Outline

- Resource Allocation (RA) models
- In-class RA exercise
- Preview of Assignment 7

Resource Allocation (RA) Models

- Used for decision situations where you have a fixed budget, and you need to distribute the budget over a number of items.
- Your objective is to get the most preferred alternative in each item category, while staying within your budget.
- Item categories may have different weights.

Resource Allocation (RA) Models

- You assign subjective “benefit” values (relative utilities) to each alternative with respect to the previous alternative in the list.
- If an alternative is more expensive, and provides less utility (a minus benefit) than the previous alternative, it is taken out of consideration.
An Example Situation

- Furnishing your office.
- Five item categories: Telephone, Printer, Scanner, Photocopier, Fax Machine
- Five alternatives in each category.
- Categories may have different weights.

RA Procedure

1. Allocate budget and list items to be bought.
2. Collect range of alternatives (prices, features, etc.)
3. Enter data into spreadsheet.
4. Calculate costs
5. Assign subjective benefits to alternatives
6. Assign subjective weights to categories
7. Calculate weighted benefit/cost.
8. Take out alternatives with weak b/c.
9. Recalculate benefits and costs. (Iterate further as needed.)
10. Sort alternatives based on \( \text{weight} \times \frac{\text{benefit}}{\text{cost}} \)
11. Calculate cumulative costs.
12. Find budget cut off point. Select best alternatives within budget.
13. Perform sensitivity analyses.

Weighted Benefit/Cost

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\text{Weighted Benefit/Cost} = \text{weight} \times \frac{\text{benefit}}{\text{cost}}
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- Important: “Benefit” is not “utility,” and “cost” is not “price."
- Benefit is the extra utility an alternative provides over the utility of the previous one.
- Total of benefits should add to 100 for each category
- Cost is the price difference between two alternatives.
Sensitivity Analysis

• What if the benefits, costs or weights were different?
• Would the final set of alternatives to be bought be different?
• What amount of change in benefits, costs or weights would yield a different decision?

Sensitivity Analysis

• Change the benefits, costs and weight values one by one, or in combinations to see what happens.
• An exhaustive coverage of all possible cases maybe impractical.
• However, some pattern, and valuable insights emerge relatively quickly.