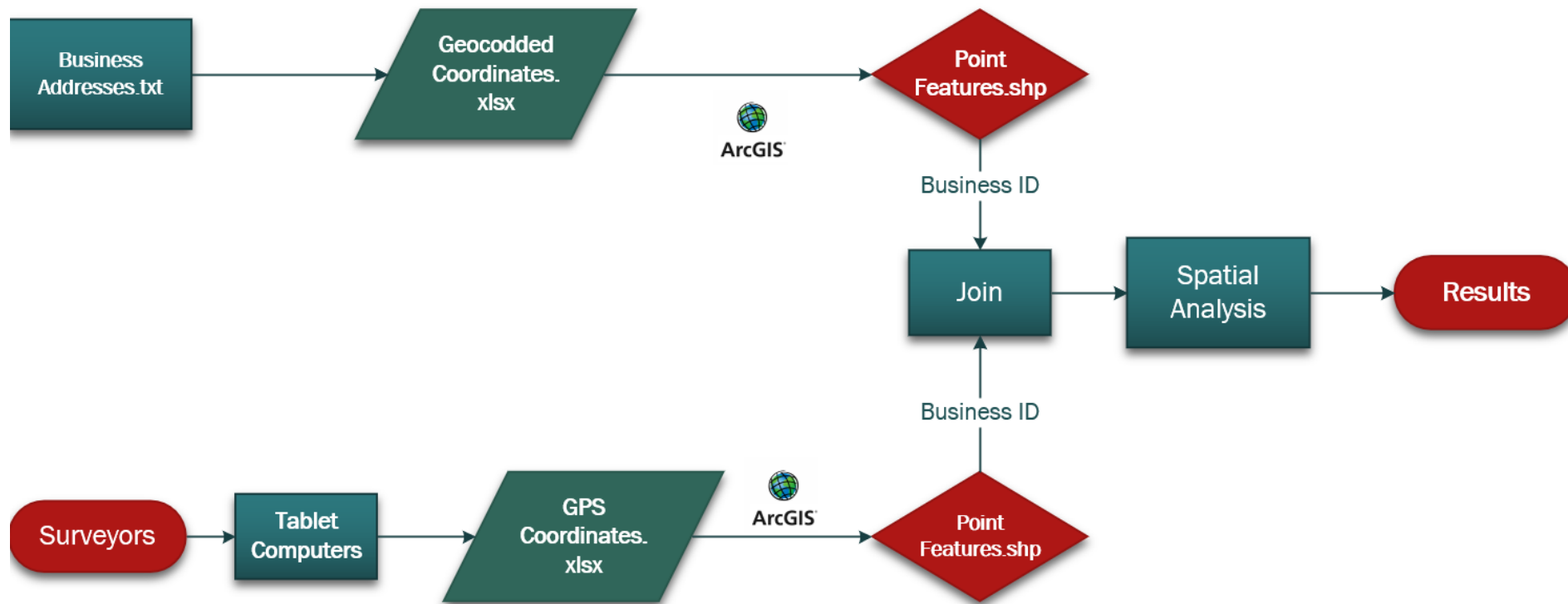
Business Data

Field	Value
Address	CUMHURİYET MAH. FEVZİ ÇAKMAK SOK. NO:15/B KIZILAY
BusinessID	10596
BusinessName	KVK TEKNİK SERVİSİ
city	ANKARA
country	Turkey
district	ÇANKAYA
formatted_	Kızılay Mah. Fevzi Çakmak 1 Sokak Oran Apartmanı No 15/B, Kızılay, 06420 Çankaya/Ankara, Turkey
lat	4419279.34661
lng	487253.431722
location_t	GEOMETRIC_CENTER

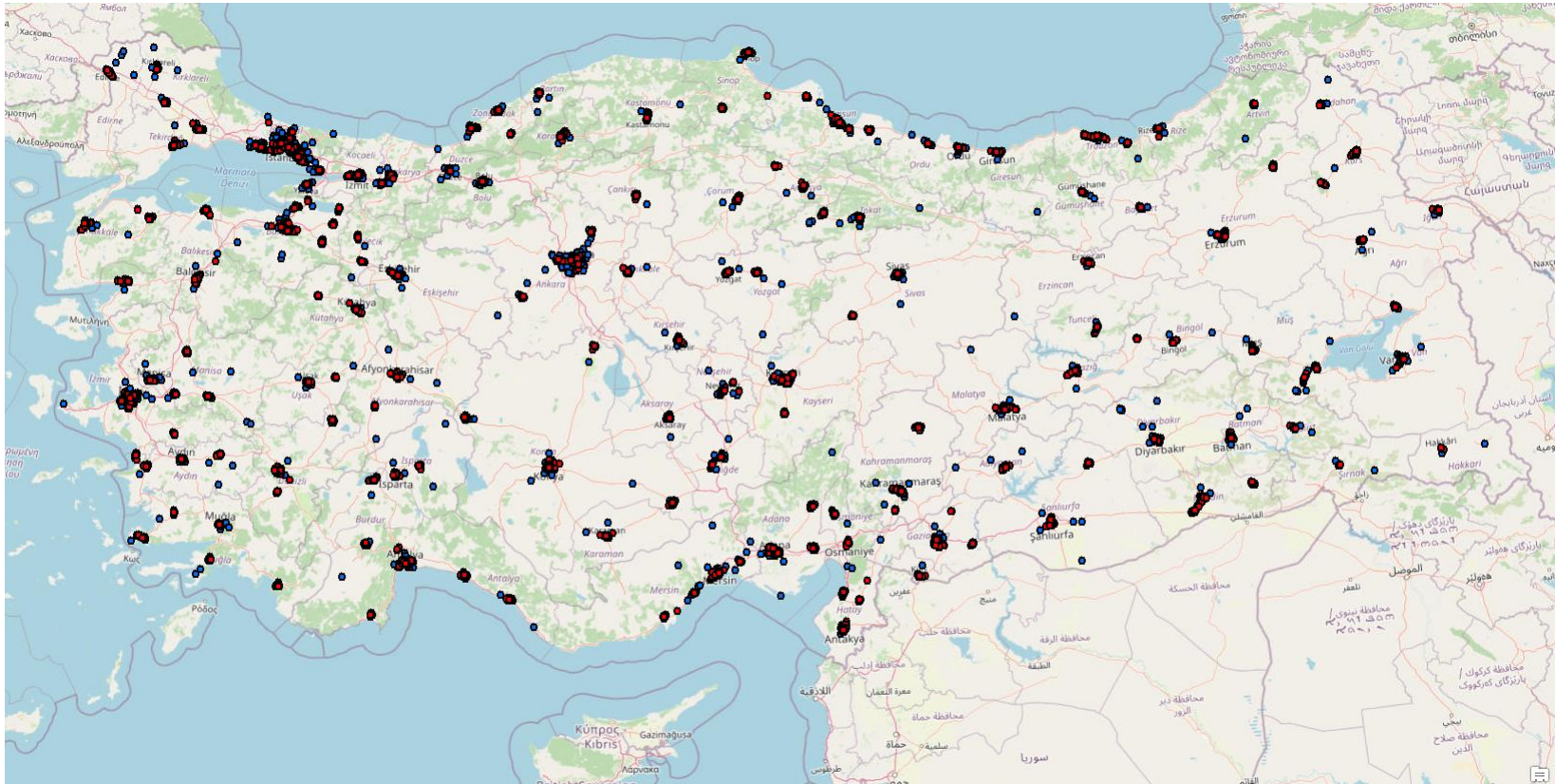
Surveyor Visit Data

Field	Value
Address	CUMHURİYET MAH. FEVZİ ÇAKMAK SOK. NO:15/B KIZILAY
BusinessID	10596
BusinessNa...	KVK TEKNİK SERVİSİ
Date	19.02.2020
lat	4419307.90707
lng	487222.470447
Surveyor	*****
SurveyorID	*****

Methodology



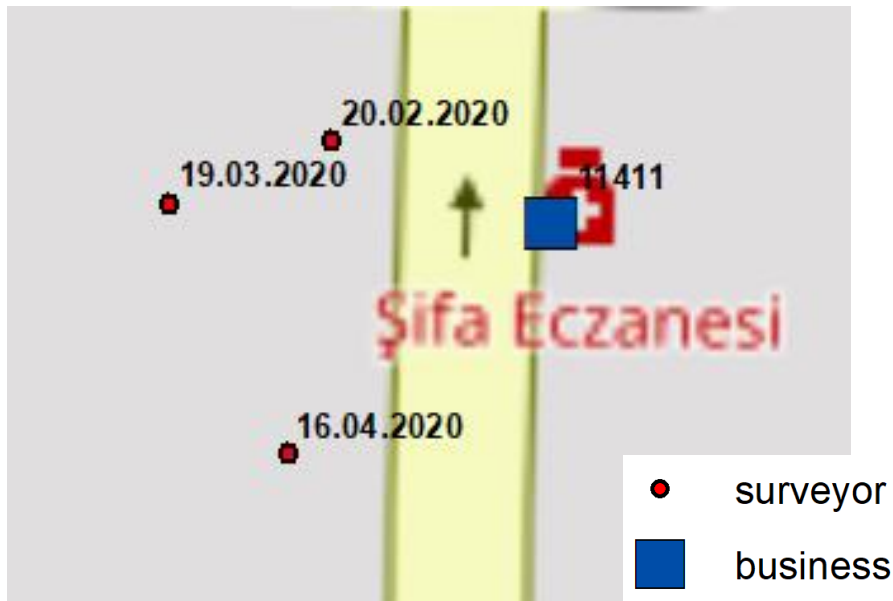
Methodology:: Surveyors and Businesses



- 30.000 businesses
- 65.000 surveyor visits in the first half of 2020

Methodology:: Spatial Analysis

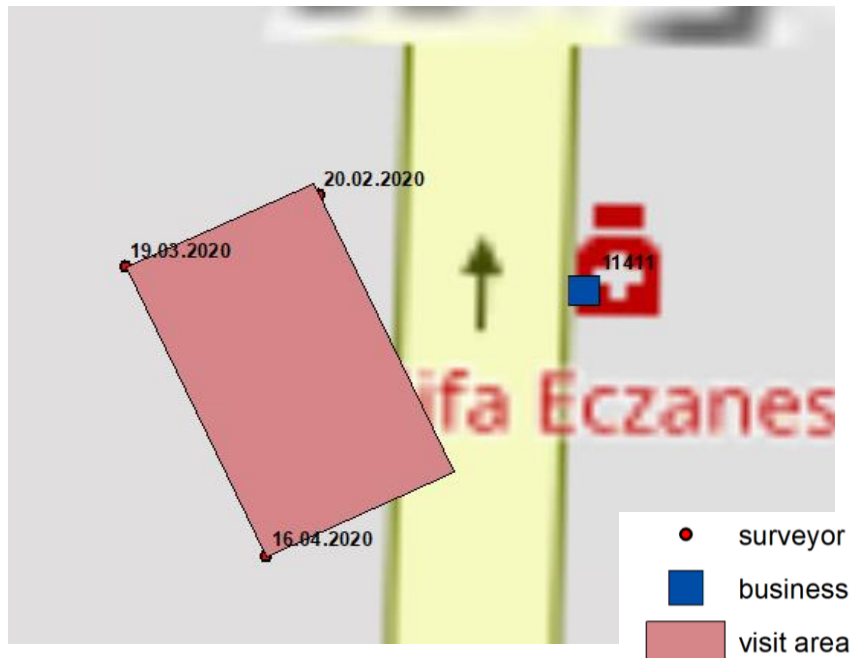
i) Distance between data collection point and its respective business:



BusinessID	Date(yyyy-mm-dd)	Distance (m)
11411	2020-02-20	15.75
11411	2020-04-16	23.49
11411	2020-03-19	25.57

Methodology :: Spatial Analysis

ii) Distance between data collection points for the same business at different times:



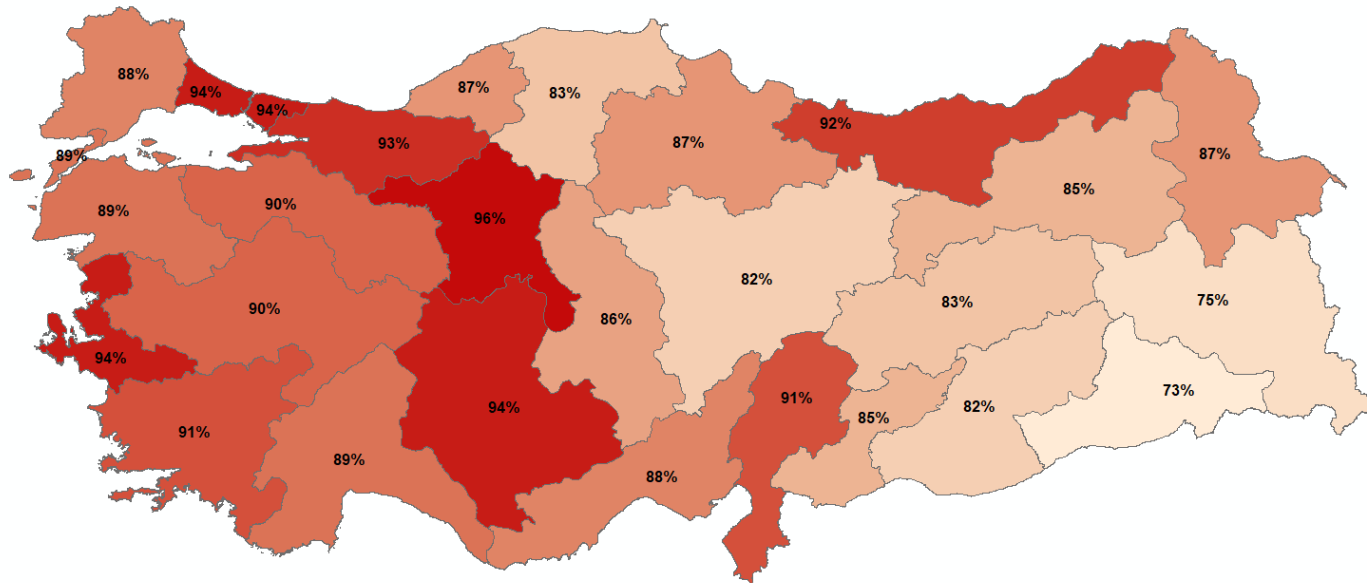
BusinessID	Date(yyyy-mm-dd)	Distance (m)
11411	2020-02-20/ 2020-03-19	11.54
11411	2020-02-20/ 2020-04-16	21.09
11411	2020-03-19/ 2020-04-16	18.50

Methodology :: Development Environment

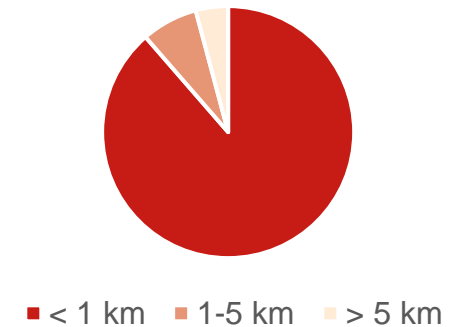
- Data store and analyse:
 - Oracle
 - PostGIS
 - PostgreSQL
 - QGIS 3.4.2
 - ArcGIS



Results

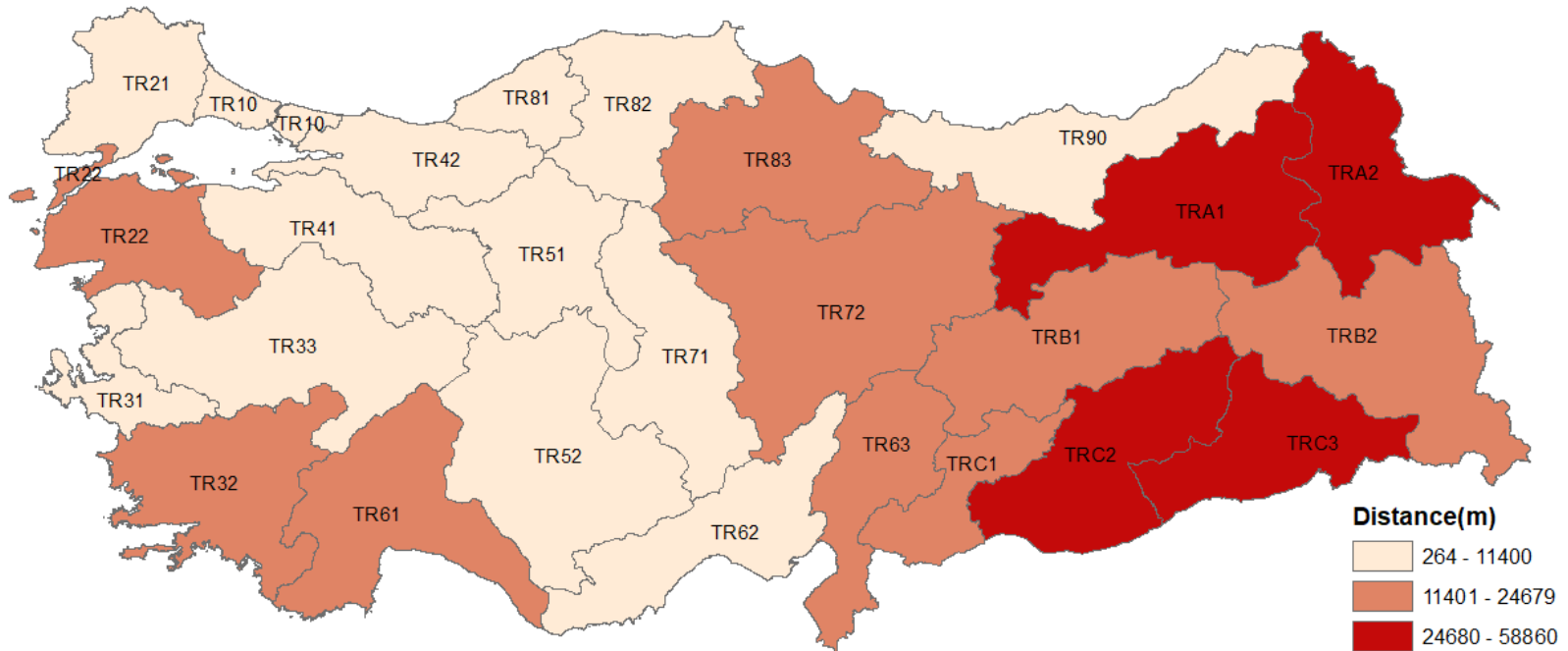


- The results show that the approx. 90% of data points were in acceptable limits.
- Long distances mostly related geocoding errors based on plain text addresses.

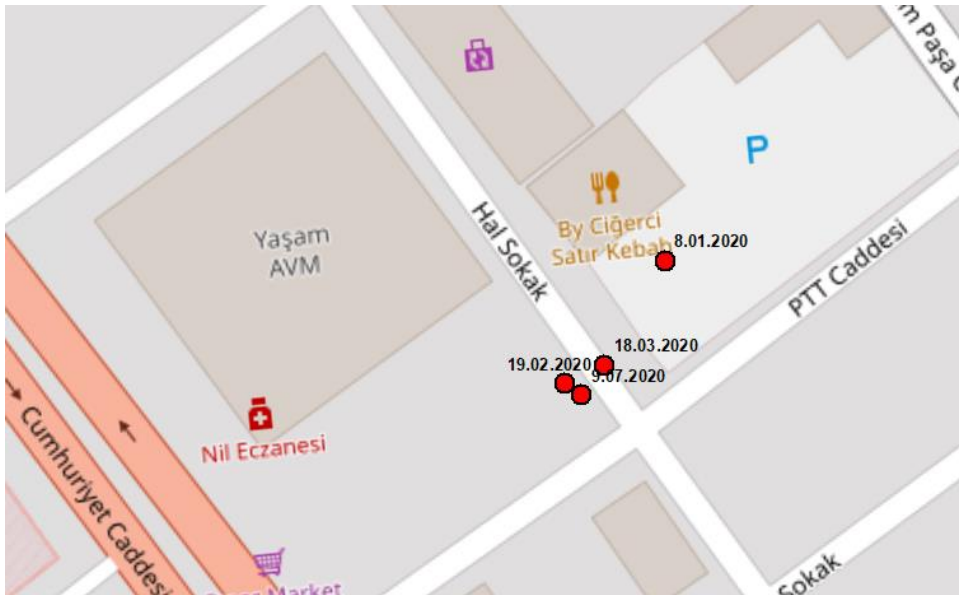


Results:: Regional Offices

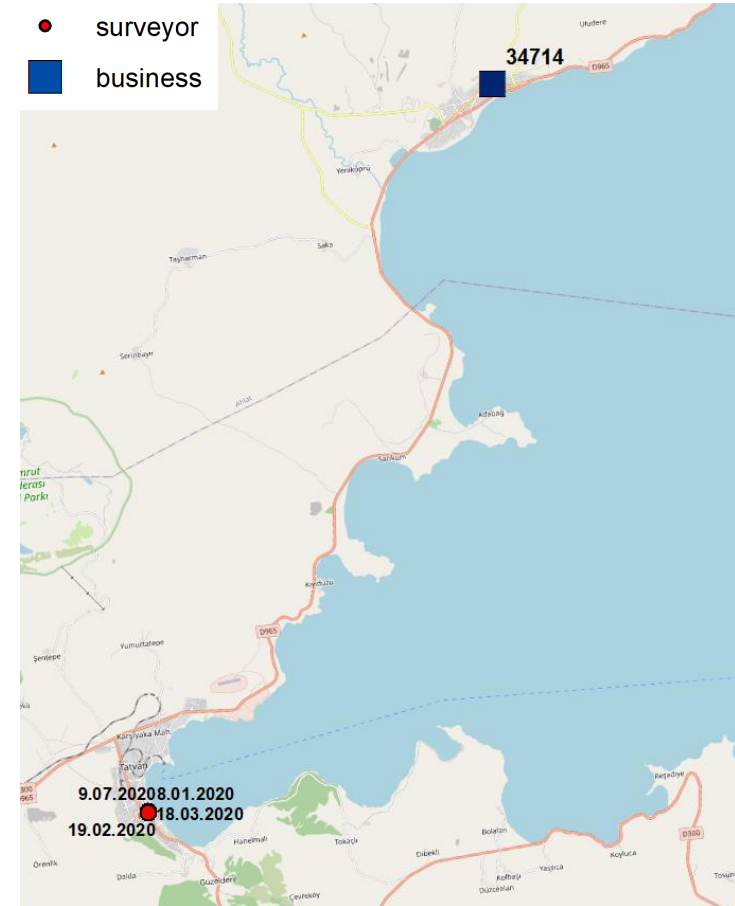
Errors based on text addresses:



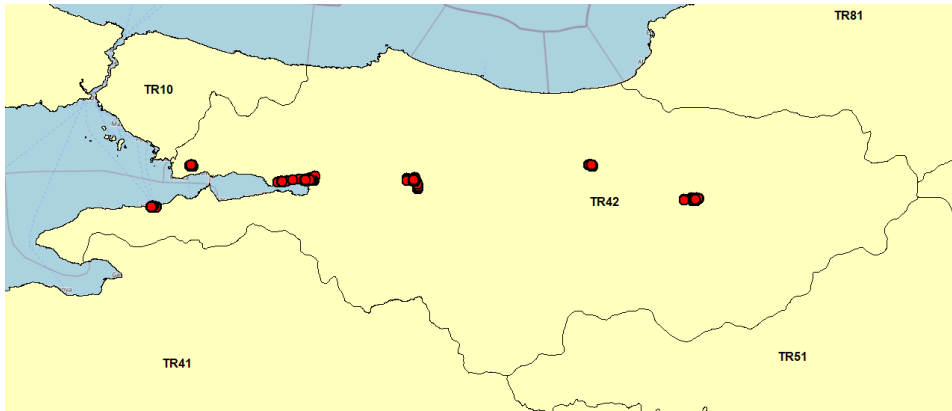
Results :: Errors



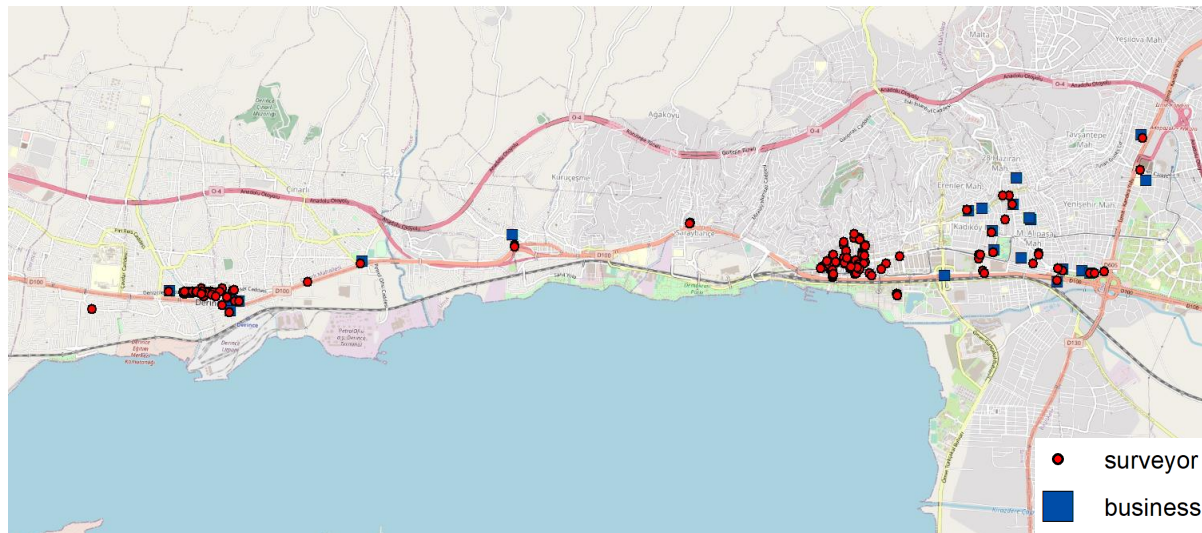
BusinessID	Date(yyyy-mm-dd)	Distance (m)
34714	2020-01-08	33904.15
34714	2020-03-18	33929.19
34714	2020-02-19	33936.19
34714	2020-07-09	33936.85



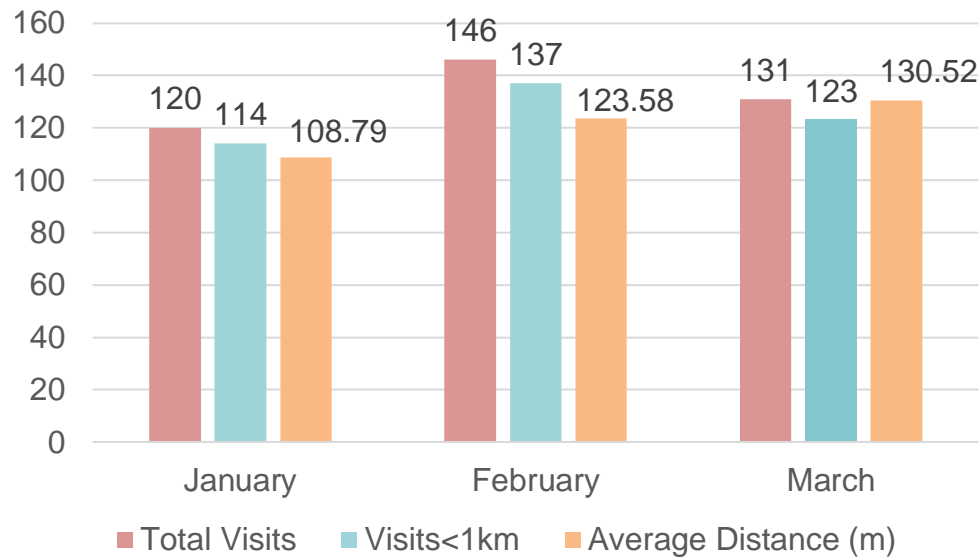
Results :: Surveyor Statistics



- 3 months
- 5 city
- 397 visits
- 374 visits <1km



Results :: Surveyor Statistics



Business ID	Date (yyyy-mm-dd)	Distance(km)
29963	2020-01-15	1.01
41117	2020-01-20	1.05
36367	2020-01-21	1.23
9173	2020-01-20	1.31
9104	2020-01-20	1.46
9739	2020-02-20	2.43
9996	2020-01-07	2.72
10029	2020-02-14	3.48
10029	2020-03-06	3.49
10053	2020-02-14	3.53
10053	2020-03-06	3.54
10143	2020-03-19	3.55
10143	2020-02-14	3.56
10336	2020-02-04	6.93
10336	2020-03-17	6.97
37494	2020-03-19	46.49
37494	2020-02-14	46.50
9475	2020-02-17	265.79
9331	2020-03-16	265.79
31956	2020-03-16	265.80
31956	2020-02-17	265.80
9475	2020-03-16	265.80
9331	2020-02-17	265.80

Discussion

- Error sources
 - Text addresses
 - Geocoding errors
 - GPS errors
- Future works
 - Standardization of addresses

THANK YOU