The Sydney Beaches Valuation Project

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Bondi Surf Bather's Lifesaving Club
28th November 2013

Sydney Beaches Valuation Project

- Collaboration between UNSW and SCCG
- Value case study beaches using a range of methods
- Inform existing management, and response to future changes under climate change

- Total funding of around $220k, 4 year project

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SYDNEY COASTAL COUNCILS

Acknowledgements

- My supervisors
- A/Prof Dale Dominey-Howes, Usyd (formerly UNSW)
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- My funders
- NSW Government, UNSW, CSIRO
- Council and NSW government staff and BMWG

Storms, climate change and beaches

- Beaches already affected by erosion due to large storms
- Climate change has a range of projected impacts important for beaches
- Shoreline recession
- Increasing the severity of storm impacts

SMH: June 2009

Impacts of SLR on coast

Principal direct physical and ecosystem effects	Potential secondary and indirect impacts
increased inundation of coastal zone	disruption of coastal economy, tourism impacts
increased coastal erosion	displacement of residents in impacted areas
increased risk of flooding and storm damage	damage to coastal infrastructure
saline intrusion into surface and ground water	health impacts associated with water quality changes

Adapted from Aboudha 2006

Impacts of beach erosion and closure

- In the short term, tourism and recreation impacts are important
- Reduced access, reduced visual amenity, increased risk to assets and users
- Impacts are linked to duration and timing

Manly Beach, Jun-July 2009
Source: Pacific Edge

Eloura: June 2009

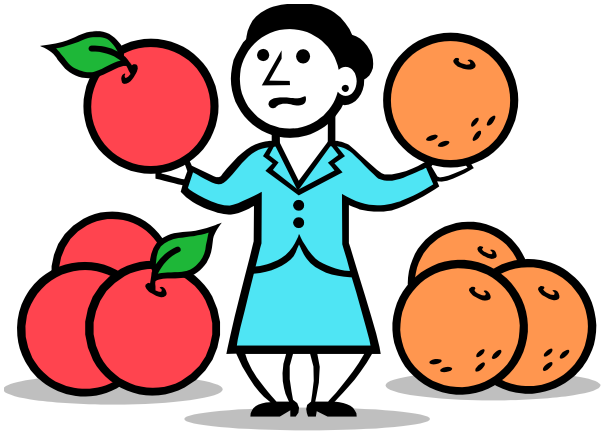
Management responses

- Do nothing, retreat, adapt, protect
- Hard or soft protection most likely - combination
- What will different alternatives mean in environmental, social and economic terms?

‘Line in the Sand’ demonstration
Narrabeen 2005 (SMH)

Economic evaluation/appraisal

- Means of comparing projects or management options to determine preferred options
- Appraisal tools used to assist decision-makers
- Cost-benefit analysis (CBA) and multicriteria analysis (MCA) are the most commonly used



Research focus

What would the partial or total loss of beaches mean for:

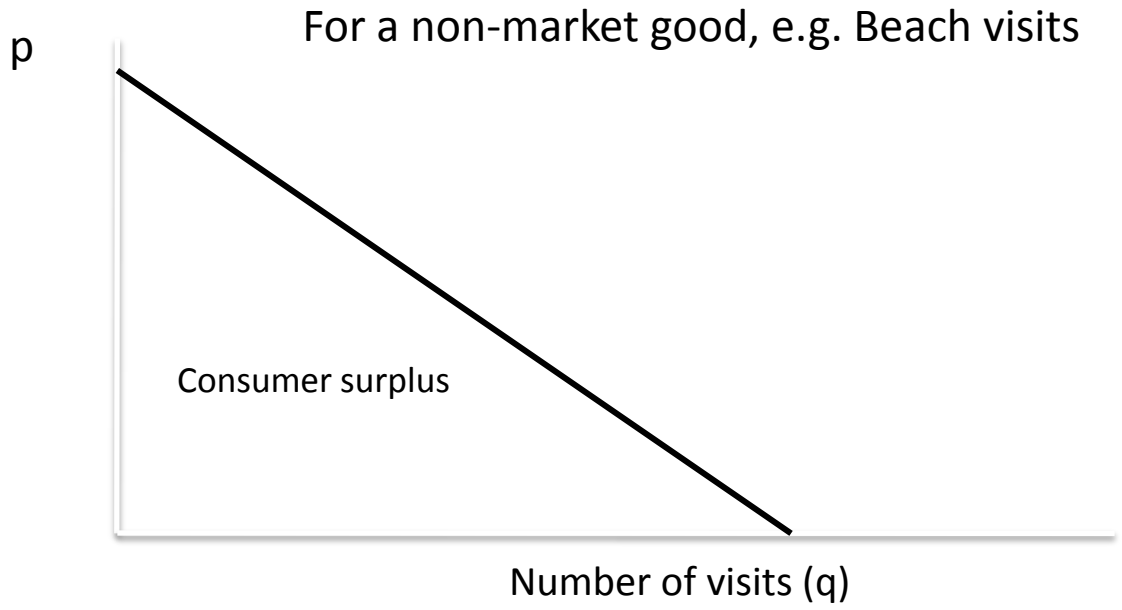
- tourism and recreation revenue streams? (**Travel Cost Method**)
- the local property market? (**Hedonic Pricing Method**)

and

- Are people willing to pay to prevent erosion? (**Contingent Valuation**)

The Travel Cost Method

- No market for beach recreation
- Travel costs to access a site used as proxies for an entry price (a 'revealed preference' method)
- Assumes consumers respond to an increase in travel cost as they would an increase in entry price



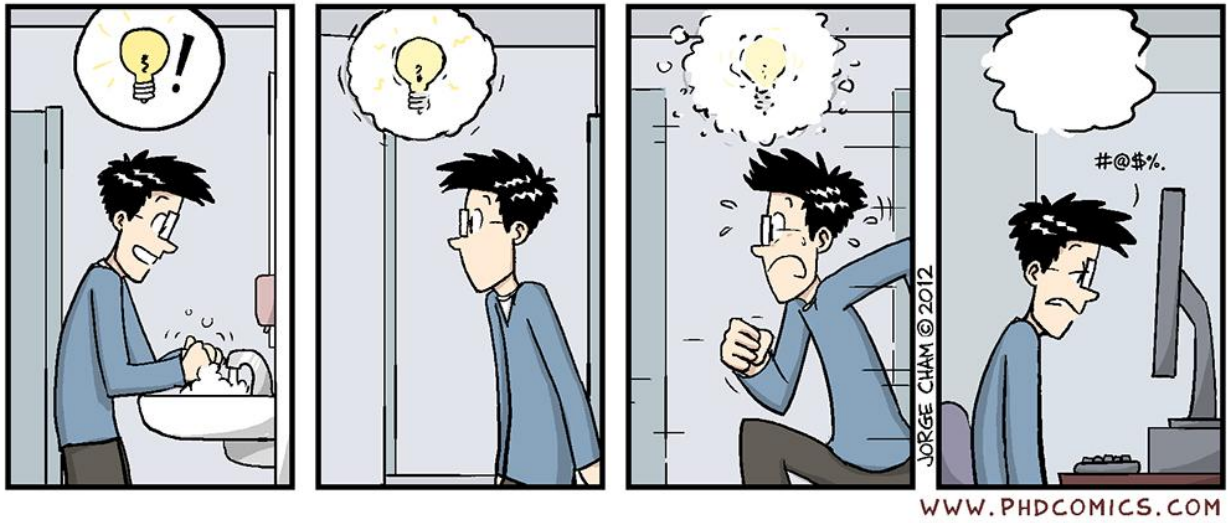
Survey-based method

My office (one of them)


Office number 2

Office number 3

The reality



$$z = \frac{\sum_{j=1}^{n} v_j x_j}{\coprod_{\partial}^{f} \sum_{n=1}^{k} \wp \ell} \otimes \frac{\alpha \to \infty}{\overline{W}} \qquad z = \sum_{j=1}^{n} v_j x_j$$

$$\sum p_j x_j \le c \qquad z = \frac{\sum_{j=1}^{n} v_j x_j}{\coprod_{\partial}^{f} \sum_{n=1}^{k} \wp \ell} \otimes \frac{\alpha \to \infty}{\overline{W}}$$

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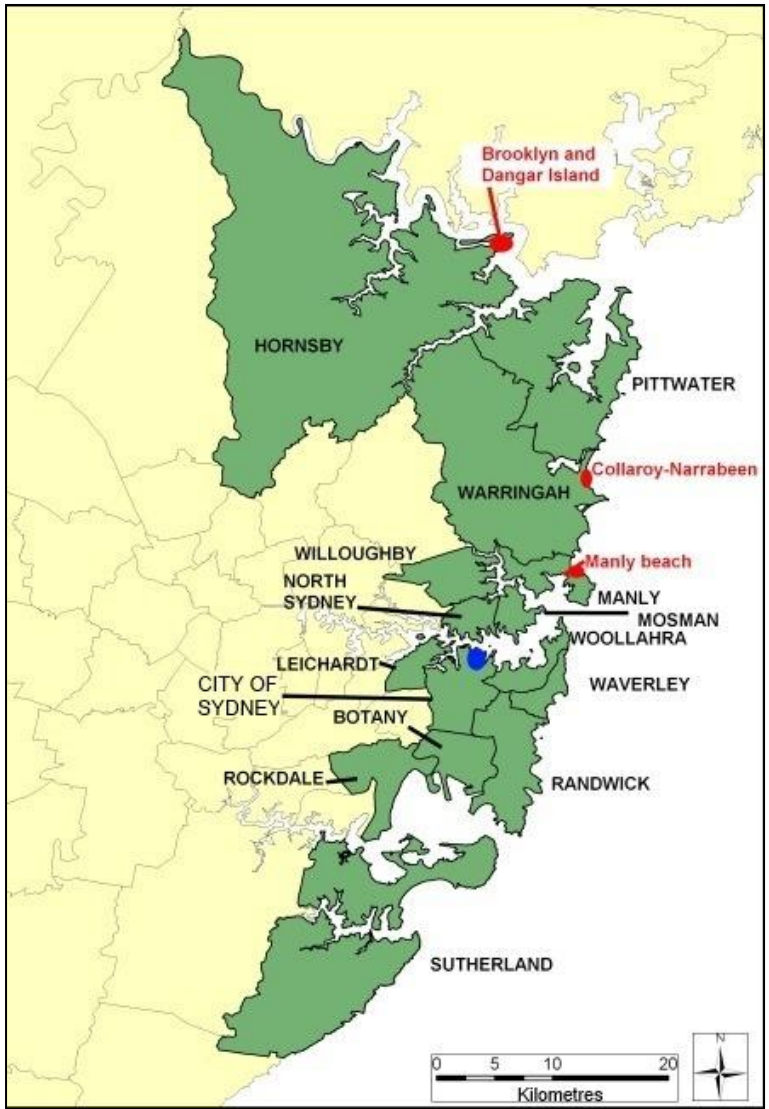
Coastal spending

- Expenditure on getting to the beach, money spent while at the beach



Case study site	Travel cost average (2009 AUD$ per visit per person)
Collaroy-Narrabeen	2.90
Manly Ocean Beach	6.31
Brooklyn Baths	14.72
Dangar Island	7.49

On average, people spent around $5.05 on food and drinks

Added value of a beach visit

- Consumer surplus is and estimate of the additional benefit people get over the costs they incur – why they make the trip

Case study site	Consumer surplus* without time cost (2009$ per person per beach visit)	Consumer surplus with travel time cost at 40% of wage rate (2009$ per person per beach visit)
Manly Ocean Beach	9.20±1.92	16.18±2.98
Collaroy-Narrabeen	2.72±0.56	10.28±2.59

Estimating visits to Sydney beaches

- No visitation records like National Parks
- Proxies are unreliable

- Car parking, lifesaver head counts

- Need to rely upon survey results to determine how frequently people visit
- Some additional information available for tourists – better understood than ‘local’ use

Resident visitation

- Average visits in SBVP surveys was between 4 and 13 per month
- Raybould (2006) found Gold Coast residents visited 48 times per year on average
- URS (2007) surveyed residents of Victoria, not just coastal locations
- Mean visitation of 6.4 visits per person per year

Total resident beach visits

- The residential population of Greater Sydney in the 2011 census was 4,391,636
- Taking the conservative estimate of 6.4 visits per year, the total estimated number of beach visits by Sydney residents is around 28.1 million per annum.

Bondi 29 Sep 08: Aquabumps

Tourist visits to Sydney beaches

	Total trips made by beach visitors*	Average number of days per trip (nights +1)*	Assumed # of beach visits per trip	Total beach visits (1000s p.a.)
Daytrippers	1,197	1	1	1,197
Domestic Overnight visitors	3,624	5.3	2	7,247
International overnight	1,709	26.1	4	6,838
Total	6,530			15,282

Figures are 3-year averages taken from Tourism Research Australia data – derived from the National and International Visitor Surveys

Aggregate values of recreation

- $260 million spent in getting to the beach
- $220 million on food and drinks

- Previously unpriced value of recreation

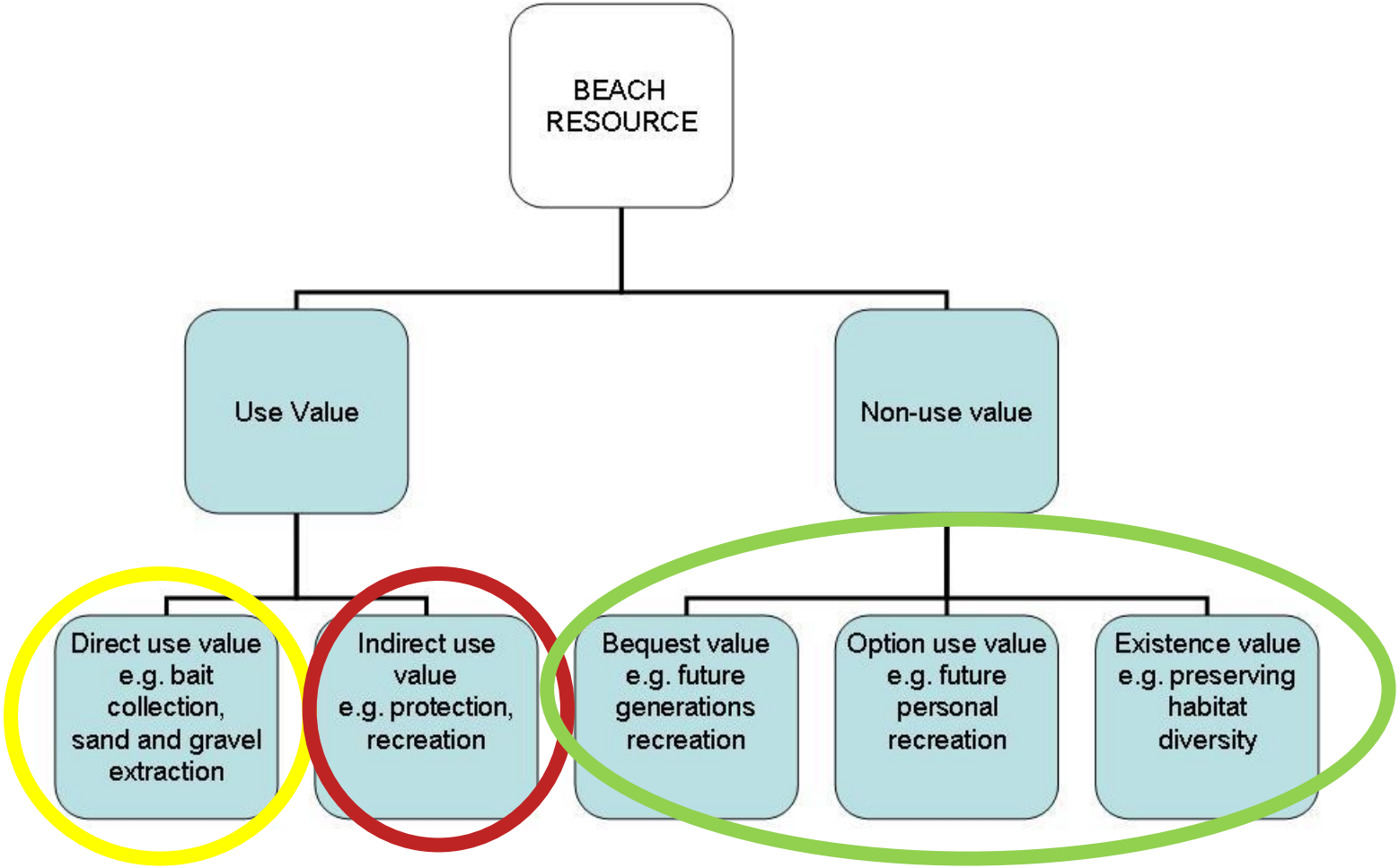
$120- 400 million **p.a.** using only travel costs

$446-702 million **p.a.** when including time costs

Exclusions from the aggregate figures

- Residents may have already spent a lot to live close to the beach and reduce their travel costs
- Tourist expenditure not directly on their beach visits – decision to come to Sydney on their working holiday due to seeing Bondi Rescue on TV when it was cold and wet outside
- Non-use/intrinsic/cultural values

Total economic value



Hedonic Pricing Method

- What is the price premium for living on the beachfront?
- How does erosion risk affect these premiums?

Source: Coastalwatch, 2007

Beachfront land values in Collaroy-Narrabeen

- Strong preference for beach frontage
- Overall average $972k per property
- Houses in first block worth $1.22 million
- Average land value of beachfront property is $1.99 million
- Total value of properties in first block is $246 million

Land values cont.

- Being on or next to the beachfront added approx $110 million to the value of a parcel of land in the first block
- Only includes house blocks
- Premiums are only relative to the case study average – coastal suburbs in general are more expensive than further inland
- Scarcity value – Sydney is a major centre with very little beachfront real estate

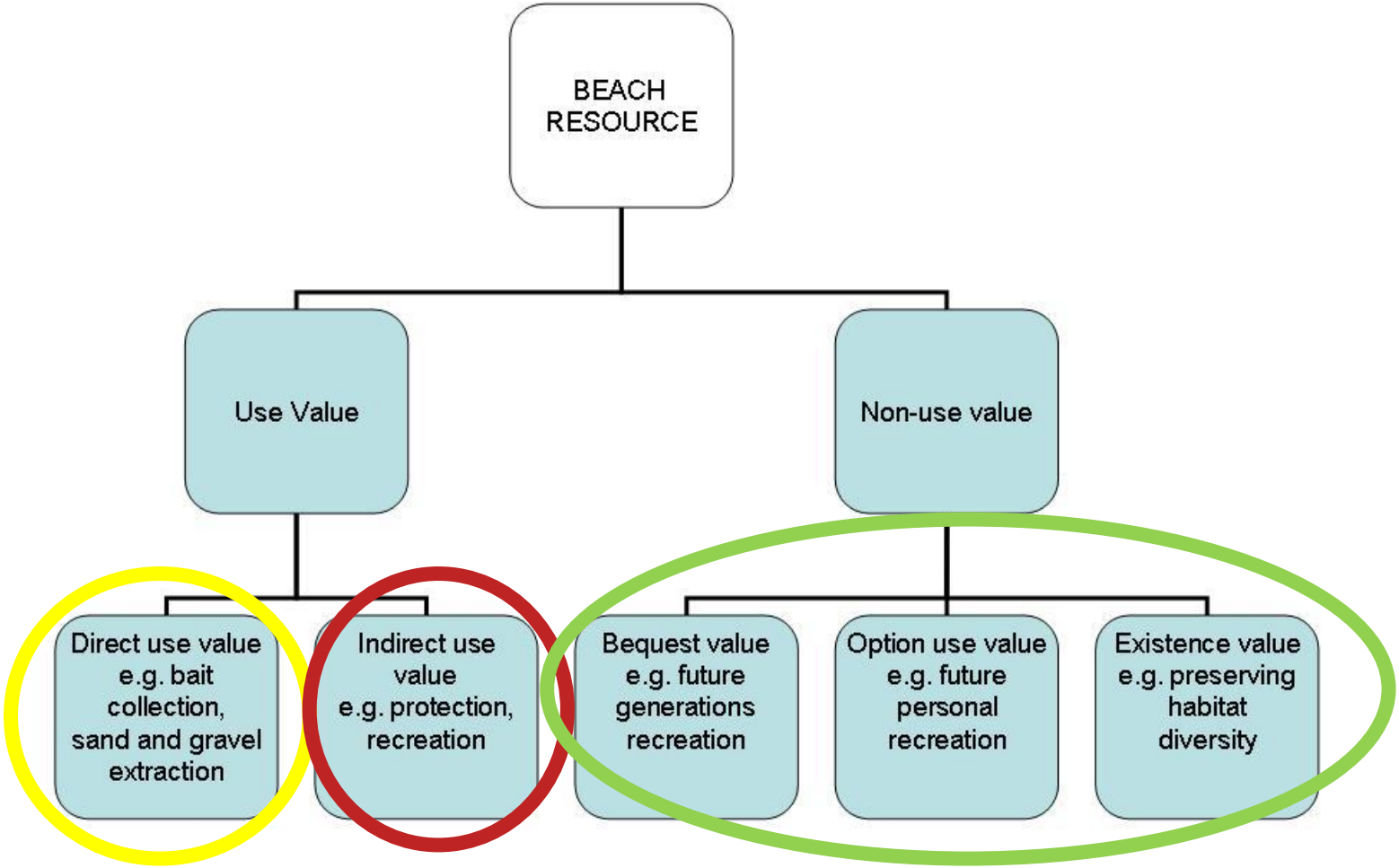
Will these premiums persist?

Which tipping point will we see first?

Sand replenishment, Collaroy-Narrabeen
Source: Daylan Cameron

Wamberal, 1978 Source: OzCoasts

Total economic value



Contingent Valuation

- Hypothetical Market constructed
- Captures non-use values
- Allows for exploration of situations not experienced before

Source: SMH 2006

Paying to avoid closure

- In *2050*, 10% of the time you visit the beach there will be no dry sand present at high tide. Would you be willing to contribute *$X* to a fund designed to prevent this erosion occurring?

Manly Beach, Jun-July 2009
Source: Pacific Edge

WTP results

- 71% believe SLR will mean beaches are closed more often
- Around 53% of all respondents would be willing to pay, in principle, for a beach management fund that would prevent erosion

- Average WTP of around $116.27 ($69.63) per person, among those who support in-principle

User pays beach charges and WTP

Reasons for support were mainly around personal use and bequest values

Reasons for non-WTP included:

- Not local beach
- Availability of substitutes
- Insufficient information about project
- Pay taxes already – not the right funding model

Equity issues – everyone benefits
e.g. Manly Council – 40k residents, 4m+ beach visits

Do the WTP numbers make sense?

- Treat hypothetical results with caution
- High level of support, low level of financial support
- Manly Council climate change levy was defeated 2:1 at 2008 local council elections

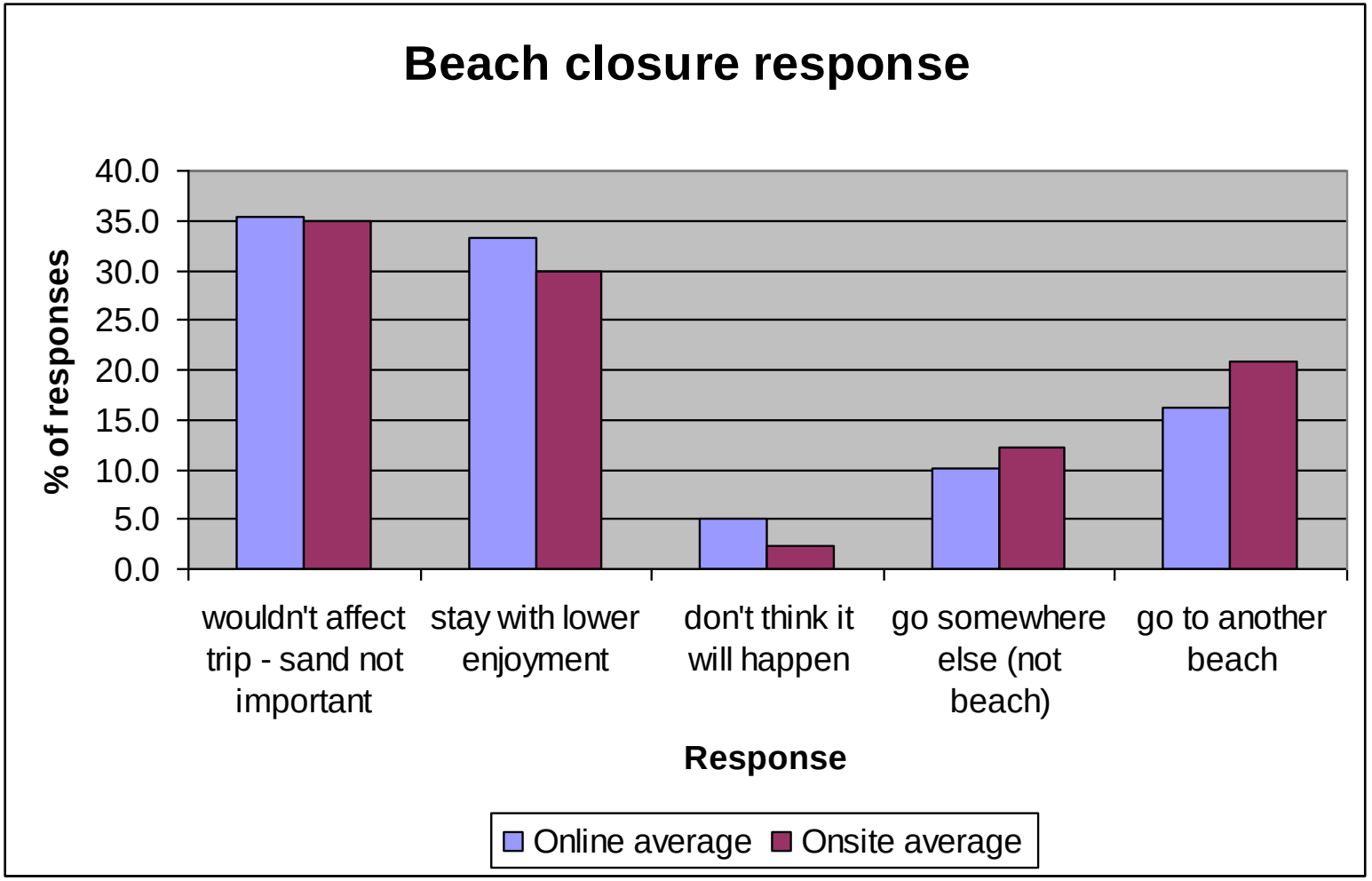
WTP bid amount ($2009)	% of beach users WTP that amount as a once-off donation
5	100.0
10	90.3
25	77.4
50	70.6
100	45.7
500	13.2

Why is behaviour important?

- People are more able to predict their behaviour than their WTP
- Relies upon experience of similar situations
- Can use behavioural responses to predict the economic impacts

BBC News

What would people do if there was no sand?



What if the beach never returns?

- The long term impacts are less certain
- tourism destinations no longer viable?
- Residents move to other locations?

Climate change is reducing land values in coastal areas such as Byron Bay in NSW. Photo: GLENN HUNT

Sea change sinks coastal land values

Angus Grigg and **Lisa Allen**

Land values on a beachfront strip near Byron Bay in northern NSW have been slashed by 50 per cent, in an early sign of the devastating effect climate change can have on coastal property.

The unprecedented step was taken by the NSW Valuer-General and relates to properties at Belongil Beach, which are being affected by coastal erosion.

This is the result of storm surges and has contributed to a big increase in the number of properties being placed on the market in recent months.

But the uncertainty means there have been few sales over the past two years.

This could become a national problem in other low-lying areas such as the Gold Coast, Cairns and Sydney's northern beaches, potentially exposing banks to big losses as property prices plummet.

Experts said sea level rises in the coming decades will make storm surges more frequent and severe.

"There is no doubt rising sea levels pose a real and significant threat to low-lying coastal property," said Matthew England from

Continued page 9

PROPERTY ROUND-UP

- Lend Lease Solar, **page 46**
- Aevum deal. Property observed: **Robert Harley, page 47**
- Triguboff's Sydney play, **page 49**

Take-home messages

- Economic values are substantial, poorly understood and subject to significant threats and challenges
- Need a decent estimate of beach usage
- Need a better understanding of how people will respond to changes in the coastal environment

- Short term and long term
- residents and tourists

Comments

- Need greater funding for environmental research
- Need greater funding and support for local governments
- Need to talk to the community and take them on the journey

Contact details and more info

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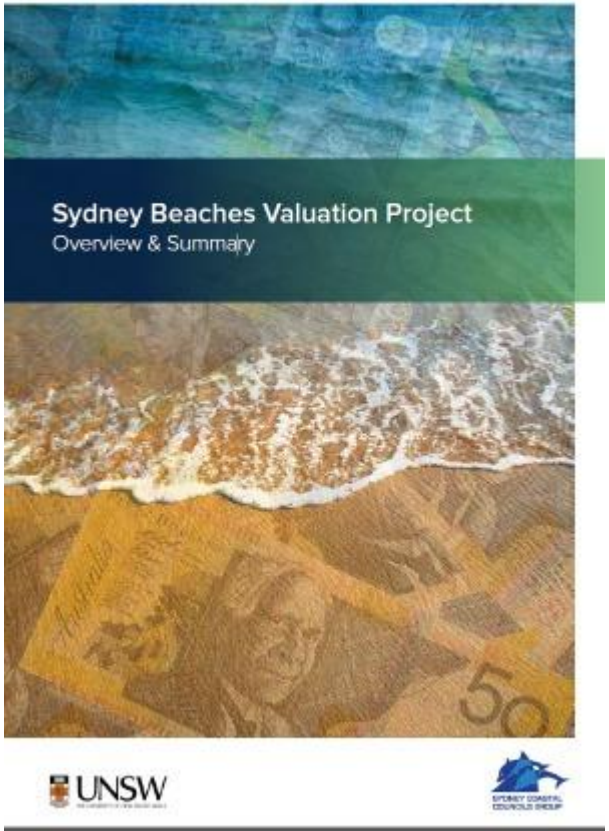

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