

Public Transport Subsidies and Affordability in Mumbai, India

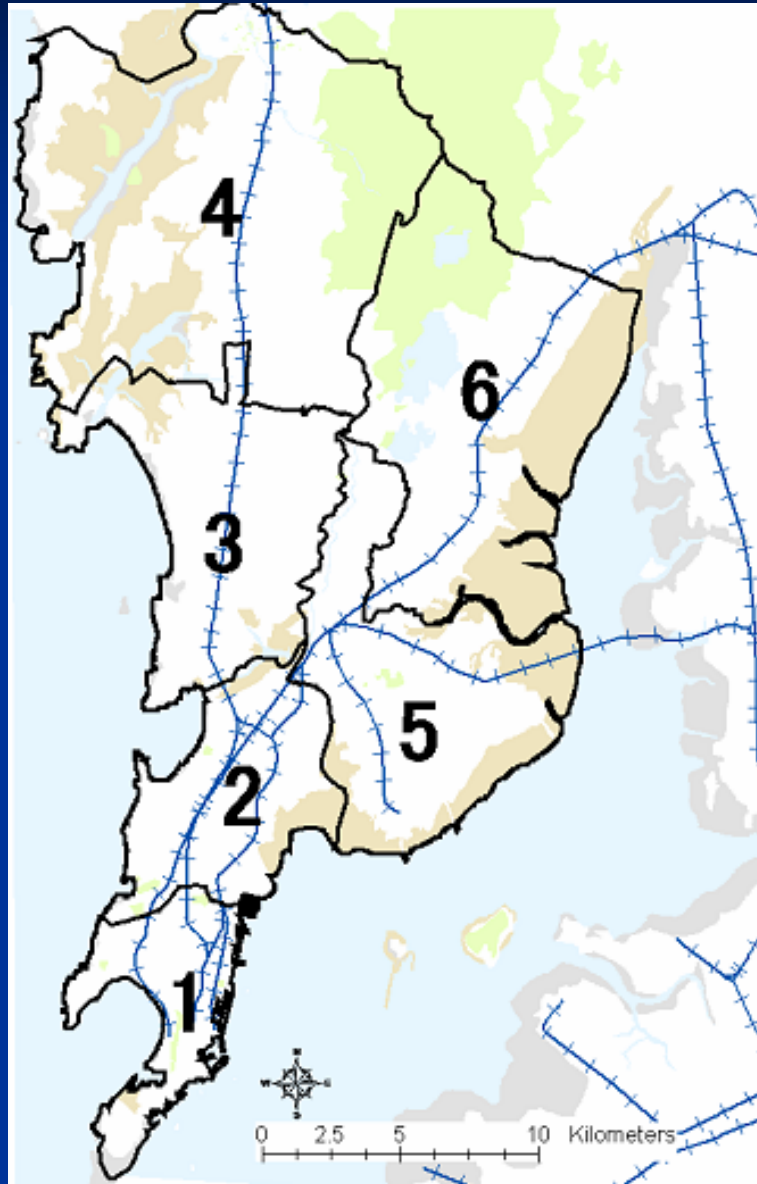
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Questions Addressed

- To what extent do the poor and the non-poor rely on public transport (bus and rail) in Mumbai?
- How affordable is public transit?
- How large are supply-side subsidies?
- What is the incidence of these subsidies?
- How could they be better targeted?

Study Site and Target Population



- Greater Mumbai Region (GMR)
- Population of 11.9 million people in 2001
- Occupies 468 sq. km (42 km north to south, a maximum width of 17 km)
- Results based on a survey of 5,000 households conducted Nov. 2003 – Feb. 2004
- For details see PRWP 3693 (Baker et al. 2005)

How Do We Define the Poor?

- Household income distribution is as follows:

<u>Monthly Income</u>	<u>% of HHs</u>
< 5,000 Rs.	26.5
5k - 7.5k Rs.	27.7
7.5k-10k Rs.	21.9
10k - 20k Rs.	17.8
>20 k Rs.	6.2

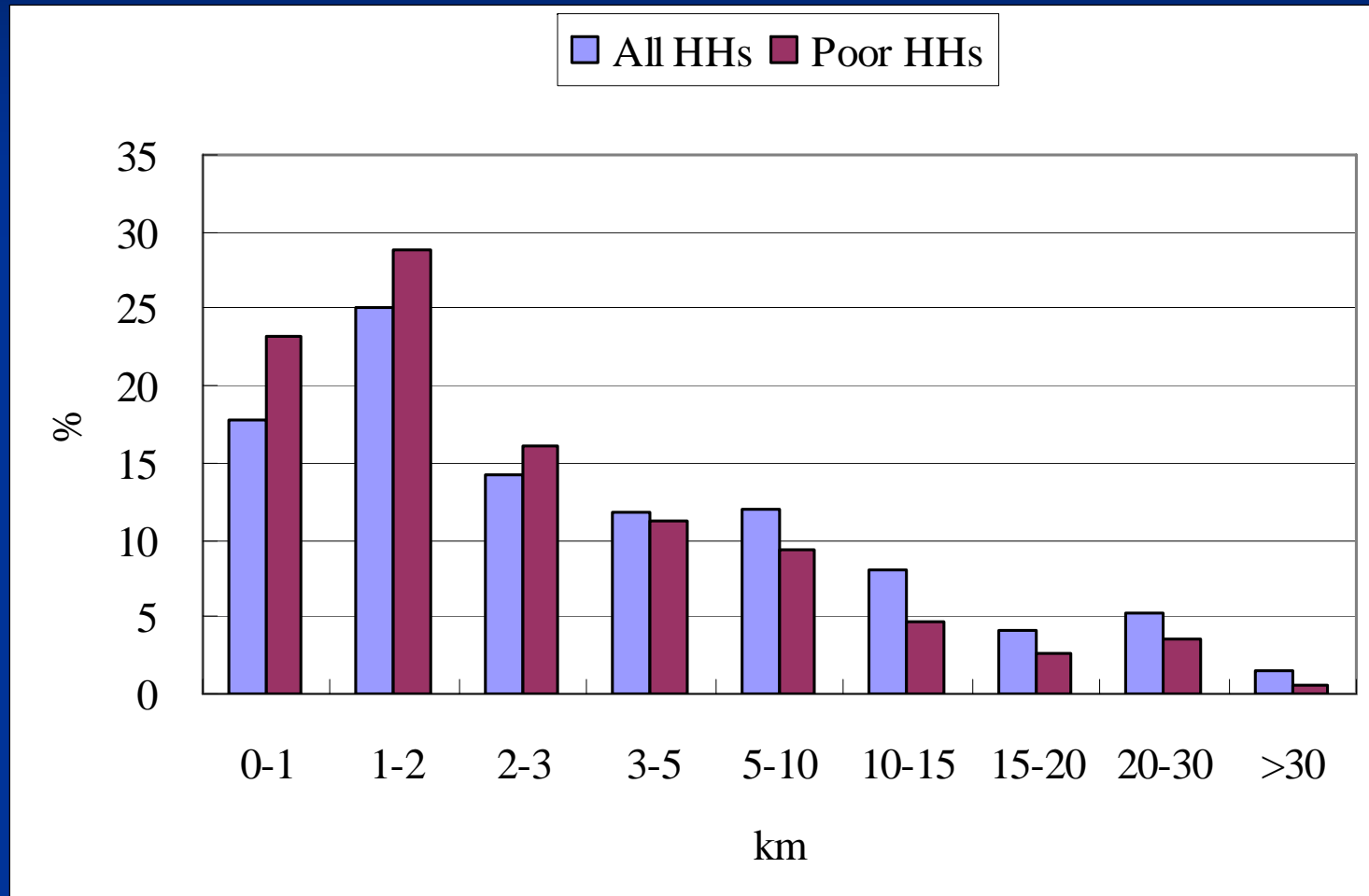
- Define the poor to be < 5,000 Rs.

Main Commute Mode by Income

	<5k	5k-7.5k	7.5k-10k	10k-20k	>20k	All HHs
Walk	61	50	41	31	15	44
Rail	16	23	26	26	21	23
Bus	15	17	18	16	12	16
Two-wheeler	1	4	10	18	20	9
Car	0	0	0	4	24	3

Note: Main commute mode is the mode taking the longest time. For “walk” to be the main mode it must be the only mode used.

One-Way Commute Distance



Percent of Household Income Spent on Transportation by Income and Commute Mode of Principal Earner

	Walk	Train	Bus	Two- wheeler	Car
< 5K	12.5	16.8	19.4	28.5	NA
5 – 7.5K	8.6	9.3	9.9	19.8	NA
7.5 – 10K	7.8	8.3	8.7	16.0	NA
10 – 20K	7.6	9.0	8.4	14.4	20.0
> 20K	7.8	6.8	5.8	11.6	14.2

Mean Monthly Household Expenditure (Rs.) on Transportation by Income Group

	<5k	5k-7.5k	7.5k-10k	10k-20k	>20k	HH Avg
Bus	151	195	221	286	275	210
Rail	89	124	165	227	296	152
Taxi	91	121	165	287	397	169
School Bus	3	5	13	50	59	18
Fuel + Vehicle Repair	66	193	241	687	1852	357
Share in Income (rail & bus expenditure only)	9.6%	5.1%	4.4%	3.4%	2.3%	4.3%
Share in Income (total transportation expenditure)	16.0%	10.2%	9.2%	10.2%	11.5%	10.7%

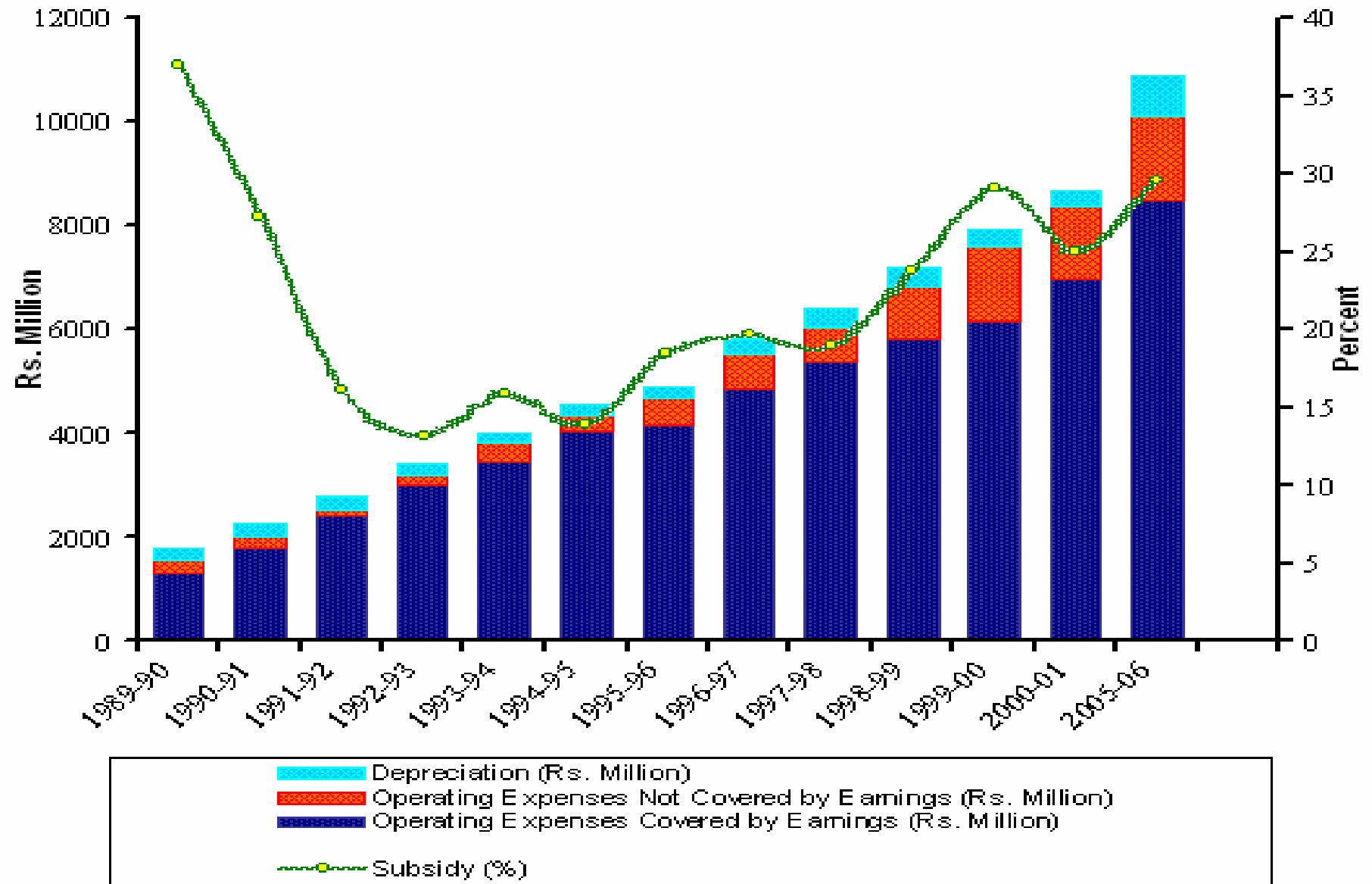
Cost of Rail (Second Class) and Bus (Regular Service)

Distance (km.)	Rail Fare		Bus Fare	
	Monthly Pass (Rs.)	One Way (Rs.)	Monthly Pass (Rs.)	One Way (Rs.)
1 - 3	60	4	180	3
3 - 5	60	4	210	4
5 - 7	60	4	240	5
7 - 10	60	4	390	6
10 - 15	75	5	480	9
15 - 20	90	6	-	10
20 - 25	105	7	-	11
25 - 30	105	7	-	12
30 - 35	120	8	-	13
35 - 40	135	9	-	15
40 - 45	150	10	-	17
45 - 50	165	11	-	19

Provision of Public Bus Services

- B.E.S.T. provides public bus service as well as electricity generation
- In spite of higher bus fares (per km) B.E.S.T. bus service has failed to cover even operating expenses in recent years
- Transport losses are covered partly by profits from electricity generation
- However, combined operations show a loss for 2003-2006

BEST Costs, Revenues and Subsidies



Provision of Suburban Rail

- Two divisions of Indian Railways supply rail service
 - Western Railway carries approximately 3.2 million passengers per day on two corridors (2004-2005)
 - Central Railway carries approximately 3.2 million passengers per day on three corridors (2004-2005)
- Mumbai Suburban Rail covered operating costs and depreciation in 2005-2006
 - Capital costs not fully reflected in depreciation figures

Revenues and Costs of the Mumbai Suburban Railway: 2005-06

Passenger Revenues (Rs. Million)	9,937
Operational Expenses (Rs. Million)	8,950
Depreciation (Rs. Million)	702
Interest on Capital (Rs. Million)	409
Total Cost (Rs. Million)	10,061

Calculation of Supply-Side Subsidies

- Bus subsidy calculated as 29.6% of fares in 2005-2006
- Rail subsidy calculated as 1.23% of fares in 2005-2006
- However, the percent of total rail (bus) subsidy going to each income group depends only on that income group's share in total rail (bus) revenues

Incidence of Bus and Rail Subsidies, by Income Group

Income Group	Percent of Sample	Percent of Total Subsidy Benefits		Percent of Households Who Receive Subsidy	
		Bus	Rail	Bus	Rail
<5K	27	19	16	90	74
5K-7.5K	28	26	23	94	83
7.5K-10K	22	23	24	94	91
10K-20K	18	24	27	92	88
>20K	6.0	7.8	12	82	79

Errors of Inclusion and Exclusion of Subsidy

**Percentage of
Households.....**

Poor (< 5K)

Non-Poor

Receiving Bus Subsidy

90

93

Not Receiving Bus Subsidy

10

7.5

Receiving Rail Subsidy

74

86

Not Receiving Rail Subsidy

26

14

Conclusions (I)

- Neither bus nor rail services in Mumbai cover all operating-plus-capital costs, implying there are supply-side fare subsidies
- Implicit rail subsidy is difficult to calculate: operating costs and depreciation are covered by current revenues; capital costs difficult to estimate
- Whatever the size of the rail subsidy
 - 26% of poor do not receive it because they never use rail
 - Lowest 27% of income distribution receives only 16% of subsidy
 - Even if subsidy were better targeted (by raising first class fares), many poor still would not receive it

Conclusions (II)

- Implicit bus subsidy at least 30% of fares in 2005 (even though bus fares are much higher per km than rail)
- Ironically, bus subsidy is better targeted because, in spite of high fares, a higher percent of the poor ride the bus:
 - Only 10% of poor receive no subsidy
 - Lowest 27% of the income distribution receives 19% of bus subsidy
- Big problem is increasing losses of BEST: Would have to raise fares 50% to cover current losses, given price elasticity of demand
- Could rail fares (esp. first class) be raised to cross-subsidize bus fares?