T14 W3 Sustainable funding sources and related cost benefit measurements

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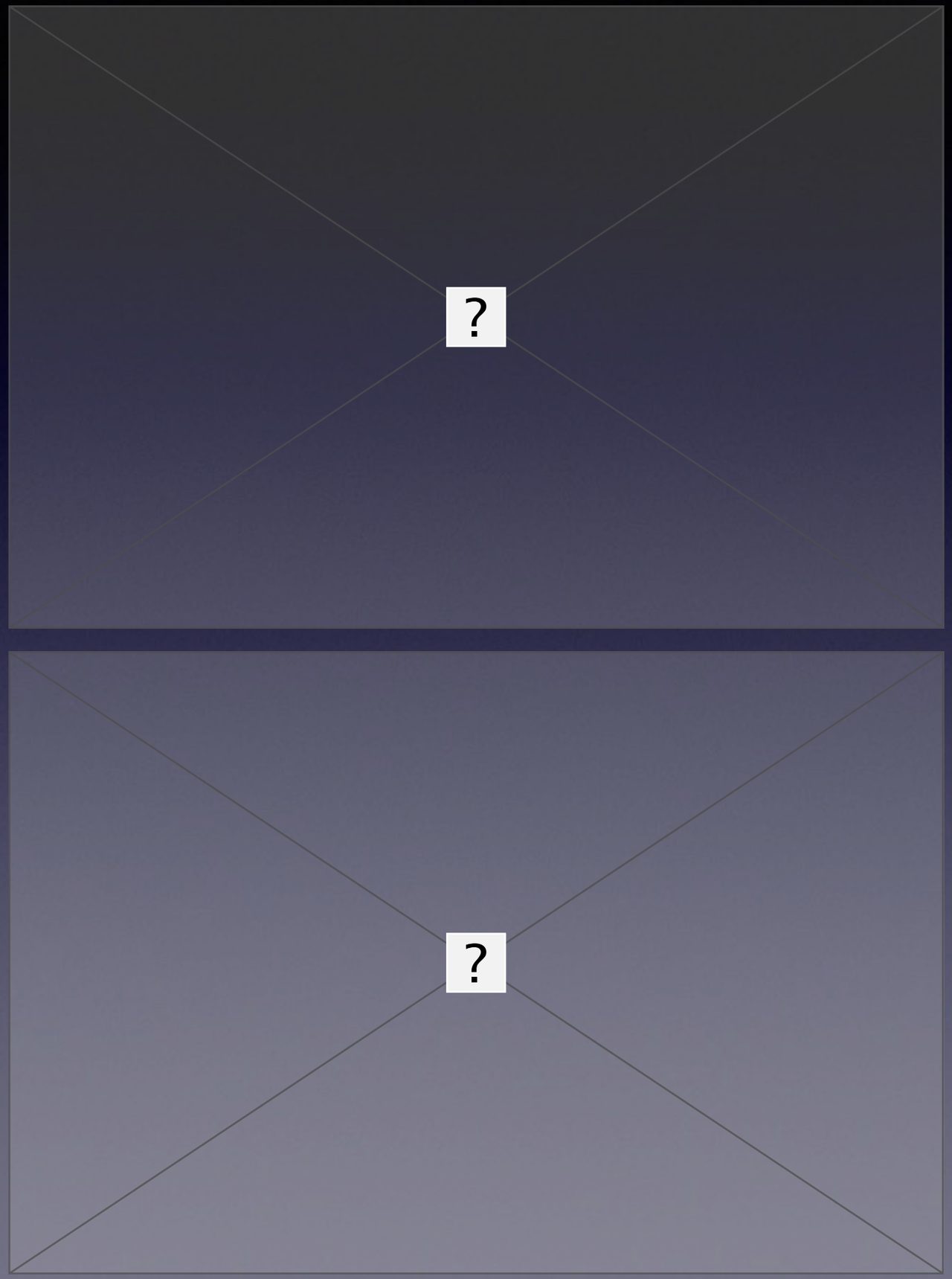
WORKSHOP 3 PARTICIPANTS

- John Stanley (chair)
- 22 from 7 countries (US, Australia, South Africa, Chile, Mexico, Norway, Sweden, Brazil)
- 14 Papers
- PT Benefits, Pricing, Funding (VC, User Pays), PPPs, Fare Evasion, Subsidization, System Performance



14 Papers

- 16_Public Private Partnerships Shared value creation..., Chung, Hensher.pdf
- 20_Funding opportunities for Australian urban public..., Stanley .pdf
- 27_Marginal cost-pricing in the Swedish transport sec..., Ljungberg.pdf
- 52_Preparation for implementing land value capture in..., Wang.pdf
- 63_Predicting fare evasion in urban bus systems, Guarda et al.pdf
- 71_Accessibility and Transit Performance..., Ermagun, Levinson.pdf
- 78_The revenue potential and performance of BRT opera..., Merkert et al.pdf
- 85_Are we planning investments to fail Consequences..., Oliveira et al.pdf
- 86_Designing a Pro-Poor Bus Fare Policy for the City..., Pillay, Seftel .pdf
- 87_Using Least Present Value of Revenue auctions for..., Oliveira et al .pdf
- 94_An early analytical contribution for regulation of..., Hauge et al.pdf

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- 158_The impact on fare evasion of a credit-based fare..., Bucknell et al .pdf
- 164_THE POLITICS OF PUBLIC TRANSPORT FUNDING THE CAS..., Briones, Bull.pdf
- 172_When to provide express services for buses, Larrain, Muñoz.pdf

Public Transport Benefits

- User benefits
- Non-user Benefit
- Agency Benefits
- Positive Externalities from Transit
- Reduction in Negative Externalities from Competing Modes
- Reduction in Internal Costs from Competing Modes
- Flexibility / Adaptability of technology

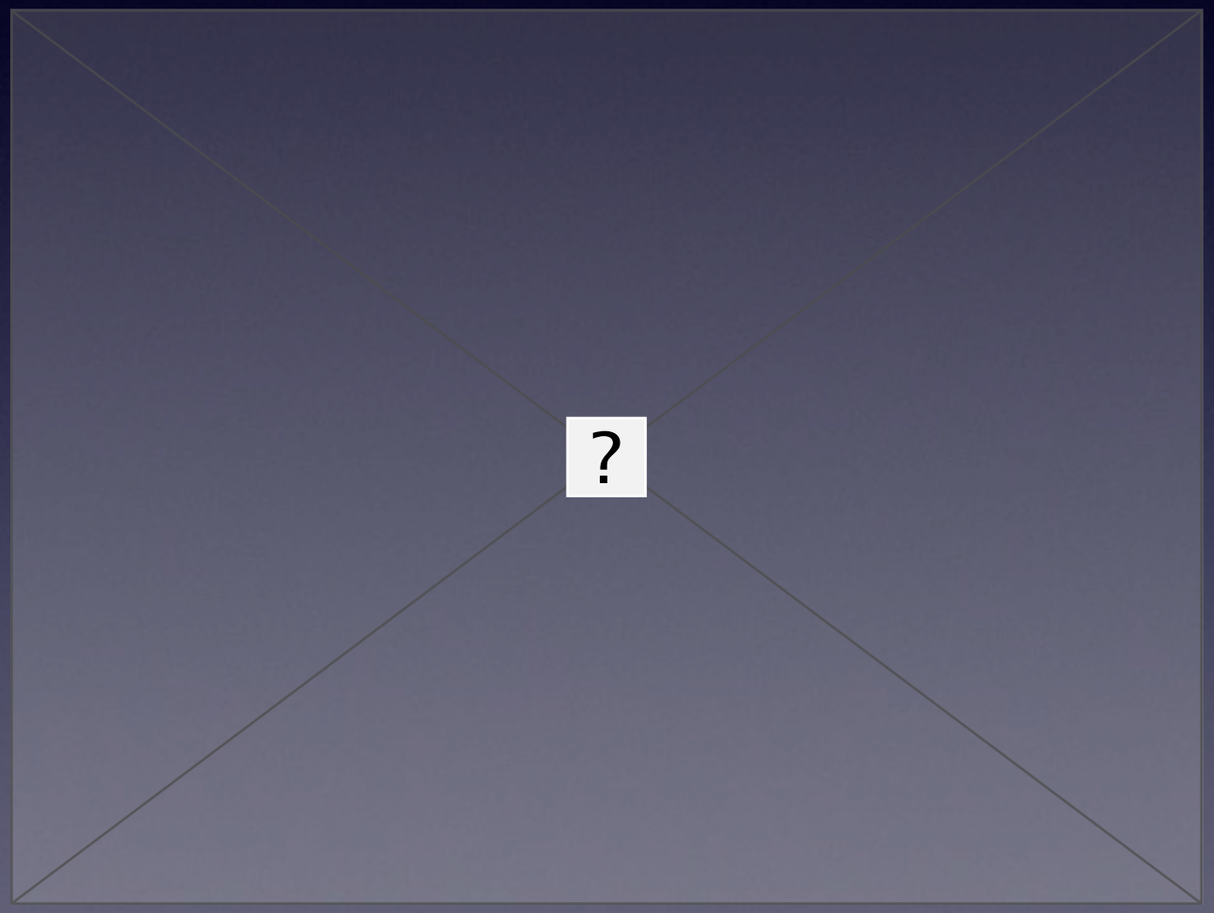
User Benefits

- Use time effectively (time in motion)
- Travel time Savings, [Fares, Income, Consumer Surplus]
- Travel Time Reliability
- Non-resident travel

Non-user Benefit

- Option values
  - Modal
  - Access to Destinations
- Existence value

Agency Benefits



- Brand value
- Jacobean - “Eyes on the Street”
- Mohring Effects
  - Temporal / Frequency – (waiting time) travelers increase frequency, reduces waiting time, induces more travelers (Network Externalities, Scale Economies)
  - Spatial / Coverage Effect (access time) travelers increase coverage

Positive Externalities from Transit

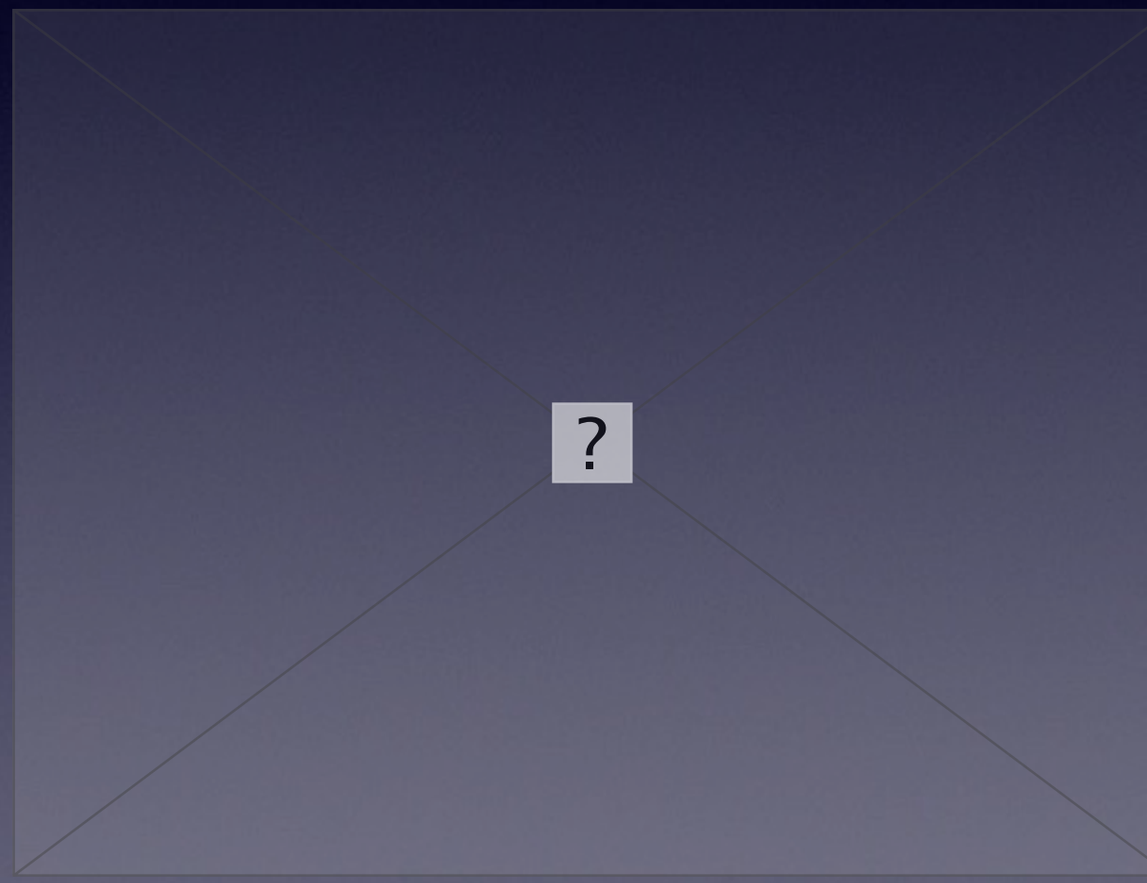
- Accessibility (Land value) (assumptions about interest rates: private vs. social time preference) Net of Nuisance Effects.
- Value Capture methods as a funding mechanism
- Agglomeration (Productivity)
- Livability
- Gentrification - Inequity/displacement disbenefit
- Social inclusion (mobility as a means of enhancing); affordability; social capital;
- Sense of community (Ui=f(Behavior j))

Reduction in Internal Costs from Competing Modes

- Infrastructure wear
- Infrastructure use
- Car ownership
- Car storage
- Land Area for other uses

Reduction in Negative Externalities from Competing Modes

- Pollution (air, CO2, noise)
- Road congestion
- Car crash reduction
- Health (obesity)
- Mental health
- Energy insecurity



Other Issues

- Double Counting
- Jobs (micro vs. macro) (Benefit vs. Cost)
  - informal: selling on vehicle,
  - formal: construction;
  - operations: drivers, mechanics, etc)
- Capitalism
- Political benefit
- Query multiplier benefit
- Flexibility / Adaptability of technology
- GDP

Creating wider public and political benefits

- Packaging / Bundling of Goods (and bads) to spread benefits across multiple interests and groups
- Sympathy for the political coalition building process
- Recognition of strength of preferences
- Compensation of losers
- Benefits for constituents
- Alignment of interests
- Including secondary amenities (not just time, but also quality of experience)

Communicating these benefits

- Cost of Do-Nothing Solution
- Propaganda, advertising, or education.
- Where are the academics and decision-makers in public debates?
- Public participation/ bring public and politicians along with decision process

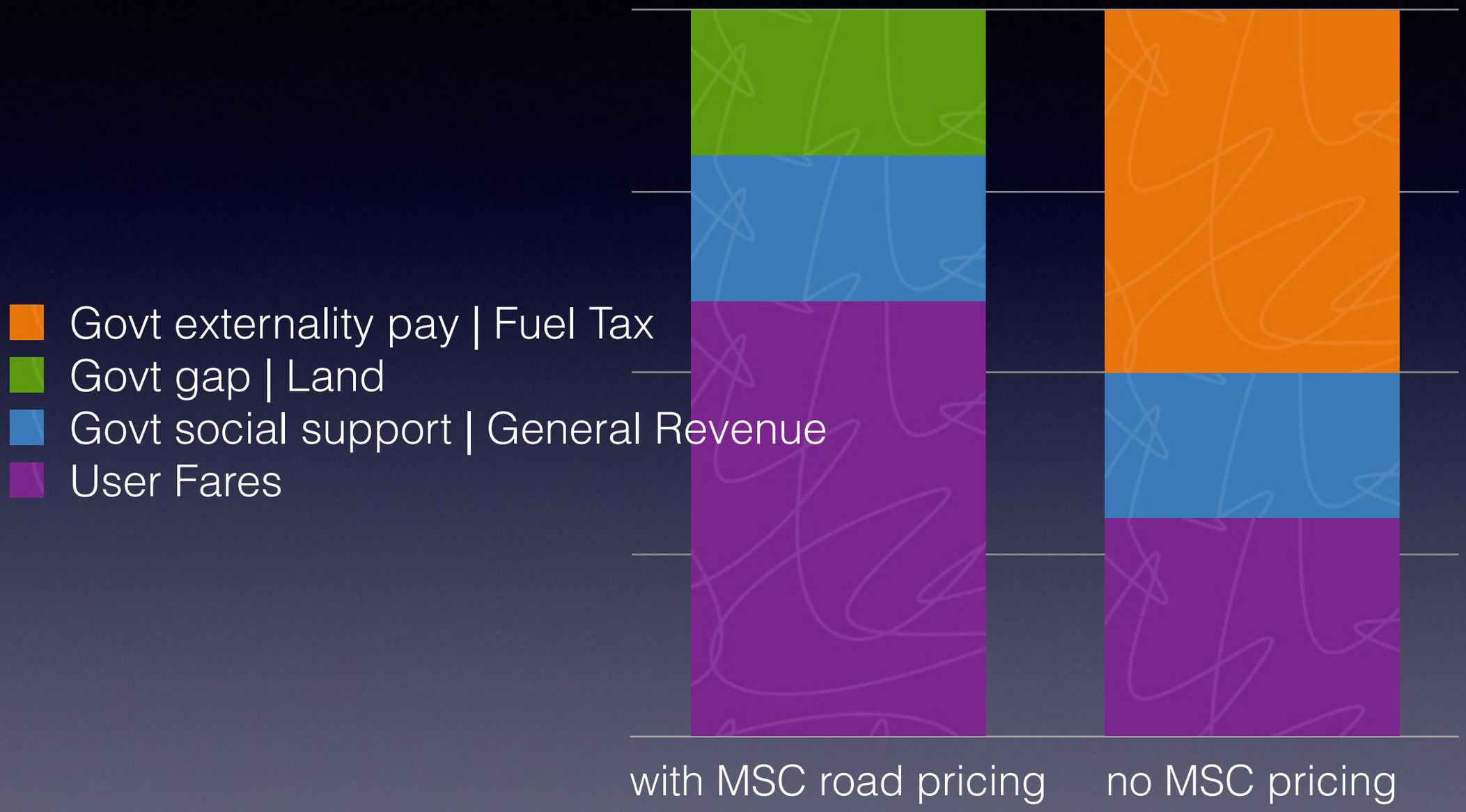
Capturing these benefits

- Policy window, Ready to jump on opportunities, generate momentum, providing evidence/ ammunition for supporters (Hendley Stevens windows, waves, surfers)

- Big bang vs. Incremental deployment

How should funding of public transport relate to the expected system/service benefits?

- If you price road use properly (First Best)
  - How much from users vs. non-user beneficiaries (land, employers)?
  - Earmarking (hypothecation) increases political acceptability , annoys Treasury
  - Fares alone cannot necessarily recover capital + operating costs, maybe operating costs
  - Operating funding – more from current users (fares, assuming efficient operation, service delivery)
  - Subsidies to deserving poor etc. as transportation vouchers rather than lower fares (General Revenue (which level of government?)
  - Cross subsidies from road tolls/fuel excise to transit?
  - Maintenance + Recapitalization funding – depreciation of capital charge to current users (fares, other sources)
  - New Capital funding + financing – more from non-user beneficiaries (land-various methods of value capture, Wider Economic Benefits/agglomeration) for new
  - DEBT: User vs. Non-User Payment
- If you don't (Second Best)
  - Sydney system (NB: Lower fares in this scenario than First Best)
  - Land pays for capital (line of sight)
  - (Equity effects of pricing people off system vs. subsidies for poor)


Govt externality pay | Fuel Tax
Govt gap | Land
Govt social support | General Revenue
User Fares
with MSC road pricing
no MSC pricing

What policy recommendations do we have?

- Funding
  - All funds should be raised and spent efficiently.
  - Funding models should be transparent and accountable.
  - Consider private sector delivery of transport services (competitive, regulated, franchise/concession, utility) to maximize public benefit.
  - Align governance level with service benefits and delivery.
  - Hypothecate transport user fees/ taxes to transport sector.
- Pricing
  - Implement full pricing of roads and correlated transit pricing.
  - Continue transit subsidies in absence of full road pricing, with IPART-like rationale.
- Subsidy
  - Be clear about reasons and amount of subsidy (equity, efficiency).
  - Look at best ways to deliver those subsidies (person vs. mode).
  - Use subsidies efficiently.

Thredbo 14 – e.g. Sydney Independent Pricing and Regulatory Tribunal (IPART)

Box 2.1 Proposed criteria for assessing whether external benefits should be included in the new 'best estimate'

1. **It needs to be external –** not a private cost or benefit that goes directly to the user, as those are already taken into account when making a decision on how to travel.
2. **It should not be available only to a particular subset of people –** benefits that are only available to some people (such as, benefits to those who own property close to a train station) do not provide justification for lowering fares for everyone.
3. **It needs to be measurable –** we need to be able to estimate the value of the benefit; it would be enough that we could determine a reasonable range.
4. **It needs to change materially in response to changes in public transport use, brought about by changes in fares –** the value of the net benefits of public transport use to society (external benefits + fare revenue - the cost of providing the services) should change in response to changes in fares.[a]

[a] It is important that the benefit increases as the usage of public transport increases because the purpose of subsidising fares is to increase the use of public transport by lowering its price (relative to not having a subsidy) in order to realise greater benefits for society.

What are the research priorities

- Use of Land valuation as core of measurement
- Dealing with the monetized and un-monetized benefits. Better Multi-criteria strategies. Valuing benefits. Monetizing the unmonetized
- Alternative technologies (Mobility-as-a-Service, EVs, AVs)
- Benefits of transport in poor countries/ regions
- Funding capital expenses / recapitalization via land vs. fares
- Political/Economic (Public Choice) Theory for Allocation of Sourcing Funds
  - Equity and Efficiency of Alignment of Fares with Funding/Subsidy Policy
  - Subsidies for Social Inclusion/ Exclusion to individual vs. to the operator
    - Defining who deserves subsidies and how much
- Benefits/Costs of Hypothecation
- Inter-governmental coordination, which layer funds transit (why)
- Connection of Pricing, Funding, and Service Provision

What do we want to propose to Thredbo 15 for this topic?

- Comparative Analyses
    - Look at alternative pricing and funding models across metros (e.g. Sydney, Vancouver, London, Stockholm, Hong Kong, Tokyo, Santiago, Singapore, Sao Paolo, Vienna, Helsinki)
    - Bus, Rail Benchmarking
    - Transport vs. Other Public Utilities (Water, Electric, Gas, etc.)
- Linking accessibility and land value capture (greenfields vs. brownfields)
- Monetization of full benefits and full costs
- Funding implications: Gross cost vs. net cost contracts
- Fiscal federalism/multi-level governance

Questions? Comments!

Thredbo 14 – IPART overview

- IPART Principle: Approach to setting Public Transport Fares

- Public Transport provides benefit to the community in two primary ways:

    - Public Transport Users derive consumer surplus by purchasing ‘journey’s’ that are less than their private valuation of those journeys

    - Non- rail passengers derive benefits from the fact that others purchase passenger transport and therefore consume less private means of transportation – i.e. cars

    - In the absence of a road use pricing mechanism that matched the motorist’s payment to full marginal costs – there is the requirement to take into account the externalities in setting optimal fares.

    - IPART are currently reviewing the extent that externalities are extended beyond this ‘boundary’

Thredbo 14 – IPART overview

At a high level, the IPART approach is:

Step 1: Work out the total efficient cost to provide public transport

Step 2: Determine the level of Government subsidy to reflect the external benefits

Step 3: Take into account specific other subsidisation i.e. concession and students

Step 4: The remaining amount is to be recovered through fares

To put this in perspective for Metro Buses in Sydney:

- Taxpayers will fund around 60% of the efficient costs - 40% represents our estimate of the external benefits attributable to bus services and the remaining 20% is a subsidy for school services and concession tickets.

Thredbo 14 – IPART overview

Externalities being taken into account:

- Congestion related externalities
- Emission related externalities
- Reduced fuel excise and parking levy

Table 3.1 Summary of the external benefits included in IPART's current fare determinations ($ per passenger trip)

	Metro buses ($2013)	CityRail ($2013)	Sydney Ferries ($2013)
External benefits			
- Avoided road congestion	1.24	6.55	0.47
- Reduced pollution & greenhouse gas	0.43	0.18	-0.22
- Road charges adjustment	-0.14	-0.15	-0.16
Total external benefit per passenger trip	**1.52**	**6.58**	**0.09**
Total external benefit per passenger km[a]	0.23	0.39	0.01
Total external benefit as a % of total efficient costs	36%	65%	1%

[a] The sample size for average trip distance data for ferries was small.

Note: Average fare paid is based on actual fares charged in 2013. We have not previously reported the external benefits on a per passenger trip basis for Sydney Ferries.

Source: IPART, *Review of maximum fares for CityRail services from January 2013 – Final Report*, November 2012, p 43; *Review of fares for metropolitan and outer metropolitan bus services from January 2010 – Final Report*, December 2009, p 78; *Review of maximum fares for Sydney Ferries services from January 2013 – Final Report*, November 2012, p 54; Bureau of Transport Statistics, *2011/12 Household Travel Survey Summary Report*, 2013 *Release*, p 35; IPART calculations.

Weakness of IPART

- Ignore Agglomeration
- Ignore Social Exclusion
- Ignore Crashes