

# TomTom European Congestion Index



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## TomTom Congestion Index

It is our mission to get drivers to their destinations faster, safer and greener.

Over the years we have invested in new ideas and technologies with the aim of bringing significant benefits to drivers, businesses and society as a whole.

In 2007 we started a groundbreaking initiative that helped us to understand how we could guide drivers in a better way. We set out to build a more precise view of traffic flow over the entire road network to enable us to give drivers more exact route information and arrival times.

With the support of millions of TomTom customers we have captured anonymous travel time information in all the territories where we are active. Rather than relying on theoretical models, we are now able to understand real-life driving patterns by time of day, day of week, time of year and around special events. This initiative is unique in that we are able to capture, evaluate and redistribute vehicle-centric travel information on a global scale.

Over the years we have built the world's largest database of historic travel times and the most detailed and accurate real-time traffic information available. Based on the insights we gained we have developed advanced routing technologies that help millions of drivers get to their destinations faster, safer and with lower emissions of greenhouse gases.

Contrary to popular belief, there are often multiple ways to reach a destination and avoid traffic congestion. Finding the fastest route is a complex task. Now, thanks to advanced routing technologies, motorists can drive with dynamic navigation systems which quickly react and adjust routes to the ever changing traffic situations.

By helping drivers to find a faster route we can also demonstrate that the total available capacity on the road network increases. If a small percentage of drivers uses different (and faster) routes, congestion can be alleviated across the entire road network, thereby benefitting all drivers.

By offering a more accurate analysis of traffic flows, we help identify and pinpoint congestion trouble spots more effectively. And by routing traffic away from congested areas we can play a key role in easing congestion in cities and urban areas.

Our historical archive of real travel times has paved the way for the creation of the TomTom Congestion Index – the most accurate and comprehensive barometer of traffic congestion in major cities all over the world.



## About the TomTom Congestion Index

With the publication of the TomTom Congestion Index we are aiming to provide the general public, industry and policy makers with unique and unbiased information about congestion levels in urban areas\*.

The methodology that is used in this report compares travel times\* during non-congested periods (free flow\*) with travel times\* in peak hours\*. The difference is expressed as a percentage increase in travel time\*. We take into account local roads, arterials and highways. All data is based on actual GPS based measurements and for each city\* the sample size is expressed in total number of measured kilometres for the period.

A comparison is made for the travel times\* during the quarter and this is compared with the same period a year ago.

As well as assigning and ranking the overall congestion levels of over 50 cities\*, the report evaluates the congestion levels\* in cities at different times of the day and on different days of the week.

Individual city reports include more detailed information such as the most congested day\*, average free flow speed\*, time delay per year for commuters\* and congestion levels on highways\* and local roads.

To download a copy of the report go to: [www.tomtom.com/congestionindex](http://www.tomtom.com/congestionindex).

If you would like to know more about TomTom's traffic solutions, please contact your local TomTom office or [sales@tomtom.com](mailto:sales@tomtom.com).

For questions or comments about this report, please contact us at [congestionindex@tomtom.com](mailto:congestionindex@tomtom.com).

Note: words with a \* are explained in the glossary at the end of the report.

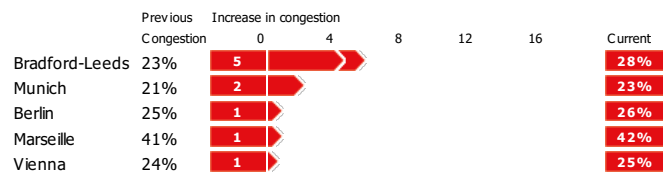
## Europe

Europe congestion level

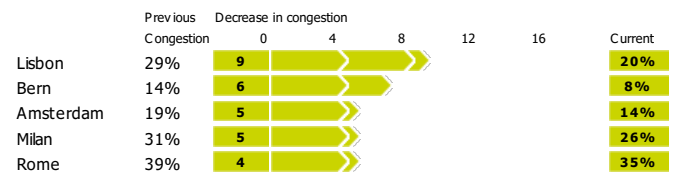
24%



## Top 5 - Increasing congestion



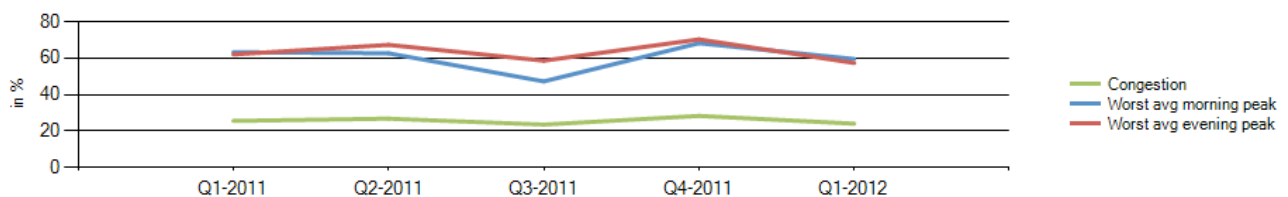
## Top 5 - Decreasing congestion



## Top 10 cities

Rank	Prev. Year	City	Country	Congestion	Morning peak	Evening peak	Highways	Non-Highways
1	1	--- Warsaw	Poland	42%	89%	86%	39%	45%
2	2	--- Marseille	France	41%	79%	81%	23%	52%
3	3	--- Rome	Italy	34%	76%	66%	24%	40%
4	4	--- Brussels	Belgium	34%	82%	86%	27%	40%
5	6	▲ Paris	France	32%	72%	63%	29%	36%
6	5	▼ Dublin	Ireland	30%	70%	62%	23%	42%
7	19	▲ Bradford-Leeds	United Kingdom	28%	63%	60%	23%	34%
8	9	▲ London	United Kingdom	27%	48%	50%	10%	38%
9	8	▼ Stockholm	Sweden	27%	65%	62%	22%	32%
10	11	▲ Hamburg	Germany	27%	49%	42%	17%	35%

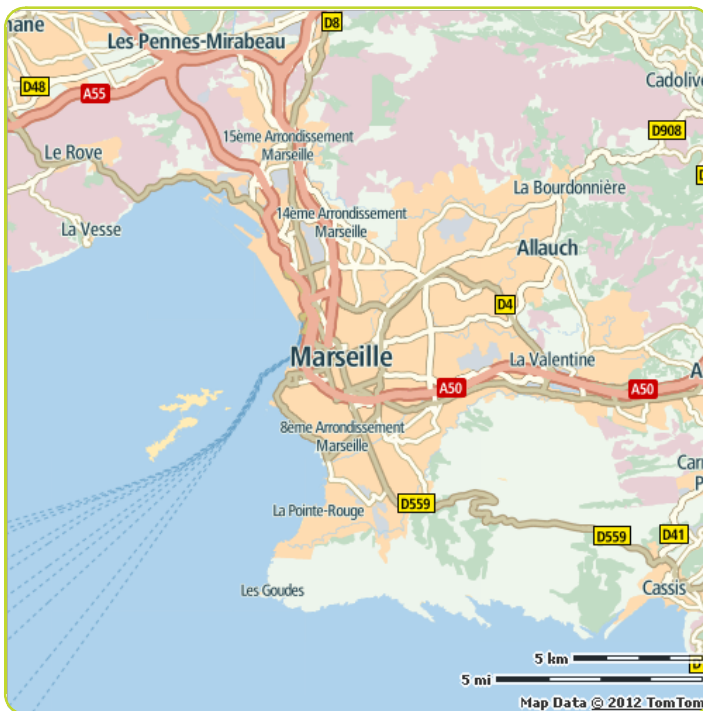
## Comparison per quarter



## Europe

Rank	Prev. Year	City	Country	Congestion	Morning peak	Evening peak	Highways	Non-Highways
1	1	--- Warsaw	Poland	42%	89%	86%	39%	45%
2	2	--- Marseille	France	41%	79%	81%	23%	52%
3	3	--- Rome	Italy	34%	76%	66%	24%	40%
4	4	--- Brussels	Belgium	34%	82%	86%	27%	40%
5	6	▲ Paris	France	32%	72%	63%	29%	36%
6	5	▼ Dublin	Ireland	30%	70%	62%	23%	42%
7	19	▲ Bradford-Leeds	United Kingdom	28%	63%	60%	23%	34%
8	9	▲ London	United Kingdom	27%	48%	50%	10%	38%
9	8	▼ Stockholm	Sweden	27%	65%	62%	22%	32%
10	11	▲ Hamburg	Germany	27%	49%	42%	17%	35%
11	12	▲ Cologne	Germany	26%	54%	47%	24%	32%
12	7	▼ Milan	Italy	26%	71%	53%	18%	32%
13	15	▲ Berlin	Germany	26%	42%	44%	22%	29%
14	17	▲ Vienna	Austria	24%	42%	43%	16%	31%
15	14	▼ Oslo	Norway	24%	66%	70%	20%	31%
16	13	▼ Naples	Italy	24%	34%	43%	10%	37%
17	18	▲ Turin	Italy	23%	50%	42%	11%	29%
18	22	▲ Munich	Germany	23%	50%	36%	17%	33%
19	23	▲ Birmingham	United Kingdom	21%	51%	43%	14%	32%
20	24	▲ Luxembourg	Luxembourg	21%	51%	47%	12%	34%
21	16	▼ Barcelona	Spain	21%	49%	39%	14%	24%
22	10	▼ Lisbon	Portugal	20%	41%	49%	9%	21%
23	21	▼ Helsinki	Finland	20%	43%	43%	15%	26%
24	20	▼ Prague	Czech Republic	20%	46%	31%	13%	27%
25	26	▲ Ruhr region west	Germany	17%	38%	28%	13%	28%
26	29	▲ Copenhagen	Denmark	16%	42%	29%	5%	26%
27	27	--- Madrid	Spain	16%	41%	33%	9%	23%
28	30	▲ Ruhr region east	Germany	15%	31%	28%	11%	24%
29	25	▼ Amsterdam	Netherlands	15%	33%	31%	8%	28%
30	28	▼ Valencia	Spain	14%	21%	21%	7%	23%
31	31	--- Bern	Switzerland	8%	19%	31%	0%	30%

## Marseille



## Congestion level

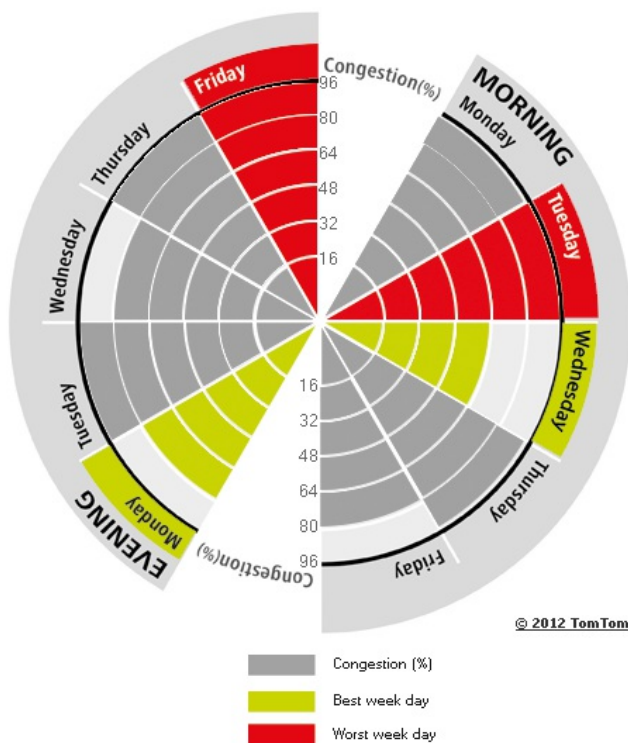
41%

## Ranking

Ranking of city compared to continent	2/31
Previous ranking	2 ---
Congestion level on highways	23%
Congestion level on non-highways	52%
Delay per hour driven in peak period	47 min
Delay per year with a 30 min commute	101 h

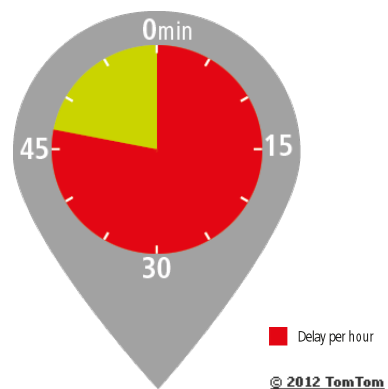
## The weekly congestion pattern:

Best and worst peak periods of the week

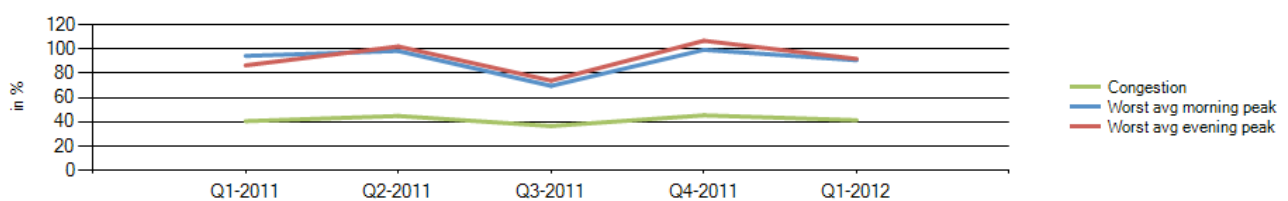


Most congested specific day	Fri 10 Feb 2012
Average free flow speed	51 km/h
Average speed during worst peak period	40 km/h
Total network length	491 km
Total network length highways	78 km
Total network length non-highways	413 km
Total vehicle kilometres	962 417 km

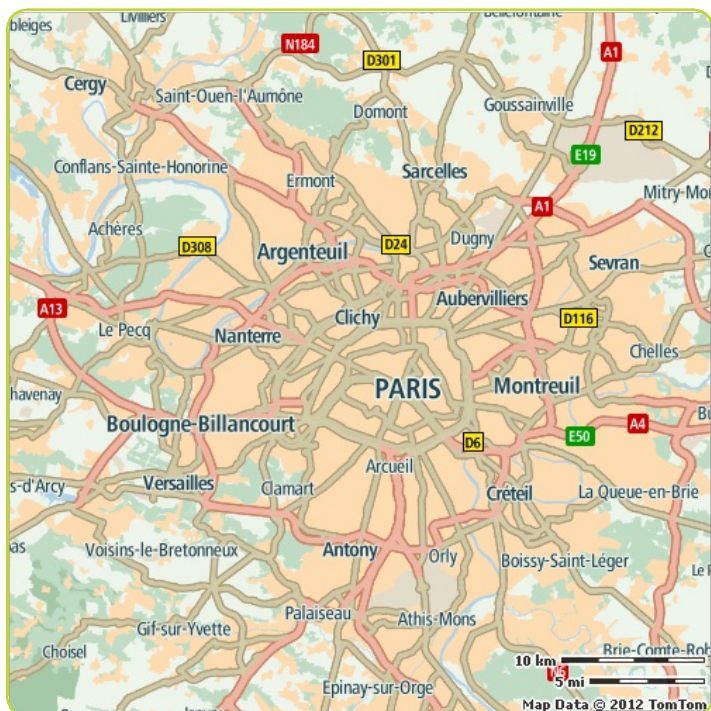
## Congestion comparison

Delay per hour  
driven in peak period

## Comparison per quarter



## Paris



## Congestion level

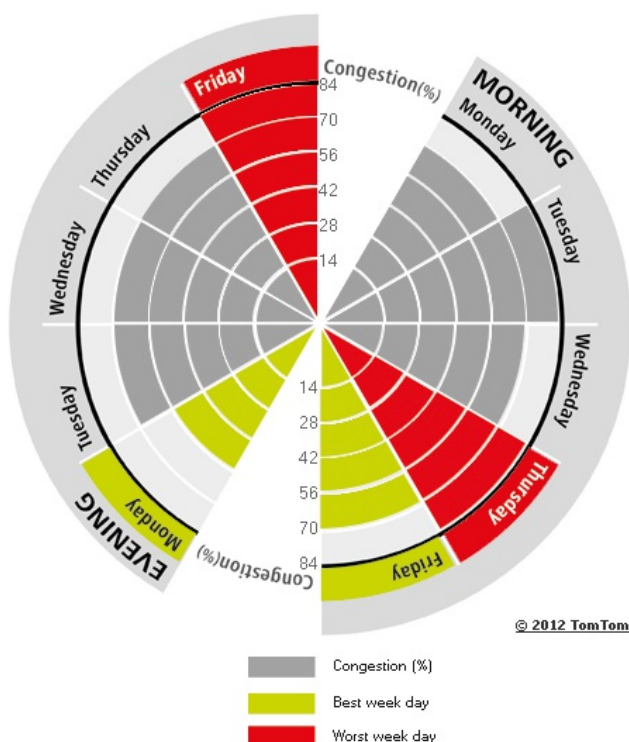
32%

## Ranking

Ranking of city compared to continent	5/31
Previous ranking	6 ▲
Congestion level on highways	29%
Congestion level on non-highways	36%
Delay per hour driven in peak period	40 min
Delay per year with a 30 min commute	92 h

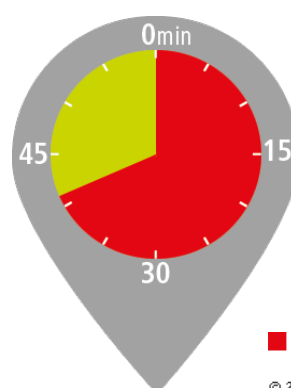
## The weekly congestion pattern:

Best and worst peak periods of the week

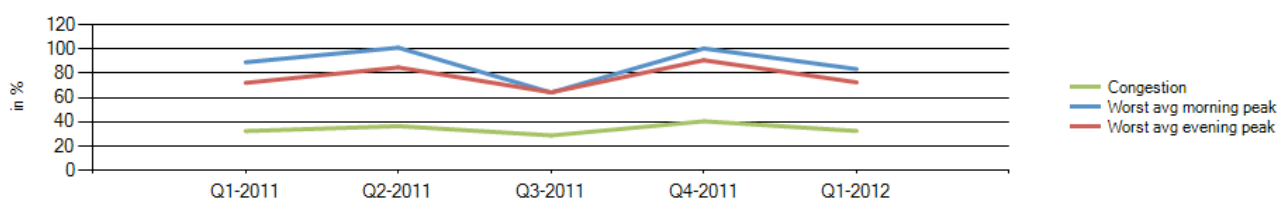


Most congested specific day	Tue 24 Jan 2012
Average free flow speed	51 km/h
Average speed during worst peak period	43 km/h
Total network length	7 845 km
Total network length highways	1 434 km
Total network length non-highways	6 411 km
Total vehicle kilometres	58 009 623 km

## Congestion comparison

Delay per hour  
driven in peak period

## Comparison per quarter





## Evaluated cities

## Europe

Rank	City	Country	24/7	Congestion Level (%)			Weekdays	Weekend	Average speed (km/h)
				Morning peak	Evening peak				
1	Warsaw	Poland	42	89	86		50	18	54
2	Marseille	France	41	79	81		46	23	45
3	Rome	Italy	34	76	66		40	17	54
4	Brussels	Belgium	34	82	86		41	13	47
5	Paris	France	32	72	63		37	19	48
6	Dublin	Ireland	30	70	62		35	19	51
7	Bradford-Leeds	United Kingdom	28	63	60		31	15	53
8	London	United Kingdom	27	48	50		30	18	51
9	Stockholm	Sweden	27	65	62		31	13	49
10	Hamburg	Germany	27	49	42		30	15	51
11	Cologne	Germany	26	54	47		31	12	52
12	Milan	Italy	26	71	53		31	11	50
13	Berlin	Germany	26	42	44		29	14	50
14	Vienna	Austria	24	42	43		28	12	48
15	Oslo	Norway	24	66	70		28	8	50
16	Naples	Italy	24	34	43		27	15	45
17	Turin	Italy	23	50	42		27	13	51
18	Munich	Germany	23	50	36		26	14	54
19	Birmingham	United Kingdom	21	51	43		24	9	57
20	Luxembourg	Luxembourg	21	51	47		25	6	55
21	Barcelona	Spain	21	49	39		24	9	54
22	Lisbon	Portugal	20	41	49		24	8	56
23	Helsinki	Finland	20	43	43		23	11	57
24	Prague	Czech Republic	20	46	31		24	7	53
25	Ruhr region west	Germany	17	38	28		20	6	51
26	Copenhagen	Denmark	16	42	29		19	7	57
27	Madrid	Spain	16	41	33		19	6	67
28	Ruhr region east	Germany	15	31	28		18	5	51
29	Amsterdam	Netherlands	15	33	31		17	6	55
30	Valencia	Spain	14	21	21		16	9	59
31	Bern	Switzerland	8	19	31		11	0	48

## Keywords

Keywords	Definition
Average Free Flow Speed	Measured average road speed during a free flow situation (usually at night).
Average observed speeds	Average observed speeds within specific time periods.
Cities	In this report urban areas in all countries with TomTom HD Traffic are evaluated. In these countries all urban areas that include a country capital and all urban areas that have over 800 000 inhabitants are included. A maximum of 20 urban areas per country is evaluated.
City	See Cities.
Congestion level	See TomTom Congestion Level.
Delay per hour driven in peak period	Delay in minutes per hour driven during morning and evening peak times compared to free flow situations. For example, 22 minutes delay per hour at peak times indicates that a one hour journey driven at free flow times will take an additional 22 minutes at peak times.
Delay per year for commuters	See Time delay per year for commuters.
FRC	Functional Road Class, an industry standard that defines different road categories. FRC0 = highways, FRC1 = international roads/slip roads, FRC2 = major roads, FRC3 = secondary roads, FRC4 = connecting roads.
Free flow	See Free flow situation.
Free flow condition	See Free flow situation.
Free flow situation	A journey made without any delay caused by traffic congestion. This most typically occurs during the night.
Free Flow Speed	See Average Free Flow Speed.
Highways	See FRC.
Most congested day	See most congested specific day.
Most congested specific day	The day with the highest Congestion Level.
Non-highways	See FRC
Peak hours	See Peak period.
Peak period	Based on real traffic measurements, the busiest one-hour-long period in the morning and in the evening period were determined for every evaluated city.
Road network	In this report all speed measurements on roads classified as FRC0 through FRC4 within the urban areas contribute to the statistics.
Time delay per year for commuters	Delay per year with a 30 minute commute. Based on 230 work days per year and two peak periods per day.
TomTom Congestion Level	Increase in overall travel times when compared to a free flow situation. For example, a Congestion Level of 12% corresponds to 12% longer travel times compared to a free flow situation.
Total network length	Total length of the evaluated network in kilometres.
Total network length highways	Total length of the evaluated network in kilometres for FRC0 and FRC1 only.
Total network length non-highways	Total length of the evaluated network in kilometres for FRC2, FRC3 and FRC4 only.
Total vehicle kilometres	Total distance covered by all TomTom user measurements, used for this specific report.
Travel time	TomTom's historic traffic database contains over six trillion anonymous speed measurements. These speed measurements are used to calculate the travel times on individual road segments and entire networks.
Urban area	Geographical area that takes population size and network layout into account. Speed measurements within the defined urban area contribute to the statistics.
Urban network	The road network in an urban area.

## Explanation of tables and figures

### Pages for continents

Section	Description
Congestion Level	Average Congestion Level across all cities evaluated on the continent.
Map of the continent	Image of the continent showing the 5 most congested cities.
Top 5 - increasing congestion	Top 5 cities with largest increase in the Congestion Level compared to the previous quarter.
Top 5 - decreasing congestion	Top 5 cities with largest decrease in the Congestion Level compared to the previous quarter.
Top 10 cities	Ranking of cities according to Congestion Levels.
• Rank	Rank according to Congestion Levels.
• Previous rank	Rank according to city Congestion Levels in the previous year.
• Congestion	Congestion Level.
• Morning peak	Average Congestion Level during morning peak periods on work days.
• Evening peak	Average Congestion Level during evening peak periods on work days.
• Highways	Average Congestion Level for highways only.
• Non-highways	Average Congestion Level for non-highways only.
Comparison per quarter	Change in Congestion Levels over the last year.
• Congestion	Average Congestion Level for all the cities evaluated.
• Worst average morning peak	Highest Congestion Level during the 5 morning peak periods (work days) in all cities evaluated.
• Worst average evening peak	Highest Congestion Level during the 5 evening peak periods (work days) in all cities evaluated.

### Pages for cities

Section	Description
Congestion Level	Average Congestion Level across all roads in the city.
Ranking of city compared to continent	Rank of the city according to Congestion Level compared to other evaluated cities on the continent.
Congestion Level on highways	Congestion Level for highways only.
Congestion Level on non-highways	Congestion Level for non-highways only.
Delay per hour driven in peak period	Average delay in minutes for a one hour journey driven in the peak periods.
Delay per year with a 30 minute commute	The total accumulated delay over one year for a 30 minute commute driven in the peak periods on work days.
Speed during worst peak period	Average speed during most congested weekly rush hour.
The weekly congestion pattern	Average Congestion Levels for the 10 peak periods in a week (morning and evening peak hours on 5 working days).
Comparison per quarter	Change in Congestion Level over the past quarters.
Congestion	Average Congestion Level across the city.
Worst average morning peak	Highest Congestion Level during the 5 morning peak periods (work days).
Worst average evening peak	Highest Congestion Level during the 5 evening peak periods (work days).