North America

Top 10 cities

Rank	CI change	City	Country	Congestion
1	▲	Los Angeles	United States	33%
2	---	Vancouver	Canada	32%
3	▲	Honolulu	United States	30%
4	▲	San Francisco	United States	29%
5	▲	Seattle	United States	26%
6	▼	Toronto	Canada	25%
7	▲	San Jose	United States	25%
8	▼	Washington	United States	25%
9	▲	New Orleans	United States	25%
10	▼	Montreal	Canada	25%

Europe

Johannesburg

Congestion level

30%

Ranking	
Ranking of city compared to continent	1/5
Congestion level on highways	18%
Congestion level on non-highways	37%
Delay per hour driven in peak period	43 min
Delay per year with a 30 min commute	96 h

Measuring Traffic Congestion

Edwin Kools, BBE

Dr. Johanna Tzanidaki

UN-Habitat 24th Governing council

Nairobi, Kenya

Contents

- About TomTom
- HD Traffic: Real-Time Traffic Information
- Why a Congestion Index
- Data Source
- Methodology
- Recent Results
- Working with road authorities
- Next Steps

About TomTom

- Founded in 1991, we are the worlds leading supplier of in-car location and navigation products and services

- Our clients include the Automotive Industry, Drivers, Freight Companies, Public Authorities and Traffic Control Centres

- A research study by TNO in 2007 found a positive relationship between the presence of a navigation system and the number of claimed damages and damage costs per kilometres driven→ we can contribute towards a safer, greener and more efficient mobility

TomTom HD Traffic: real-time traffic information

- Last week (Wed April 10th, 11h45 local time):

TomTom Data Sources

TomTom has a broad and significant number of sources

TomTom HD Traffic: real-time traffic information

Connected navigation devices

TOMTOM

TomTom HD Traffic

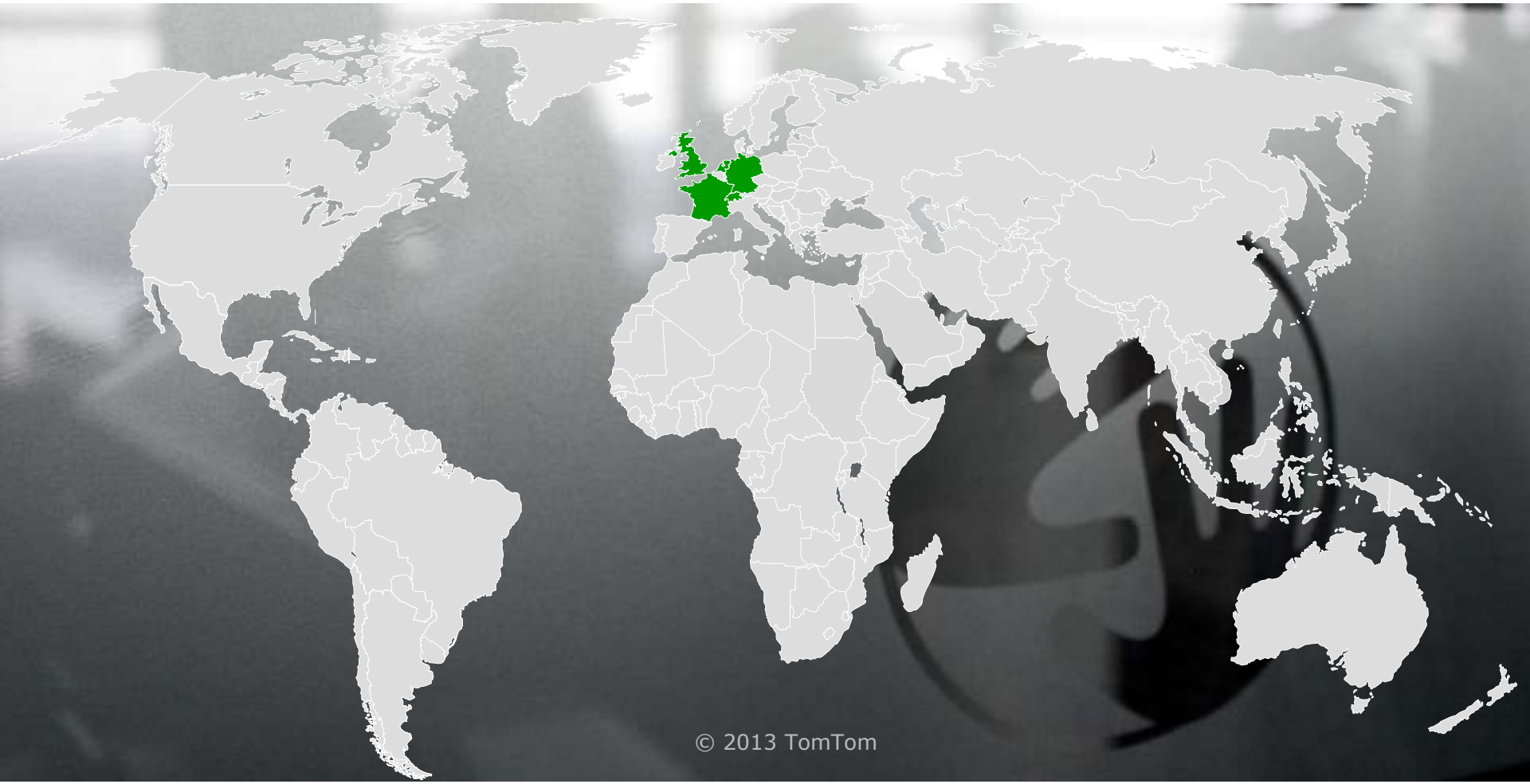
World Leader in Traffic Information Services

- 2007

TomTom HD Traffic

World Leader in Traffic Information Services

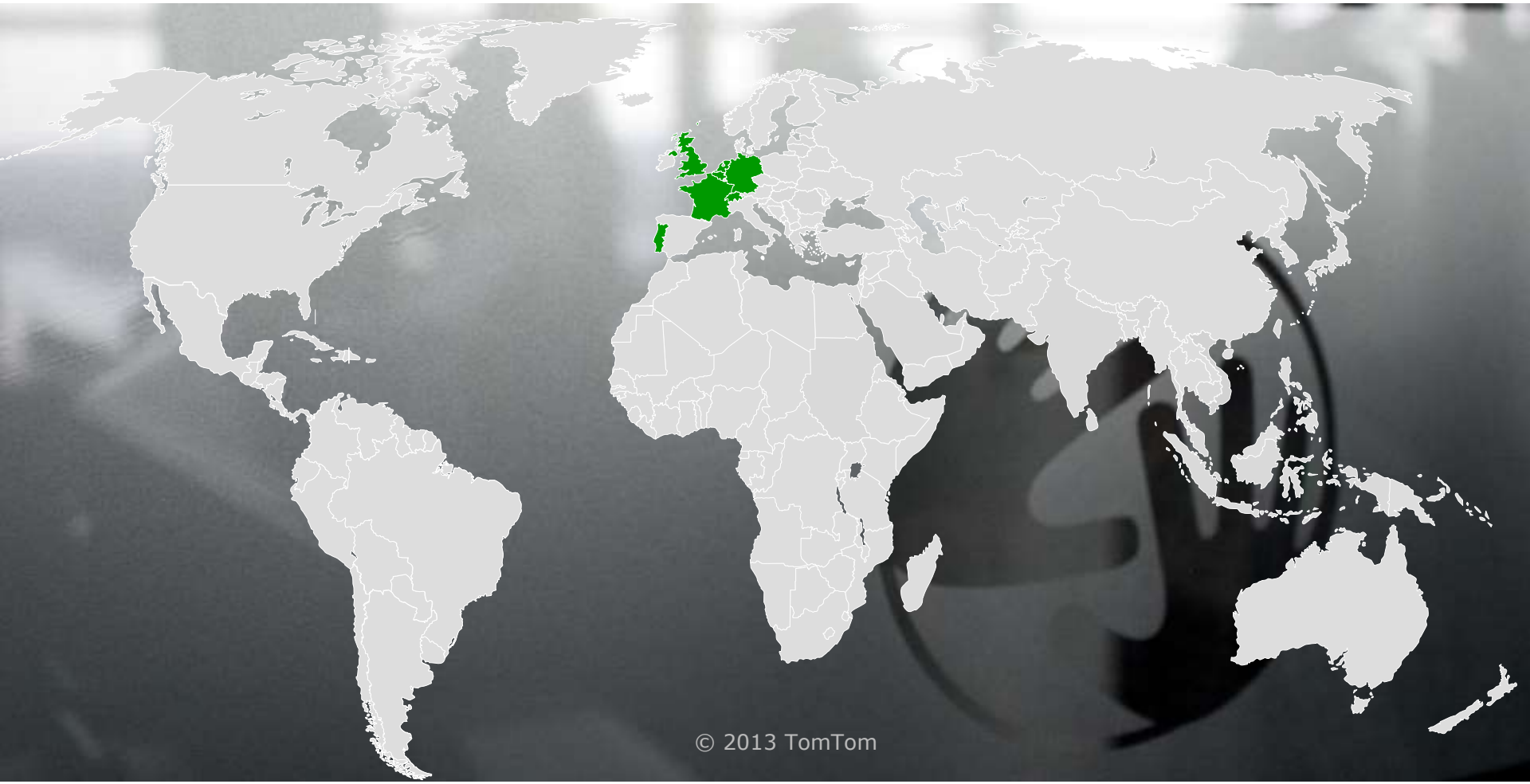
- 2008



TomTom HD Traffic

World Leader in Traffic Information Services

- 2009



TomTom HD Traffic

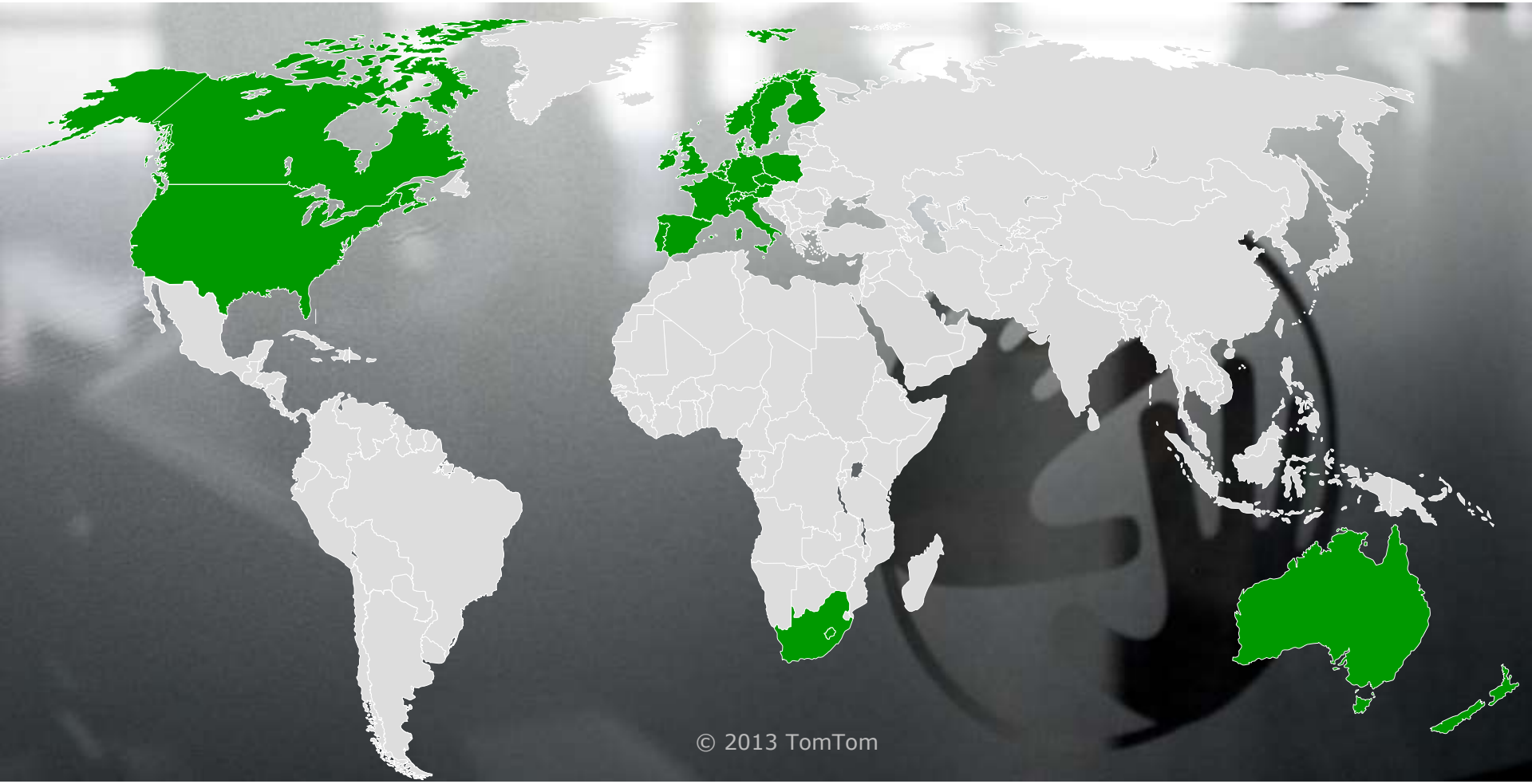
World Leader in Traffic Information Services

- 2010

TomTom HD Traffic

World Leader in Traffic Information Services

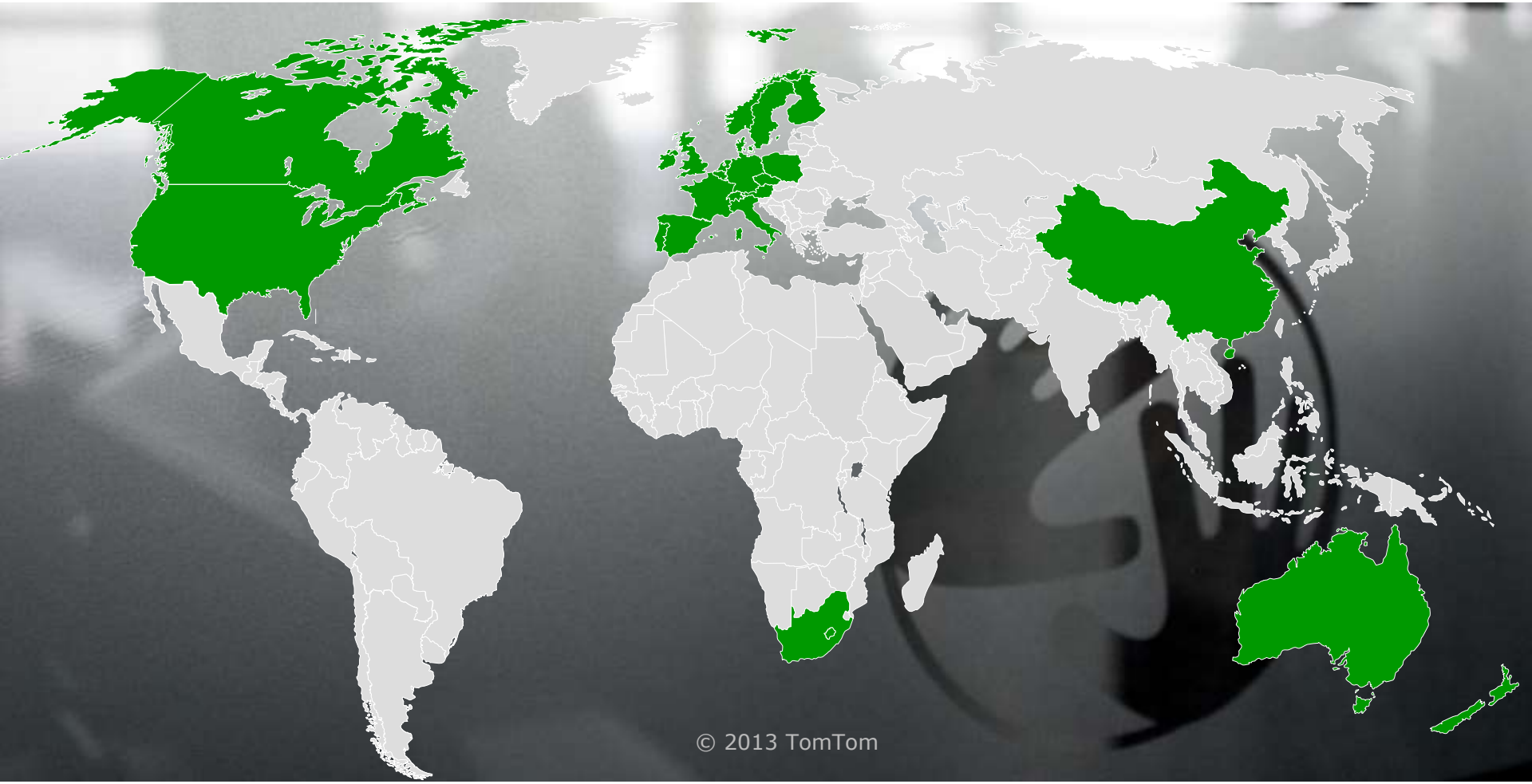
- 2011



TomTom HD Traffic

World Leader in Traffic Information Services

- 2012



TomTom HD Traffic

World Leader in Traffic Information Services

- 2013

Congestion Index

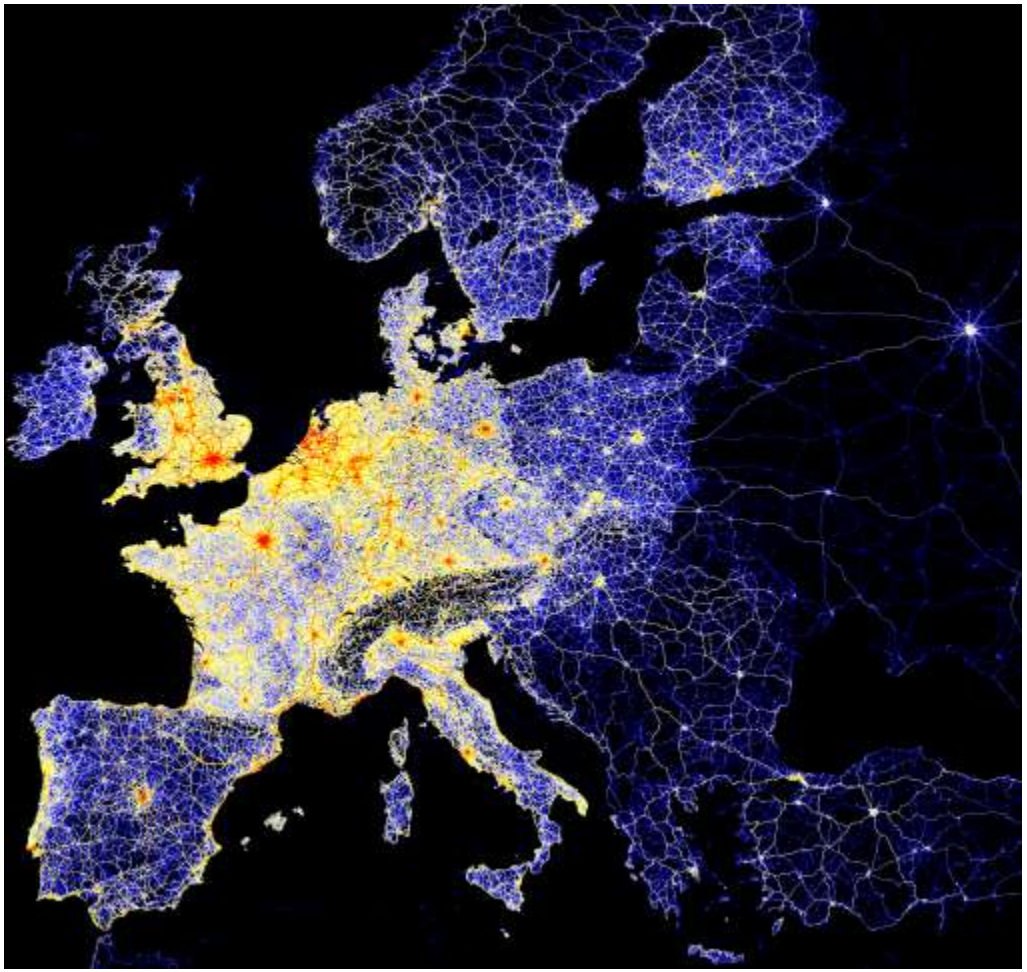
Why and for whom?

- Raise awareness about the availability of traffic information for avoiding or reducing travel time delay
- Raise awareness about the availability of road network performance measurements across the world
- Provide the public and transport authorities with insight into their own regions
- Help authorities monitor change
- Help authorities identify and diagnose trouble spots in the network

TOMTOM

Congestion Index: Primary Data Source

Historical data collected by TomTom users

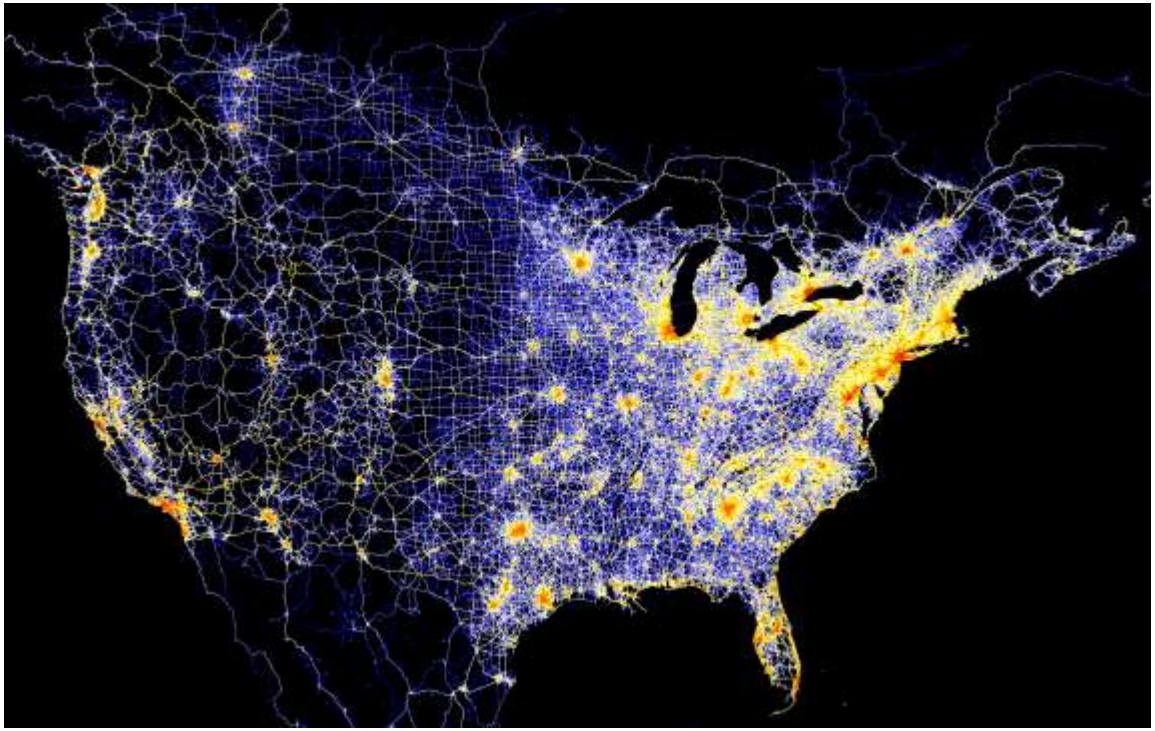


TOMTOM

Congestion Index: Data Source

Advantages

- Large customer base = wide coverage across all road classes
- Passenger vehicles
- ANONYMOUS
- Consistent source worldwide
- Info on:
  - Speeds
  - Travel times
  - Vehicle density
  - Highways, arterials and local roads



TOMTOM

Congestion Index: Methodology

- Base-line = measured uncongested conditions
- Congestion Index = additional travel time compared to uncongested conditions

Congestion Index of 50%:

- For example a trip that would take 1 hour in an uncongested situation, will now take an hour and a half.

- Network: highways, arterials and local roads
- Weighting: busy roads more important
- Peak periods: local busiest hour

TOMTOM

Congestion Index: Results

http://www.tomtom.com/congestionindex

North America

Top 3 - Increasing congestion

	Previous Congestion	Increase in congestion	Current
Houston	18%	6	24%
Seattle	24%	2	26%
Tampa	20%	1	21%

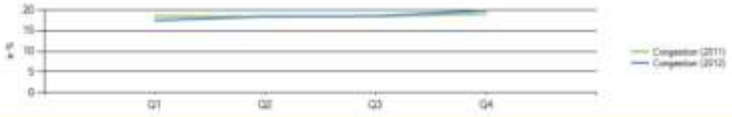
Top 3 - Decreasing congestion

	Previous Congestion	Decrease in congestion	Current
Edmonton	21%	6	15%
Birmingham	17%	3	14%
Pittsburgh	22%	3	19%

Top 10 cities

Rank	CI change	City	Country	Congestion	Morning peak	Evening peak	Highways	Non-Highways
1	▲	Los Angeles	United States	33%	56%	77%	29%	39%
2	---	Vancouver	Canada	32%	52%	68%	19%	27%
3	▲	Honolulu	United States	30%	49%	68%	22%	38%
4	▲	San Francisco	United States	29%	51%	69%	24%	36%
5	▲	Seattle	United States	26%	45%	73%	21%	34%
6	▼	Toronto	Canada	25%	49%	62%	19%	31%
7	▲	San Jose	United States	25%	50%	69%	17%	38%
8	▼	Washington	United States	25%	44%	59%	18%	32%
9	▲	New Orleans	United States	25%	35%	57%	18%	28%
10	▼	Montreal	Canada	25%	48%	71%	22%	29%

Comparison per quarter



South Africa

Top 3 - Increasing congestion

	Previous Congestion	Increase in congestion	Current
Durban	16%	6	22%
Cape Town	24%	1	25%

Top 3 - Decreasing congestion

	Previous Congestion	Decrease in congestion	Current
East Rand n	28%	6	34%
East Rand s	25%	3	22%
Johannesburg	32%	6	26%

Evaluated cities

Rank	CI change	City	Country	Congestion	Morning peak	Evening peak	Highways	Non-Highways
1	▼	Johannesburg	South Africa	30%	79%	66%	18%	37%
2	▲	Cape Town	South Africa	26%	78%	58%	22%	31%
3	▼	East Rand n	South Africa	25%	63%	65%	15%	37%
4	▼	Pretoria	South Africa	24%	57%	50%	11%	32%
5	▼	East Rand s	South Africa	23%	50%	50%	12%	32%
6	▲	Durban	South Africa	18%	47%	40%	14%	28%

Comparison per quarter

TOMTOM

Congestion Index: Results

http://www.tomtom.com/congestionindex

Europe

TOMTOM

Congestion Index: Results

http://www.tomtom.com/congestionindex

Johannesburg

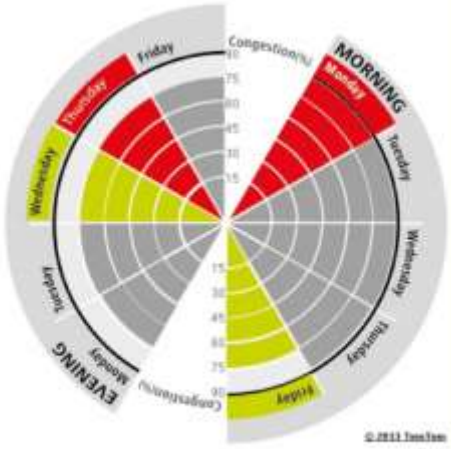
Congestion level

30%

Ranking	
Ranking of city compared to continent	1/6
Congestion level on highways	18%
Congestion level on non-highways	37%
Delay per hour driven in peak period	43 min
Delay per year with a 30 min commute	96 h

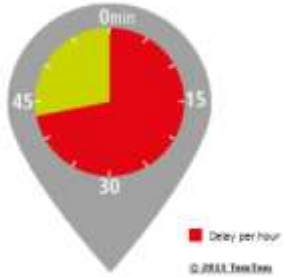
The weekly congestion pattern:

Best and worst peak periods of the week



Most congested specific day	Thu 6 Sep 2012
Total network length	2 595 km
Total network length highways	315 km
Total network length non-highways	2 280 km
Total vehicle kilometres	20 164 620 km

Delay per hour driven in peak period

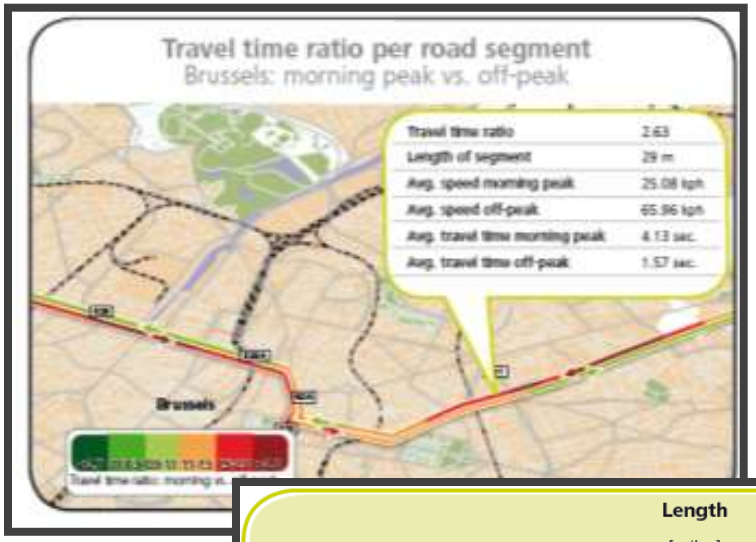


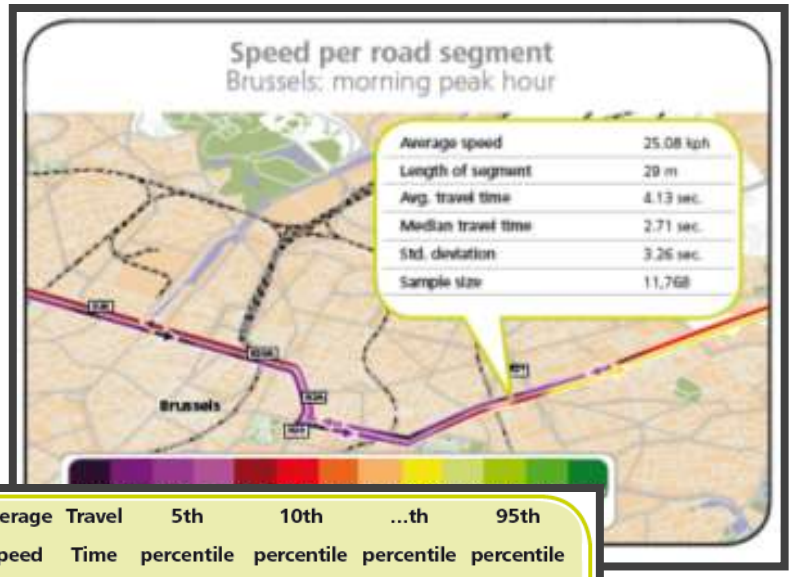
TOMTOM

How our Traffic Info helps Public Authorities

Historical travel times and speeds analyses

- Bottleneck analysis
- Specific routes
- Areas (cities, regions)
- Trends over time





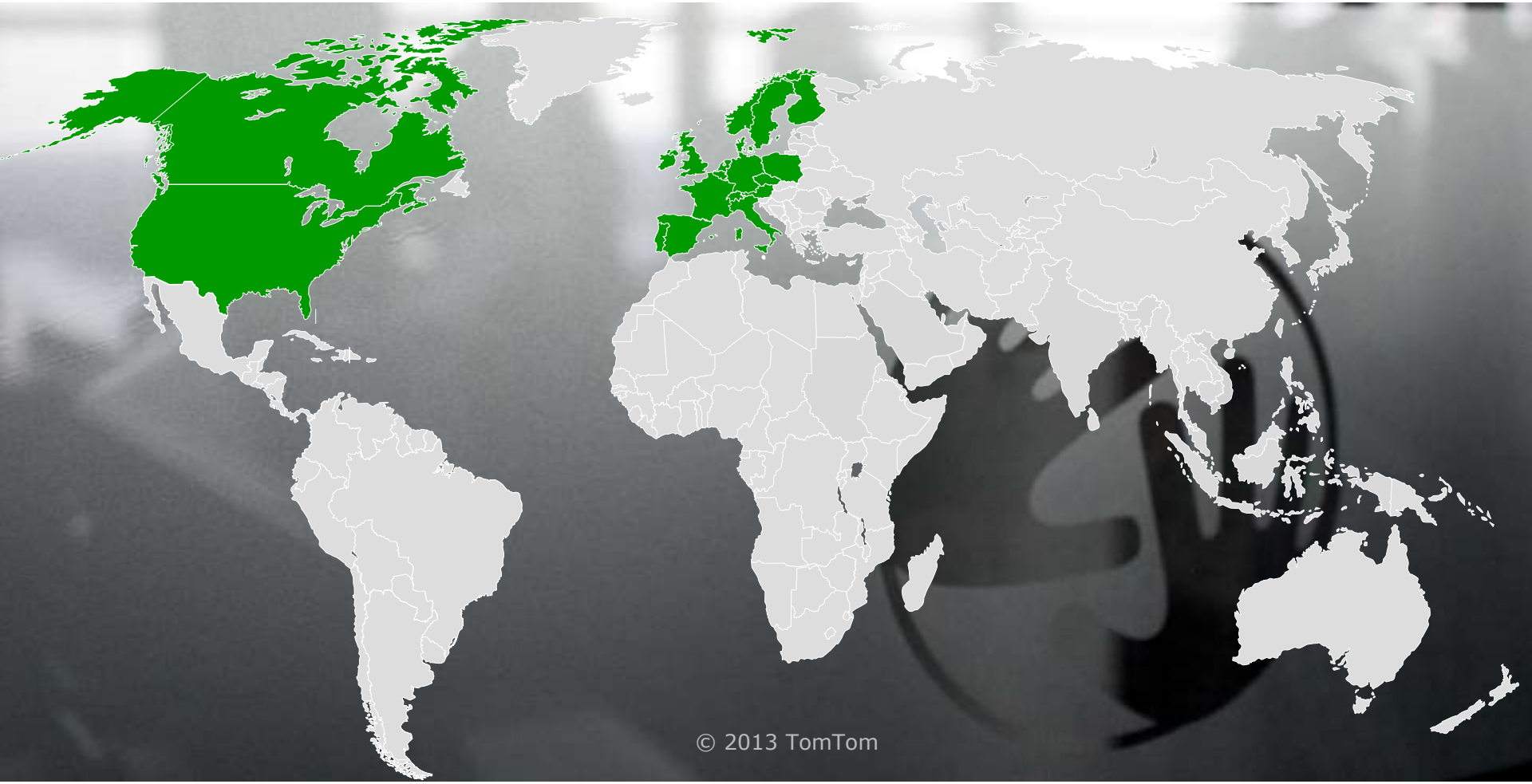
Route Name	Times Name	Length [miles]	Sample size [avg per segment]	Average Travel Times [mm:ss]	Median Travel time [mm:ss]	Average Speed [mph]	Travel Time ratios	5th percentile travel time [mm:ss]	10th percentile travel time [mm:ss]	...th percentile travel time [mm:ss]	95th percentile travel time [mm:ss]
Utrecht - Amersfoort	Off-peak	20.419,90	14.737	20:34	18:54	59,56	1,00	12:33	13:28	..:..	33:59
Utrecht - Amersfoort	Morning peak	20.419,90	17.095	22:21	20:16	54,80	1,09	12:49	13:49	..:..	39:09
Utrecht - Amersfoort	Evening peak	20.419,90	15.979	32:39	28:38	37,52	1,59	15:29	17:51	..:..	62:22
Utrecht - Amersfoort	Sunday	20.419,90	19.068	15:53	15:27	77,08	0,77	10:54	11:29	..:..	22:52

Working with road authorities

TomTom Congestion Index

Measuring traffic congestion worldwide

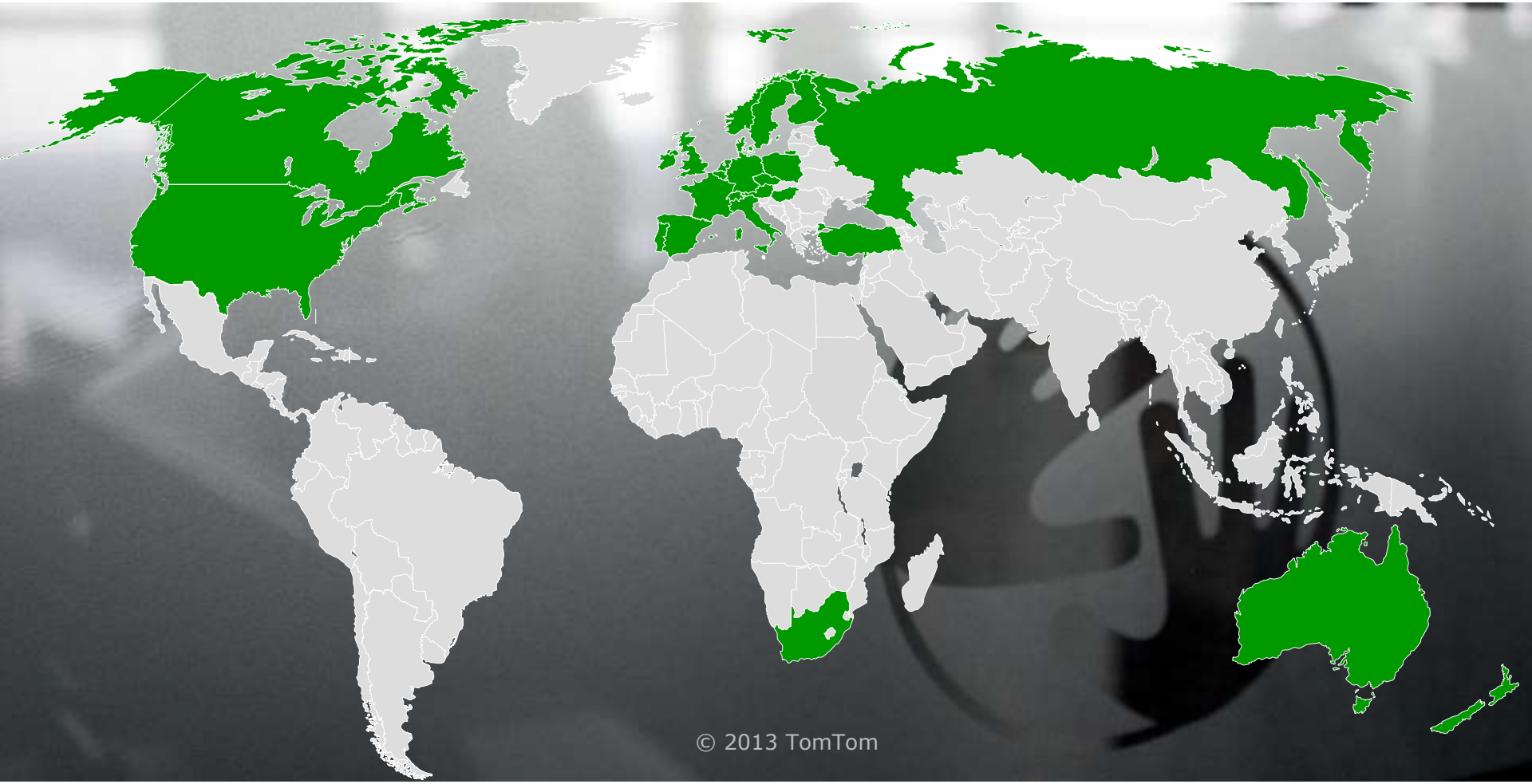
- 2012



TomTom Congestion Index

Measuring traffic congestion worldwide

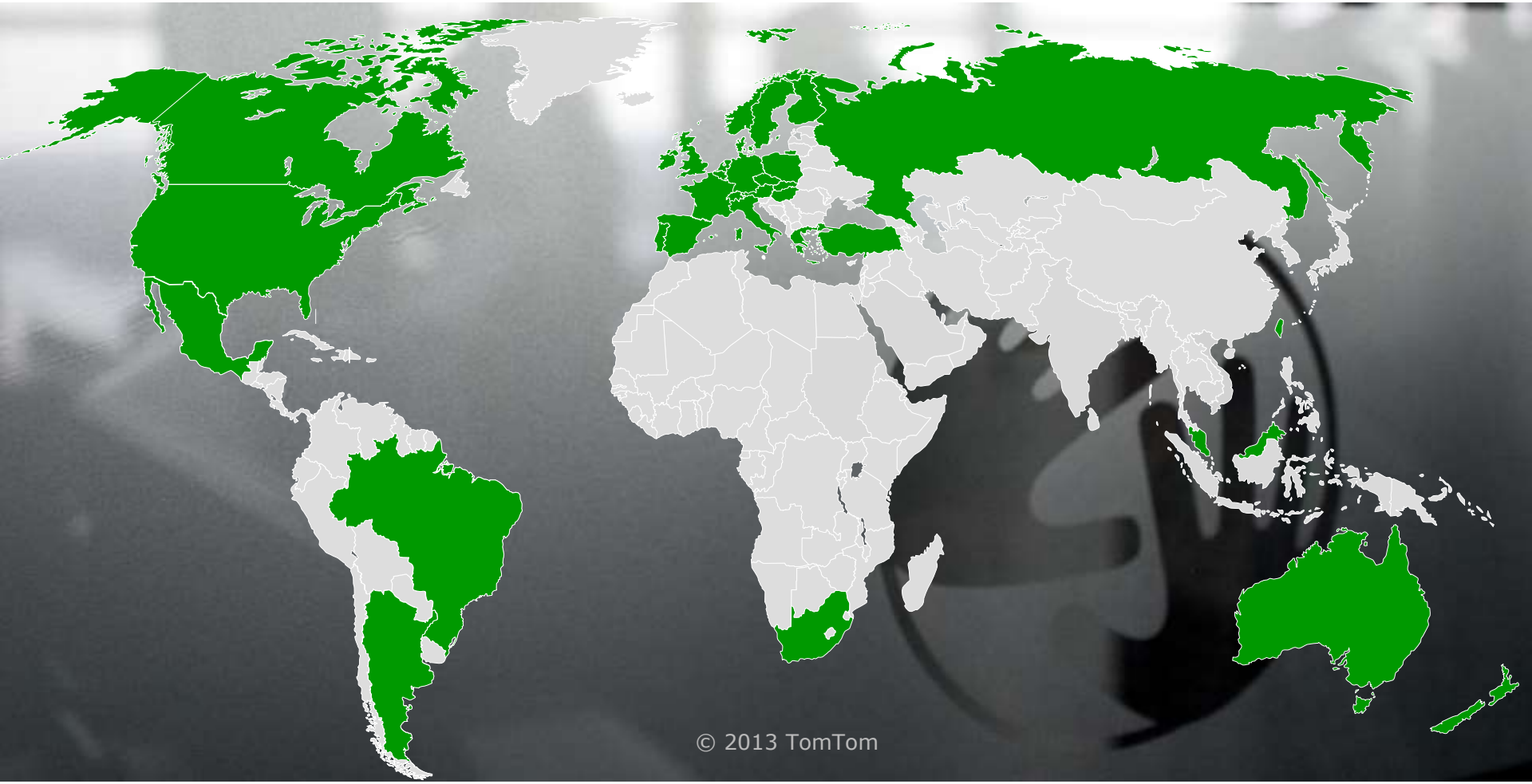
- 2013 Q1



TomTom Congestion Index

Measuring traffic congestion worldwide

- 2013 Q2/Q3



How can we make our Congestion Index more useful for City Planners?