

In Use data collection by India for WLTP

Introduction

- To get the representative driving pattern
- ✓ Regions were decided on the basis of best representative metropolitan areas of the nation.
- ✓ The Urban, Rural and Motorway routes in each region are decided to get exact driving pattern of the region.
- ✓ The vehicles are selected to give representative data in the segment for both Passenger cars and commercial vehicles and which covers the good market share.
- ✓ The drivers cover all range of age i.e. young, middle and old.

Test Design-Region



- In-use data is collected in 6 major metropolitan cities and their connected Rural & Motorways which represents Indian road conditions.

- The cities are;

1. Delhi
2. Ahmadabad
3. Mumbai
4. Pune
5. Bengaluru
6. Chennai

- Population of India, 1210.2 million

Routes selected for collection of data in various regions of India

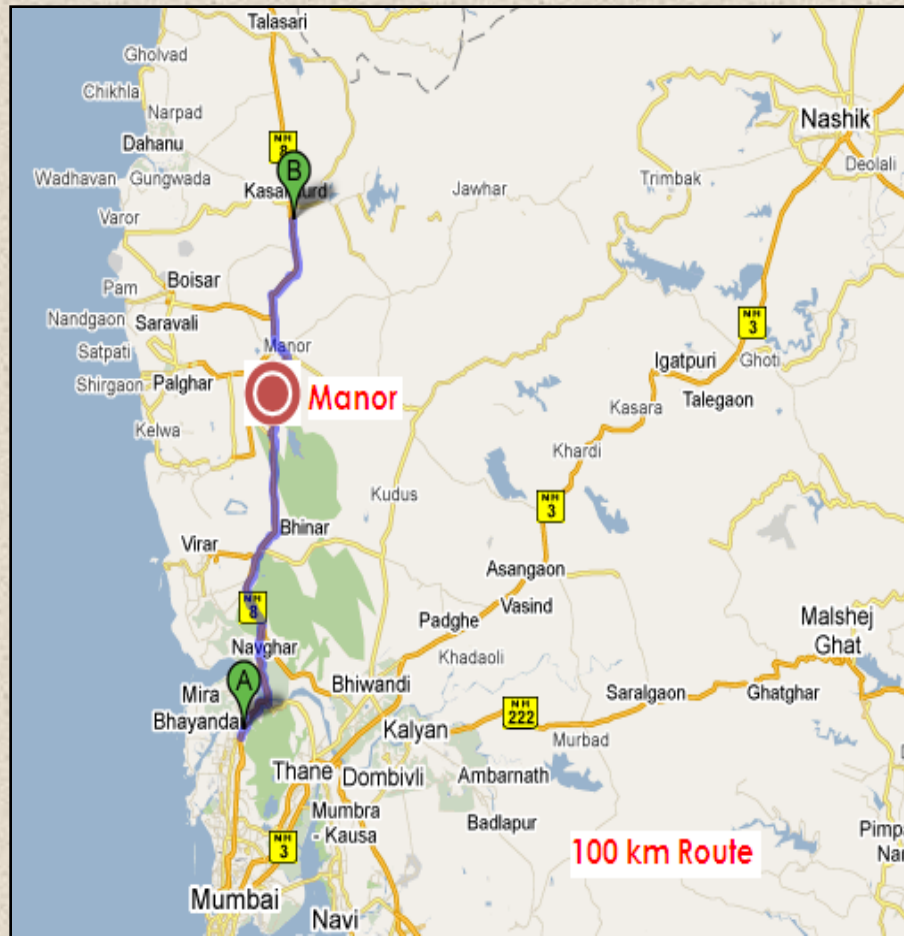
Mumbai City Route for Urban- M/s Mahindra & Mahindra Ltd. collected the data in this region



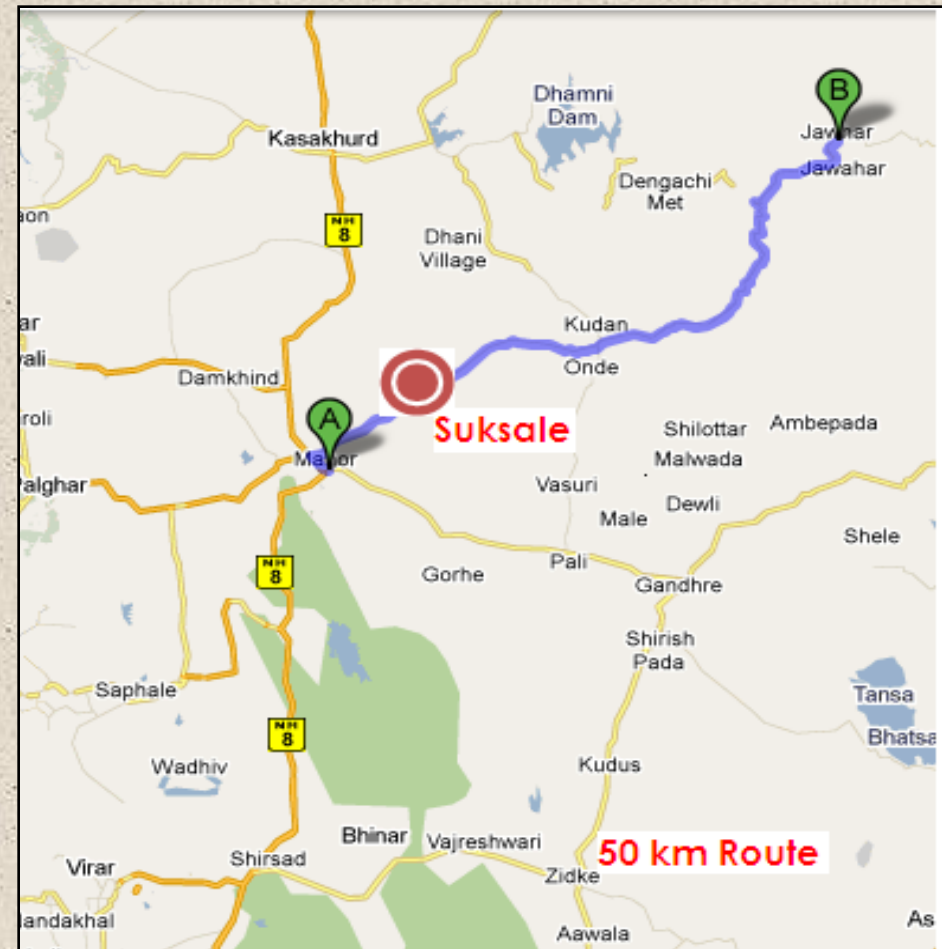
Routes selected for collection of data in various regions of India

Mumbai City Route for Rural & Motorway- M/s Mahindra & Mahindra Ltd. collected the data in this region

▪ Motorway Route

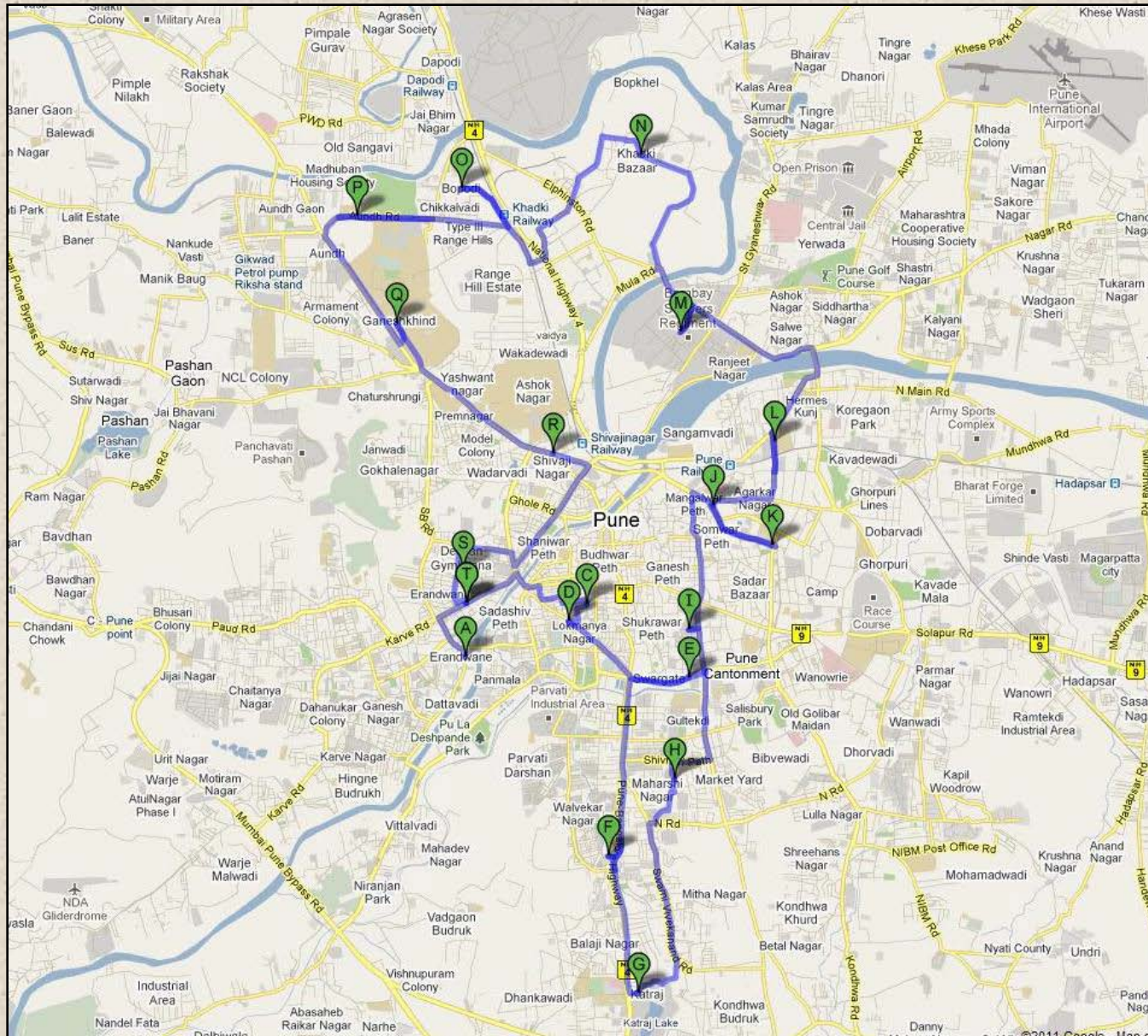


▪ Rural Route



Routes selected for collection of data in various regions of India

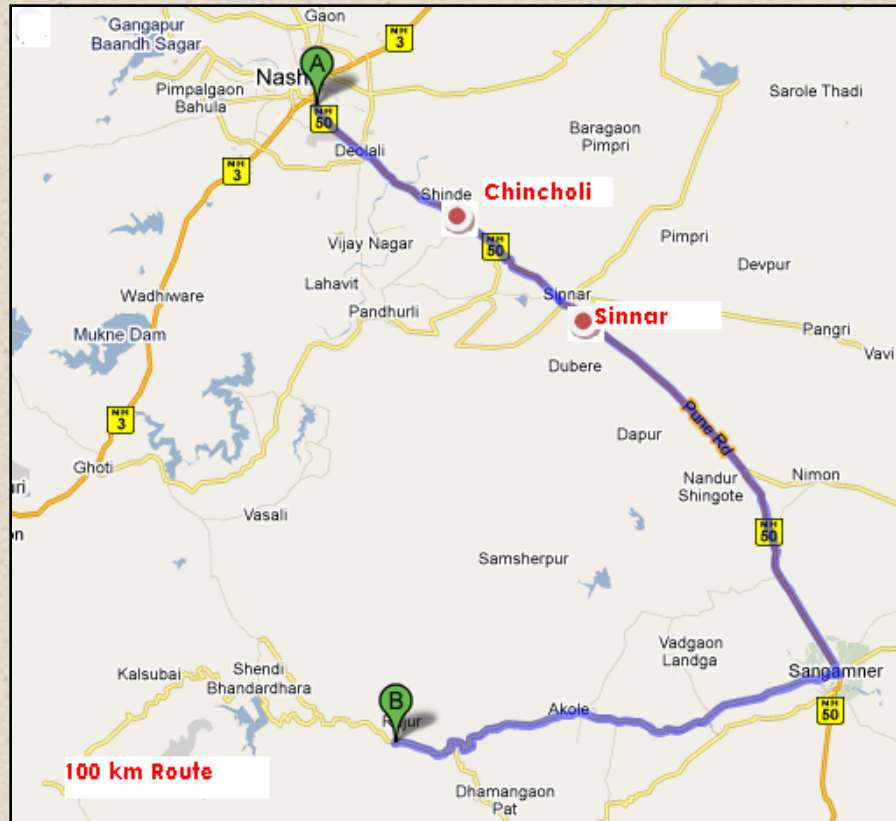
Pune City Route for Urban- M/s Mahindra & Mahindra Ltd. collected the data in this region



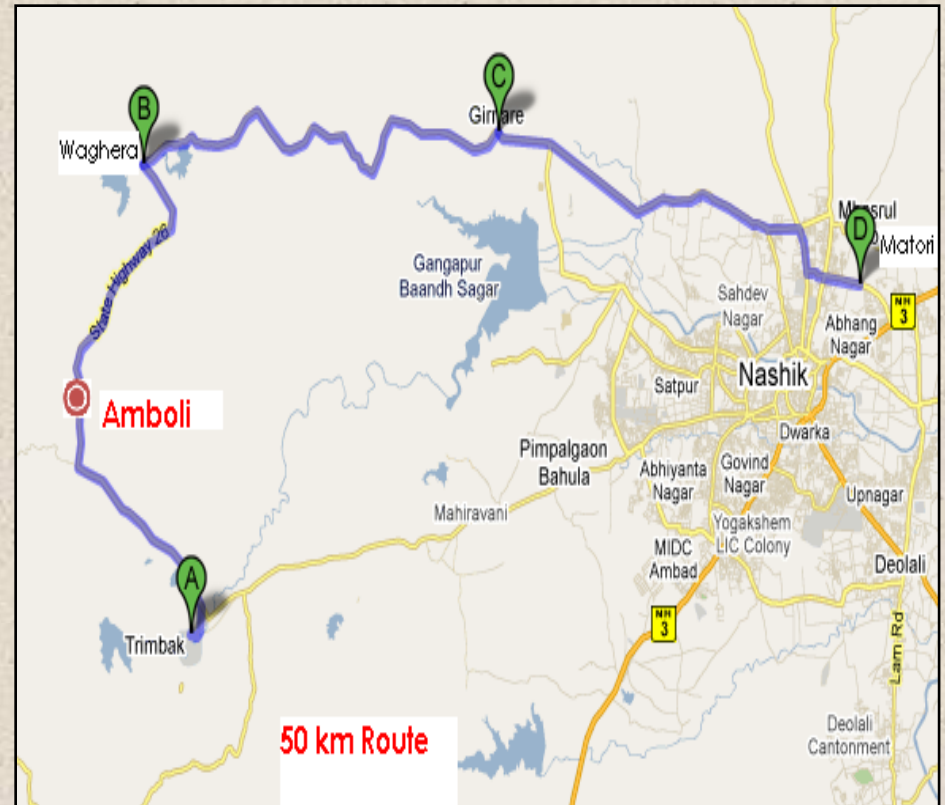
Routes selected for collection of data in various regions of India

Nashik Route for Rural & Motorway- M/s Mahindra & Mahindra Ltd. collected the data in this region

▪ Motorway Route

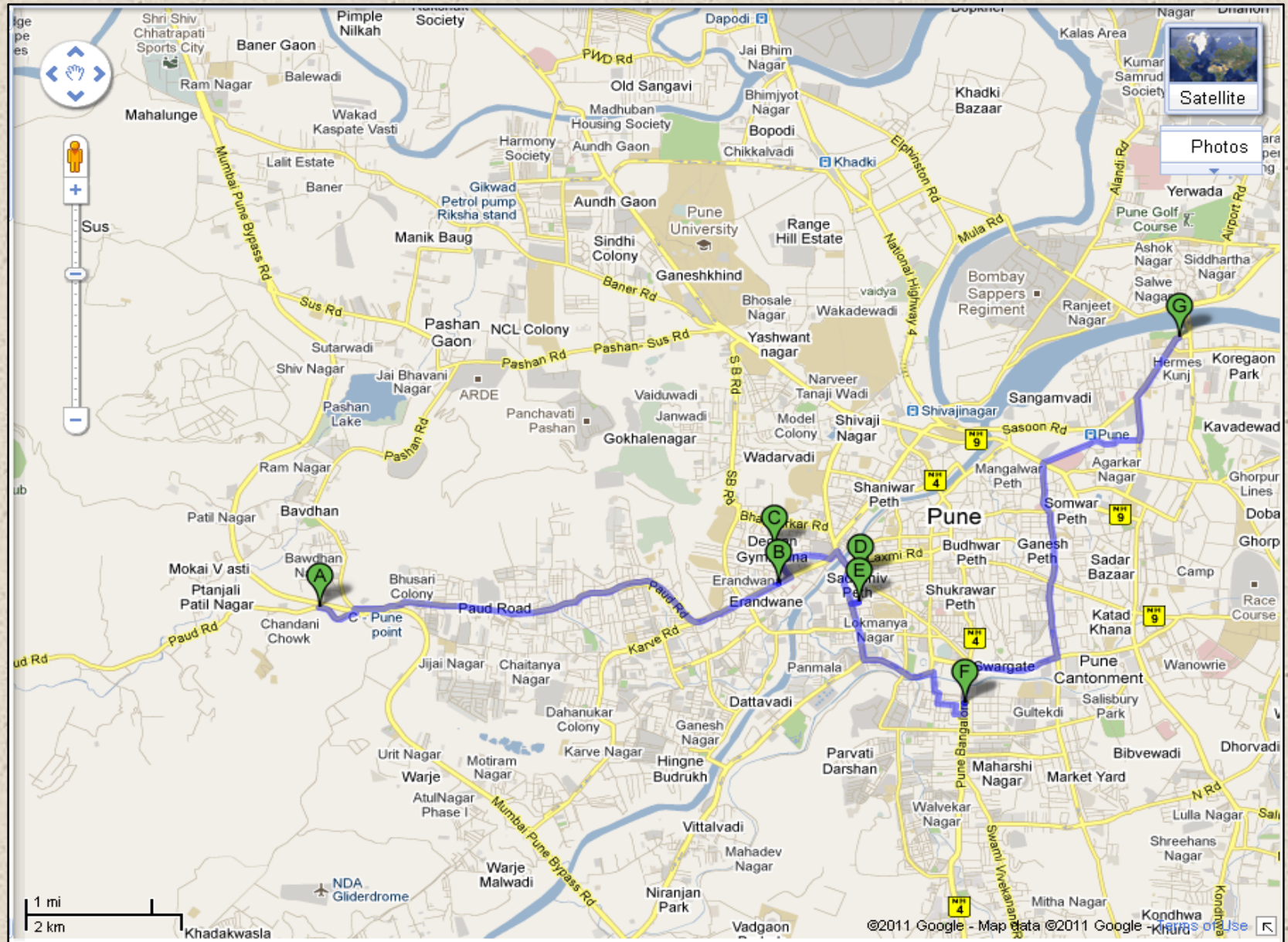


▪ Rural Route- Manor to Jawhar



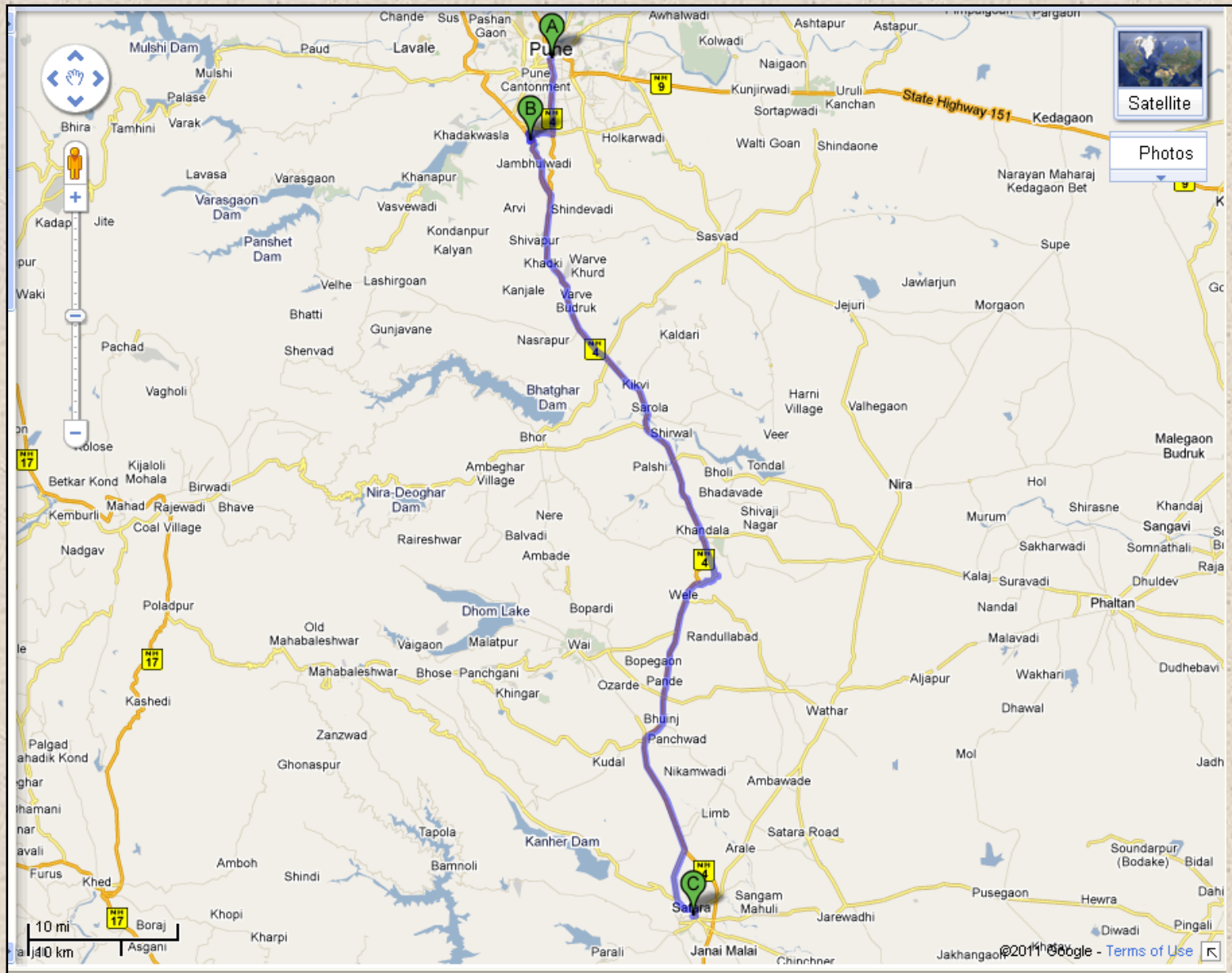
Routes selected for collection of data in various regions of India

Pune City Route for Urban-M/s TATA Motors Ltd. collected the data in this region



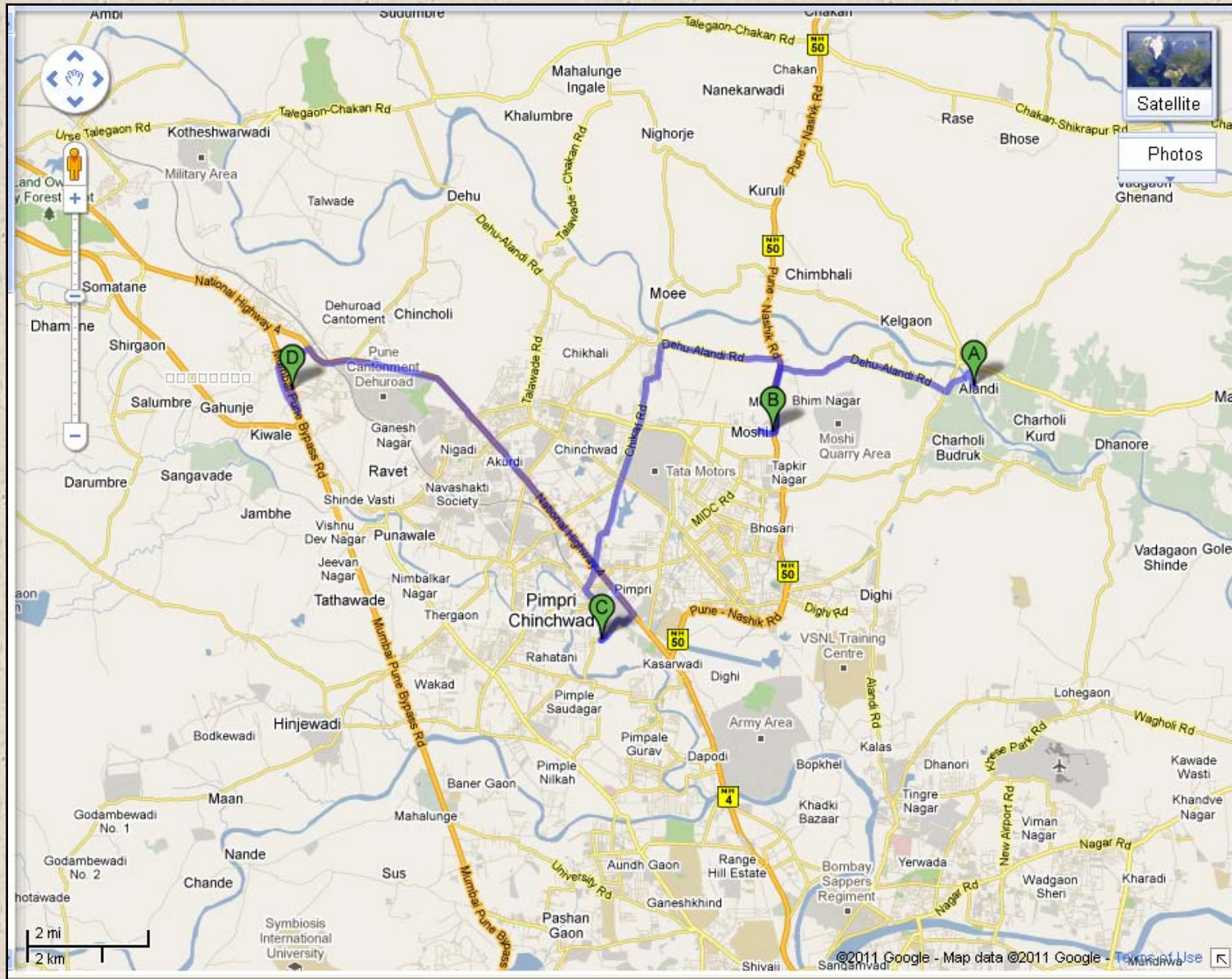
Routes selected for collection of data in various regions of India

Pune City Route for Motorway-M/s TATA Motors Ltd. collected the data in this region



Routes selected for collection of data in various regions of India

Pune City Route for Rural-M/s TATA Motors Ltd. collected the data in this region



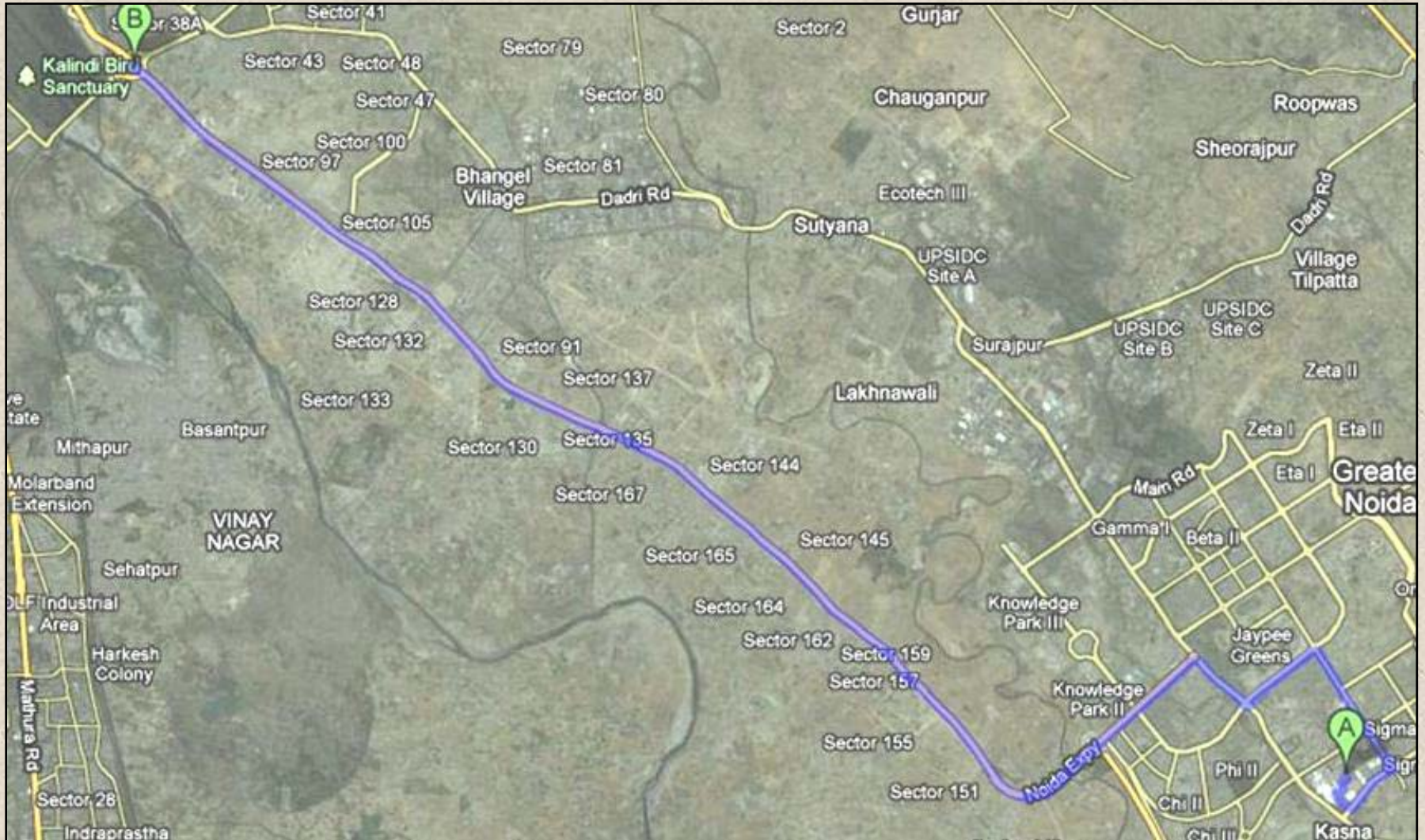
Routes selected for collection of data in various regions of India

Delhi City Route for Urban- M/s Honda SIEL Cars India Ltd. collected the data in this region



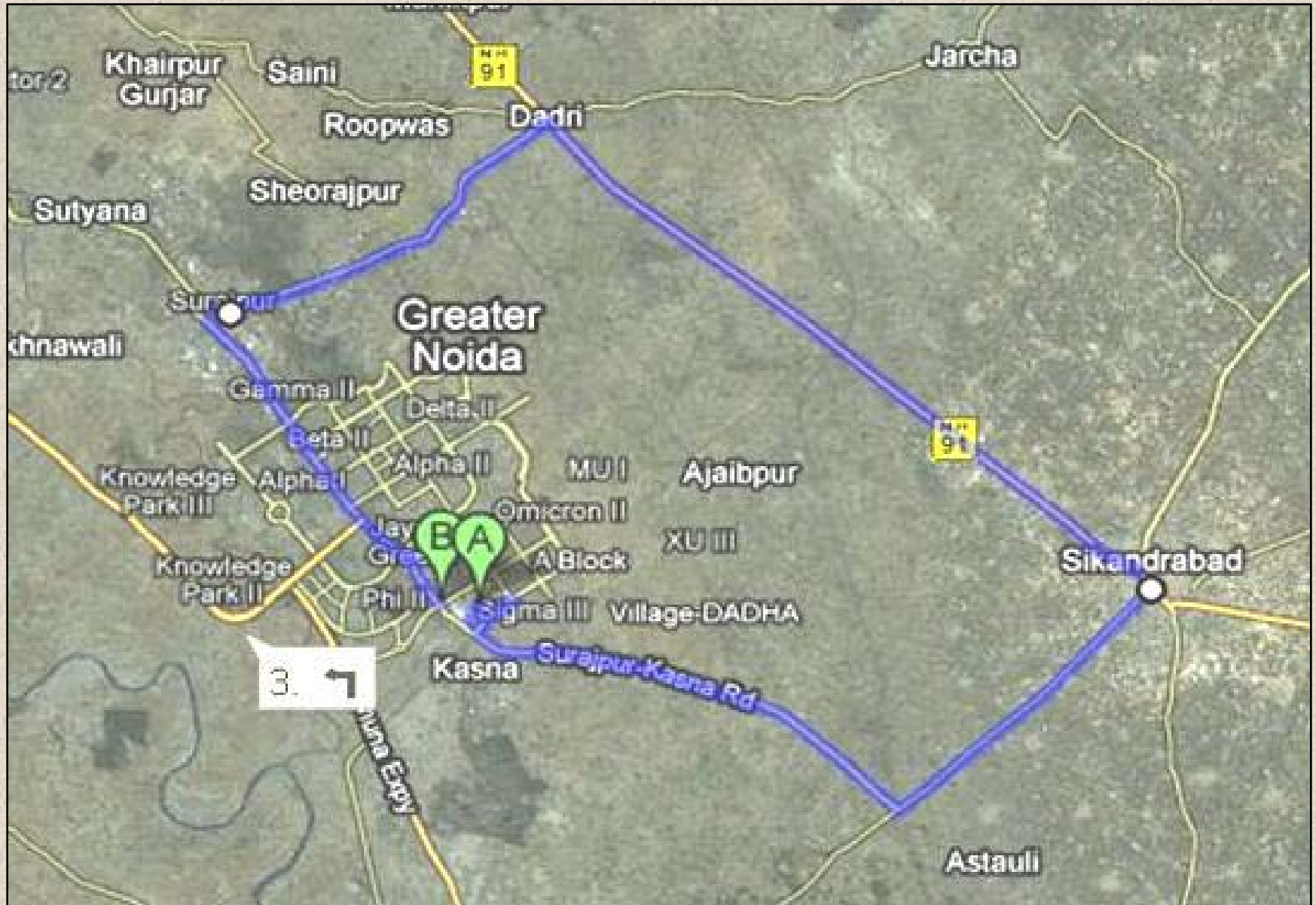
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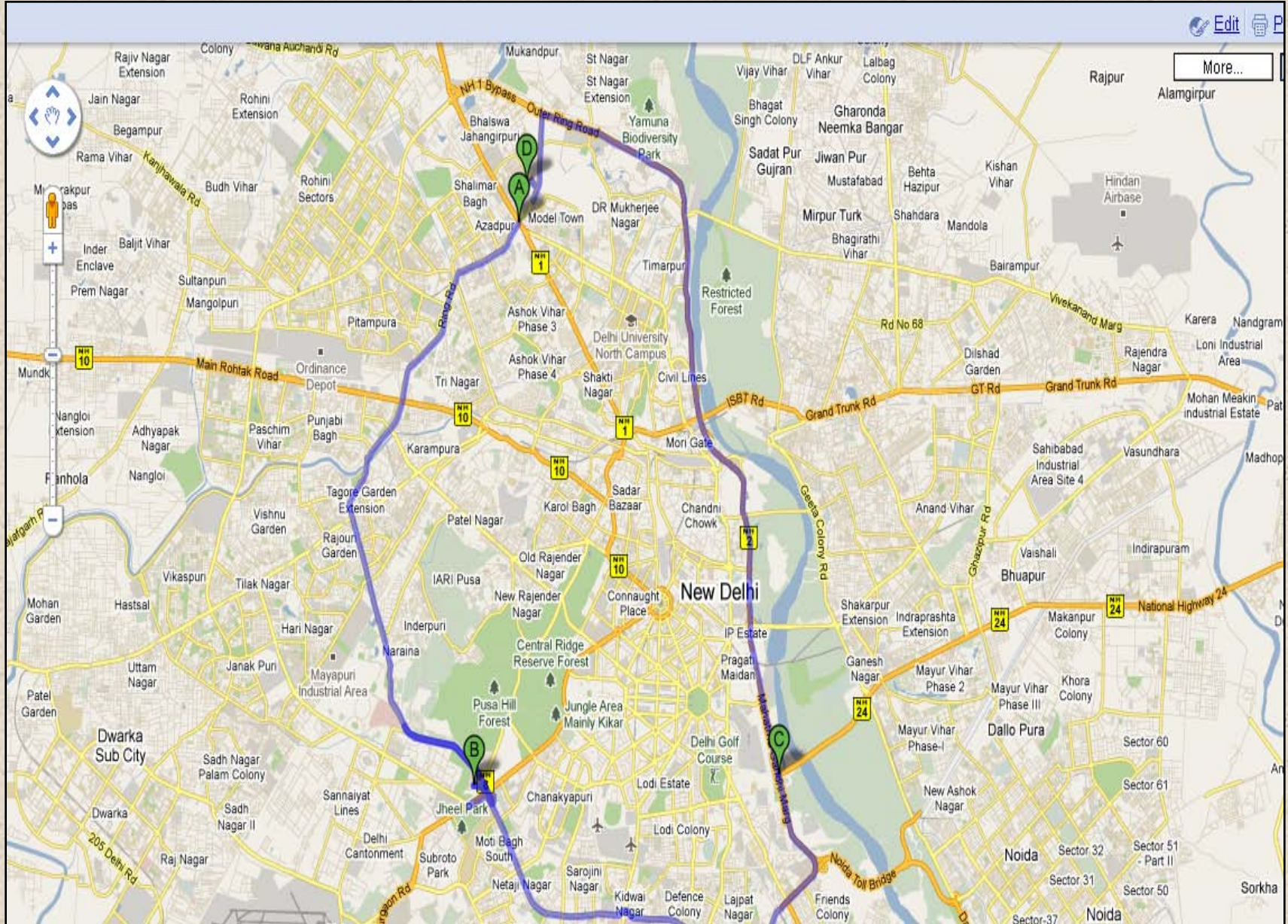
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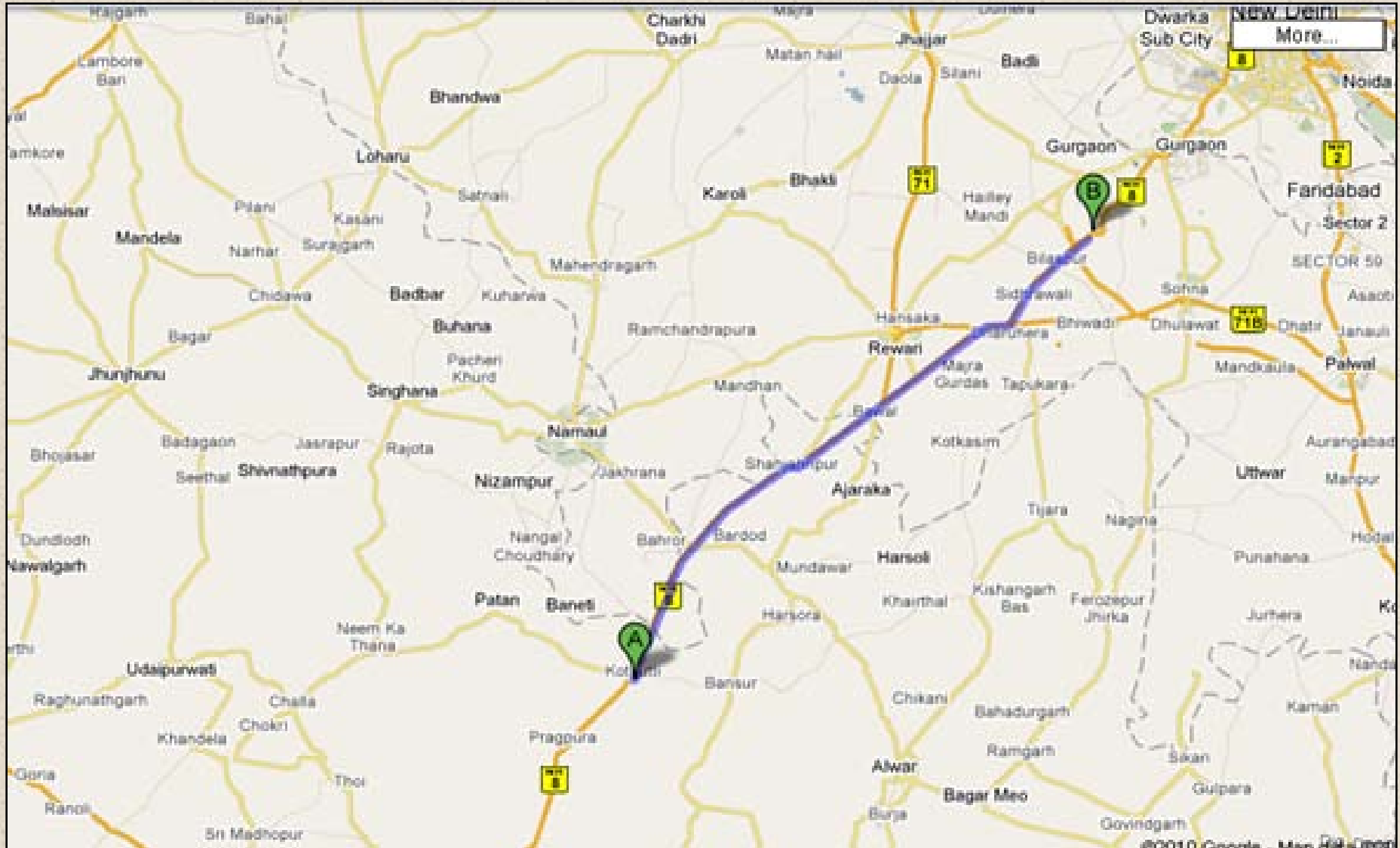
Routes selected for collection of data in various regions of India

Delhi City Route for Rural-M/s Maruti Suzuki India Ltd. collected the data in this region



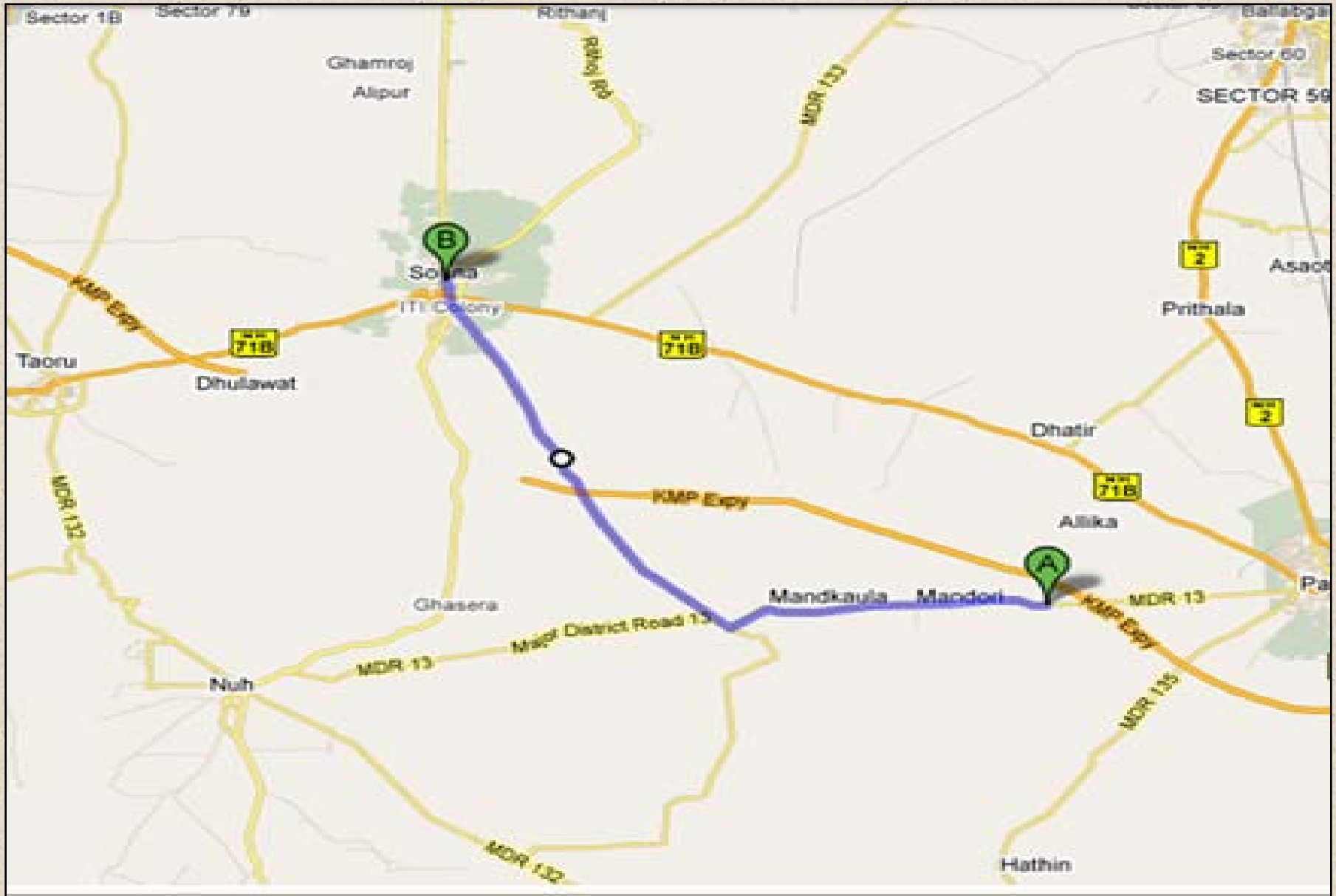
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Delhi City Route for Motorway- M/s Maruti Suzuki India Ltd. collected the data in this region



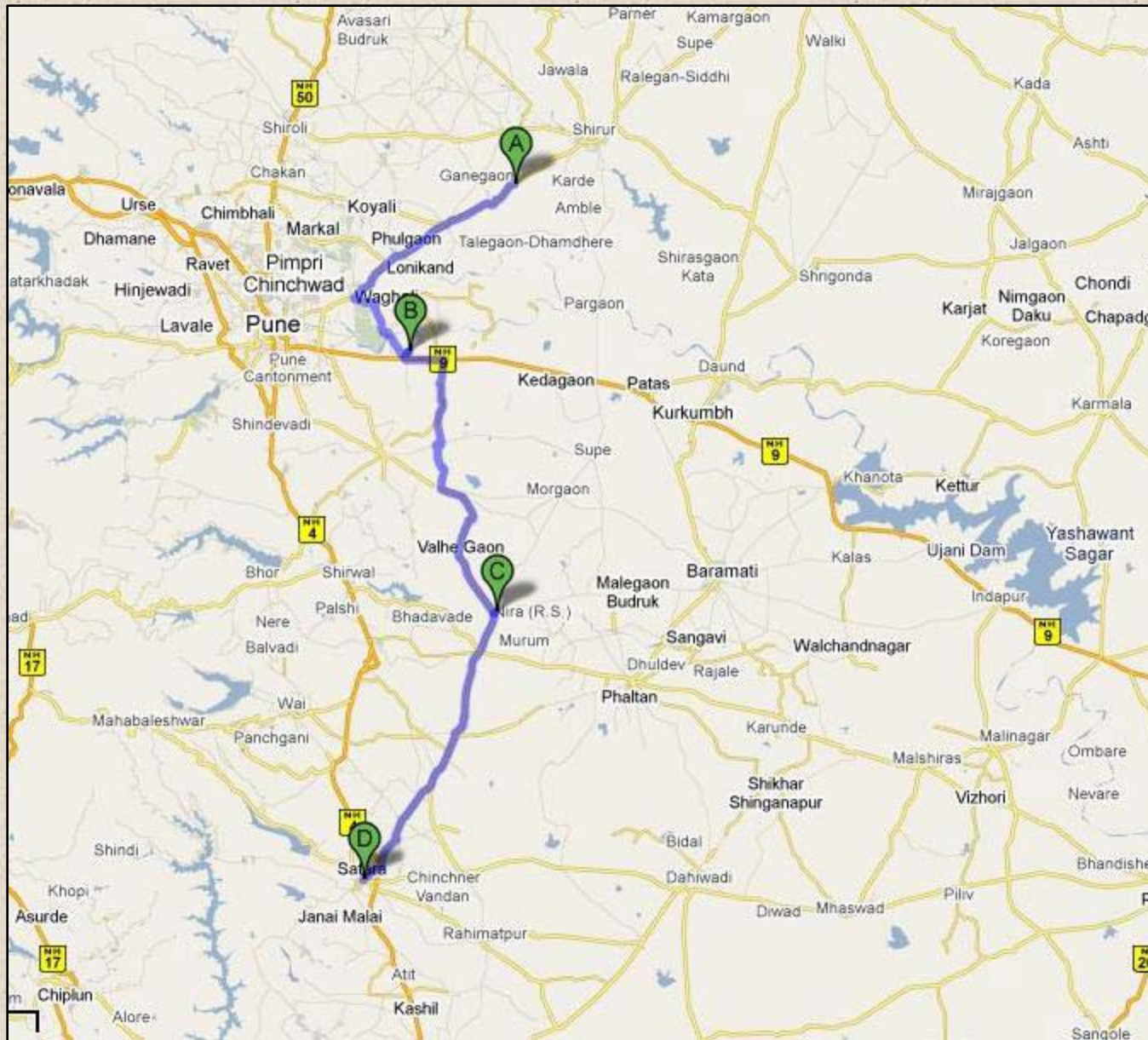
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Delhi City Route for Rural- M/s Maruti Suzuki India Ltd. collected the data in this region



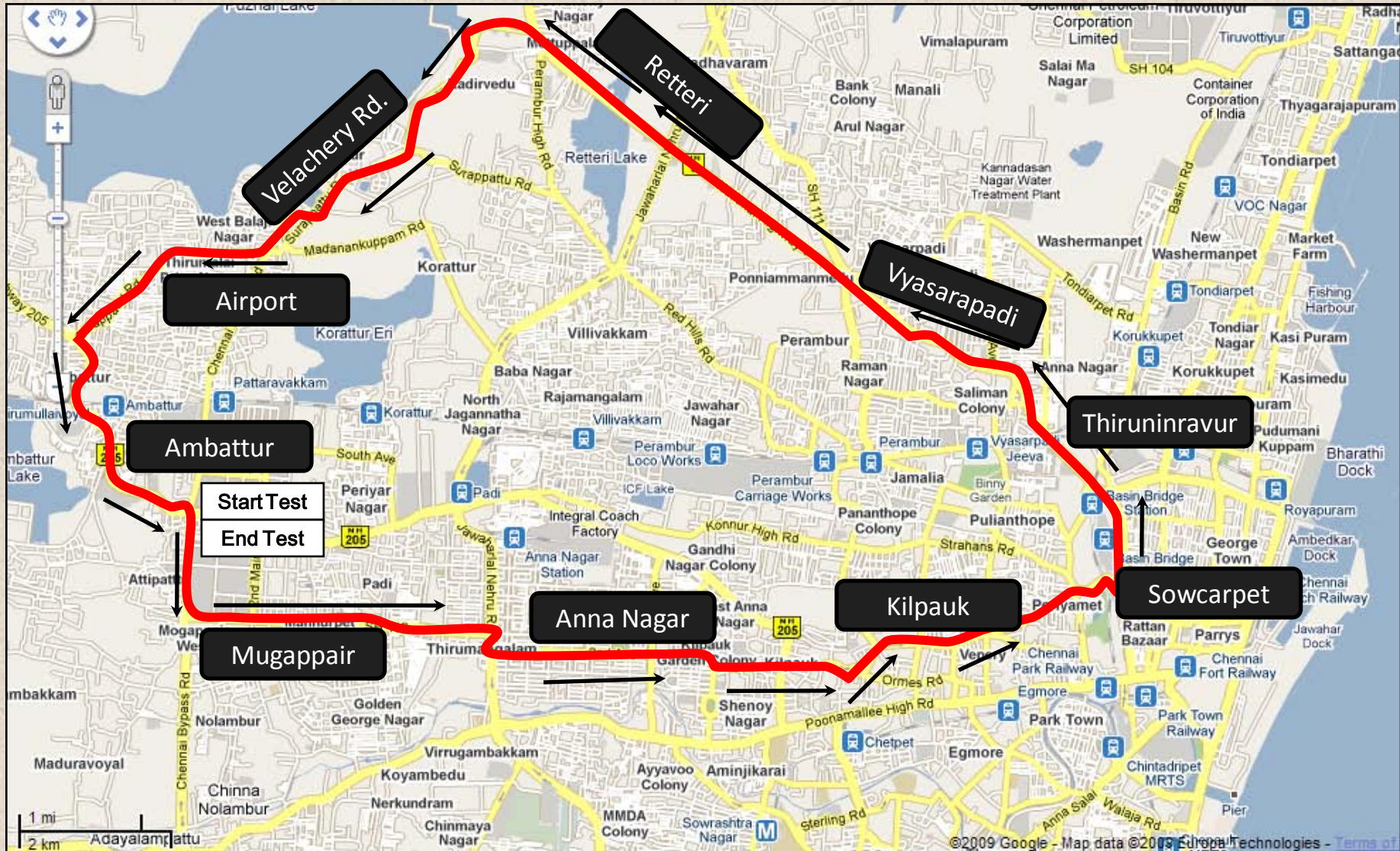
Routes selected for collection of data in various regions of India

Pune City Route for Rural- M/s Fiat India Automobiles Pvt. Ltd. collected the data in this region



Routes selected for collection of data in various regions of India

Chennai City Route for Urban- M/s Hyundai Motors India Ltd. collected the data in this region Route 1(North Chennai)



Routes selected for collection of data in various regions of India

Chennai City Route for Urban- M/s Hyundai Motors India Ltd. collected the data in this region Route 2



Routes selected for collection of data in various regions of India

Chennai City Route for Urban- M/s Hyundai Motors India Ltd. collected the data in this region Route 3



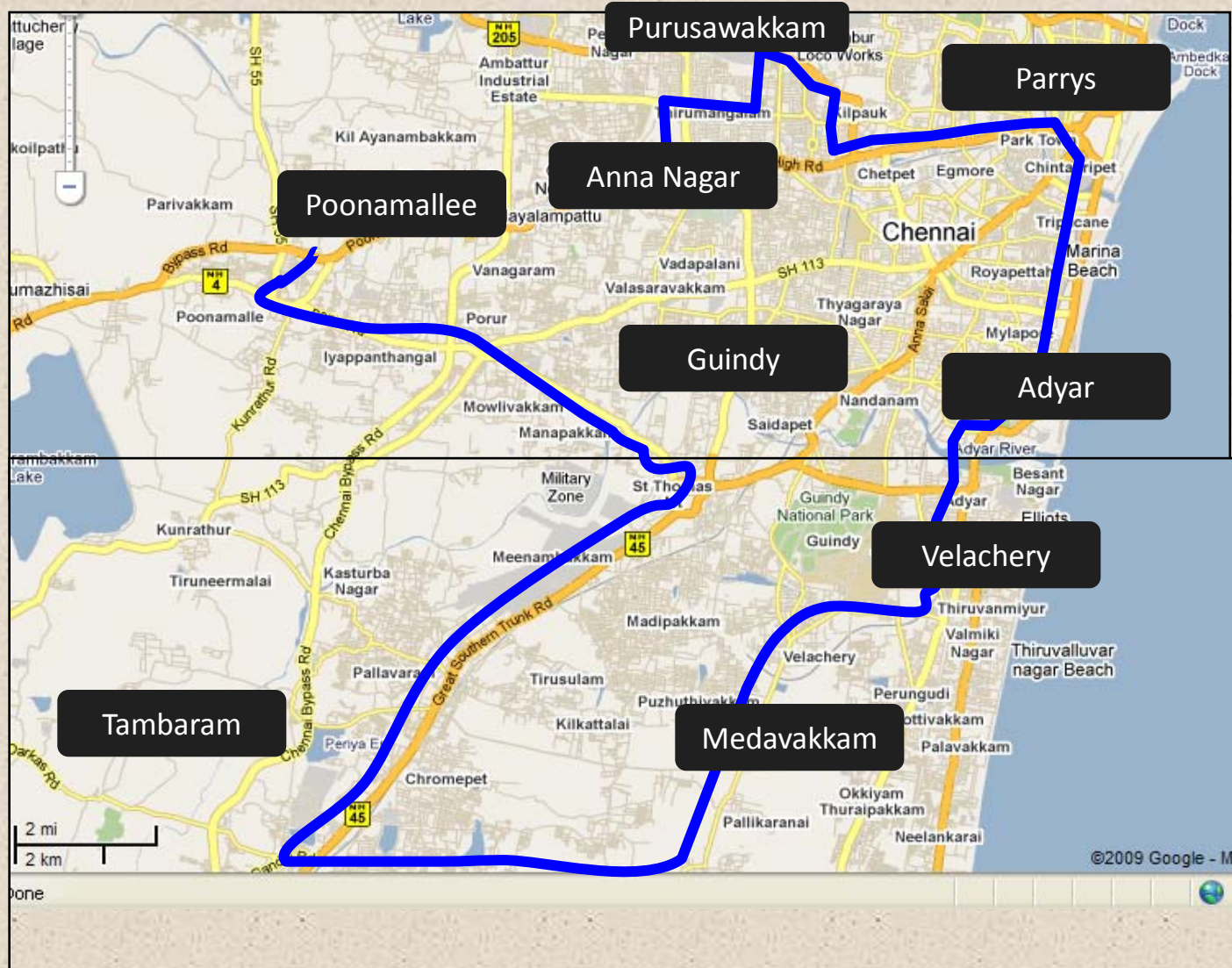
Routes selected for collection of data in various regions of India

Chennai City Route for Urban- M/s Hyundai Motors India Ltd. collected the data in this region Route 4



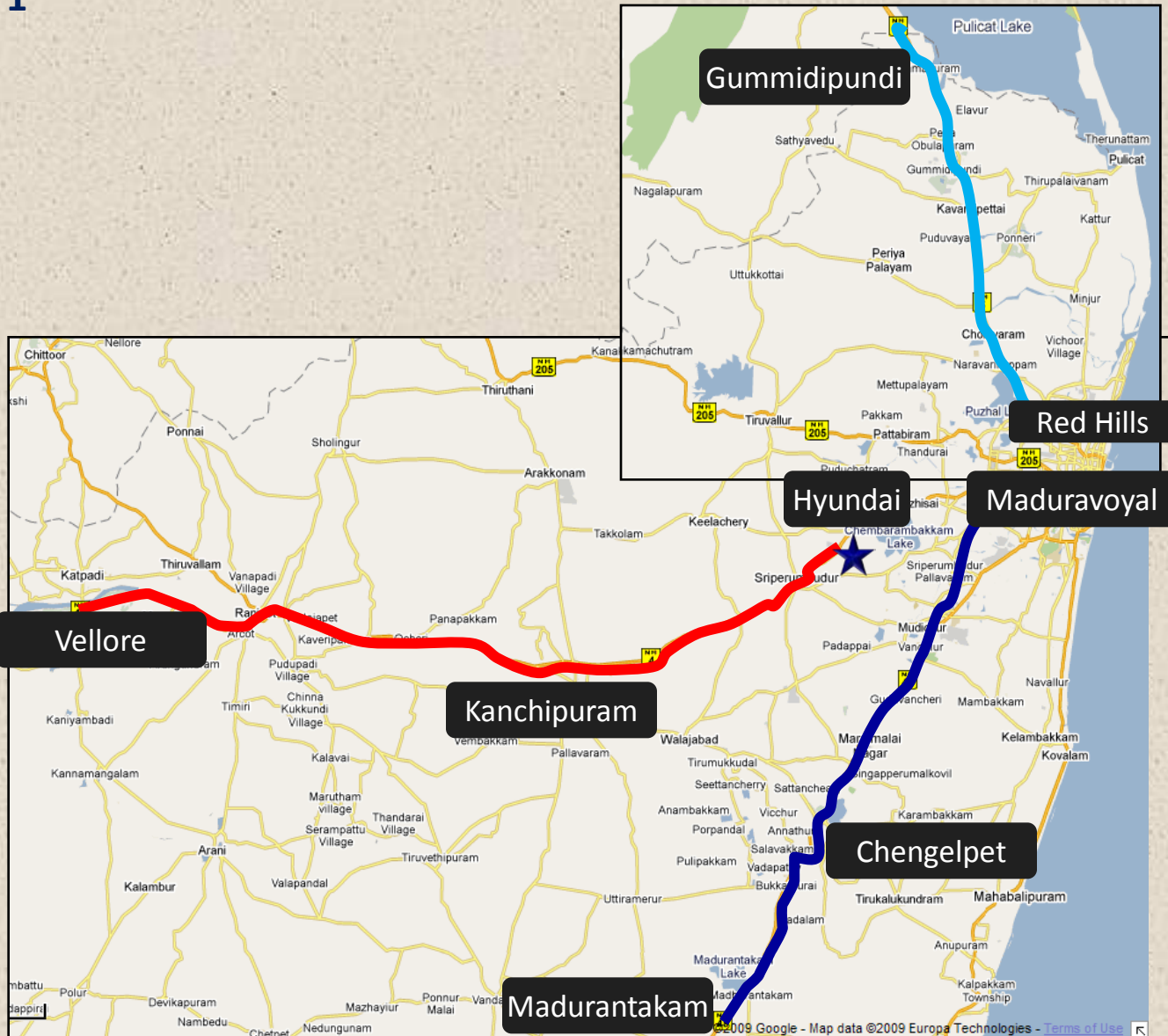
Routes selected for collection of data in various regions of India

Chennai City Route for Urban- M/s Hyundai Motors India Ltd. collected the data in this region Phase Two



Routes selected for collection of data in various regions of India

Chennai City Route for Motorway- M/s Hyundai Motors India Ltd. collected the data in this region Route 1



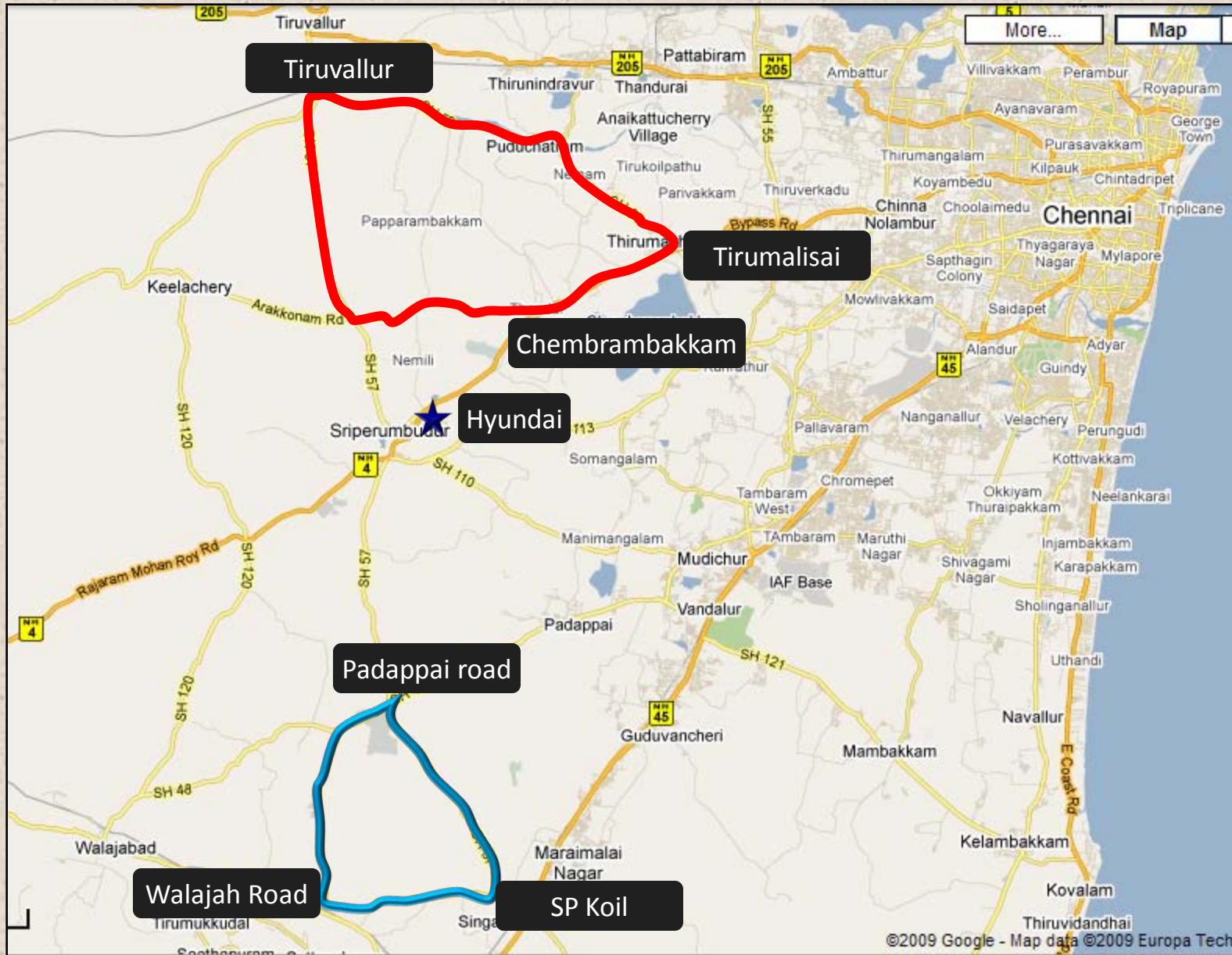
Routes selected for collection of data in various regions of India

Chennai City Route for Motorway- M/s Hyundai Motors India Ltd. collected the data in this region Route 2



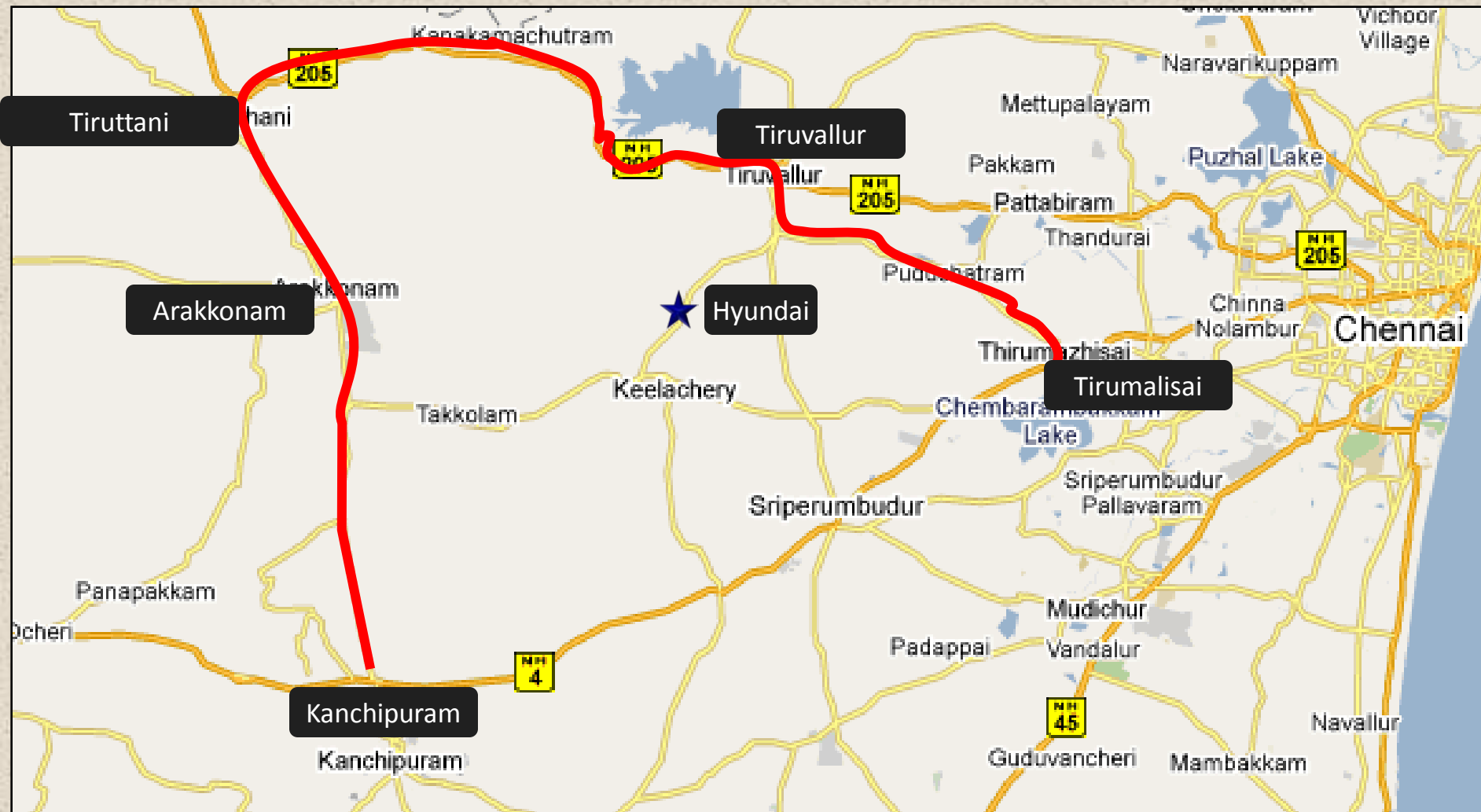
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Route 1



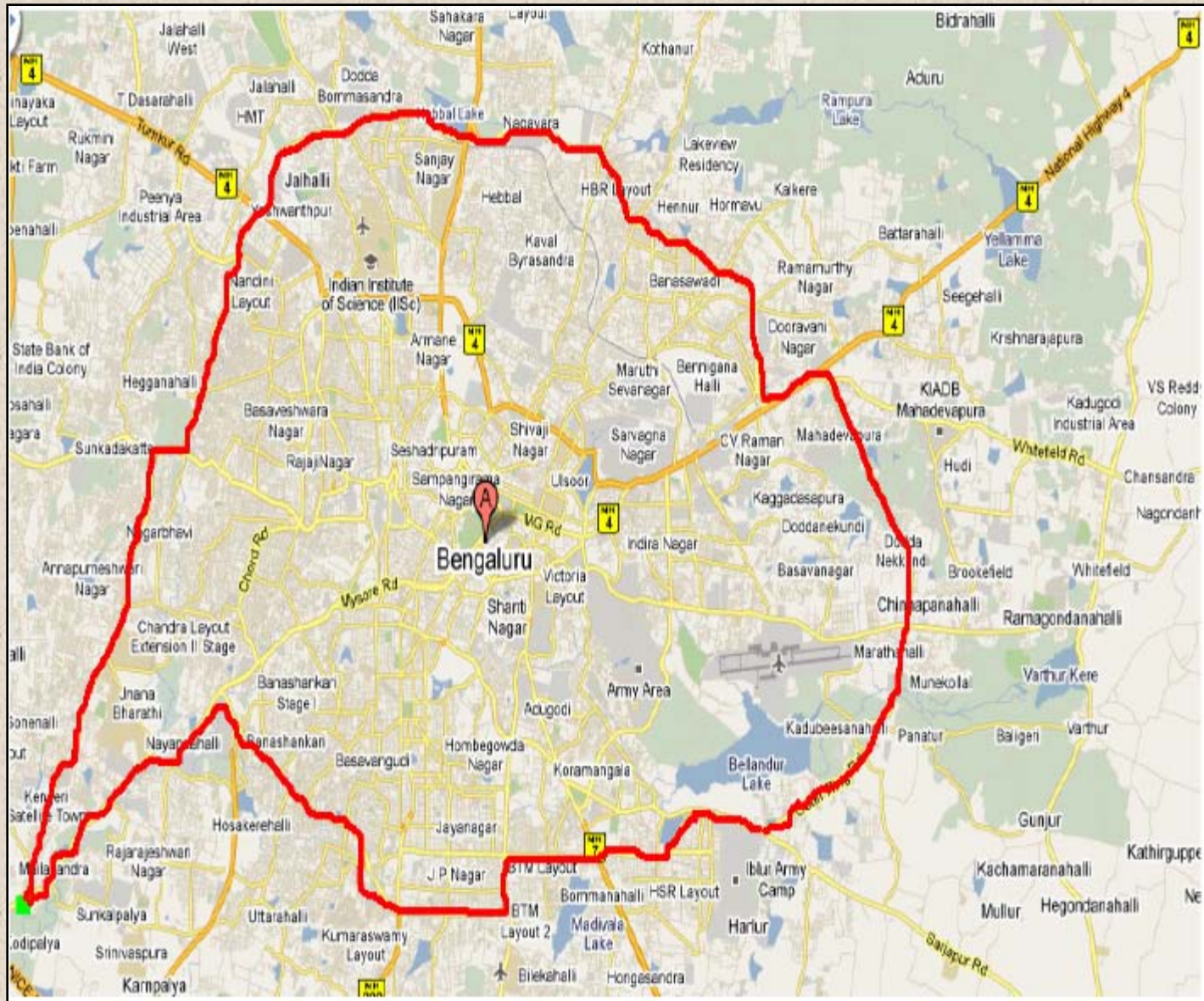
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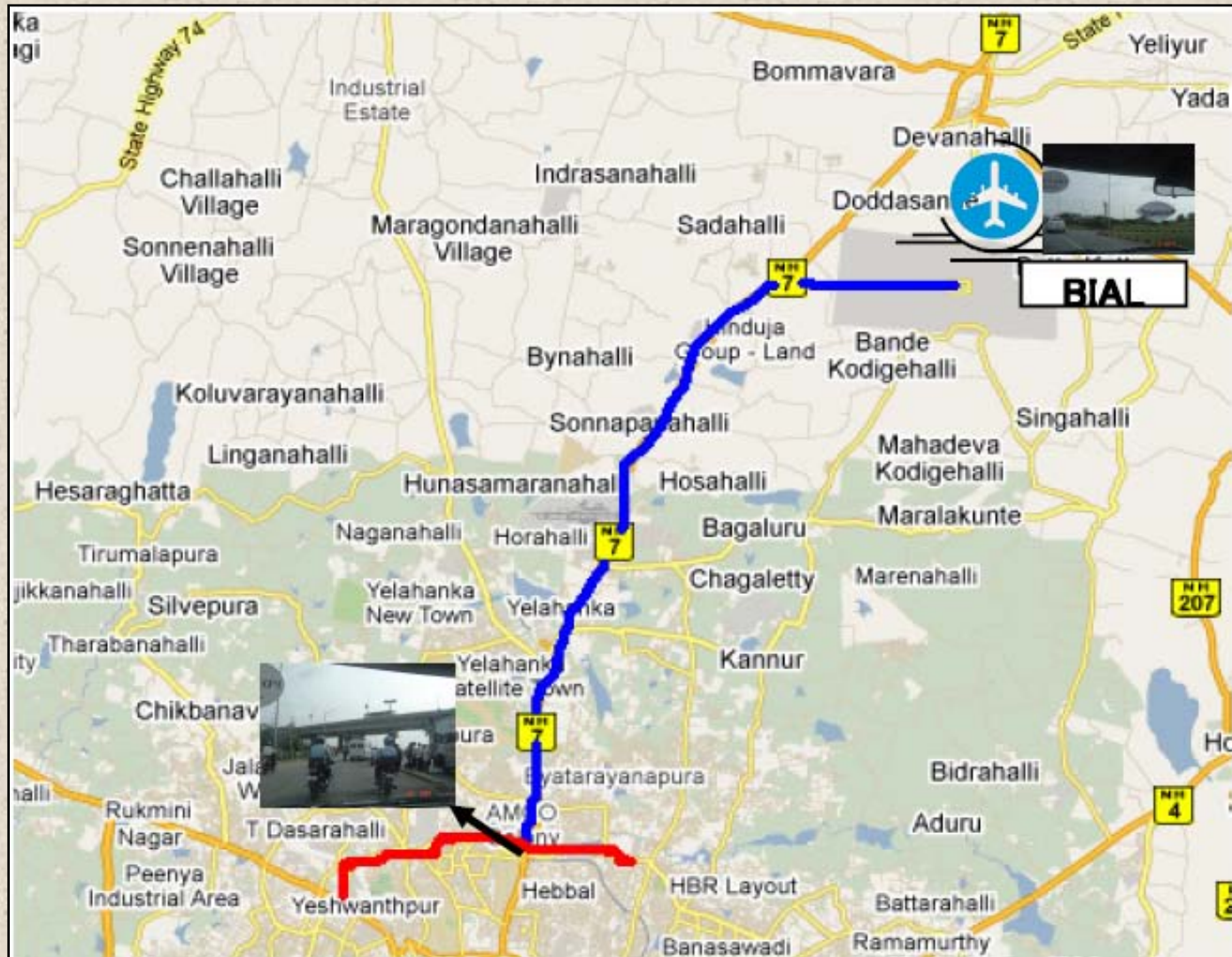
Routes selected for collection of data in various regions of India

Bengaluru City Route 1 for Urban-M/s Toyota Kirloskar Motors Ltd. collected the data in this region.



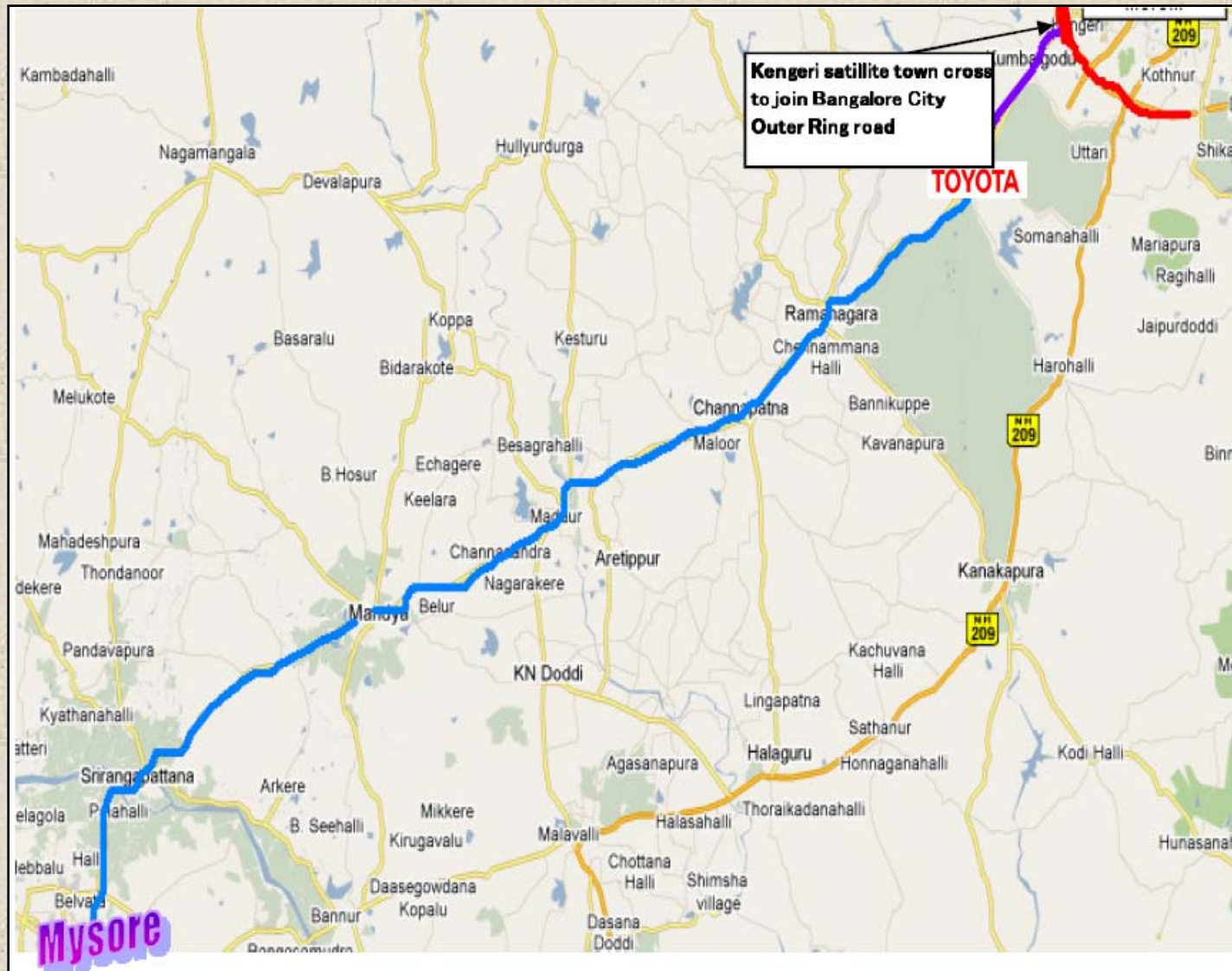
Routes selected for collection of data in various regions of India

Bengaluru City Route 2 for Urban-M/s Toyota Kirloskar Motors Ltd. collected the data in this region.



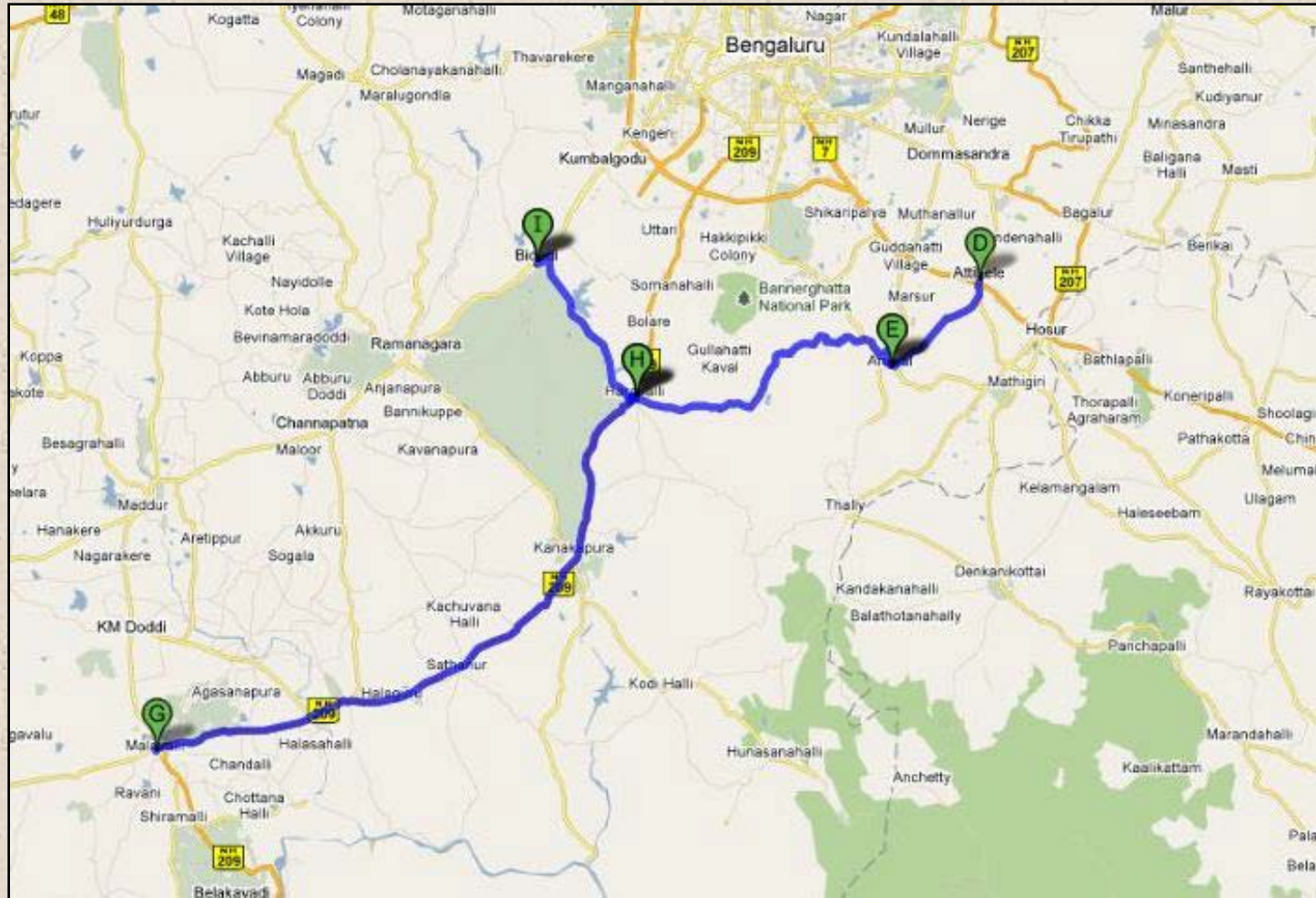
Routes selected for collection of data in various regions of India

Bengaluru City Route for Motorway- M/s Toyota Kirloskar Motors Ltd. collected the data in this region.



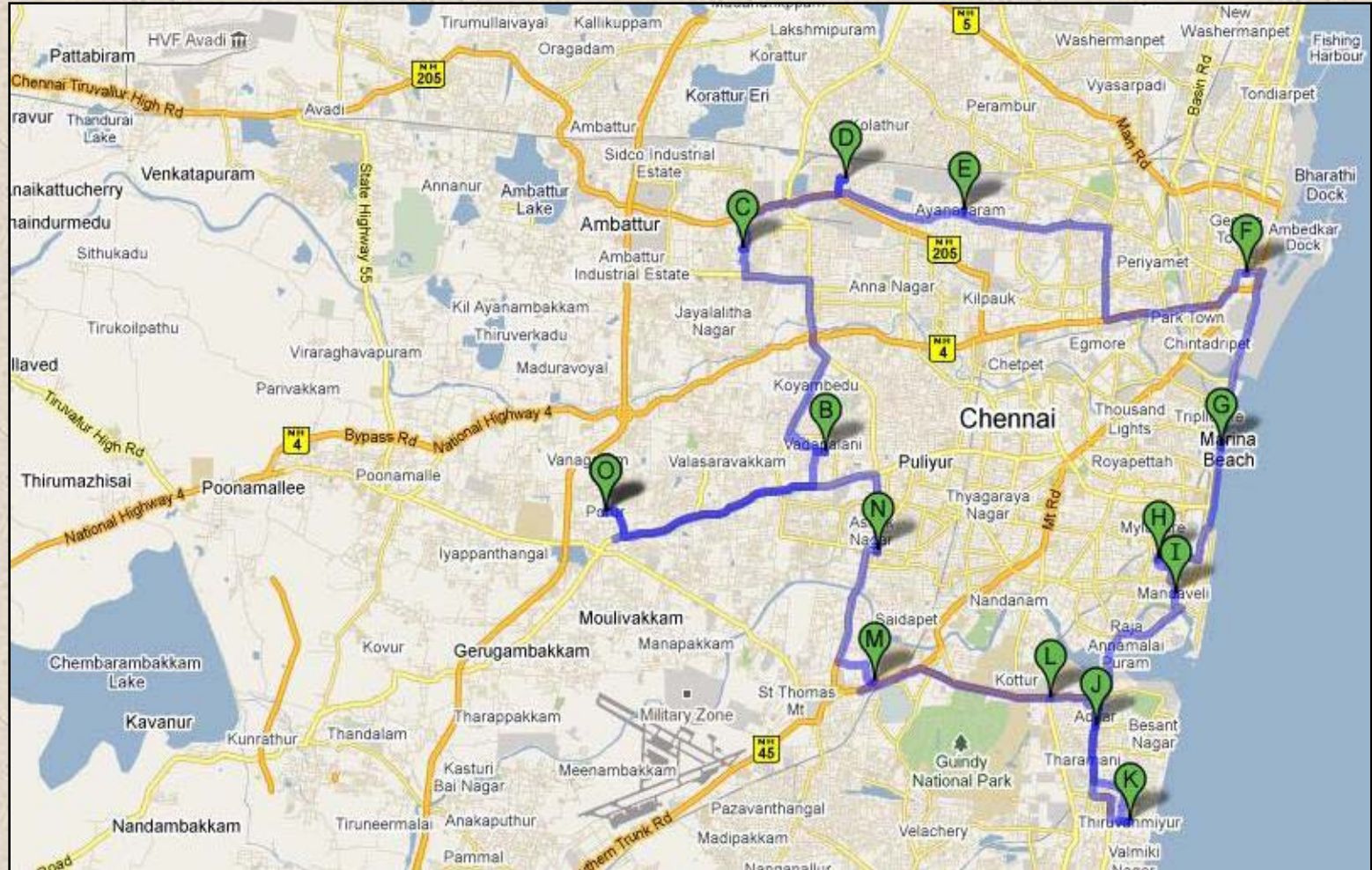
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Bengaluru City Route for Rural- M/s Toyota Kirloskar Motors Ltd. collected the data in this region.



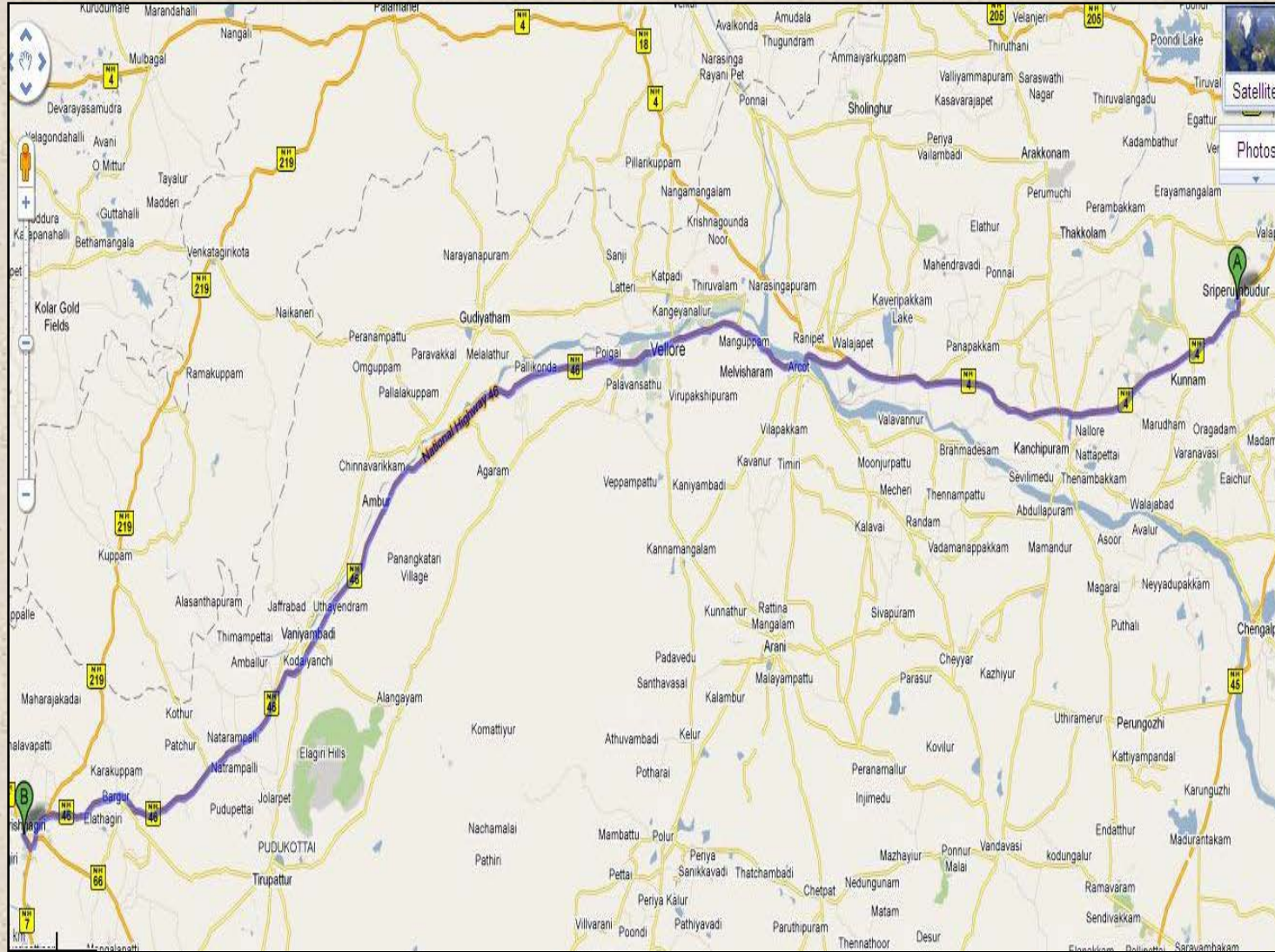
Routes selected for collection of data in various regions of India

Chennai City Route for Urban-M/s Nissan Ashok Leyland Ltd. collected the data in this region.



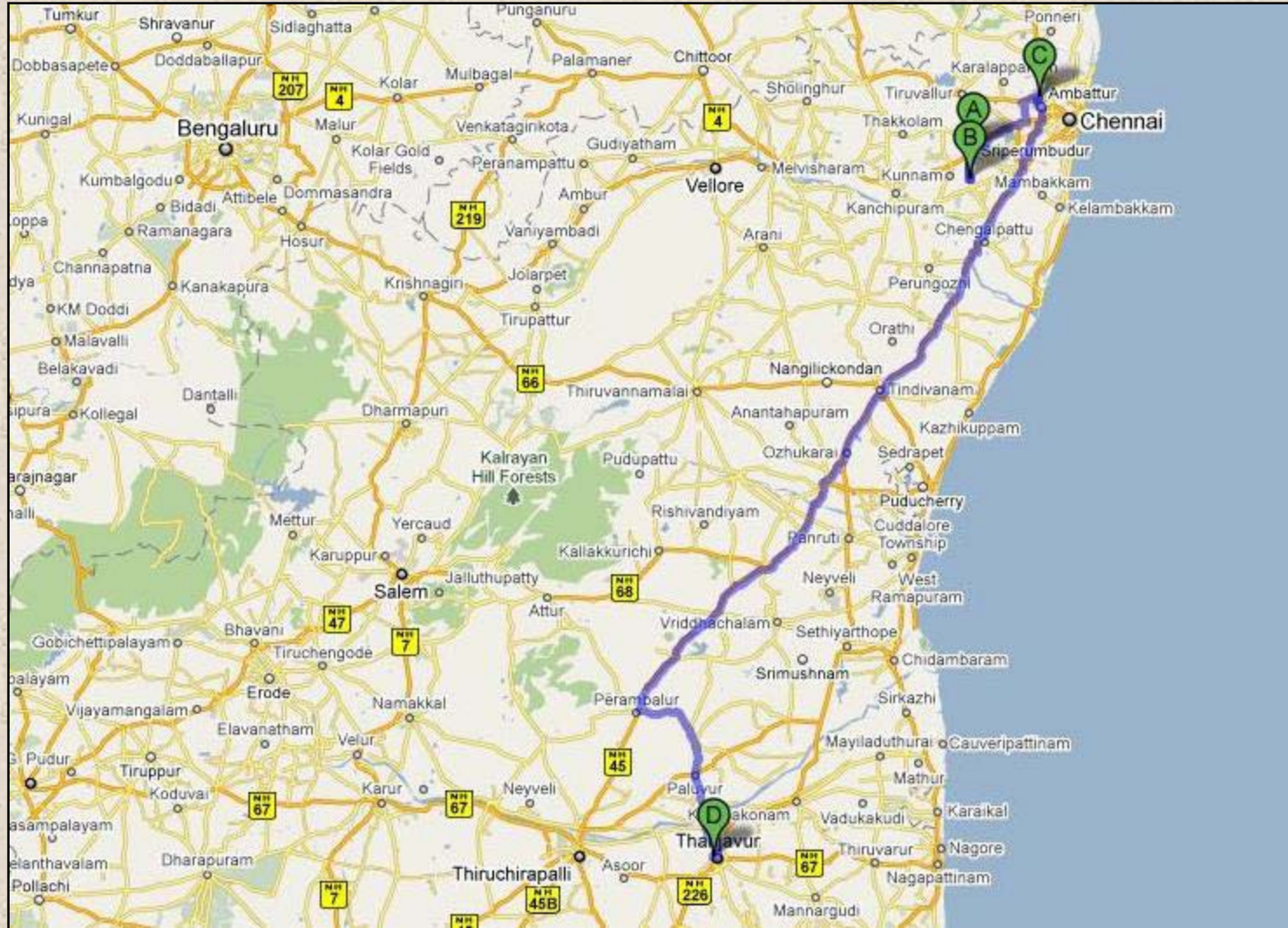
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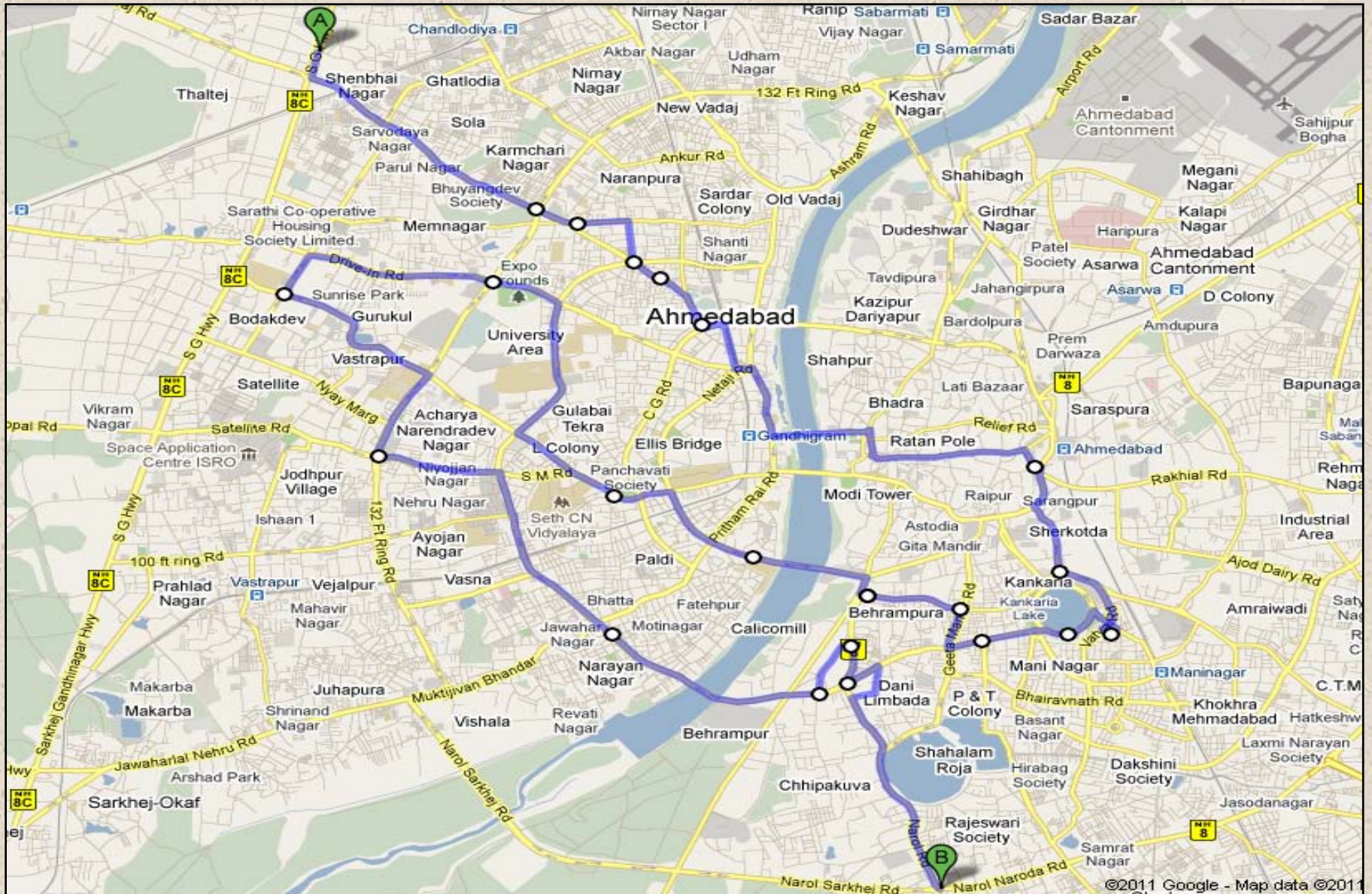
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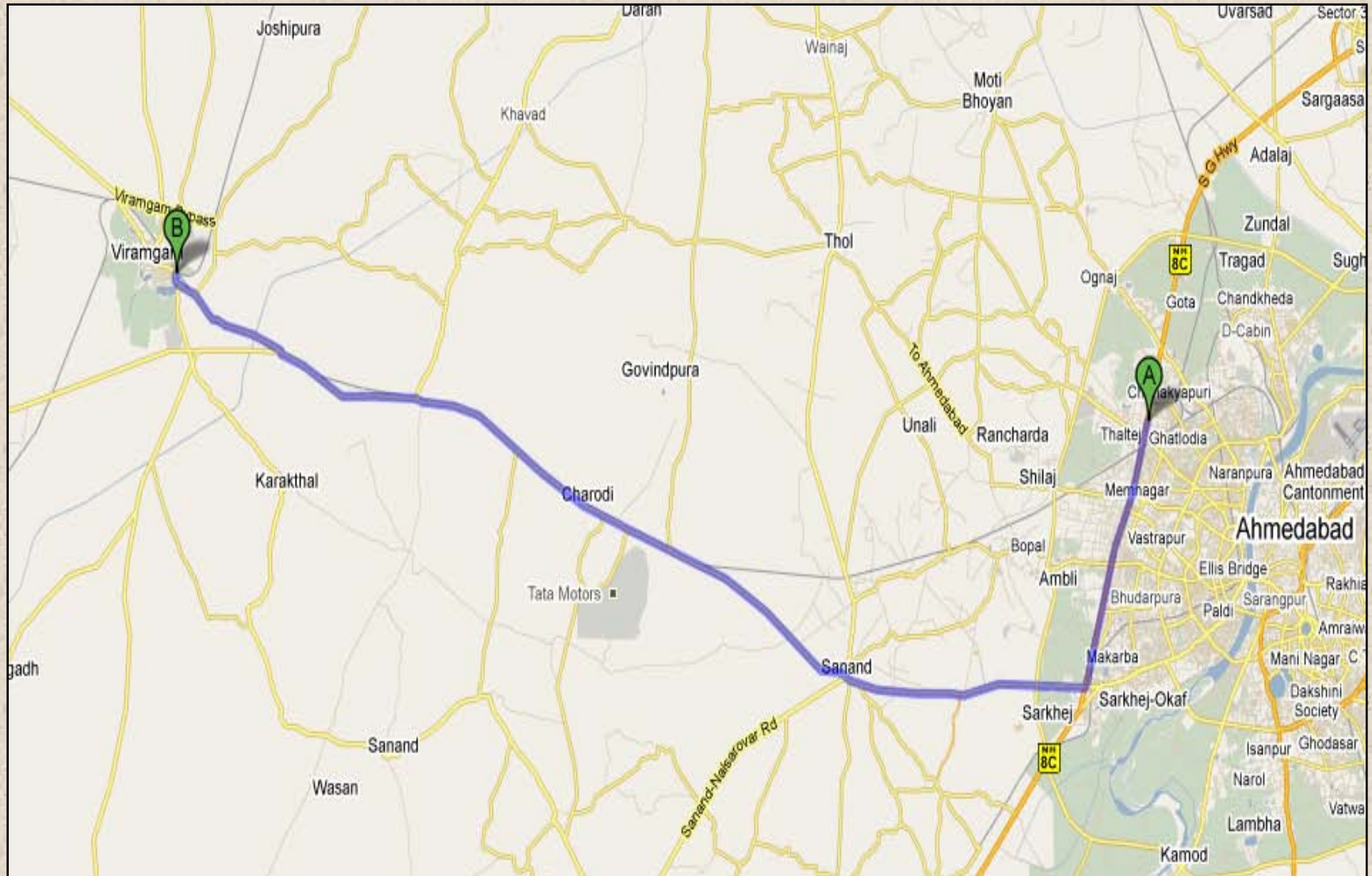
Routes selected for collection of data in various regions of India

Ahmadabad City Route for Urban-M/s Volkswagen India collected the data in this region.



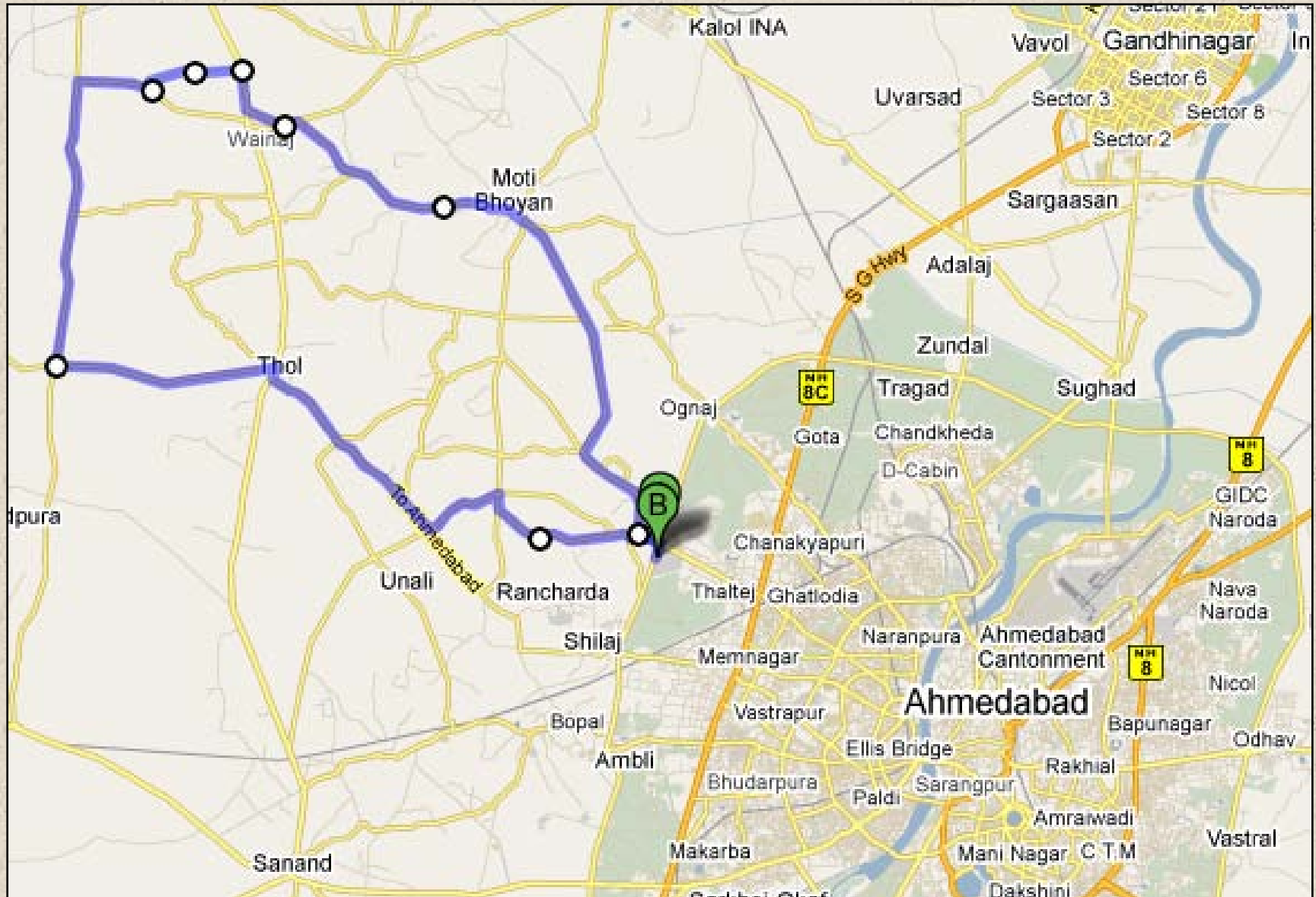
Routes selected for collection of data in various regions of India

Ahmadabad City Route for Motorway-M/s Volkswagen India collected the data in this region.



Routes selected for collection of data in various regions of India

Ahmadabad City Route for Rural-M/s Volkswagen India collected the data in this region.



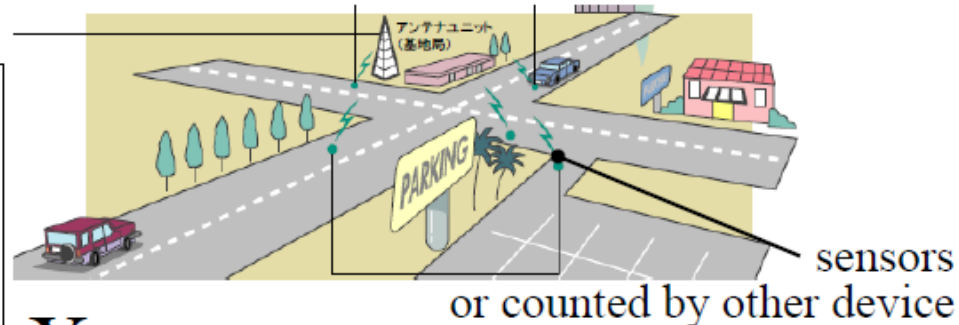
Method used for traffic count for calculation of weighting factor as per WLTP-DHC-02-04

3.3.8. How to Generate the Weighting Factor - Method 2 -

Road to be measured

- Urban
- Rural
- Motorway

Measured points : fairly
represent the region
conditions



X

Time to be measured

- On-peak (7~9AM & 5~7PM in Japan)
- Off-peak (rest of above hours)
- Weekend (Saturday & Sunday)

X

Minimum measure duration : 2 weeks

Items to be measured

- # of vehicles passed measured points per passenger cars & light commercial vehicles
- Average vehicle speed @ measured point
<- not mandate, can be deviated from in-use collection data.

Statistical Data of
Total Network Distance

- Urban : xxxxx km
- Rural : yyyyyykm
- Motorway : zzzzzzz km

Design for traffic counting for calculation of weighting factor

- Traffic counting is done at all the regions where In use data is collected.
- Traffic counting is done at representative locations of the route.
- Cities where traffic count is done are,
 1. Delhi
 2. Ahmadabad
 3. Mumbai
 4. Pune
 5. Bengaluru
 6. Chennai
- Traffic count is done in all the session like On Peak, Off peak on weekdays and weekend.

Test Design-Test vehicles & drivers

Vehicle Model	Vehicle Type (PC/CV/SUV)	Engine Type (Fuel)		
		Diesel	Gasoline	CNG
Xylo	SUV	√	-	-
Aria	SUV	√	-	-
Nano	PC	-	√	-
Grand Punto	PC	√	√	-
A Star	PC	-	√	-
Alto	PC	-	-	√
Swift	PC	√	-	-
WagonR	PC	-	√	-
i10	PC	-	√	-
i20	PC	-	√	-
Etios	PC	-	√	-
Jazz	PC	-	√	-
Linea	PC	√	√	-
Vento	PC	√	-	-
Bolero Camper	CV	√	-	-
Gio	CV	√	-	-
Ace	CV	√	-	-
Dost	CV	√	-	-

- ✓ Total 20 vehicles used (SUV- 2, PC-14 and CV-4)*
- ✓ All vehicles are Manual Transmission
- ✓ The drivers cover all range of age i.e. young, middle and old.
- ✓ Test drivers age share,
 1. 20s- 30%
 2. 30s to 40s- 66%
 3. 50s or above- 2%
- ✓ Test drivers were instructed to follow the traffic flow and not paid for fuel cost.

* SUV-Sports utility vehicle, PC-Passenger cars, CV-Commercial Vehicle

Test Design- Road Type

- Using concept of administrative boundaries,
 - ✓ Urban
 - It should have a core town of a minimum population size of 50,000.
 - speed limit is from 20 to 40 kmph.
 - ✓ Rural
 - Rural applies to sparsely settled or agricultural country
 - speed limit is from 40 to 60 kmph.
 - ✓ Motorway
 - A main public road, especially one connecting towns and cities.
 - speed limit is from 60 to 80 kmph.

Test Design-Time of data collection

- **Data collection was done from December to April**

- ✓ Mid winter / mid summer
- ✓ Different weather conditions taken

- **Test period was decided on the basis of the characteristics of the region.**

- ✓ Peak hour- 8 to 11 AM, 5 to 8 PM in weekdays
- ✓ Off peak hour- Rest of the above hours
- ✓ Weekend - Saturday and Sunday

- **Target distance per day**

Session	Urban	Rural	Motorway
Morning	40	40	100
Afternoon	40	40	--
Evening	40	40	100
Total	120	120	200

Test Design-The amount of data collection

Vehicle Model	Urban	Rural	Motorway	Total
Xylo Diesel	1249	1331	2165	4745
Bolero Camper Diesel	701	526	816	2043
Gio Diesel	561	836	1355	2753
Ace Diesel	640	1730	1744	4114
Nano Gasoline	376	489	1034	1899
Aria Diesel	388	470	1193	2051
Punto Diesel	480	240	840	1560
Punto Gasoline	0	1345	1821	3165
Linea Gasoline	145	244	480	869
Linea Diesel	1129	832	1089	3049
A Star Gasoline	550	450	600	1600
Alto CNG	550	450	600	1600
Swift Diesel	1165	0	1160	2325
WagonR Gasoline	480	420	800	1700
i10 Gasoline	4544	2654	5892	13090
i20 Gasoline	480	287	590	1357
Etios Gasoline	2220	1030	2095	5345
307 DOST Diesel	2205	1619	4441	8265
Jazz Gasoline	927	1047	1100	3074
Vento Diesel	591	1415	1760	3766
	19381	17415	31575	68370

Total Data from India: 68370 km

Total Number of vehicles;

Passenger Cars (M1)- 16 & Commercial vehicles(N1)-4

Thank You