Case Study Samples

DALBERG ASIA

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CASE I – AGEING CITIES
Question

Case Description

The government of a large international city has hired you help them study the problem of an aging population. The city currently has a population of over 7 million and is fairly developed. While the city has had favorable demographics in the past, officials in the city are worried that this will not be the case in the next 25 years as the population ages due to lower birth rates and higher life expectancy.

Questions

The city government wants you to do 3 things:
1. Look at the possible ramifications of an ageing population on the city
2. Estimate the number of hospital beds in 2041
3. Recommend what the city could do in the near term future to manage the ageing population in the long run

Solution

Questions
1. **Look at the possible ramifications of an ageing population on the city**
2. Estimate the number of hospital beds in 2041
3. Recommend what the city could do in the near term future to manage the ageing population in the long run

Possible Answers

Economic
- Slower economic growth
- Smaller tax base
- Greater elderly poverty rate

Health
- Greater incidence of old-age diseases
- Greater healthcare expenditure and burden on health system

Social
- Ageism and age discrimination
- Social issues related to family conflicts or dependent elderly with no supporting family

CASE I – AGEING CITIES
Solution

Questions
1. Look at the possible ramifications of an ageing population on the city
2. **Estimate the number of hospital beds in 2041**
3. Recommend what the city could do in the near term future to manage the ageing population in the long run

Let's focus on health for the rest of this case. The city government provides highly subsidized access to hospital care in the city. The number of beds in the city have not changed in many years and currently there are no immediate plans for increasing the number of beds. As of 2012, there were 27,400 hospital beds in the city. How many additional beds will the city need by 2041?

Answer
Additional beds = Total future beds required – [Current number of hospital beds] – [expected increase]
Additional beds = Total future beds required – 27,400 – 0

A. Calculating the total number of beds required in 2041

Age group	2012 population	Total hospital bed days (2012)	Average number of days spent in hospital (2012)	2041 population (thousands)	Total number of days spent in hospital (2041)
0 to 14	810,000	541,708	.668775	762,000	509,607
15 - 64	5,390,000	3,733,017	.692582	5,150,000	3,566,797
65+	978,000	3,935,071	4.0235899	2,558,000	10,292,343
Total	7,178,000	**8,209,796**		8,470,000	**14,368,747**

Solution

Questions
1. Look at the possible ramifications of an ageing population on the city
2. **Estimate the number of hospital beds in 2041**
3. Recommend what the city could do in the near term future to manage the ageing population in the long run

If we divide the total number of bed days by the number of days in a year we will get the minimum number of beds required

Year	Total hospital bed days	Days in a year	Hospital beds required
2012	8,209,796	365	**22,492**
2041	14,368,747	365	**39,366**

[Additional] What are the assumptions we are making? How valid are these assumptions?
- *One person uses 1 bed at a time*
- *Hospital beds are interchangeable. A bed for one purpose can be used for any other purpose*
- *The bed days are distributed evenly so that the hospital does not run out of capacity on any given day*
- *The rate of use per age group does not change. Technology or medical advancements do not help the rate decline*
  - *The third assumption is actually not a good one to make. Hospitals cannot assume that the demand for services will occur evenly throughout the year. E.g., during a pandemic or during flu season people's hospital use will be bunched together. For this reason, it is best for the hospital to have some excess capacity.*

The 1- (excess capacity/total beds) is the utilization rate. What is the utilization ratio of hospital beds in 2012? There are 27,400 hospital beds in the city. There was a need for 22,492. The utilization rate was approx. **82%**

Solution

Questions
1. Look at the possible ramifications of an ageing population on the city
2. **Estimate the number of hospital beds in 2041**
3. Recommend what the city could do in the near term future to manage the ageing population in the long run

Future need = [Hospital beds required] / [Utilization rate of beds]
Future need = 39,366 / .82 = **48,007**

Gap = [Future need] – [Current number of hospital beds] – [Expected increase in hospital beds]
Gap = 48,007 – 27,400 – 0
Gap = **20,607**

This represents an increase of (20,607/27400) 75-80% over current capacity

[Additional] What are the implications of this gap?
- *The city will need to increase the number of beds*
  - *This will cost money*
  - *This might require new hospitals, doctors, nurses*
- *The city does not increase the number of beds*
  - *There will be rationing of care*
  - *Quality of care will decline*
  - *People will lose out on care*

Solution

Questions
1. Look at the possible ramifications of an ageing population on the city
2. Estimate the number of hospital beds in 2041
3. **Recommend what the city could do in the near term future to manage the ageing population in the long run**

Possible Answers

Supply
- Invest more in services for the elderly
- Build more hospitals and provide more health services
- Encourage the private sector to provide elderly services

Demand
- Invest more in prevention for elderly
  - Create greater access to primary care, screenings
  - Encourage elderly to be active and take up healthy practices
- Target pre-elderly before they become elderly
  - Encourage healthy living among the age group that is 55-65 years

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Question

Case Description
You have been engaged by a small ULB (Urban Local Body) in Maharashtra, India to develop a PPP (Public Private Partnership) contract for privatizing Faecal Sludge Management in the town.

Questions
1. How would you calculate the contract value, and what should the annual contract value be?
2. Imagine you are meeting the Water and Sanitation Minister of Maharashtra. How would you present your findings in one minute?

Clarification Questions (for the interviewee to ask)
- **What is Faecal Sludge Management (FSM)?**
  There is no sewerage network in this town. All households, who have an attached toilet, have a septic tank connected to it. Every three years, these septic tanks need to be cleaned by a cleaning truck. The process of cleaning these tanks by trucks is called FSM.

- **What is the current process of FSM in the town?**
  Currently, there is no schedule for cleaning these tanks. Whenever the tanks fill up, the households call the truck company, and the truck comes and cleans the tank. We want to change this with a scheduled cleaning where each tank is automatically cleaned by the private player once in three years.

Questions
1. **How would you calculate the contract value, and what should the annual contract value be?**
2. Imagine you are meeting the Water and Sanitation Minister of Maharashtra. How would you present your findings in one minute?

Ideal Approach to Solving the Case
- To estimate the contract value we need to estimate the total cost of carrying out the cleaning, and then can add on a % commission that we can give the private player on top of the estimated costs
- We can calculate the cost by taking thinking about capital costs and operating costs. These are:

A. Operating costs

The main operating cost heads are:

A. Salary of staff
- Number of people required: 2 per truck
- Monthly salary: INR 10k per person
- Total salary cost: 2*2 trucks*10k*12 (months)= INR 4.8 Lakhs

B. Cost of fuel and maintenance
- For simplicity we can take this to be 20% of annual truck cost: INR 60k

Total operating annual cost: 5.5 Lakhs

Questions
1. **How would you calculate the contract value, and what should the annual contract value be?**
2. Imagine you are meeting the Water and Sanitation Minister of Maharashtra. How would you present your findings in one minute?

B. Capital Costs

The main cost head for capital cost is trucks.

> Numbers in blue can be provided by the interviewer when asked by the interviewee

To estimate the number of trucks required:
- Number of people in the town: 65000
- Number of households: 65000/5= 13000
- Number of households with private toilets: 70% (20% use community toilets, 10% are open defecating)
- Number of toilets that need to be cleaned in three years: 9100
- Number of toilets that need to be cleaned each year: 9100/3 (since each truck needs to be cleaned once in three years) = 3033
- Number of trips a truck can do in one day: 5
- Number of operating days: 300
- Total trips a year: 5*300 = 1500
- Hence number of trucks required: 3033/1500 = 2

The cost of one trucks is: INR 15 lakhs; Cost of 2 trucks: INR 30 lakhs. Since we are calculating annual contract value, we can take the lifecycle of the truck to be 10 years.

*Hence the annual capital cost will be **3 lakhs.***

Questions
1. **How would you calculate the contract value, and what should the annual contract value be?**
2. Imagine you are meeting the Water and Sanitation Minister of Maharashtra. How would you present your findings in one minute?

Final Calculation

Total annual cost: 5.5 Lakhs + 3 Lakhs = INR 8.8 Lakhs

Considering there is 20% commission, the total cost of the contract can be ~INR 11 Lakhs

Questions

1. How would you calculate the contract value, and what should the annual contract value be?
2. **Imagine you are meeting the Water and Sanitation Minister of Maharashtra. How would you present your findings in one minute?**

Ideal Answer would be:

- *(Setting the context)* We were asked to estimate the feasibility of developing a PPP contract for FSM, and calculating what the contract value could be
- *(Explaining what we did)* We took the case of Wai, a small town in Maharashtra which has over 70% using personal toilets
- *(Explaining what we did)* Based on our estimates, we believe that privatization would cost the government INR 11 lakhs per year
- *(Final recommendation)* We believe that you should go ahead with this, as it will bring in private expertise that will increase the quality of sanitation service provision, and lift the burden of doing FSM from the government allowing it to focus on other administrative tasks

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CASE III – NUMBER OF SHIPS ON WATER
Question & Solution

Case Description
Estimate the number of ships above 30 feet in length that are on the water (not in port or on shore) at any point in time across the world.

Suggested Response
* Breakdown the categories of ships that fit the criteria of being more than 30 feet in length.
* The three categories are military / navy ships, recreational /pleasure ships, cargo / trade ships
* Adopt an activity-level / capacity / trip length approach for each of the three categories of ships
    – Activity-level approach: How much international trade takes place, what proportion of that is likely to be goods shipped across oceans, what is the average value per volume of international trade and how much is the average volume of a ship
    – Calculate the average distance of a trip / the time taken to get to destination (and don't forget the time back)
    – Multiply that with the volume being shipped daily to come up with the number
    – And repeat this for the other categories of the ship

The key to success on such cases is to a) Create a good structure b) Have some familiarity with different aspects of the way that the world works so that good assumptions could be made and c) Making sure you are not missing out on anything important (many candidates miss out on the return journey for instance)

GOOD LUCK!

You can read more about Dalberg and the work we do on our website – www.dalberg.com