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**A modal shift scenario that could cut
urban travel CO2 in half by 2050**

**Lew Fulton,
University of California, Davis**

- **Motivations for this study:**
- UN efforts to promote sustainable transport and set targets
- RIO+20 Multilateral Development Bank Voluntary Commitment to more Sustainable Transport
- SLoCaT/ITDP interests in ex-ante evaluation, on-going tracking of potential impacts from transport policies and investments

Today's Presentation

- This analysis is being led by UC Davis, in cooperation with the IEA and supported by ITDP
- Project advisory committee includes World Bank, IADB, ICCT, EMBARQ and others
- Initial phase of this project to be completed by Spring 2014, report will be prepared.

Today's Presentation

- Question: how much can we reduce CO2 emissions from urban transport by 2050 via changes in urban form and travel patterns?
- Analysis builds up from data on current travel patterns in different parts of the world, projections of where these may go out to 2050, using IEA Mobility Model
 - World broken into 30+ countries and regions
 - Urban mobility modules being developed
 - More modes added
 - Modal shift potential based more on potential to increase capacity of transit/NMT systems to allow fewer cars

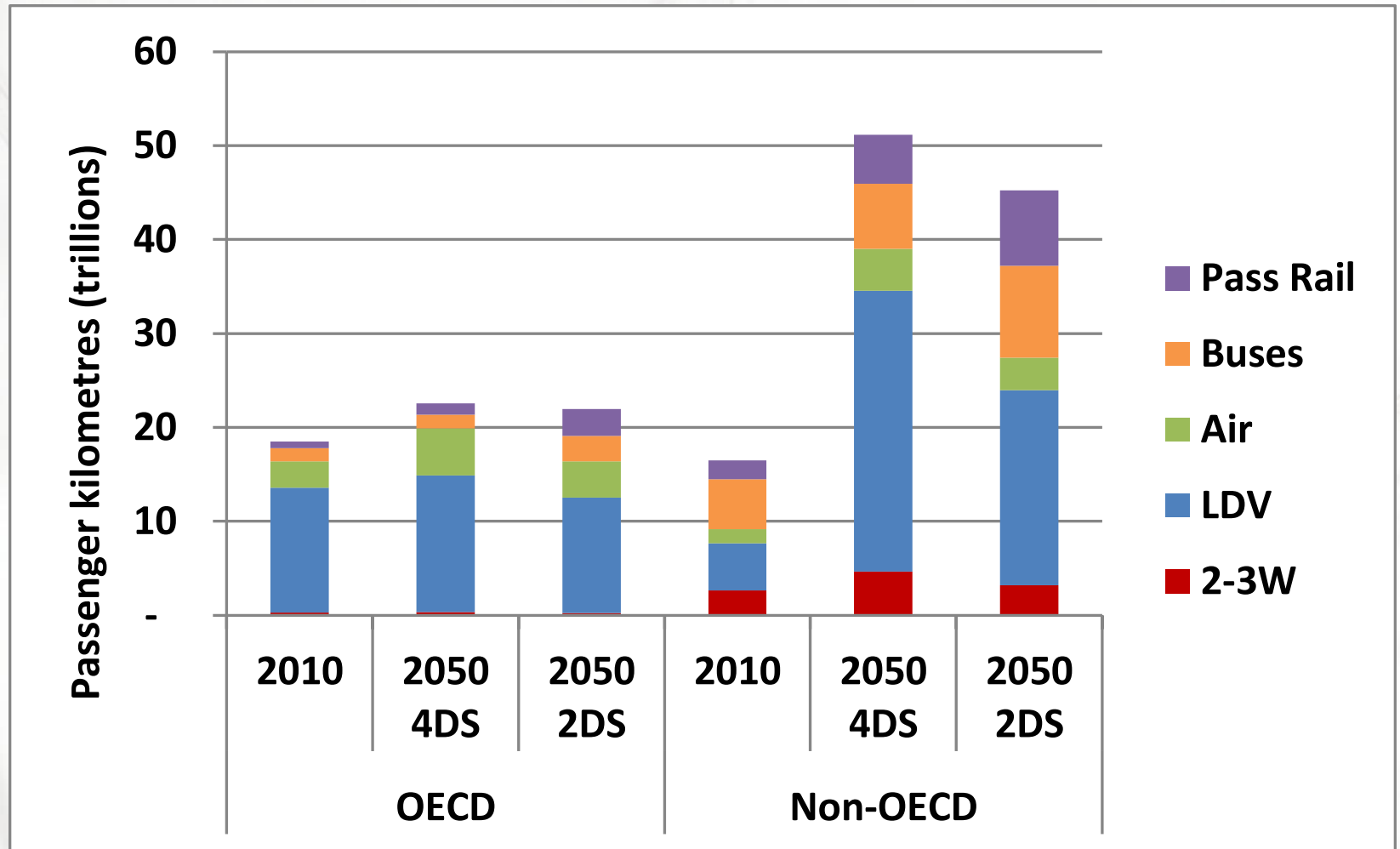
Today's Presentation

- “High Shift” scenario
 - This new urban low carbon scenario “pushes the envelope” on how travel could be organized in cities by 2050, what the implications are for travel, energy use, CO2 and other indicators
- Further calibration and reality checks are needed.
- A full cost and investment analysis is underway but not yet far enough along to report on
- Also looking into demographic and equity impacts

Our starting point :

MoMo result from IEA ETP 2012

Modal shift plays an important role in 2 degree scenario



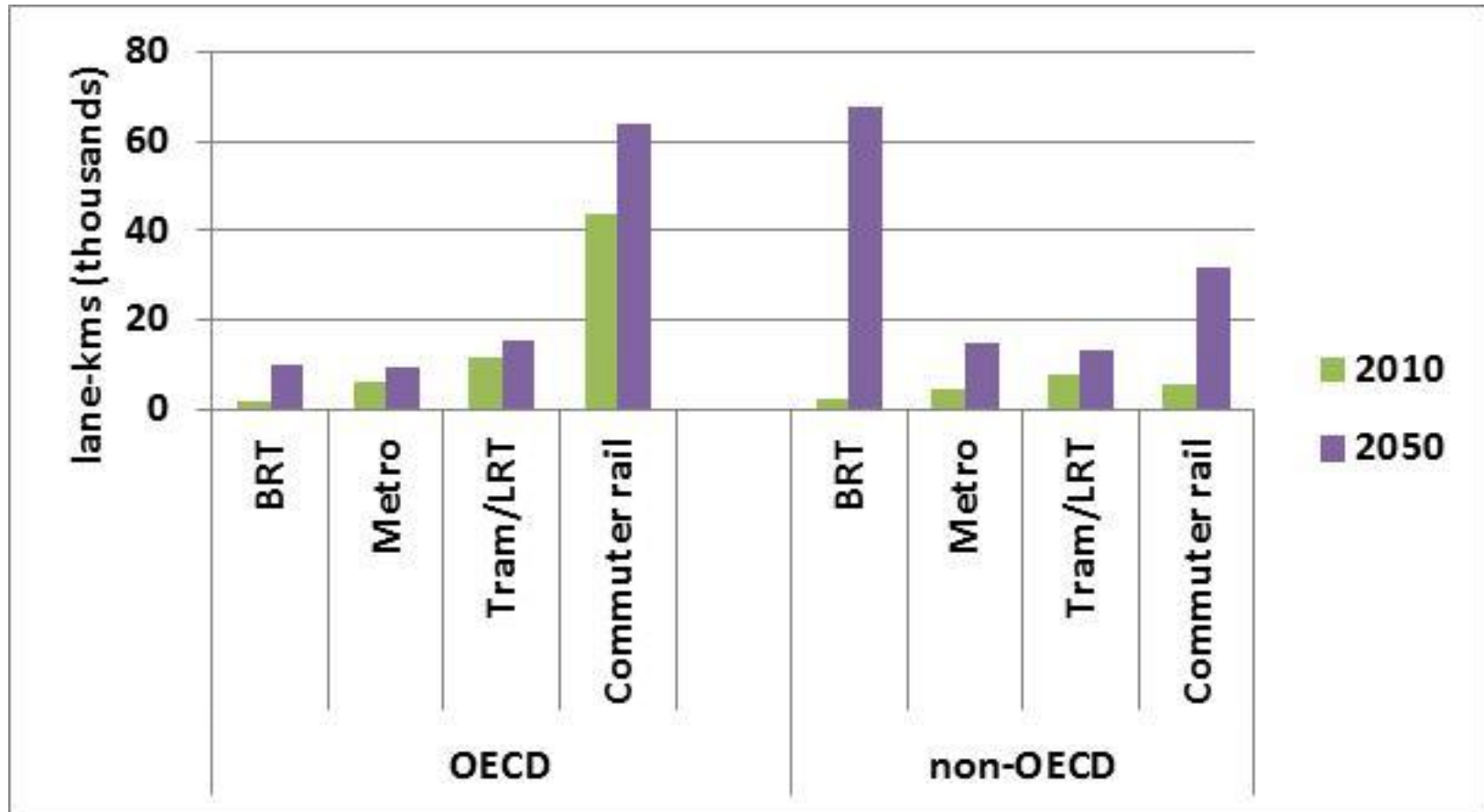
Features of new scenario

- High Shift Scenario:
 - Build up bus and rail systems so that most major cities have large capacity systems
 - Encourage walking and cycling for short trips
 - Major push for e-bikes in lieu of motor cycles (and cars)
 - Cut car travel in cities by half
- This is compared to a “Base Case” that aligns with the IEA 4 degree scenario
 - Some fuel economy improvement
 - No shift away from car growth
 - Other modes static

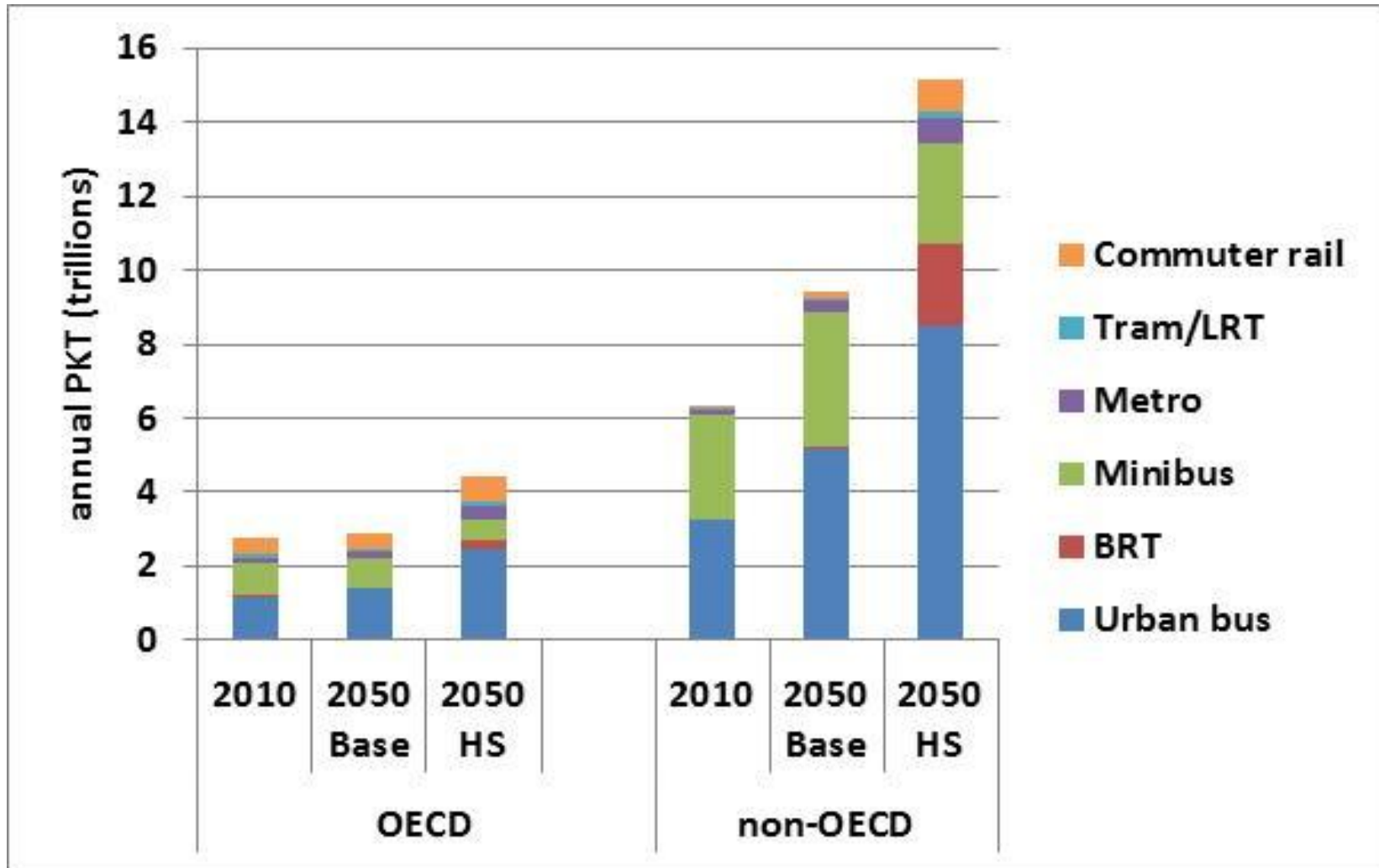
Features of new scenario

- The following results are preliminary and subject to revision
- Please cite only as draft results

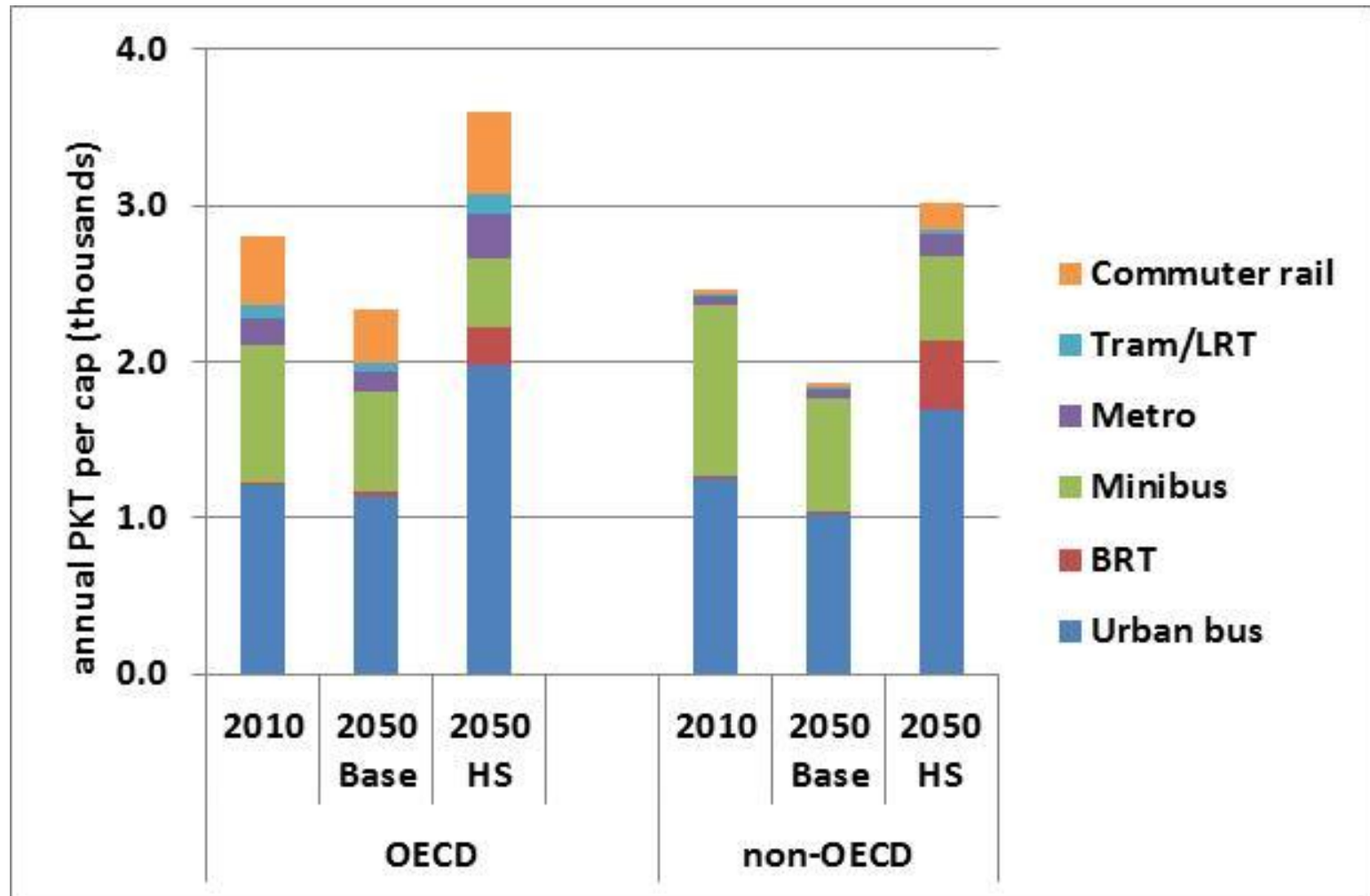
High shift case: total lane/track kms, 2010 and 2050



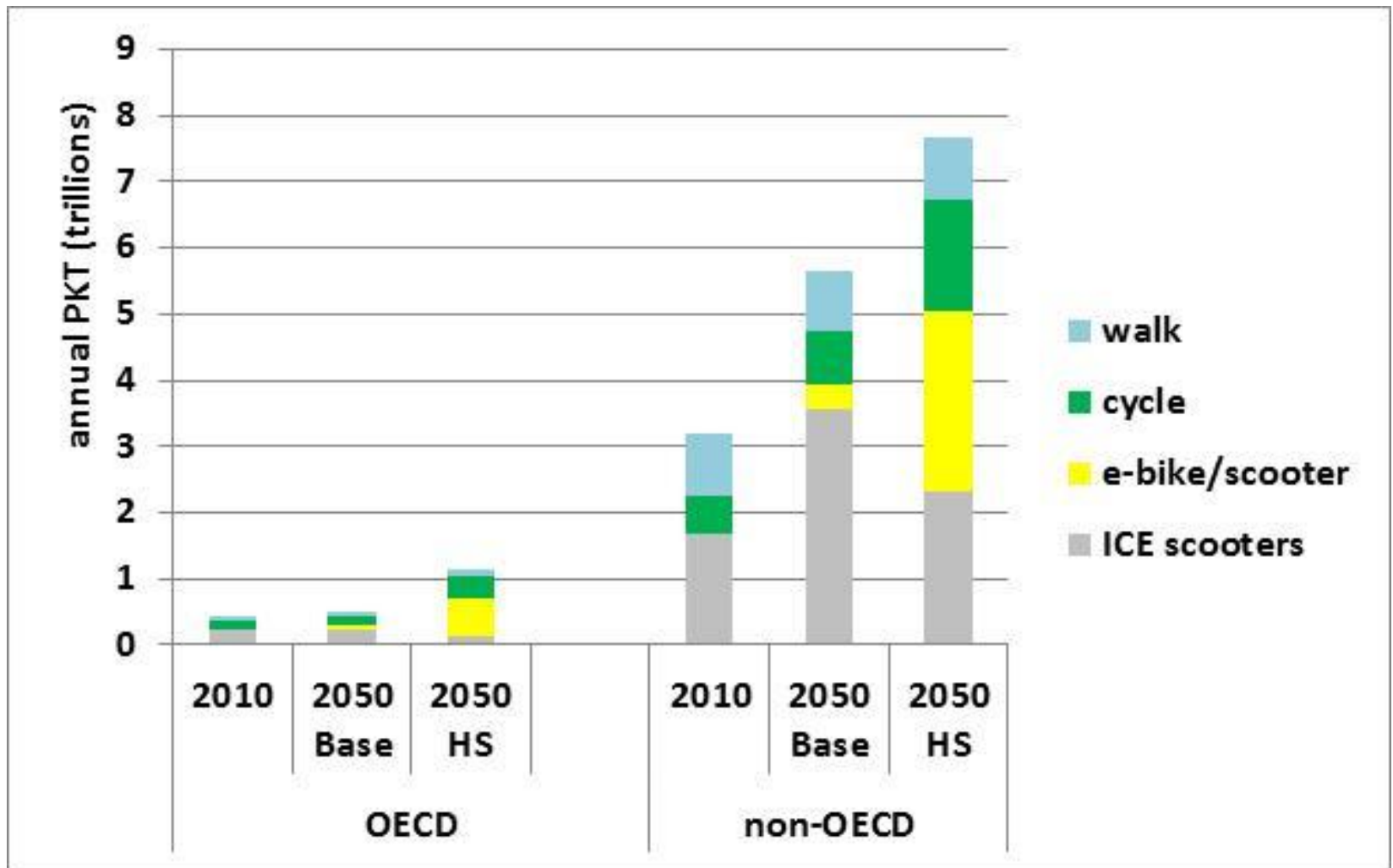
Total urban bus and rail passenger-kms travelled (PKT) by region and scenario



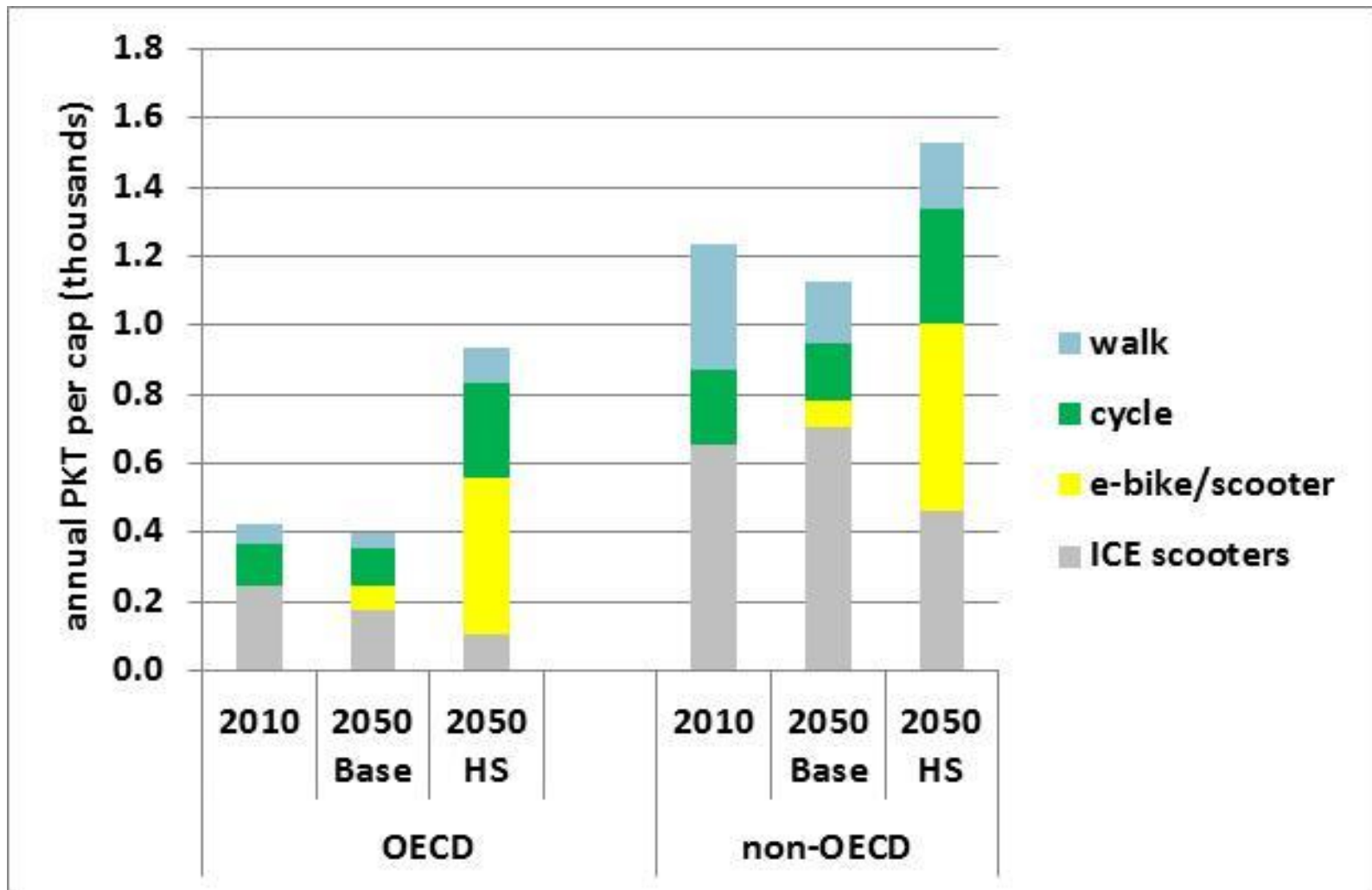
Urban bus and rail passenger-kms travelled per capita



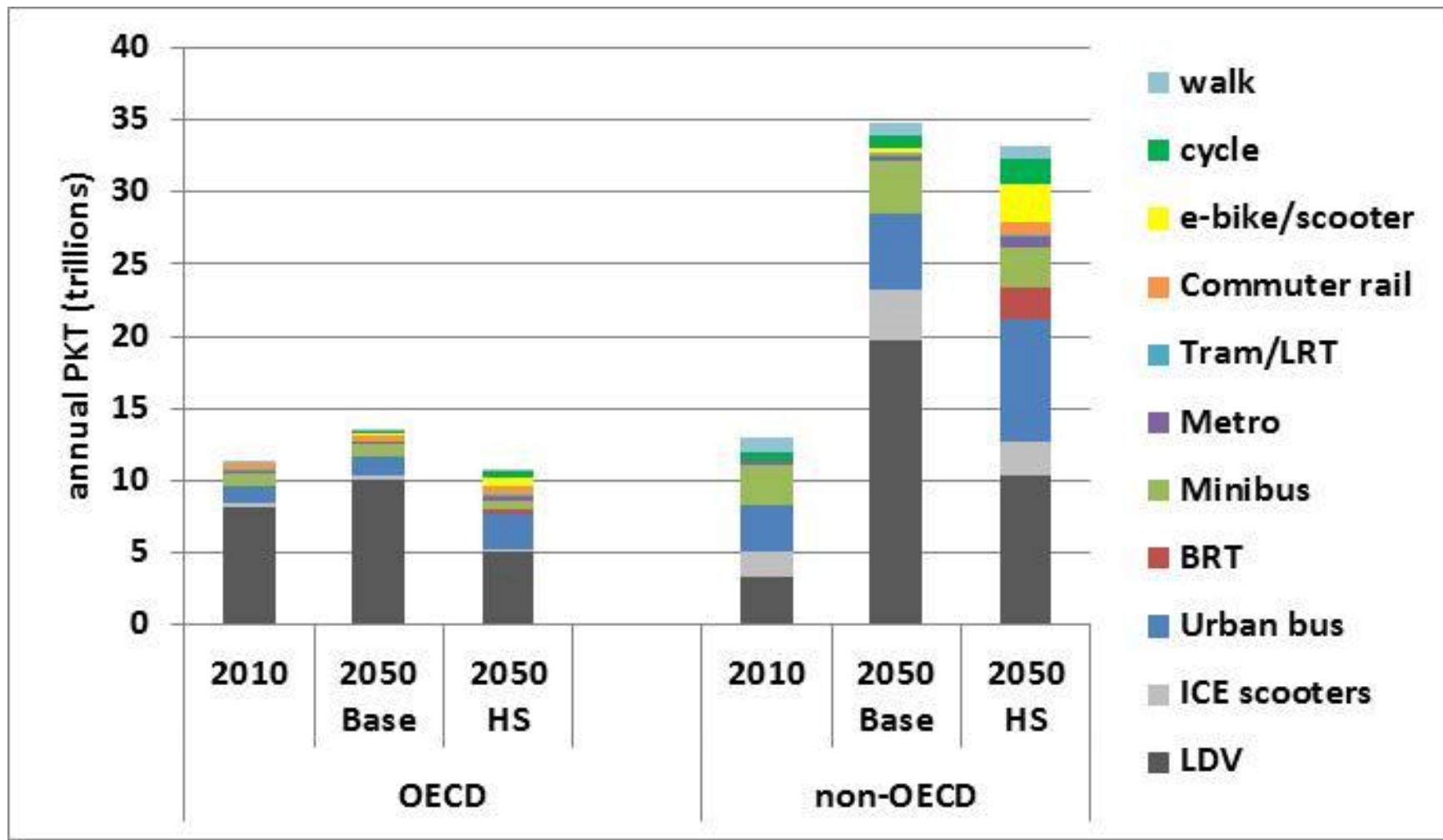
Walking and cycling PKT



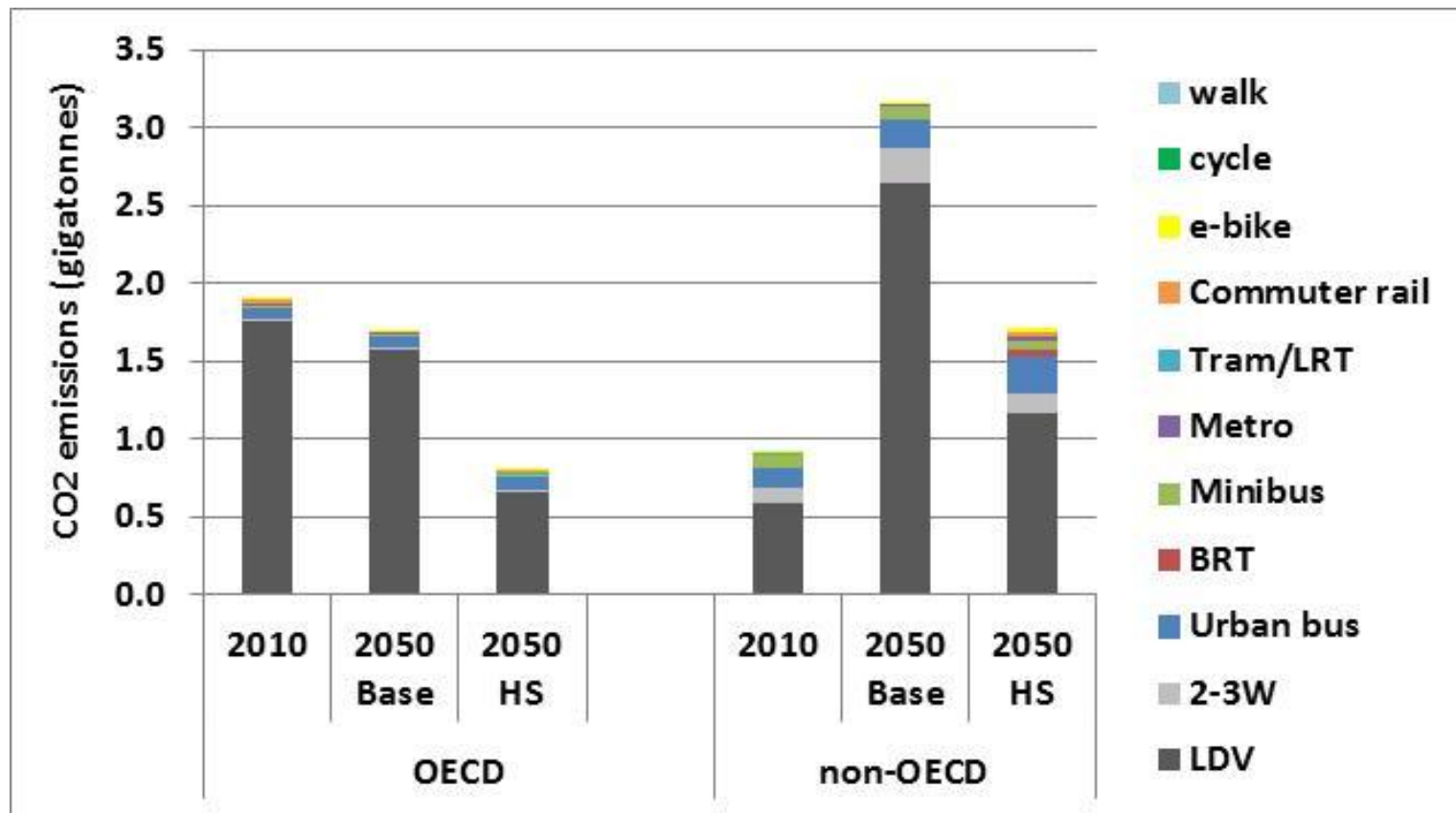
Walking and cycling per capita



Result: total urban travel - all modes and scenarios



CO2 emissions ~ 50% reduction (4.9 to 2.5 gt in 2050)



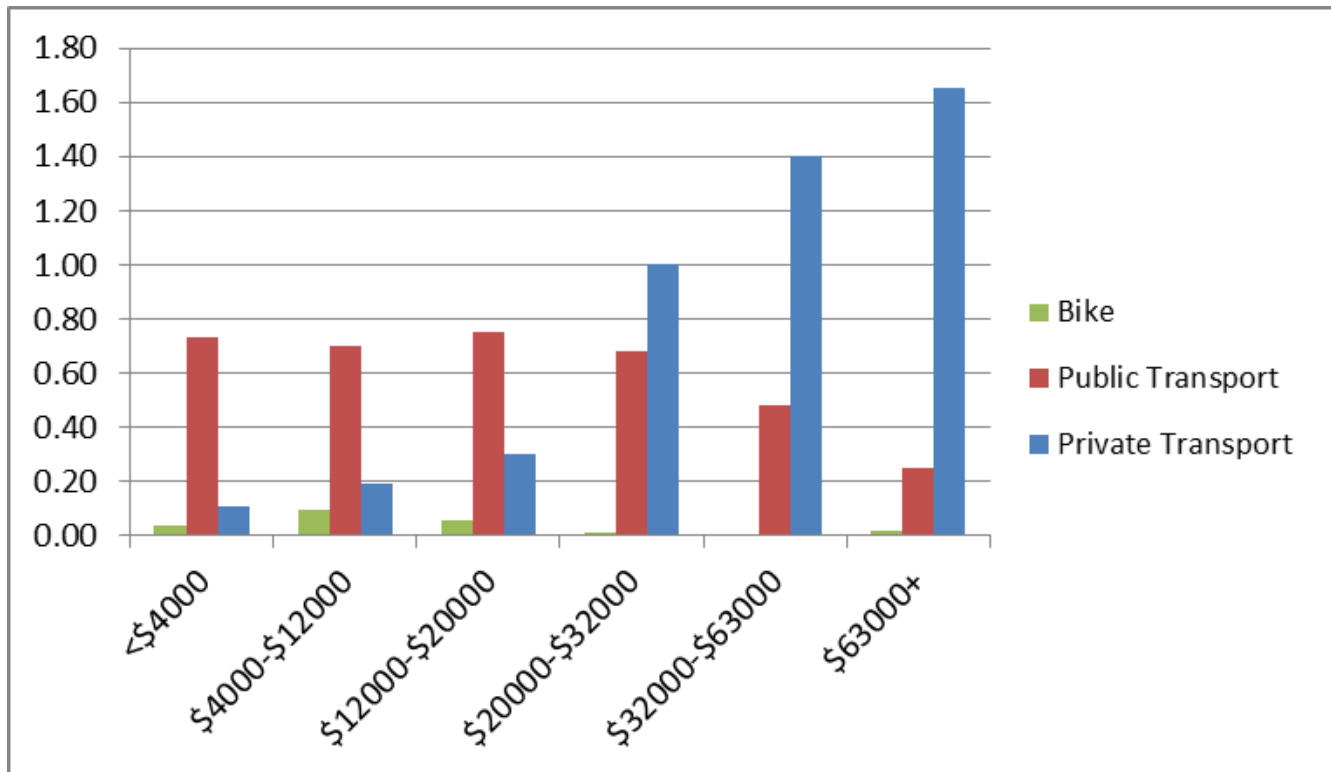
Non-OECD Demographic/Economic/Equity Module Data

- Various cities in Latin America administer “mobility surveys” (Encuesta de Movilidad) with varying degrees of frequency.
- Reports provide some relevant information for our module but as you can see from the Bogota example below, it doesn’t provide all of it.

Bogota, Colombia		Gender		Age group			Economic group					
		Male	Female	<25	25-50	>50	<\$4000	\$4000-\$12000	\$12000-\$20000	\$20000-\$32000	\$32000-\$63000	\$63000+
Trips/cap/day							2.45	2.63	2.67	2.97	3.06	3.15
PKM/cap/year												
Trips/mode	Motorized						0.86	0.93	1.21	1.86	2.12	2.06
	Private Transport						0.11	0.19	0.30	1.00	1.40	1.65
	Public Transport						0.73	0.70	0.75	0.68	0.48	0.25
	Bike						0.04	0.09	0.06	0.01	0.01	0.02
Avg trip distance by mode (kms)	POV											
	Transit											
	Bike											
	Walk											
Annual PKM/mode	Air											
	POV											
	Transit											
	Bike											
	Walk											
	Air											

Non-OECD Demographic/Economic/Equity Module Data

- Bogota: for those with incomes below USD 20,000, public transport plays the dominant role in providing mobility.
- We need to document such distributions across income, gender and age groups and develop projection systems to understand how well different future transport/mode configurations will likely serve different parts of the population.



Conclusions

- Base case future for cities is fairly car-dominated
- “High shifts” scenario cuts 2050 car travel in half v. 2050 baseline, and preserves almost all passenger kilometers via increased transit and NMT travel
- Energy and CO2 emissions are cut by about 50%
- This scenario needs further development, and detailing across countries and regions:
 - Elaboration of related policy and investment scenarios
 - Estimation of costs, (co)benefits and distributional impacts
- Lots more work to do – more results soon!



Thank you!

Lew Fulton

lmfulton@ucdavis.edu