

## 3.2 Bike\_numerical\_graphical\_Geo\_analysis

Jimmy Janssen van Raay

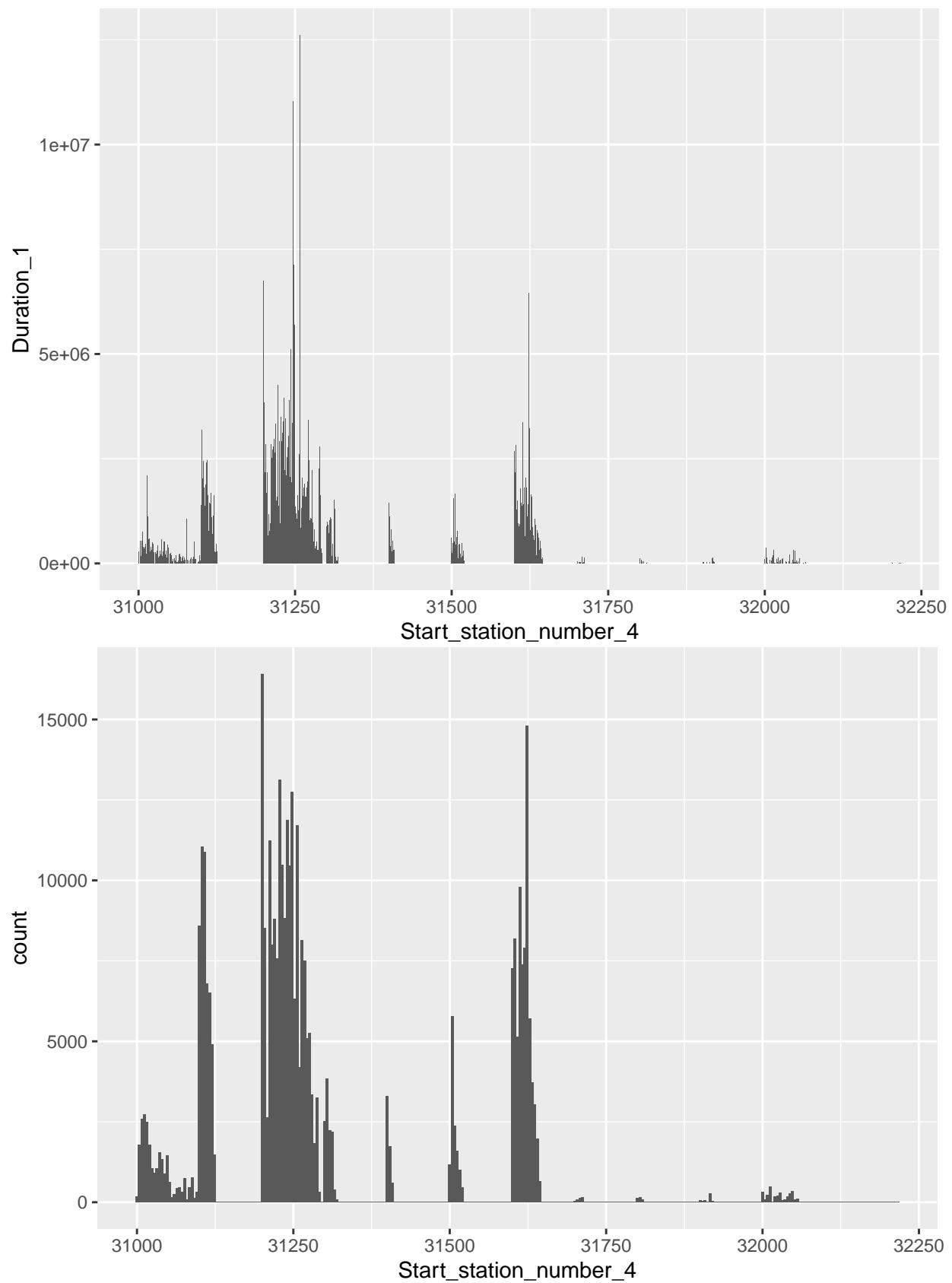
9-12-2020

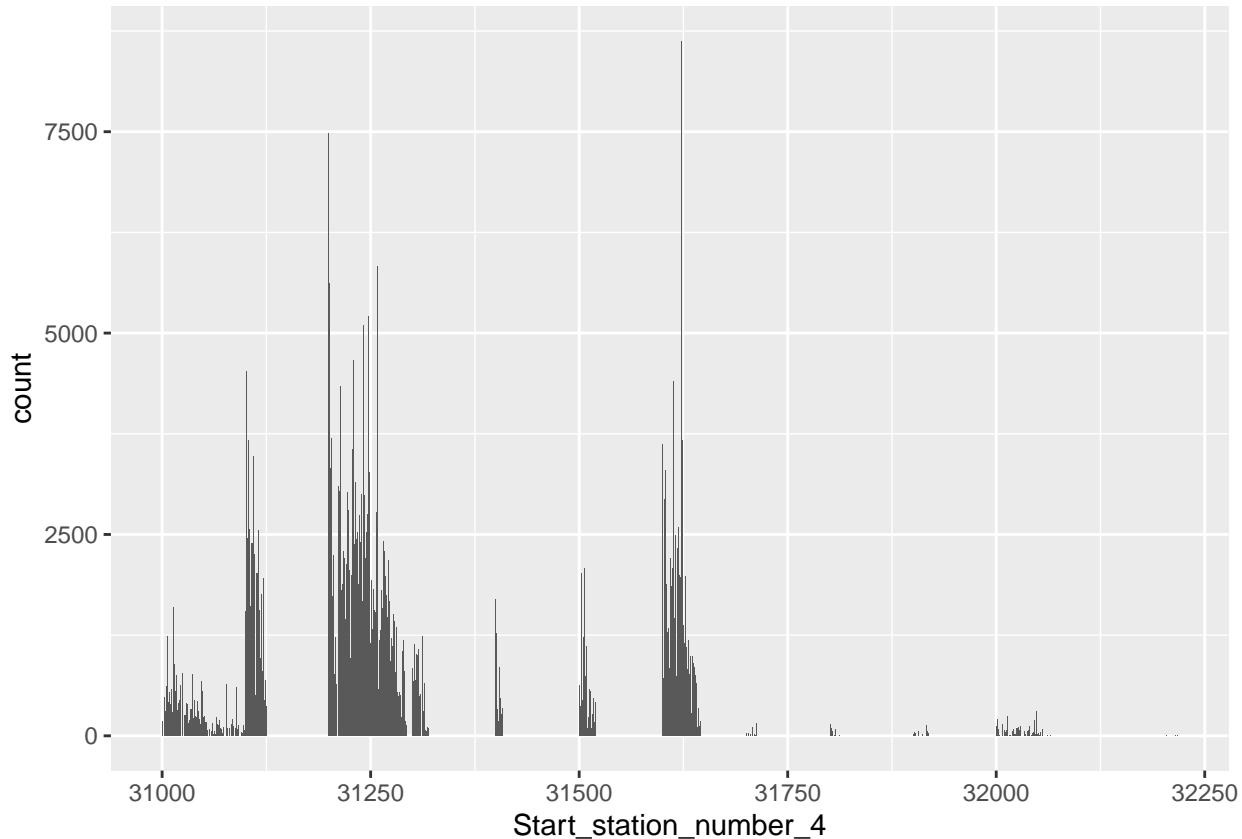
```
setwd("~/QI Courses/Assignment/Bike/R code")
```

### Bike-Geo-data-specific summary

Bij het verrijken van de data met de geografische gegevens zijn de kolommen met de variabelen enigszins door elkaar heen gaan lopen. Ook zijn enige longitude-waarden verkeerd uitgekomen; aangezien het om enkele honderden gaat zijn deze eruit gefilterd.

## Station Analyse





\* Duidelijk te zien op de plots is dat een aantal stations bovenmatig druk zijn en een aantal stations zeer rustig. \* De stations-nummering zal niet doorlopend zijn, vandaar waarschijnlijk de lege tussenstukken in de grafiek, \* maar de systematiek hierachter is onbekend.

	Start_station_5	StartSector	n
## 1	Reston Station	NorthDC	1
## 2	Shady Grove Hospital	NorthDC	1
## 3	Tysons Corner Station	WestDC	1
## 4	Monroe St & Monroe Pl	NorthDC	3
## 5	Grandview & Blueridge Ave	NorthDC	4
## 6	Fallsgrove Dr & W Montgomery Ave	NorthDC	5
## 7	Key West Ave & Siesta Key Way	NorthDC	7
## 8	Wheaton Metro/Georgia Ave & Reedie Dr	NorthDC	7
## 9	16th & Q St SE / Anacostia HS	SouthDC	9
## 10	Congress Heights Metro	SouthDC	9
## 11	Sunset Hills Rd & Discovery Square	NorthDC	9
## 12	Deanwood Rec Center	EasthDC	11
## 13	Fallsgrove Blvd & Fallsgrove Dr	NorthDC	11
## 14	Mount Vernon Ave & Bruce St	SouthDC	13
## 15	Nannie Helen Burroughs Ave & 49th St NE	EasthDC	13
## 16	Spring St & Second Ave	NorthDC	13
## 17	Montgomery College/W Campus Dr & Mannakee St	NorthDC	14
## 18	East West Hwy & 16th St	NorthDC	16
## 19	Dennis & Amherst Ave	NorthDC	18
## 20	Benning Branch Library	EasthDC	19
## 21	S George Mason Dr & 13th St S	SouthDC	19
## 22	S Kenmore & 24th St S	SouthDC	20
## 23	Georgia Ave & Spring St	NorthDC	21

```

## 24          Rockville Metro West      NorthDC 21
## 25          S Stafford & 34th St S    SouthDC 21

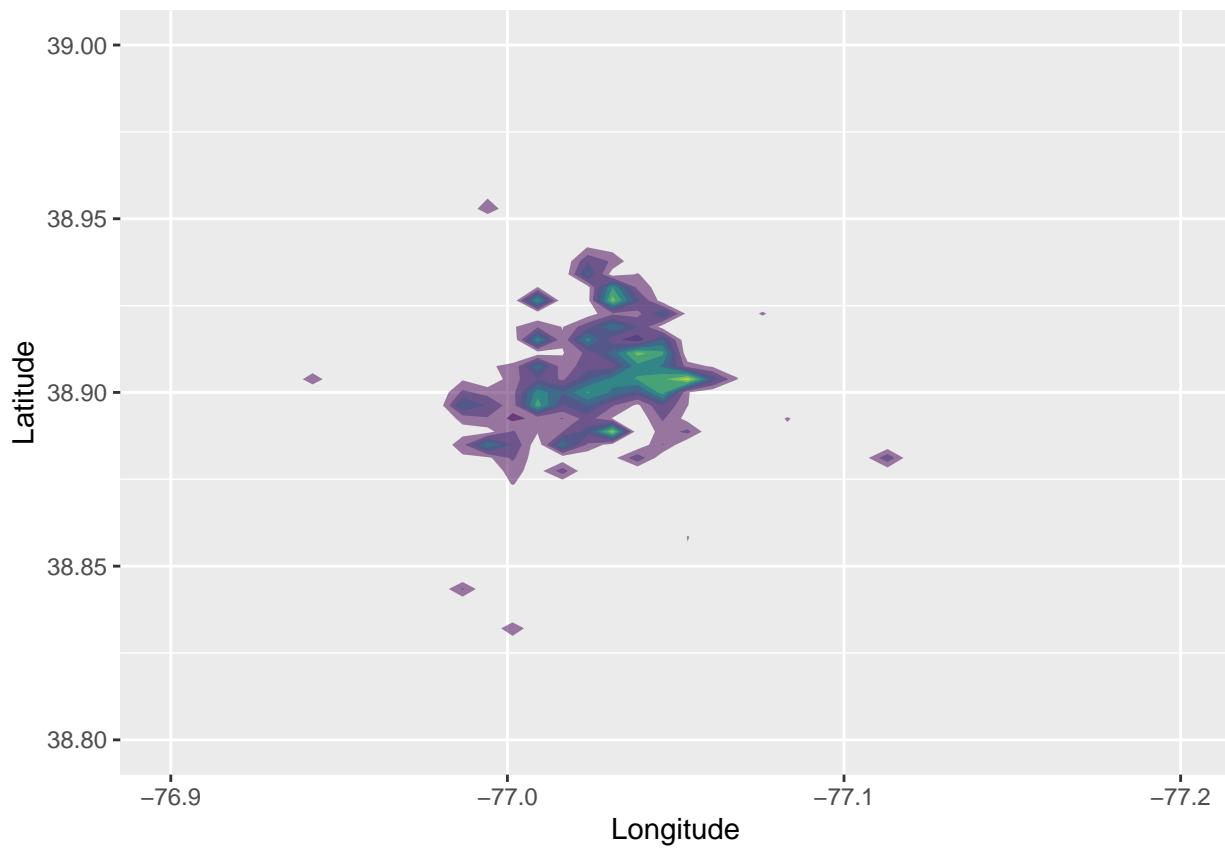
##                                     Start_station_5   StartSector   n
## 1          Columbus Circle / Union Station SouthEastCenter 8626
## 2          Massachusetts Ave & Dupont Circle NW NorthWestCenter 7479
## 3          Lincoln Memorial           WestDC 5829
## 4          15th & P St NW NorthWestCenter 5618
## 5          Jefferson Dr & 14th St SW SouthWestCenter 5214
## 6          Thomas Circle             NorthWestCenter 5097
## 7          New Hampshire Ave & T St NW       NorthDC 4662
## 8          14th & V St NW NorthWestCenter 4531
## 9          Eastern Market Metro / Pennsylvania Ave & 7th St SE SouthEastCenter 4405
## 10         17th & Corcoran St NW NorthWestCenter 4337
## 11         14th & Rhode Island Ave NW NorthEastCenter 3688
## 12         Adams Mill & Columbia Rd NW NorthWestCenter 3671
## 13         North Capitol St & F St NW NorthEastCenter 3669
## 14         5th & K St NW             WestDC 3621
## 15         8th & H St NW             SouthWestCenter 3562
## 16         20th St & Florida Ave NW NorthWestCenter 3472
## 17         14th & R St NW             NorthWestCenter 3321
## 18         1st & M St NE             NorthEastCenter 3298
## 19         Jefferson Memorial        SouthWestCenter 3270
## 20         16th & Harvard St NW       NorthWestCenter 3189
## 21         7th & F St NW / National Portrait Gallery       NorthDC 3153
## 22 Smithsonian-National Mall / Jefferson Dr & 12th St SW SouthWestCenter 3113
## 23         21st & M St NW             WestDC 3103
## 24         17th & K St NW             NorthWestCenter 3037
## 25         New York Ave & 15th St NW       NorthWestCenter 3019

```

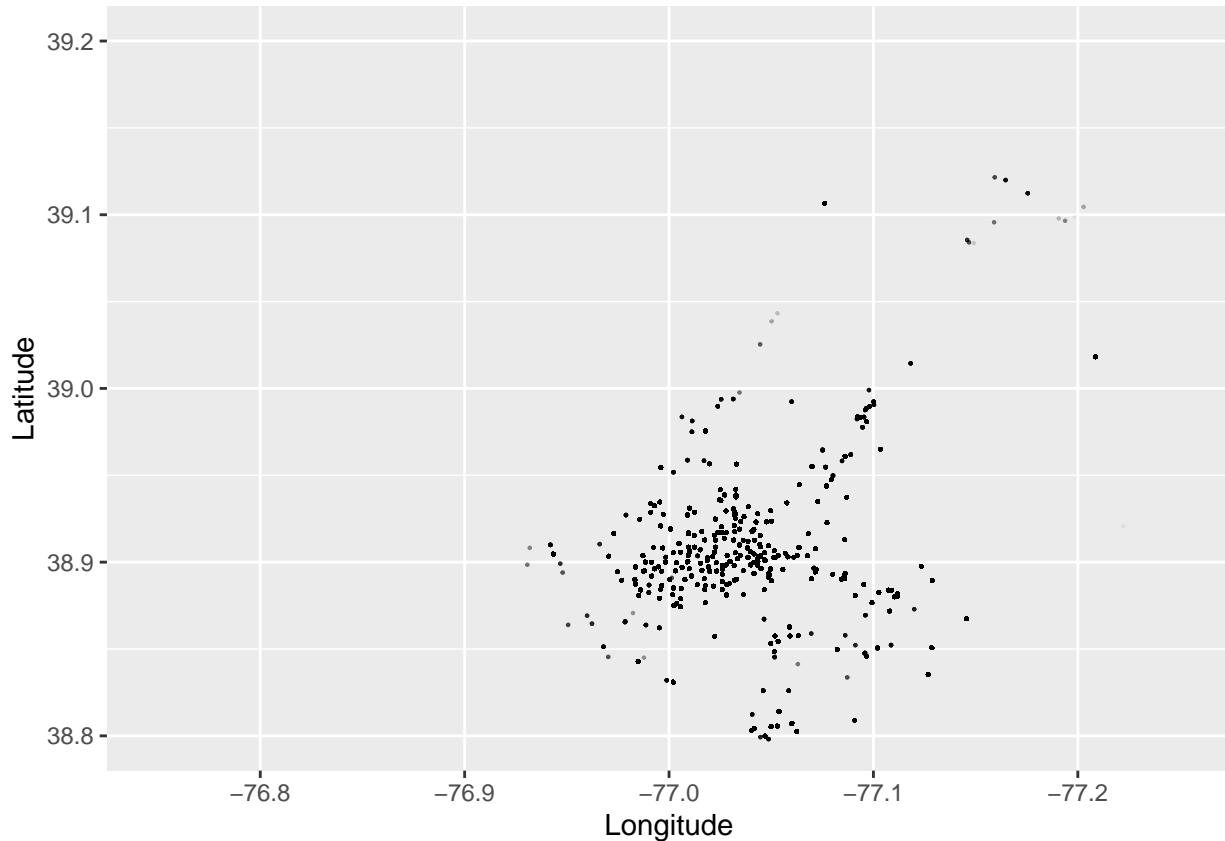
- Er zijn veel stations (362), in deze 2 top-25 lijsten staan de 25 rustigste en de 25 drukste.
- Zoals al uit de grafiek bleek zijn de onderlinge verschillen groot;
- In de sample zijn er 3 stations die slechts een keer gebruikt worden in de 5 jaar, terwijl het drukste station 8626 verhuurde
- fietsen heeft in dezelfde tijd.

### Station plots

```
## Coordinate system already present. Adding new coordinate system, which will replace the existing one
```



```
## Coordinate system already present. Adding new coordinate system, which will replace the existing one
```



- Met het plotten van de coördinaten krijg je een redelijk goed beeld waar de drukste stations zich bevinden.
- Mooist is om dit nog te plotten op de stadskaart maar de Google free trial was van korte duur.

## Sector Analyse

### Sector Stats

```
##           StartSector          EndSector
## NorthWestCenter:120657  NorthWestCenter:118827
## SouthWestCenter: 59844   SouthWestCenter: 64342
## WestDC       : 59272    WestDC        : 60290
## SouthEastCenter: 45168   SouthEastCenter: 46131
## NorthDC       : 37602    NorthDC        : 31879
## NorthEastCenter: 23640   NorthEastCenter: 24258
## (Other)        : 25131   (Other)        : 25587
```

Var1	Freq
EasthDC	0.0253559
NorthDC	0.1012674
NorthEastCenter	0.0636658
NorthWestCenter	0.3249460
SouthDC	0.0423254
SouthEastCenter	0.1216437

Var1	Freq
SouthWestCenter	0.1611682
WestDC	0.1596277

Var1	Freq
EasthDC	0.0259538
NorthDC	0.0858546
NorthEastCenter	0.0653302
NorthWestCenter	0.3200176
SouthDC	0.0429556
SouthEastCenter	0.1242372
SouthWestCenter	0.1732819
WestDC	0.1623693

	EasthDC	NorthDC	NorthEastCenter	NorthWestCenter	SouthDC	SouthEastCenter	SouthWestCenter	WestDC
EasthDC	1093	364	843	1198	542	3286	1038	1051
NorthDC	481	10692	1733	13802	577	1709	3546	5062
NorthEastCenter	768	1404	3858	7486	389	4092	3777	1866
NorthWestCenter	1045	11088	8020	60463	1427	4011	15615	18988
SouthDC	714	571	360	1288	7251	1071	2311	2150
SouthEastCenter	3152	1541	3789	3532	1103	21488	8910	1653
SouthWestCenter	922	2726	3771	13274	2362	8578	18718	9493
WestDC	1462	3493	1884	17784	2299	1896	10427	20027

	EasthDC	NorthDC	NorthEastCenter	NorthWestCenter	SouthDC	SouthEastCenter	SouthWestCenter	WestDC
EasthDC	0.0029	0.0010	0.0023	0.0032	0.0015	0.0088	0.0028	0.0028
NorthDC	0.0013	0.0288	0.0047	0.0372	0.0016	0.0046	0.0095	0.0136
NorthEastCenter	0.0021	0.0038	0.0104	0.0202	0.0010	0.0110	0.0102	0.0050
NorthWestCenter	0.0028	0.0299	0.0216	0.1628	0.0038	0.0108	0.0421	0.0511
SouthDC	0.0019	0.0015	0.0010	0.0035	0.0195	0.0029	0.0062	0.0058
SouthEastCenter	0.0085	0.0042	0.0102	0.0095	0.0030	0.0579	0.0240	0.0045
SouthWestCenter	0.0025	0.0073	0.0102	0.0357	0.0064	0.0231	0.0504	0.0256
WestDC	0.0039	0.0094	0.0051	0.0479	0.0062	0.0051	0.0281	0.0539

```
##      EasthDC      NorthDC      NorthEastCenter      NorthWestCenter      SouthDC
## 0.02595377 0.08585456 0.06533015 0.32001756 0.04295556
##      SouthEastCenter      SouthWestCenter      WestDC
## 0.12423717 0.17328191 0.16236932
```

```
##      EasthDC      NorthDC      NorthEastCenter      NorthWestCenter      SouthDC
## 0.02535590 0.10126739 0.06366579 0.32494600 0.04232536
##      SouthEastCenter      SouthWestCenter      WestDC
## 0.12164368 0.16116818 0.15962770
```

```
## [1] 4
```

	EasthDC	NorthDC	NorthEastCente	NorthWestCente	SouthDC	SouthEastCente	SouthWestCente	WestDC
EasthDC	0.116	0.039	0.090	0.127	0.058	0.349	0.110	0.112
NorthDC	0.013	0.284	0.046	0.367	0.015	0.045	0.094	0.135
NorthEastCenter	0.032	0.059	0.163	0.317	0.016	0.173	0.160	0.079
NorthWestCenter	0.009	0.092	0.066	0.501	0.012	0.033	0.129	0.157
SouthDC	0.045	0.036	0.023	0.082	0.461	0.068	0.147	0.137
SouthEastCenter	0.070	0.034	0.084	0.078	0.024	0.476	0.197	0.037
SouthWestCenter	0.015	0.046	0.063	0.222	0.039	0.143	0.313	0.159
WestDC	0.025	0.059	0.032	0.300	0.039	0.032	0.176	0.338

```
##          EasthDC          NorthDC      NorthEastCenter      NorthWestCenter          SouthDC
## 0.3253194 0.6492290 0.5668862 1.9940823 0.6652482
## SouthEastCenter SouthWestCenter           WestDC
## 1.3200163   1.3267500 1.1524687
```

```
##          EasthDC          NorthDC      NorthEastCenter      NorthWestCenter          SouthDC
## 1          1              1              1              1
## SouthEastCenter SouthWestCenter           WestDC
## 1          1              1
```

	EasthDC	NorthDC	NorthEastCente	NorthWestCente	SouthDC	SouthEastCente	SouthWestCente	WestDC
EasthDC	0.113	0.011	0.035	0.010	0.034	0.071	0.016	0.017
NorthDC	0.050	0.335	0.071	0.116	0.036	0.037	0.055	0.084
NorthEastCenter	0.080	0.044	0.159	0.063	0.024	0.089	0.059	0.031
NorthWestCenter	0.108	0.348	0.331	0.509	0.089	0.087	0.243	0.315
SouthDC	0.074	0.018	0.015	0.011	0.455	0.023	0.036	0.036
SouthEastCenter	0.327	0.048	0.156	0.030	0.069	0.466	0.138	0.027
SouthWestCenter	0.096	0.086	0.155	0.112	0.148	0.186	0.291	0.157
WestDC	0.152	0.110	0.078	0.150	0.144	0.041	0.162	0.332

```
##          EasthDC          NorthDC      NorthEastCenter      NorthWestCenter          SouthDC
## 1          1              1              1              1
## SouthEastCenter SouthWestCenter           WestDC
## 1          1              1
```

```
##          EasthDC          NorthDC      NorthEastCenter      NorthWestCenter          SouthDC
## 0.3084466 0.7851922 0.5485188 2.0297432 0.6670837
## SouthEastCenter SouthWestCenter           WestDC
## 1.2621853   1.2307525 1.1680776
```

- De tabellen inzake de drukte van sectoren geven een goed beeld welke sectoren het drukst zijn en tevens de stroom van en naar sectoren (zie riverplot).
- Wat nu niet zichtbaar is in de tabellen is de drukte door de tijd heen. In deel 4 van de analyse hopen we hier nog aandacht aan te besteden;
- tevens zou je bijvoorbeeld tabellen per uur, per dag(-deel), per week of per maand kunnen maken. Data analyse stopt nooit...