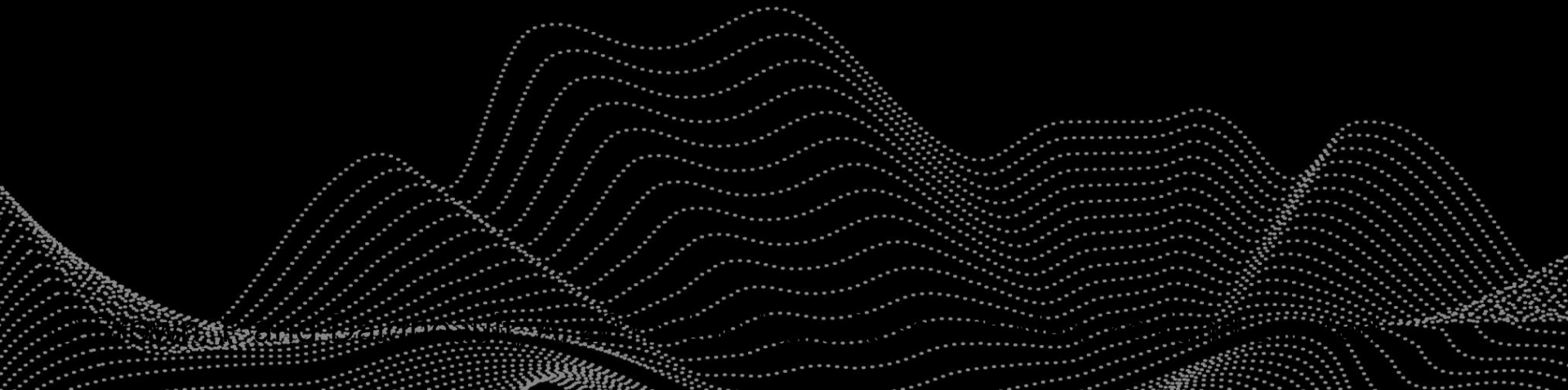




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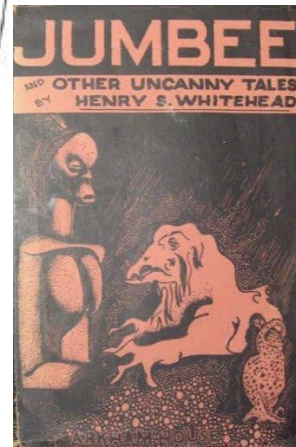
Steps in conducting a CBA





Invasive Jumbees

- There is a certain nocturnal IAS found throughout the Caribbean.
- They enter houses and break furniture, plates, and glasses. People have a hard time sleeping when the IAS are present in the house due to noise and psychological stress.
- *Jumbees cannot cross water*, so one way to avoid having jumbees follow one home is to cross a river when travelling back to the house.
- Leaving shoes outside the door has proven to be effective in distracting jumbees from entering the house because while *jumbees love shoes*, they do not have feet, so they spend a lot of time trying to wear them.
- *Jumbees love to count*, so some people have found that leaving heaps of rice outside the door prevents jumbees – who feel compelled to count every grain – from entering the house.





Steps in conducting a CBA

1. Determine the objectives of the cost-benefit analysis



2. Identify costs and benefits



3. Value costs and benefits



4. Aggregate costs and benefits



5. Perform sensitivity analysis



6. Consider distributional impacts



7. Prepare recommendations



Steps in conducting a CBA

- [1] *Determine the objectives of the cost-benefit analysis*
 - What is the problem, i.e., what are we trying to prevent by controlling of jumbees?
 - Who has agency in the analysis?
 - What are the options?





Steps in conducting a CBA

- [1] *Determine the objectives of the cost-benefit analysis*
 - What is the problem, i.e., what are we trying to prevent by controlling of jumbees?
 - Who has agency in the analysis?
 - What are the options?
 1. Do nothing
 2. Diversion channels to bring water in front of all doors
 3. Leave shoes outside the door
 4. Leave heaps of rice outside the door





Steps in conducting a CBA

- [1] *Determine the objectives of the cost-benefit analysis*
- [2] *Identify costs and benefits of managing the invasive*
 - **Total Costs** = Direct Costs + Indirect Costs
(Alternatively, Explicit Costs + Implicit Costs)
 - **Total Benefits** = Direct Benefits + Indirect Benefits
(Consider market costs + non-market costs)





Steps in conducting a CBA

- [1] *Determine the objectives of the cost-benefit analysis*
- [2] *Identify costs and benefits of managing the invasive*

Costs of management	Do nothing	Diversion channels	Shoes outside the door	Heaps of rice
R&D				
Fixed Capital				
Annual Supplies				
Labour				
Maintenance				



Steps in conducting a CBA

- [1] *Determine the objectives of the cost-benefit analysis*
- [2] *Identify costs and benefits of managing the invasive*

Costs of management	Do nothing	Diversion channels	Shoes outside the door	Heaps of rice
R&D		Civil engineer	Market research firm	
Fixed Capital		Concrete		
Annual Supplies			Shoes	Rice
Labour		Contractors		
Maintenance		Maintenance engineers	Compliance officers	Compliance officers



Steps in conducting a CBA

- [1] *Determine the objectives of the cost-benefit analysis*
- [2] *Identify costs and benefits of managing the invasive*
- [3] *Value costs and benefits*

Costs of management	Do nothing	Diversion channels	Shoes outside the door	Heaps of rice
R&D	capital cost → \$750,000		\$350,000	
Fixed Capital	capital cost → \$135,000			
Annual Supplies		annual cost →	\$200,000 / year	\$50,000 / year
Labour	capital cost → \$600,000			
Maintenance	annual cost →	\$400,000 / year	\$100,000 / year	\$80,000 / year



$$\$350,000 + \$200,000 \times 20 + \$100,000 \times 20 = \$6,350,000$$



Steps in conducting a CBA

- [1] *Determine the objectives of the cost-benefit analysis*
- [2] *Identify costs and benefits of managing the invasive*
- [3] *Value costs and benefits*

Benefits of management:

- Avoided damage: less damage to furniture, plates, and glasses
- Economic/health outcomes: better sleep → higher productivity at work
- Psychological outcomes: People are less afraid

Benefits of management	Do nothing	Diversion channels	Shoes outside the door	Heaps of rice
Avoided damage				
Economic/health				
Psychological				



Steps in conducting a CBA

$$\begin{aligned}
 & \$200,000 \times 20 \\
 + & \$400,000 \times 20 \\
 + & ? \\
 = & \mathbf{\$12,000,000 + ?}
 \end{aligned}$$

- [1] *Determine the objectives of the cost-benefit analysis*
- [2] *Identify costs and benefits of managing the invasive*
- [3] *Value costs and benefits*

Benefits of management:

- Avoided damage: less damage to furniture, plates, and glasses
- Economic/health outcomes: better sleep → higher productivity at work
- Psychological outcomes: People are less afraid

Benefits of management	Do nothing	Diversion channels	Shoes outside the door	Heaps of rice
Avoided damage	0	\$200,000 avoided damages / year	\$140,000 avoided damages / year	\$40,000 avoided damages / year
Economic/health	0	\$400,000 labour productivity / year	\$280,000 labour productivity / year	\$80,000 labour productivity / year
Psychological	0	?	?	?



Steps in conducting a CBA

- [1] *Determine the objectives of the cost-benefit analysis*
- [2] *Identify costs and benefits of managing the invasive*
- [3] *Value costs and benefits*
- [4] *Aggregate costs and benefits*

	Do nothing	Diversion channels	Shoes outside the door	Heaps of rice
Cost over 20 yrs	\$0	\$9,485,000	\$6,350,000	\$2,600,000
Benefit over 20 yrs	\$0	\$12,000,000 + ?	\$8,400,000 + ?	\$2,400,000 + ?

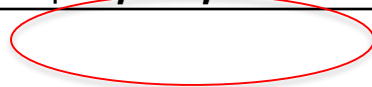


Steps in conducting a CBA

- [1] *Determine the objectives of the cost-benefit analysis*
- [2] *Identify costs and benefits of managing the invasive*
- [3] *Value costs and benefits*
- [4] *Aggregate costs and benefits*
 - Calculate the **Benefit / Cost Ratio** and/or **Net Benefit**



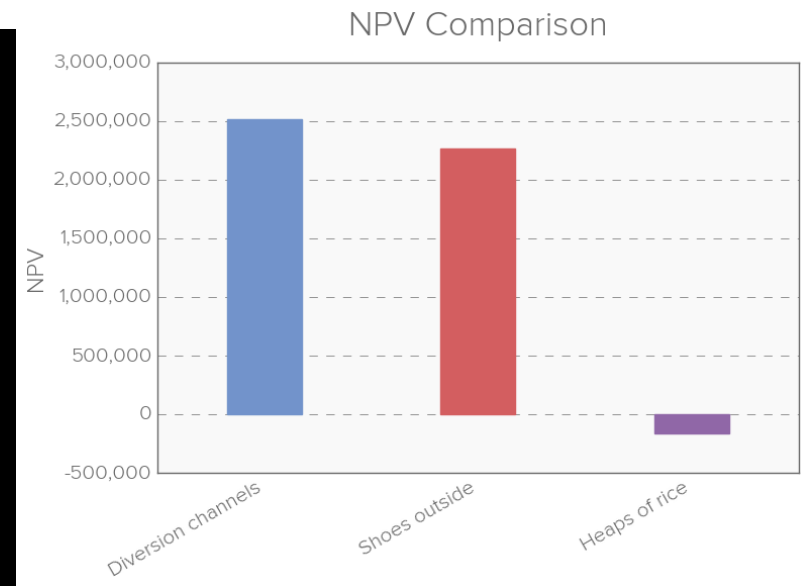
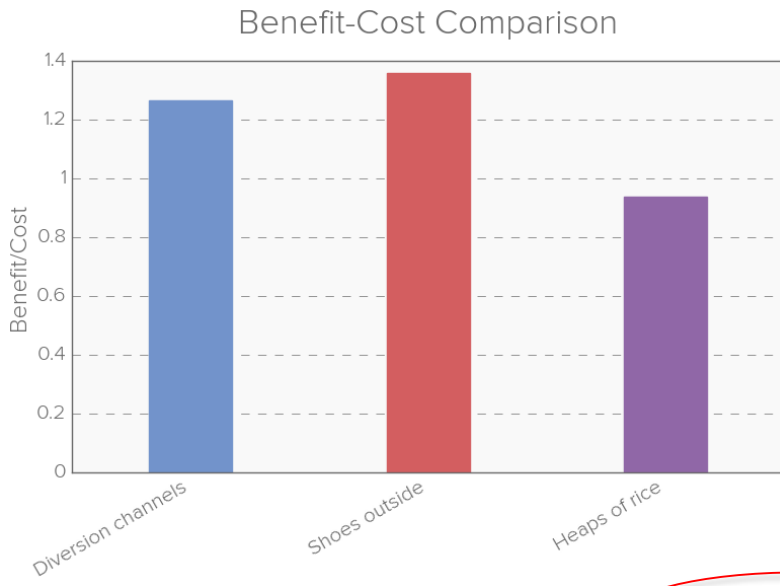
	Do nothing	Diversion channels	Shoes outside the door	Heaps of rice
Cost over 20 yrs	\$0	\$9,485,000	\$6,350,000	\$2,600,000
Benefit over 20 yrs	\$0	\$12,000,000 + ?	\$8,400,000 + ?	\$2,400,000 + ?





Steps in conducting a CBA

- [1] *Determine the objectives of the cost-benefit analysis*
- [2] *Identify costs and benefits of managing the invasive*
- [3] *Value costs and benefits*
- [4] *Aggregate costs and benefits*
 - Calculate the **Benefit / Cost Ratio** and/or **Net Benefit**



Net benefit
Benefit / Cost Ratio

≥ \$2,515,000
≥ 1.27

≥ \$2,050,000
≥ 1.33

≥ -\$200,000
≥ 0.92



Steps in conducting a CBA

- [1] *Determine the objectives of the cost-benefit analysis*
- [2] *Identify costs and benefits of managing the invasive*
- [3] *Value costs and benefits*
- [4] *Aggregate costs and benefits*
- [7] *Report results and prepare recommendations*
 - Present the problem in a way that funders, politicians, and managers can understand
 - Demonstrating the benefits in “dollar values” to policy makers can make projects easier to evaluate
 - Avoid highlighting short-term impacts over long-term changes

