





Australian Government

⁶ Department of Infrastructure and Transport Bureau of Infrastructure, Transport and Regional Economics

A policymaker's guide to transport reliability

Results from International Transport Forum study



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Presentation outline

See Commission

IPROVING

NETWORKS

The International Transport Forum

- Reliability trends
- Measuring reliability
- How much reliability
- Reliability policy instruments
- Policy conclusions

The International Transport Forum



Reliability study by the Forum, Australia and						
Austria	Canada	Denmark				
Finland	France	Greece				
Japan	The Netherlands	Spain				
The Ukraine	United Kingdom	USA				

The International Transport Forum

- ✓ an inter-governmental body within OECD family.
- ✓ a global platform for transport policy makers and stakeholders

The Forum

- organises a Conference for Ministers and leading figures from civil society each May in Leipzig, Germany
- ✓ Australia and the UK co-hosted the 2009 Forum in Leipzig

Australia

 an active participant in Forum events... and in the International Transport Forum-led programme of international research such as the transport reliability study

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"The central question of this report is whether appropriate levels of reliability are sought and supplied"

Demand for reliability has increased

- The decline in transport costs (following improvements in transport infrastructure, vehicles and equipment) has facilitated and complemented product specialisation (with outsourcing, regional warehouses and just-in-time systems)
- This capitalising on specialisation is predicated on affordable and reliable transport costs...

... but this has also created a dependence.

Increasingly complex scheduling, made possible through improved reliability, creates an ongoing need for reliability...

... but "reliable <u>fast</u>" not "reliable <u>slow</u>"!







What Counts

- Reliability will get more important
- But one size doesn't fit all
- Heterogeneity "granularity" is critical Policy Response
- Robust assessment is possible
- Use cost-benefit analysis to decide
- to build, manage, price, or inform

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Measuring reliability



Distribution (not average) of transit times is the key—and provides a far better policy focus

Measuring reliability

It is important to monitor reliability (for providers and users)





Canadian Rail Freight Service Review (2010)

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Market mechanisms with standard products/services...

- consumers want different product quality
- reflecting that, suppliers offer quality differentiation
- ...and this may lead to...
- price differentiation

Applying this to "reliability"...

- demand for reliability is "granular" so product differentiation could be efficient
- users would trade-off between reliability and price BUT
- can we product differentiate in rail network reliability?

 (sort of!)
 and in road reliability? Maybe! We cannot sell paths/slots in road as easily as we can in rail but opportunities exist for some product/price differentiation eg toll roads and high-occupancy (HOT) lanes

Market may provide options with different levels of reliability—at a price

The "Express Lane" fruit and vegetables train has a 15% premium for guaranteed delivery within a given (short) time window



...but policy is challenged when product (reliability) differentiation is not technically or economically feasible



Asking users whether reliability matters does not really help in working out how much reliability to supply! Users will prefer high levels of reliability particularly if they do not have to incur the cost



Source: City of Chicago Department of Transportation (2003).

So... what is the 'right' level of reliability?

Determining this can be difficult because

- if costless to users, then a high level will be demanded by all
- if provided at a higher cost than is valued by users, then community welfare declines.

The policy challenge is to identify those options that can increase reliability at a cost that users are willing to pay.

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In principle, network users can adapt and influence reliability

- users can adapt their behaviour to achieve higher levels of reliability
- shippers control some aspects of reliability

... which reinforces the importance of cost-benefit analysis

Four government policy instruments influence reliability... ALL the policies should be considered—and be subject to cost–benefit analysis



1. Build

The level and quality of infrastructure are reliability parameters ... and allowing for reliability can alter what and how we build

she had of a faite motor way sufficiently (present state \$5555)						
Contributing factors	Traditional surface	Advanced (low maintenance) surface				
Initial works costs	480	1440				
Maintenance works	1080	280				
User costs (delays)	1280	520				
Traffic management costs	260	170				
Residual value	-40	-90				
Net Present Value	3060	2320				
Difference in NPV of costs		-740				

Table 4.1. Economic evaluation of long life pavements: one km of 3-lane motorway surfacing (present value \$000s)

Indicative economic evaluation results. Source: OECD (2005).

2. Manage

...for example, through coordination of activities

Hunter Valley Coal Chain Logistics Team



3. Price

Where it is practical to apply, prices can be crucial in delivering an efficient level and usage of reliability

- infrastructure managers inform users what it costs to deliver a given reliability
- users communicate how they value reliability and structure their network use accordingly



4. Inform

Seattle Traffic	Seattle Area Travel Times							
 <u>Seattle Area</u> <u>Home</u> 	Travel times as of 7:55 P.M. Thursday,							
· Incidents	July 1, 2010							
· <u>Travel Times</u>	State Route/ Interstate	te Route D te/ Description (Distance (miles)	Average Travel Time (minutes)	Current Travel Time (minutes)	Via HOV (min.		
· Travel Alerts								
 <u>List of</u> <u>Cameras</u> 								
 <u>Best time to</u> <u>leave</u> 	167	<u>Auburn to</u> <u>Renton</u>	9.8	10	10	10		
 <u>Mobile Site</u> <u>Lake</u> <u>Washington</u> <u>Have</u> 	405	Bellevue to Bothell	9.7	10	10	10		
	405 5	Bellevue to Everett	26.1	27	27	27		
Questions?		Bellevue to						
State Travel Info	405 5	<u>Federal</u> <u>Way</u>	24.6	26	26	25		
 <u>State View</u> Weather 	405 90	<u>Bellevue to</u> <u>Issaquah</u>	9.6	9	10	10		
<u>Commute</u> <u>Options</u>	405	Bellevue to Lynnwood	14.9	15	15	16		
Local Traffic	405 520	Bellevue to Redmond	6.0	8	7	7		
<u>Mount Vernon</u> <u>& Stanwood</u>	405	<u>Bellevue to</u> <u>Renton</u>	11.2	11	12	11		
<u>City of</u> <u>Bellevue</u>		Bellevue to Seattle	10.6	11	12	12		

Reliability policy instruments are:

- Build
- Manage
- Price
- Inform



Optimising reliability requires use of Cost Benefit Analysis

Summary: impact of the policy instruments



2. Use price to provide choice, such as tolled roads

3 Use information to mitigate the effects of unreliability

Examples of how governments are responding

Road network vulnerability planning



Examples of how governments are responding

Impact of ramp metering on travel time and buffer time



(Used in Australia too!)

Source: Bhouri & Kauppila 2010

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Policy conclusions







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- Infrastructure provision and management policy should shift from covert to overt strategies for managing reliability
- Reliability needs the policy prominence such as is traditionally given to congestion
- The key reliability policies are:
 - monitor reliability
 - recognise the policy instruments of <u>build</u>, <u>manage</u>, price and <u>inform</u>
 - assess those policy instruments by cost-benefit analysis







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Thank you