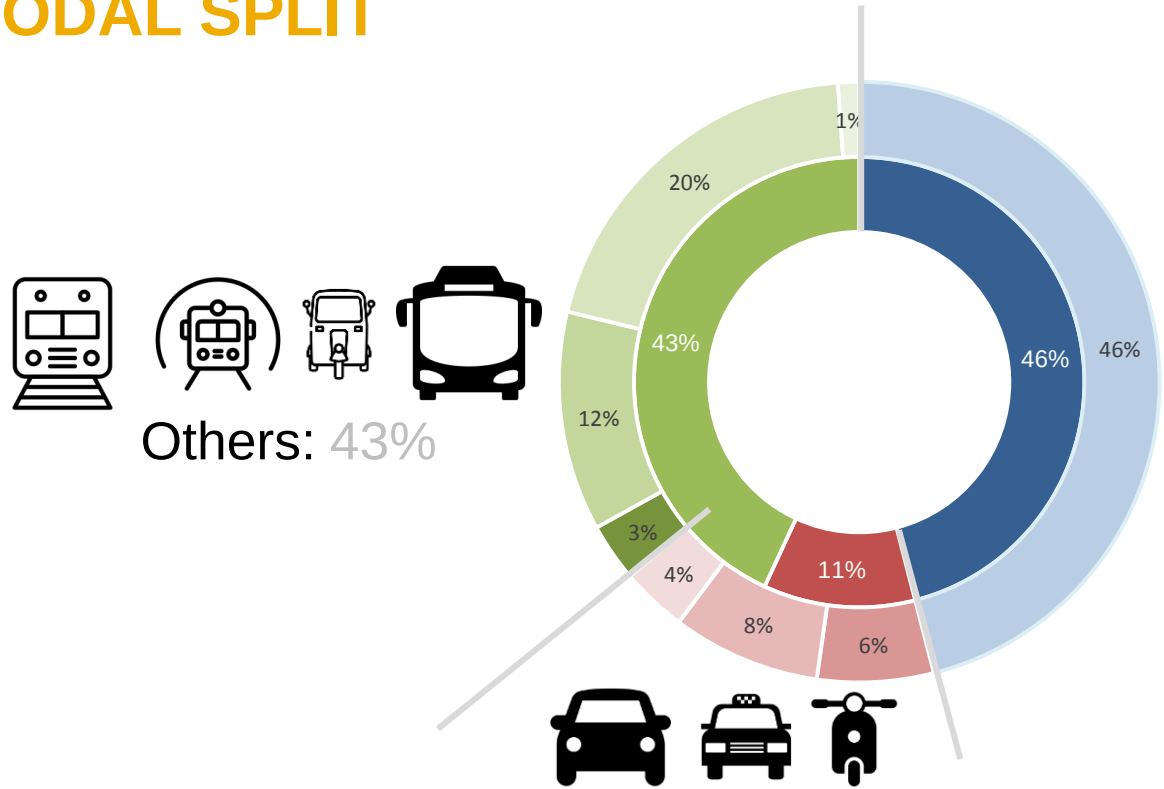
WRI INDIA
ROSS CENTER

MUMBAI METROPOLITAN REGION TRANSPORT NETWORK- A REVIEW

EU-Mumbai Partnership-Sustainable Urbanization Planning Workshop
25 March 2019

MADHAV PAI

MODAL SPLIT



Others: 43%

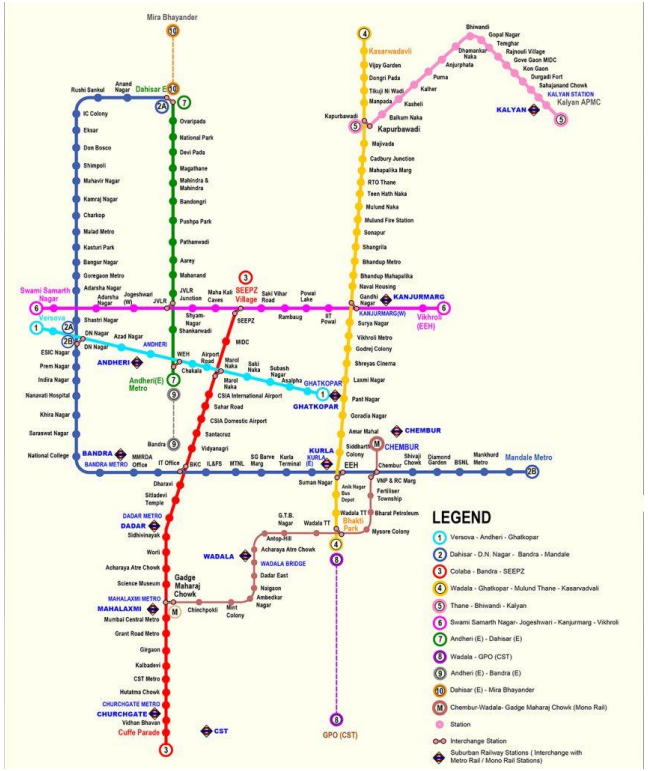
Pedestrians: 46%

Motorised: 11%

CMP2016, Data collected for 2014

MUMBAI METRO

Line	Detail/ Connecting stations/ OG/UG	EL or UG	Status	Length (km)	Cost (INR) in Crores
1	Versova – Andheri – Ghatkopar	EL	Operational	11.4	2,356
2A	Dahisar (E) – D.N. Nagar	EL	Under Construction	18.6	6,410
2B	D.N. Nagar – Mankhurd	EL	Under Construction	21.4	10,986
3	Colaba – BKC – SEEPZ	UG	Under Construction	33.5	23,136
4	Bhakti Park (Wadala) – Ghatkopar – Thane – Kasarvadavali	EL	Under Construction	32.3	14,549
4A	Kasarwadavali-Gaimukh	EL	Tendering	2.7	949
5	Thane – Bhiwandi – Kalyan	EL	Approved (bidding process)	23.1	8,416
6	Lokhandwala – Jogeshwari – Kanjurmarg	EL	Under Construction	10.5	6,672
7	Dahisar(E) – Andheri(E)	EL	Under Construction	18	6,208
7A	Andheri-CSIA	UG	Tendering	3.2	TBA
8	CSIA T2-NMIA	UG-EL	Proposed	35	15,000
9	Dahisar (East)-Mira-Bhayander	EL	Tendering	10.3	6,607
10	Gaimukh-Shivaji Chowk (Mira Road)	TBA	Approved (bidding process)	9	4,476
11	Wadala-CSMT	UG-EL	Approved (bidding process)	11.4	8,739
12	Kalyan – Dombivli – Taloja	TBA	Proposed- undergoing feasibility study	25	4,132
			Operational + UC	**145.7**	**1,11,277**

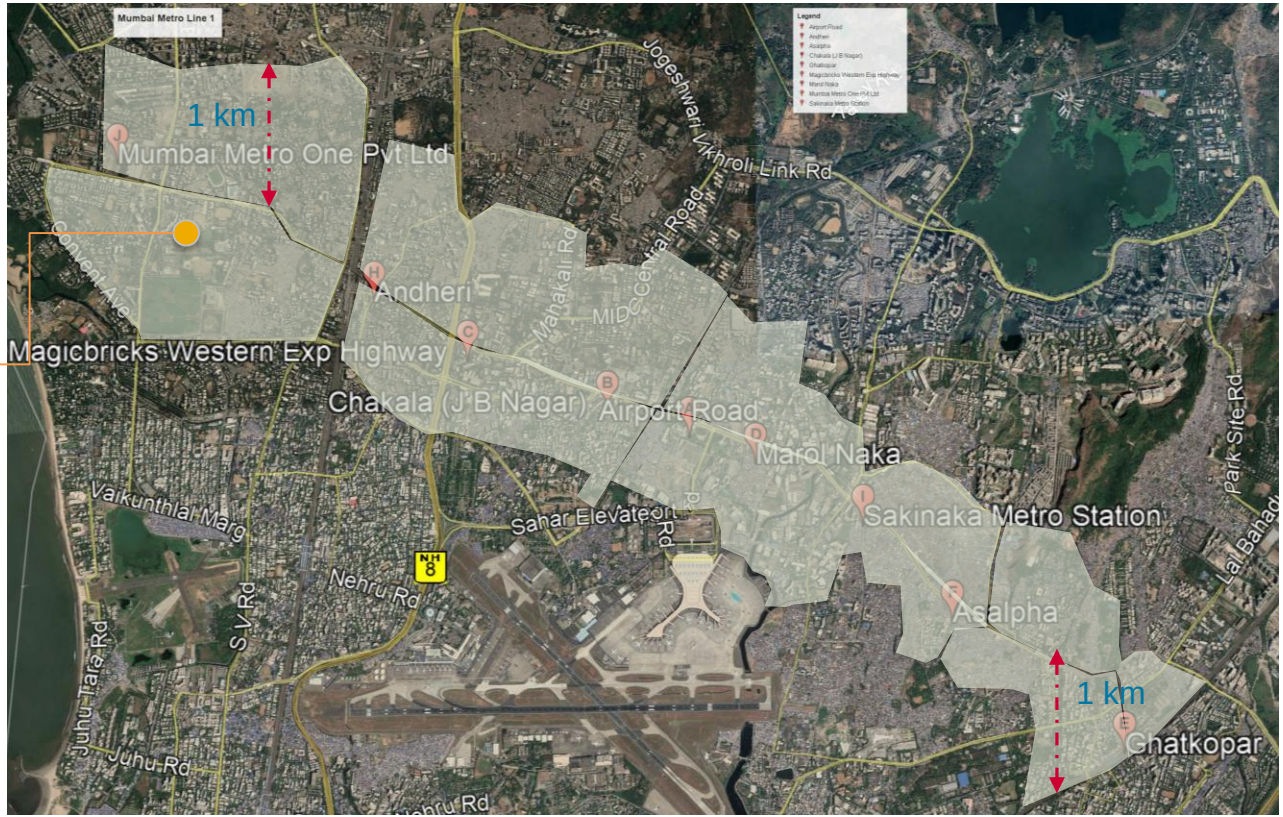


JOB DENSITY ACROSS METRO LINE 1

357,340
formal jobs

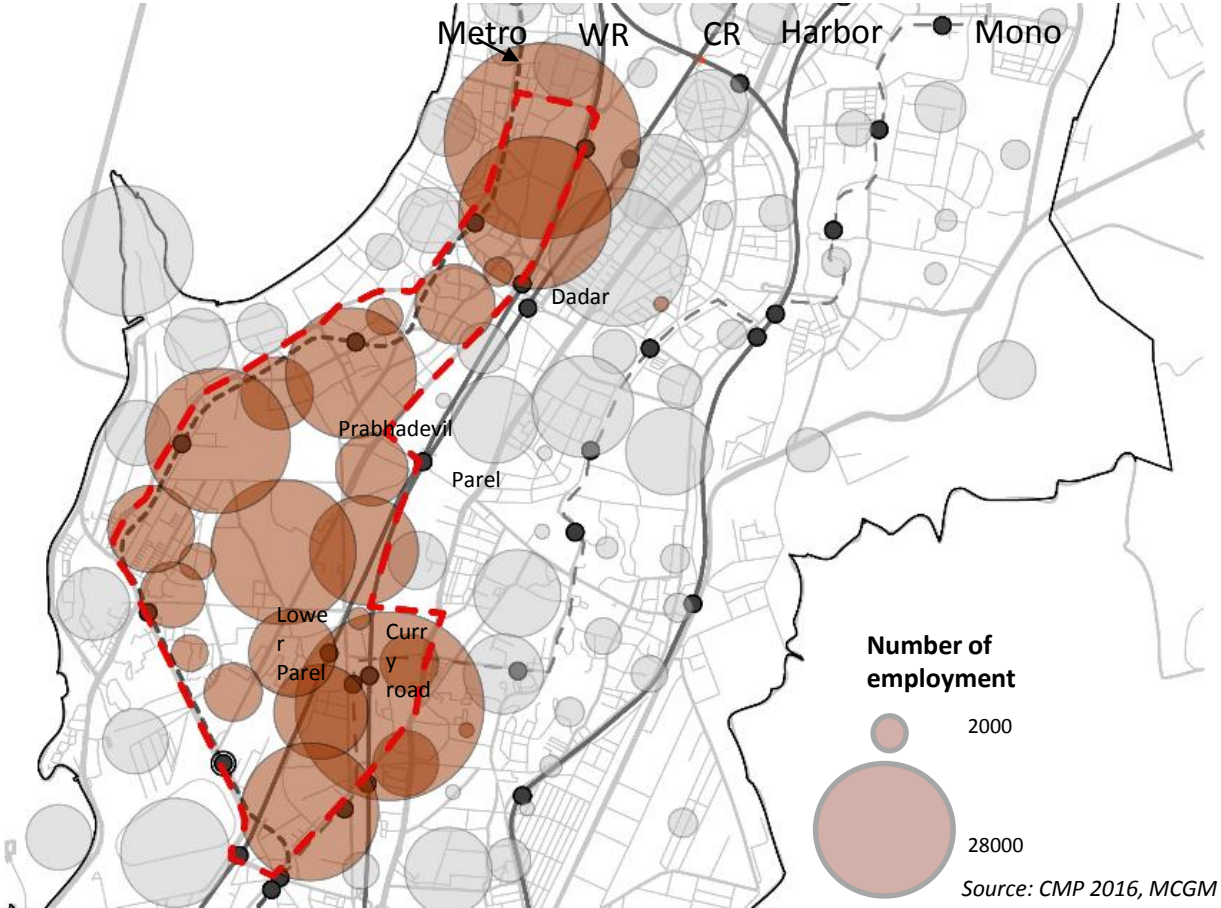
20,000
Jobs/Sqkm

581,404
formal + informal jobs



CMP of Greater Mumbai (2016); Image: Google Earth Pro

Employment density in Emerging CBD - Lower Parel



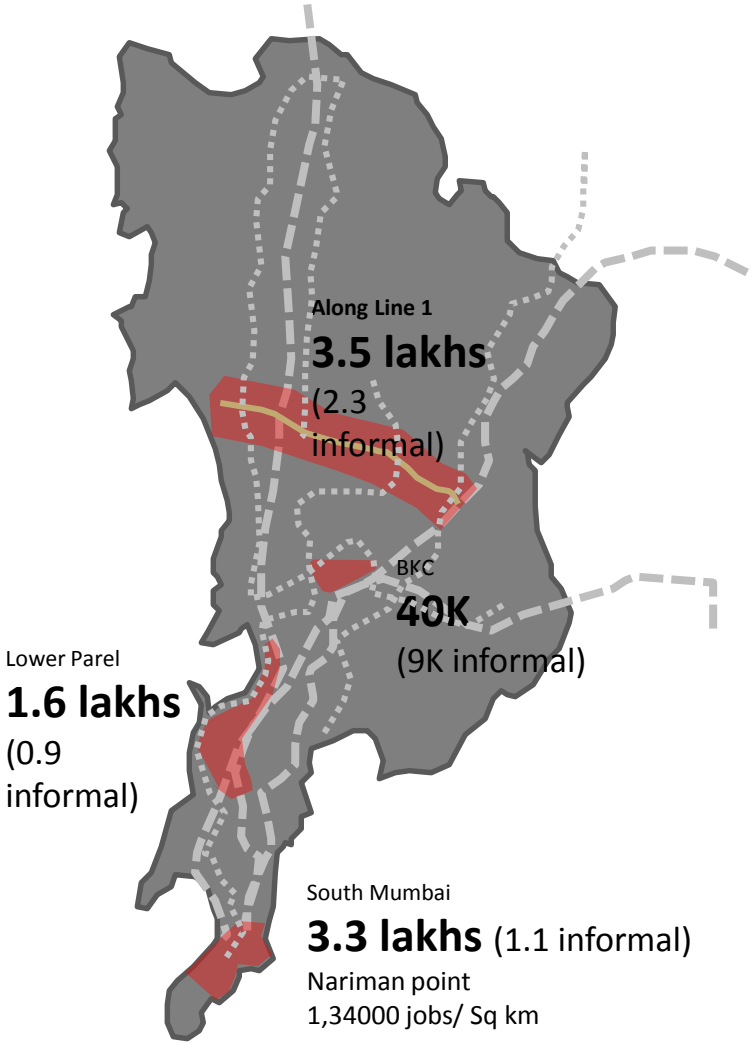
Employment density:

38,500 Jobs/ Sq Km

2.5 Lakhs jobs in 6.4 Sq km area

64% Formal (office + Industry jobs)

By 2034 **50,000** Jobs/ Sq Km



Formal Employment in CBDs as catchment for Metro

Total Formal Jobs (office + industry) = **3.3 Million**

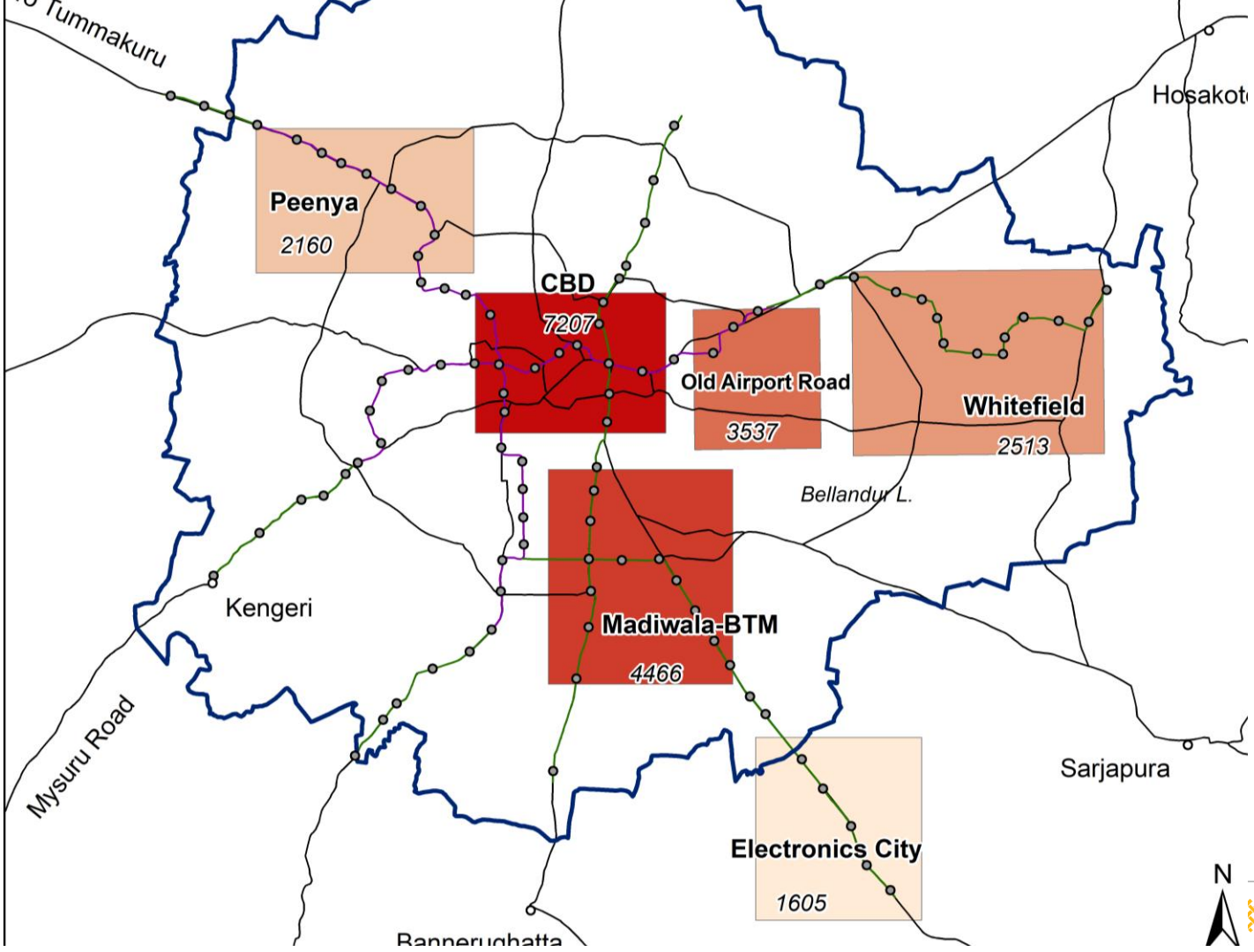
CBD Formal jobs = **0.9 Million**

Source: CMP 2016, MCGM

CBD JOBS DENSITY IN LEADING WORLD CITIES

BY CBD EMPLOYMENT DENSITY

Urban Area	Business District	Employment in Business District	Land Area: Square Miles	Employment per Square Mile	Employment per Square Kilometer	Year
New York	Midtown Core	739,452	1.2	606,108	233,838	1990
Hong Kong	Core CBD	193,520	0.4	443,897	171,257	1990
New York	Downtown Core	340,028	0.8	441,595	170,368	1990
Chicago	CBD Core (Loop)	385,399	1.0	374,902	144,638	1990
Paris	La Defence	140,000	0.6	233,333	90,021	2000
New York	South of 59 St.+++	1,967,000	8.9	221,672	85,522	1990
Hong Kong	Victora-Kowloon+	1,107,593	5.5	200,901	77,508	1990
Toronto	CBD	143,650	0.7	198,054	76,410	1990
San Francisco	CBD	291,036	1.5	192,932	74,434	1990
Washington	CBD	316,723	1.8	178,467	68,853	1990
Seoul	CBD	1,226,830	8.2	150,210	57,951	1990
Tokyo	CBD Core	2,434,163	16.3	149,795	57,791	2001
Seattle	Seattle CBD Core	98,620	0.7	146,104	56,367	1990
Melbourne	CBD	126,286	0.9	137,535	53,061	1990
Brisbane	CBD	61,844	0.5	137,008	52,858	1990
Frankfurt	CBD	119,735	0.9	129,314	49,890	1990
Brussels	CBD	144,906	1.2	121,947	47,047	1990
Ottawa	CBD	82,307	0.7	121,908	47,032	1990
Los Angeles	L.A. CBD Core	167,297	1.4	116,178	44,822	1990
London	CBD	1,260,500	11.5	109,829	42,372	1990
Sydney	CBD	175,620	1.6	109,425	42,216	1990



JOBS DENSITY PER SQ KM BENGALURU

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Hong Kong

Kowloon Bay Sports Garden
Tak Po Garden
Amoy Garden
Wai Yip Street
Ngau Tau Kok Road
Kai Cheung Road
Telford Garden
Kindergarten
Post Office
Secondary School
Telford Recreation Club
ICAC
Telford Plaza 1
Kowloon Bay MTR Station
Kwun Tong Road
Lower Ngau Tau Kok Estate
Tak Fuk Building
Wai Yip Street
Chevalier Centre
Telford Plaza 2
N

Category:Land developers of Hong Kong

From Wikipedia, the free encyclopedia

*See also **Real estate developer**.*

Wikimedia Commons media related to *Land developers in Hong*

Subcategories

This category has the following 8 subcategories, out of 8 total.

C

- Chinachem (8 P)

H

- Hongkong Land (18 P)

M

- MTR Corporation (5 C, 39 P)

N

- New World Development (2 C, 24 P)

S

- Sino Group (1 C, 30 P)

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Property management [edit]

Main article: MTR Properties

Property is one of the main businesses of the MTR generating most of the profits. In 2009 of a net profit of HK$7.3 billion, MTR HK$2.12 billion from transport operations.[13] The MTR tries to develop suitable sites related to their new railway projects and t land situated in West Kowloon that is owned by the MTR will be developed into an area with residential, office and retail space the Bank of China are to have office towers there. Furthermore, will be more than 7,000 housing units in the development. The well as the International Finance Centre.

Shopping centres [edit]

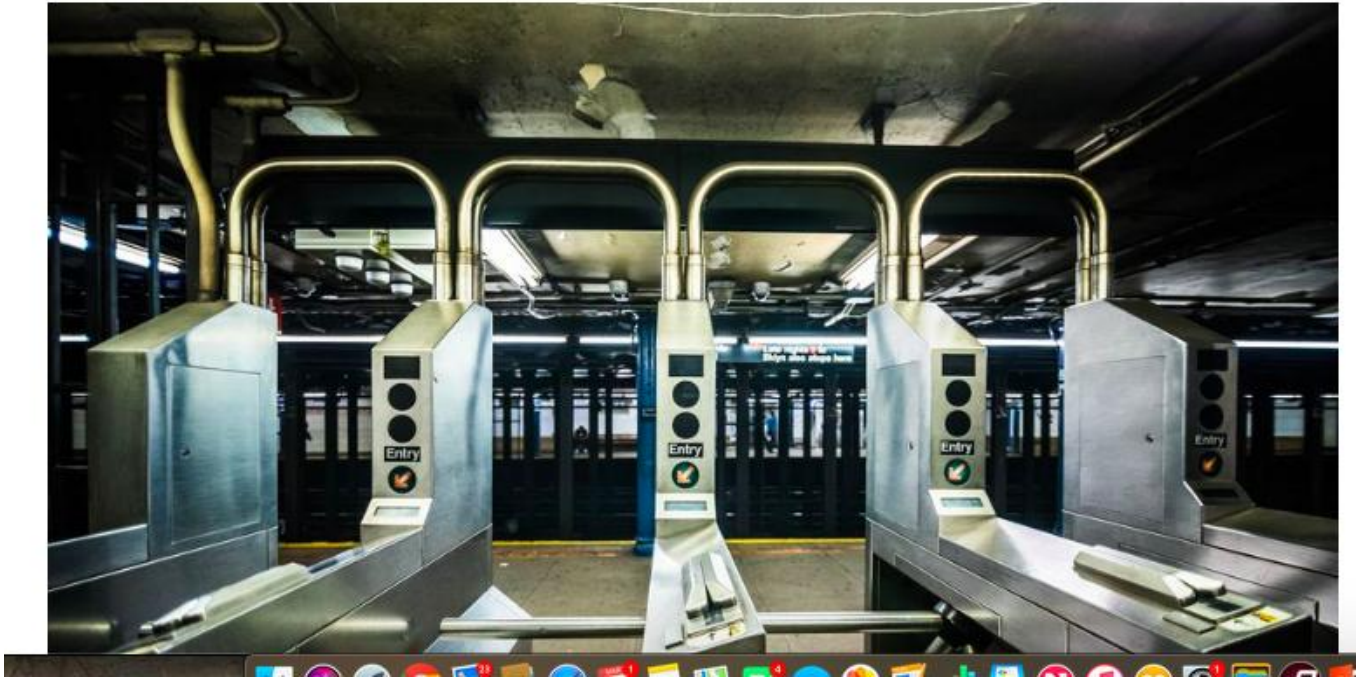
The MTR Corporation invested heavily to develop large-scale shopping centres around MTR stations. The most recent examp O station. It is connected to the adjacent malls, high-end housing and hotels. Another example of such a shopping centre is Ma station. Maritime Square is a nautical-themed mall in which there are supermarkets, boutiques, bookstores, a cinema, and rest transportation hub for Tsing Yi, Maritime Square is also easily accessible by other transportation means including buses and ta

NEWS MTA NYC TRANSPORTATION

MTA could face $42B in outstanding debt by 2022: report

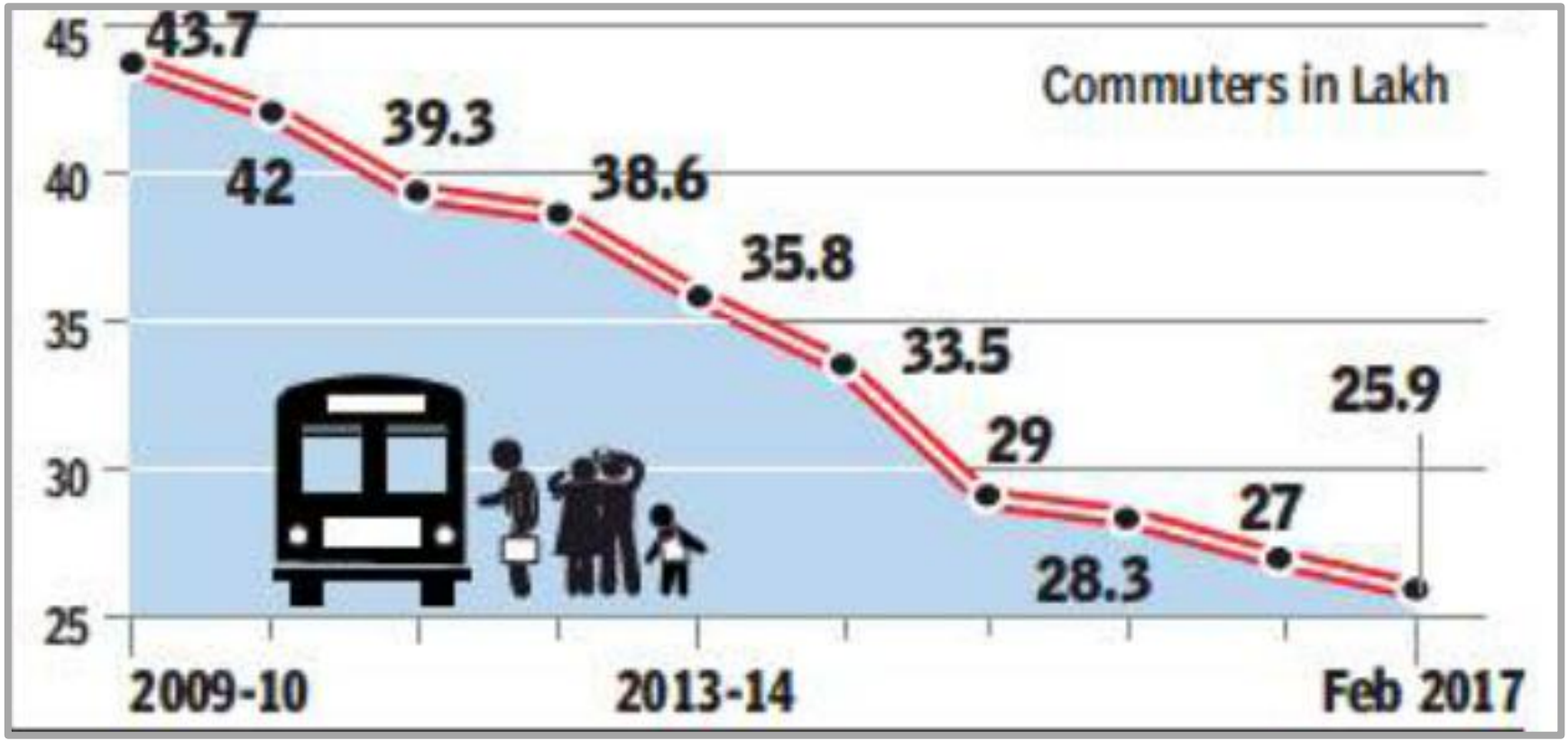
9

"The MTA is facing its greatest challenge in decades," says a report from state comptroller Thomas DiNapoli



MUMBAI METRO ONE - GHATKOPAR STATION

BEST RIDERSHIP



https://timesofindia.indiatimes.com/city/mumbai/best-commuter-count-hits-all-time-low-at-25-9-lakh/articleshow/64022765.cms

BEST RIDERS

BEST serves 3 Markets

1. Station Feeders
    - Competition with rickshaws
    - Congestion at stations
2. North South/ East West - Long Routes
    - Congestion (6-9 km/hr)
    - Lack of depots at strategic locations
    - Competition with Metro

https://timesofindia.indiatimes.com/city/mumbai/best-commuter-count-hits-all-time-low-at-25-9-lakh/articleshow/64022765.cms

AiCTSL
Shivaji Vatika
शिवाजी वाटिका
AiCTSL
Shivaji Vatika
शिवाजी वाटिका
ibus
Shivaji Vatika

Indore

APP BASED CAB AGGREGATORS

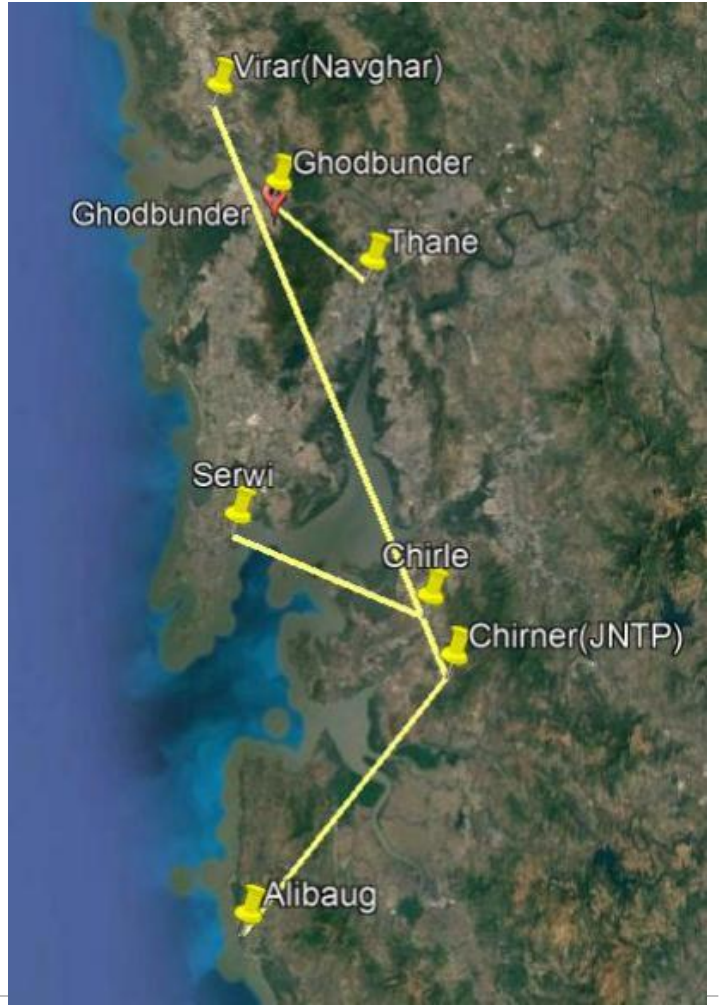
- 50,000 cabs operate as Ola/Uber.

SAO PAULO – TNC REGULATION

- 9 cents per km for using City streets
- Each company allowed 36,000 kms per hour at this price
- Prices increase by formula beyond 36,000
- Discounts for being complimentary to public transport
  - Trips after midnight/early morning
  - Trips starting or ending in locations with poor public transport access
- Discounts for inclusion, environment friendliness
  - Women drivers
  - Electric/Hybrid Vehicles

ROAD WAY PROJECTS

Project	Status	Length (km)	Cost (INR) in Crores
Alibaug-Virar multimodal corridor	Blueprint ready	126	19,000
Mumbai Trans Harbour Link (MTHL) Sewri - Chirle	Under construction	21.8	14,262
Thane-Ghodbunder	Completed	14.90 km	246.2

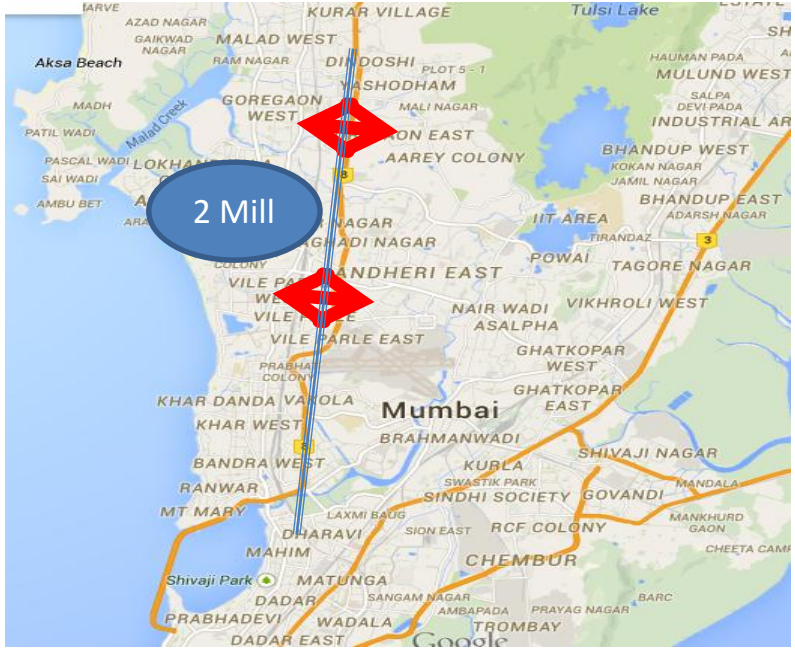


ROAD WAY PROJECTS

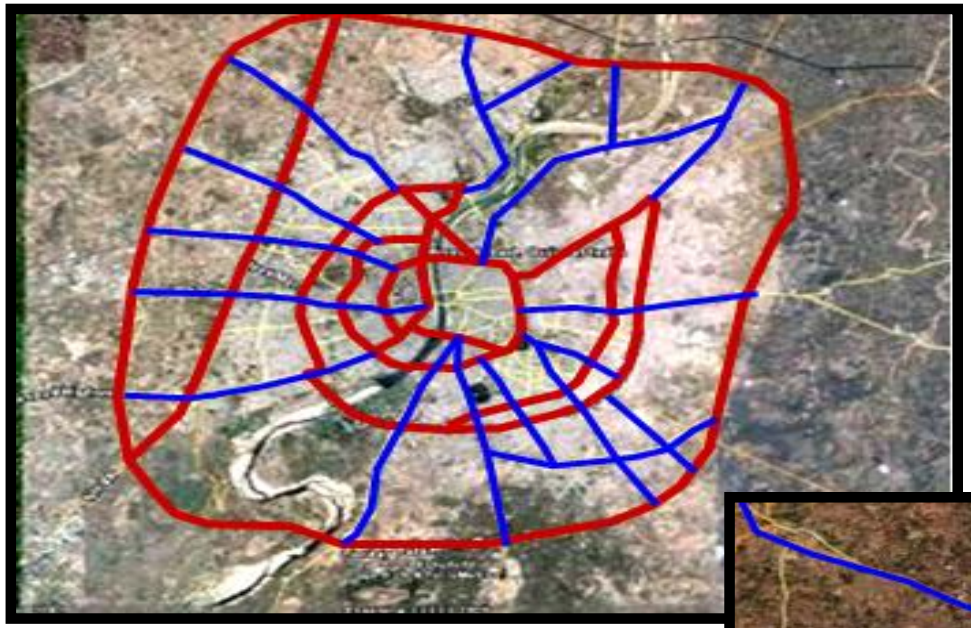
Project	Status	Length (km)	Cost
Coastal Road	Phase 1 (Princes Street to Worli) to begin	29.2	15,000
Santacruz-Chembur Link Road (SCLR)	Completed	6.5	428
JVLR-Jogeshwari Vikhroli link road	Completed	10.6	221.45
Vikhroli-Kopar Khairne Link Road (VKLR),	Proposed	7.5 -10	550 – 1,200
Eastern Freeway	Completed	16.9	749
Sewri-Worli road	Proposed	4.25	1,500

San Francisco
1989 Earthquake

COMPLETING THE NETWORK



- Missing Links



Ahmedabad
avg trip length:5-6 kms
avg speed: 18-20 km/hr
20 mins

Bangalore
avg trip length:9-12 kms
avg speed: 8 kms
75 mins

Source: Prof Swamy, CEPT University

MUMBAI'S HUGE POTENTIAL

COMPACT

DIVERSE

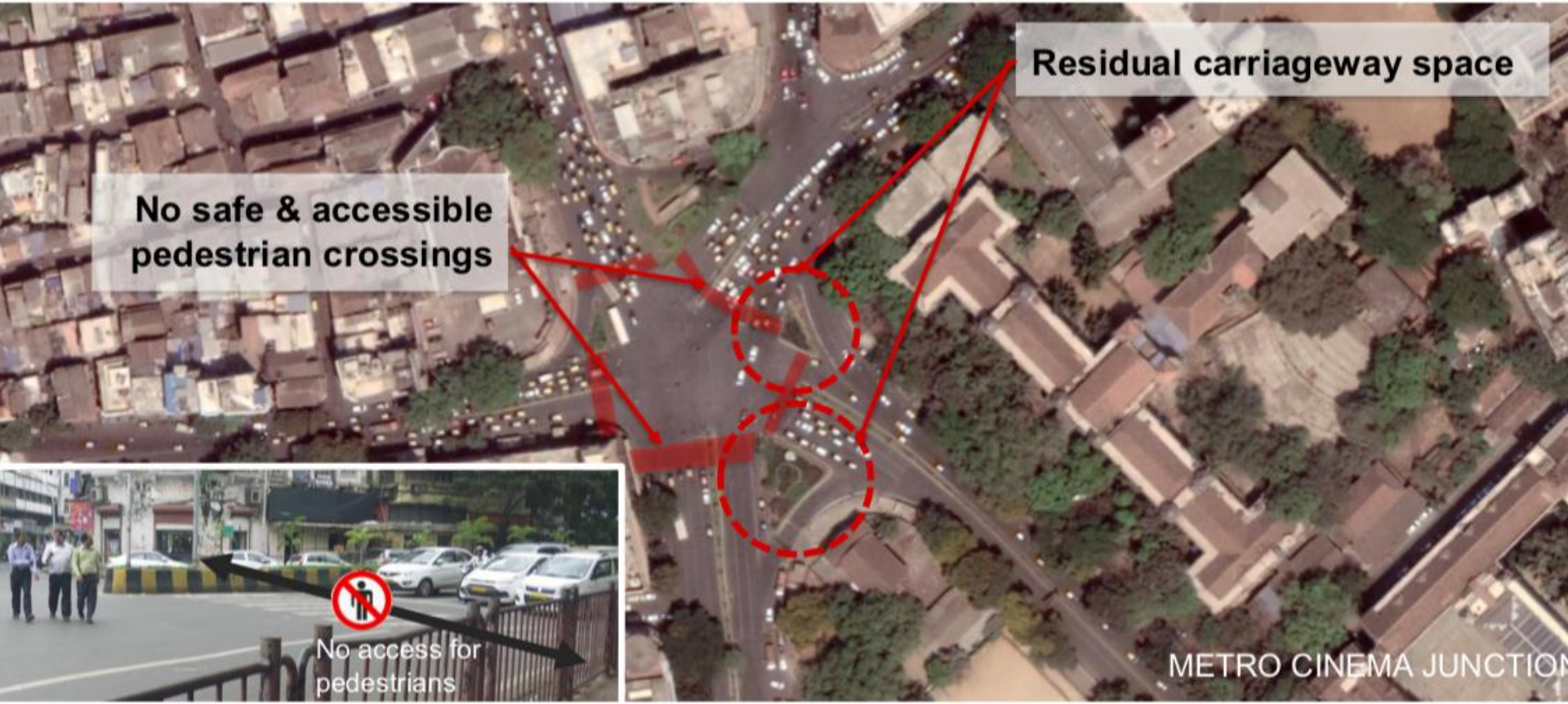
FINE GRAINED PUBLIC TRANSPORT NETWORK

Source: Comprehensive Mobility Plan, 2014, MCGM

9
8
7
6
5
4
3
2

WHAT IS THE PROBLEM?

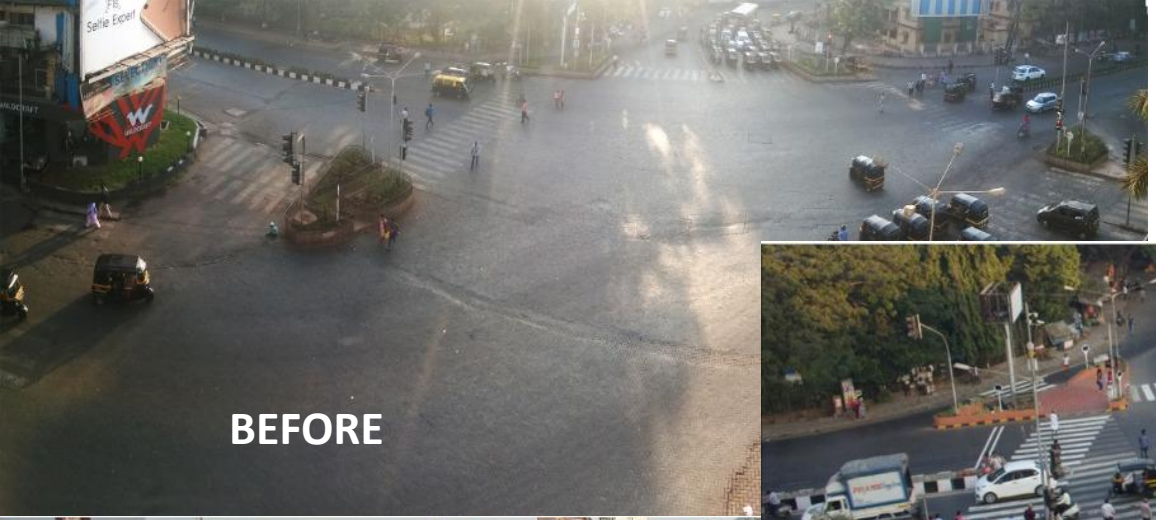
TAKING A LOOK AT RECENTLY IMPROVED ROAD



CHALTI MUMBAI

- Improving walkability (footpaths, junctions)
- Using zoning to reflect favorable uses
- Eliminating off-street parking
- Developing super-walkways
- Leveraging waterfronts

HP Junction Bandra



Nagpada

Junctions Safer
By Design
Mumbai
Construction Completed
Ongoing Intersection Construction
Ongoing Corridor Construction
Design recommendation Submitted
Blackspot Mitigation Recommendation Submitted
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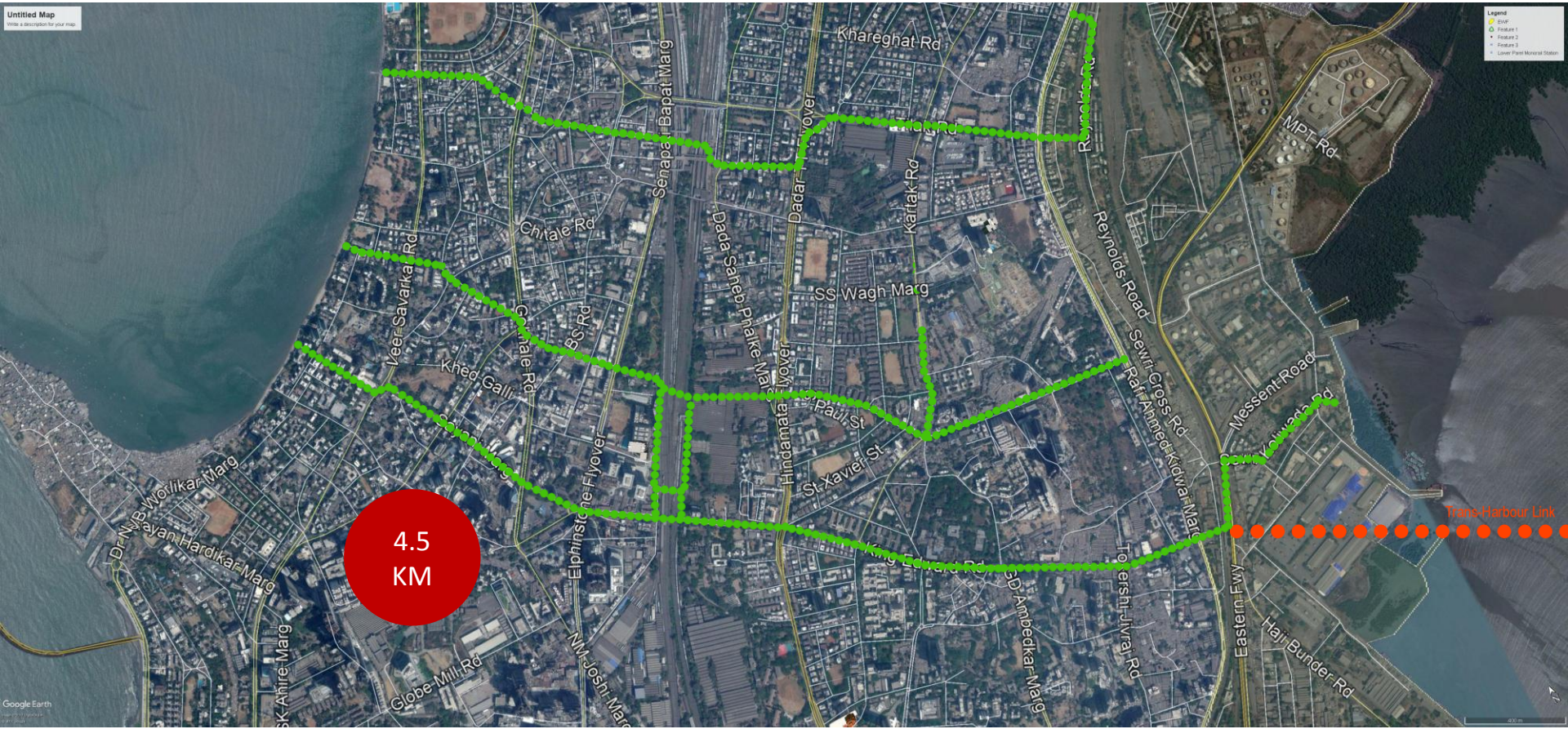
Bloomberg Philanthropies
INITIATIVE FOR GLOBAL ROAD SAFETY



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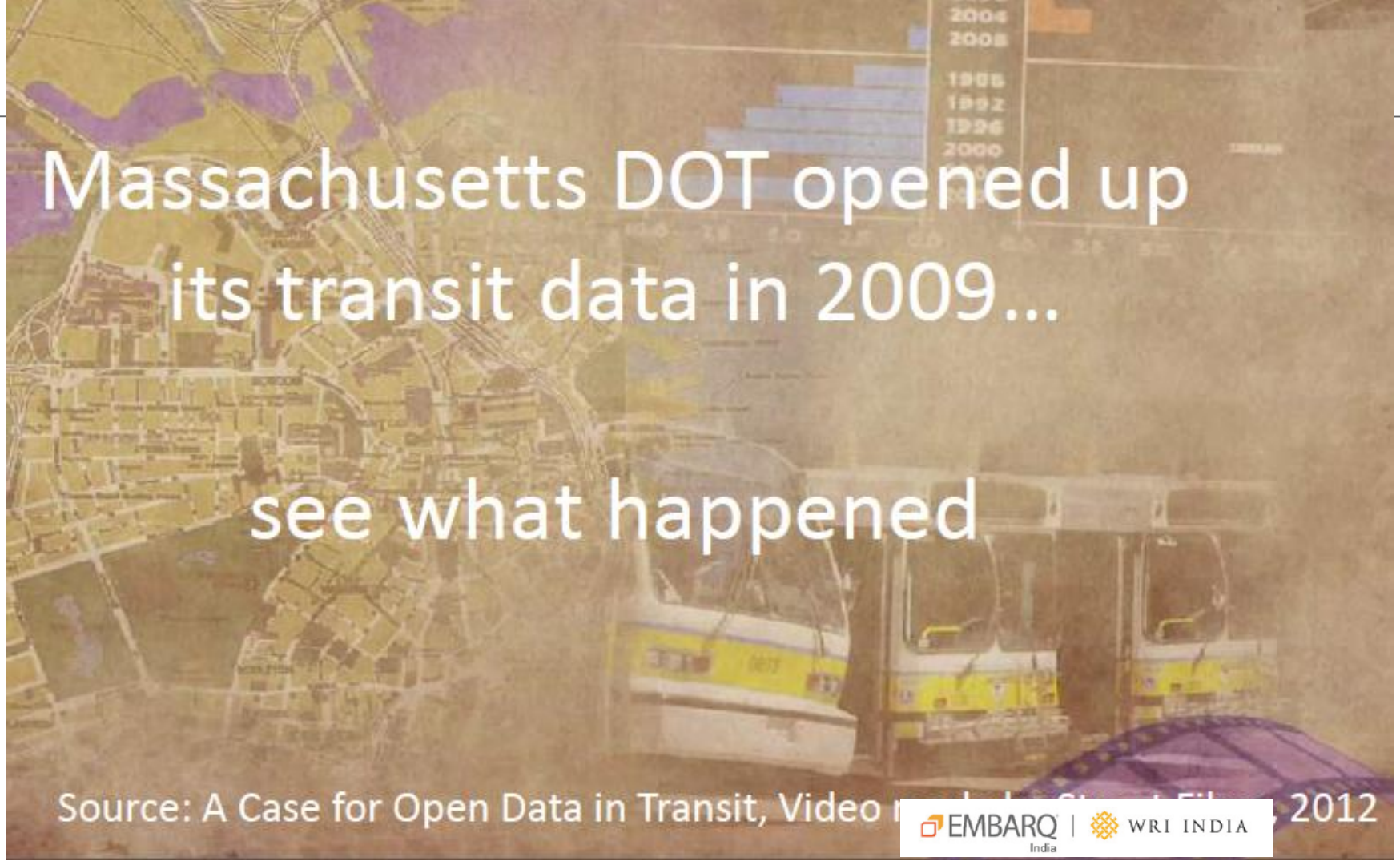
INTEGRATED TRANSPORT

- Physical Integration
- Schedule Integration
- Fare Integration
- Mobility as a service –
  - Journey planners
  - One ticket
  - Integrating with new mobility services - monthly bundles



Massachusetts DOT opened up its transit data in 2009…

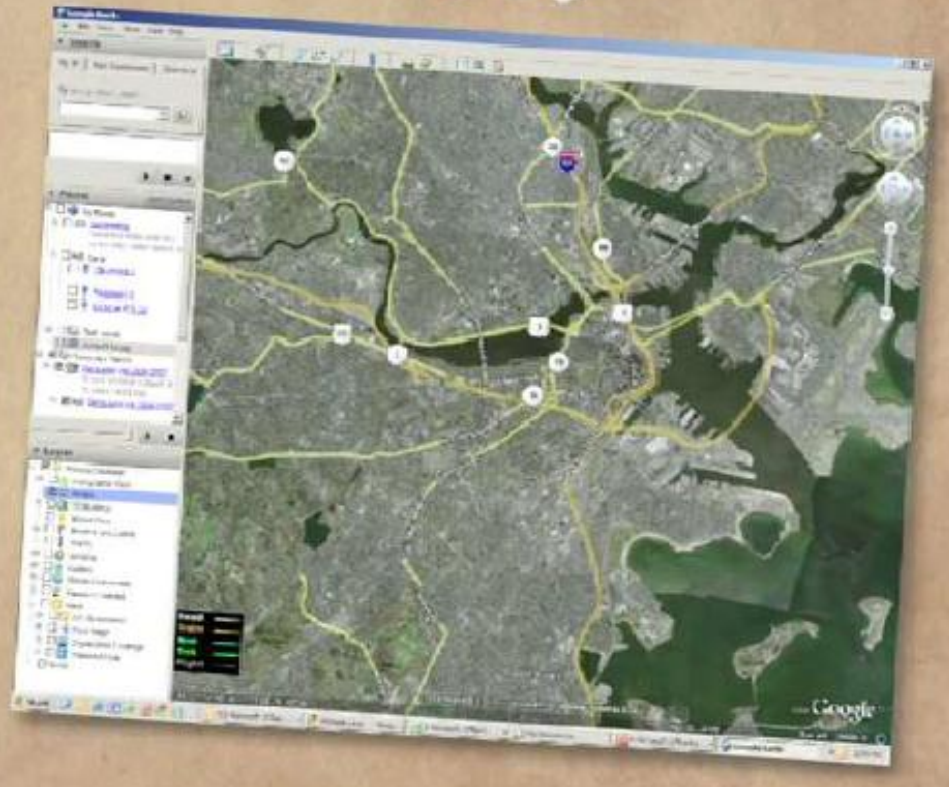
see what happened

Source: A Case for Open Data in Transit, Video … 2012

EMBARQ India | WRI INDIA

WITHIN ONE HOUR

Real-time bus locations on Google Earth



WITHIN ONE WEEK

A desktop widget with countdown information

WITHIN FIVE WEEKS

iPhone and Android apps

EMBARQ India | WRI INDIA

WITHIN SEVEN WEEKS

A system that delivers the real-time data by any phone

EMBARQ India | WRI INDIA

CONCLUDING THOUGHTS

- For Metro – Need to start thinking Iike a developer. We need to increase density of jobs, economy. Otherwise we will be in debt.
- BEST will need priority otherwise will be building Class Transit and not Mass Transit
- Walking Infrastructure, Placemaking – Needs to rolled up into a initiative led by senior bureaucrat will attention from senior political leadership
- Innovation: New mobility options, Open Data, Parking Tech – Needs Chief Innovation officer that can create the ecosystem for faster adoption at scale.