PRE-COURSE EXERCISE

HSOR@NHG
The evidence behind your decisions

Objective

- We have some problems to warm up.
- You will work on 1 problem as a group for 10 min and share your findings.
- Focus on intuition & insight. Also can you relate to an issue you faced?

1. Feedback

1. Weeds are doubling themselves every day in a pond, the size of a football field. On the 20th day, the pond is full.

Q1. When is the pond ¼ full?

Q2. What do you see halfway on the 10th day?

2. Water temperature is 25 degrees in your new hotel. You set the shower to 40 degrees.

Q1. Can you sketch the curve of the temperature from 0-3 min?

Q2. You find the temperature too hot, and you turn the faucet and it gets too cool. Had to keep adjusting. Why?

2. Random arrivals

- Taxis come to this (not busy) place <u>randomly</u>. The average wait time is 10 minutes.

- Q1: Assuming you have waited for <u>7 minutes</u>, on the average how long more must you wait for a taxi?

- Hint: Lookup wiki for '*negative exponential distribution*' *for time between taxi arrivals* (same as random)

3. A typical GP clinic

- There is a GP clinic with a registration counter, a consultation room and a pharmacy.

- Q1: Would you draw the patient flow of this GP clinic?
- Q2: If we want to analyze waiting time of the GP clinic, is there any data we can collect before building a model?

4. Bag packing

Data					
Item	A	B	C	D	E
Value ($)	3	4	5	8	10
Weight (kg)	2	3	4	6	8
Volume (units)	4	5	6	10	9

- In my bag with capacity <u>constraint</u> of 23 kg and 40 unit volume, I want to <u>decide</u> to pack as many items (A to E) to <u>maximize</u> the value ($). More than 1 item of each type is available.

- How to choose?