Peek into the consulting interview

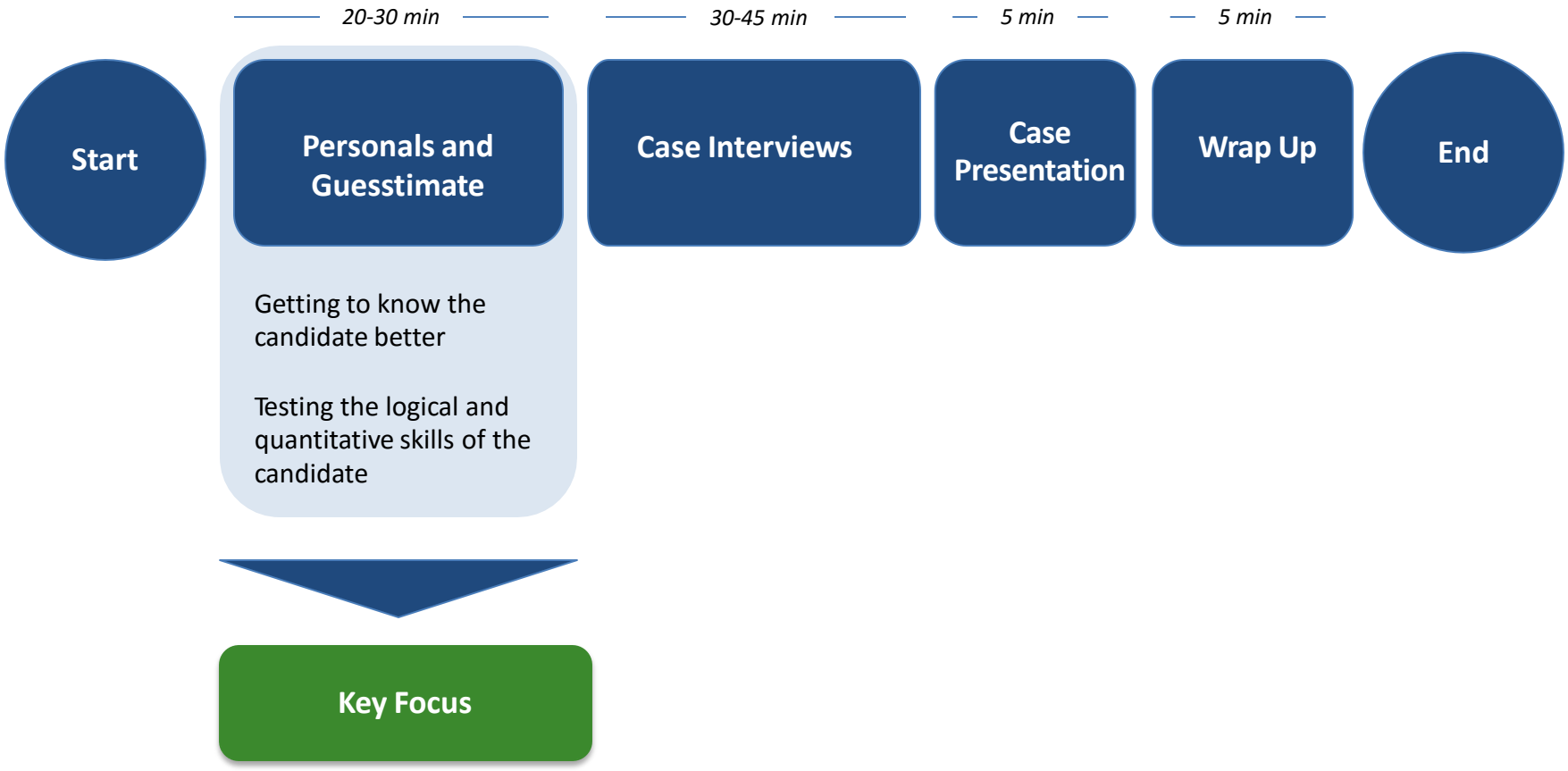
"Guesstimates"

Contents

Structure of a Consulting Interview

Applicants to consultancy firms can expect to undergo several interviews (typically three to four), each lasting 20-45 minutes.

Guesstimates are an integral part of consulting interviews. They are tested in preliminary rounds or as a sub-part of a case study



Understanding 'Guesstimates' ?

What do you think is a 'Guesstimate' ?

Guesstimate = 'Guess the estimate' ?

Yes! Do you know what you would NEVER do to solve a guesstimate ?

I'd never just GUESS! I'd SOLVE.

Guesstimate is defined as an estimate made without using or knowing adequate or complete information

The brainteaser or guestimate is a favourite assessment centre question. These seemingly random and ridiculous questions asked during the interview process, boil down to (relatively) simple logic-based problem solving tasks while keeping your calm.

So what do the interviewers want to see ?

- Ability to think on your feet
- Logical thought process
- Common sense
- Knowledge of things around you
- Numeracy skills
- Communication skills

The 4-steps Approach to solve a guesstimate

Step 1: Clarify the question, make sure you and the interviewer are on the same page on every assumption
Step 2: Break the problems into smaller pieces
Step 3: Use Estimation and Judgment to solve each pieces
Step 4: Consolidate all of those pieces into a final conclusion

Types of Guesstimates

1. Estimating the 'number of..'

- Estimate the number of..
  - light bulbs sold in India in a year
  - songs downloaded each day

'Start Small' approach

- Estimate the required figure for a segment/unit and extrapolate to get the whole.
- E.g., paint used for painting a single house can be extrapolated to estimate annual Indian paint usage

'Start Big' approach

- Split and segment the whole set as per certain criteria /assumptions to reach the desired set.
- E.g., Indian population can be a starting point for estimating number of 10th grade students in India

Find me the NUMBER

2. Market sizing

- Estimate the market size for
  - bicycles in India
  - chewing gum in the US
  - newspapers in Delhi
- The volume-price approach is useful for most market sizing cases. Estimate the volume transacted and price individually, multiply for market size

Estimate the VALUE

3. Abstract estimations

- Estimate the number of basketball that can fill a Boeing 787
- Estimate number of coins that can fill a swimming pool
- Estimate the number of horses that can fill a cricket ground

- *There is no formula for these. Sit back, relax and rely on pure logic and common sense!*

Let's have FUN

Suggested approach and guidelines

Structure is the key

- The most important component of solving your guestimate and the subsequent evaluation is the structure and approach you used to solve the problem
- When given a guestimate, take two minutes to plan how you wish to proceed and the information you would need
- The approach should be logical and complete to ensure you're covering all necessary details, yet simple enough for you to make quick mental calculations

Choose your approach wisely

- The same guesstimate problem can be solved by different people using different approaches to arrive at different answers
- Its imperative for you to choose an approach that you are comfortable with and one that appears logical
- Make sure you are confident of the base assumptions and figures – e.g., for a 'Start-big' problem, you should know the population size and distribution

State your assumptions clearly

- All assumptions made must be elucidated to the interviewer. Sometimes the interviewer might ask you to use a different assumption than what you suggest. No assumption is right or wrong, it just needs to be sellable !
- There should be a logical backing to each assumption you make. You can use prior research, popular occurrence or even personal experience to defend an assumption. E.g., 'I would assume that 30% of Indians are vegetarian – In my class of 50 people, there are close to 15 vegetarians'

Use simple figures and calculate as you go

- Always round off your numbers to closest multiple of 5 or 10 for simplicity. State that you're doing that. Sometimes the interviewer may want you to use the number as it is.
- Calculate as you proceed and pen down the calculation. It can get incredibly difficult to do the math in the end once you've made a chain of complicated assumptions
- At the end of your guestimate, try and make sense of your final answer and whether its accurate

How many minutes of mobile phone calls are made each day in Delhi?

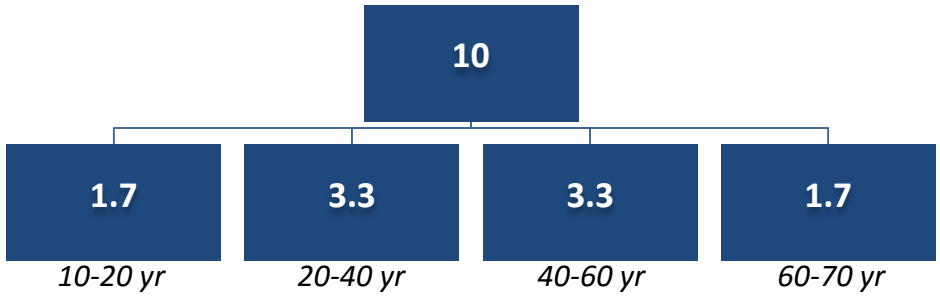
1 *Size the Market*

Population of Delhi : 16 million

Estimated demographic audience : 10-70 year olds
(70-10)/75 = 80% (assuming average life span to be 75 years

Target market audience : 80% of 16 = 12.8
Assuming 80% penetration, 80% of 12.8= 10.24 (take 10 million for ease of calculation)

2 *Population Split*



Average daily usage (mins)

20	30	30	20

Total daily usage(mins)

1.7*20 = 34	**3.3*30= 99**	**3.3*30= 99**	**1.7*20 = 34**

3 *Conclusion*

34 + 99 + 99 + 34 = 166 million

166 million minutes of phone calls are made everyday in Delhi

4 *Remarks*

- Generally very limited time is given to solve a guesstimate
- It's a good idea to break your analysis into smaller parts to enhance clarity. Interviewers appreciate clarity of though to reach at final numbers
- It is always suggested to have a simple approach and take logical assumptions that you can justify
- You can always fine tune and check numbers as the interviewer suggests
- It is always advisable to walk the interviewer through your approach as you move ahead with the guesstimate; keep it conversational

Example 1

Estimate the number of one rupee coins that would fit in a normal sized room

1 *Assumptions, reasoning and calculations*

- Let's assume the dimensions of a normal size room to be as follows
    - Height = 3m; Length = 4m, Breadth = 5m
    - Volume of the room = 60 m^3
    - The assumptions on the size of the room can be based on the dimensions of the interview room or any room in the vicinity (should be visibly justifiable)

- Consider a one rupee coin to be a square of area 2cm * 2cm (Since when two one rupee coins are kept adjacent, the space in between will remain unused and effectively, the space taken up by each coin would equal the space taken up by a square of side equalling the diameter of the coin)
    - Some interviewers like to quiz candidates on the space that would be left unused due to shape of the object. Make sure you account for the same

- Let the thickness of the coin be 2mm = 0.2 cm = 0.002m
- Volume of the coin = 0.02 * 0.02 * 0.002 = 0.0000008 m3
- Number of coins that would fit into the room = volume of room/volume of one rupee coin (incorporated as a square) = 60/0.0000008 = 7.5 * 107

Answer: Number of coins that would fit a normal size room are 7.5 * 107

2 *Remarks*

Abstract estimations are probably the most difficult type – not because they are difficult to solve but sometimes they are so random that they catch you off guard

- Keep your calm and think logically – that's the key to getting these right

- Be careful to not miss out on certain obscure but critical details in such estimations – e.g. account for space that will be left unoccupied in the room because of the shape of the coin
    - These are mistakes that the interviewer expects you to make, a little bit of practice will help you avoid such errors

- You are free to make reasonable assumptions to simplify and quantify such problems. Make sure you spell your assumptions out clearly and have the interviewer's approval

Example 2

Estimate the number of traffic lights in Delhi

1 *Assumptions, reasoning and calculations*

- We know that Delhi is approximately 1600 sq.km in area. This is pretty much evenly divided between North, South, East and West
- Imagine Delhi to be a square area with dimensions 40*40 as length and breadth
    - This assumption can be justified with basic knowledge of map of Delhi

- We divide the entire city into blocks of equal area, hence, 20 blocks from east to West and 20 blocks from North to South (with each block representing 2 sq. km)
    - Visualize this as a checkerboard with length and breadth of 40km, split into squares of side 2km

- Every intersection of four adjacent blocks would give us a cross road. Each crossroad would have a traffic signal. Hence, the number of signals at crossroads would be 400 across Delhi, averaging out for different areas.

- Since there are 400 crossroads in Delhi, the number of red light at each crossroad is 4. Hence, the total number of red lights at crossroads in Delhi is 1600

- Further, assume that there are 20% additional traffic lights to the ones found at crossroads that are meant to control traffic on straight roads. These would amount to ~300 red lights.

<u>Answer:</u> 1900 traffic lights in Delhi

2 *Remarks*

- Most guestimate questions relate to your country, city or place of origin. The interviewer will frame a question such that you would have some exposure to its tenants
    - Make sure you brush up some important figures – demographics, area etc.
    - Call out these numbers and refer the source if possible – e.g. I recently read in XYZ that 50% Delhites are below the age of 35 years
    - This not only makes your assumption sound solid but shows off your awareness

- Approach is key to getting these guestimates right. The interviewer is interested in the logic you use and how you defend it rather than the answer

- Try and make sense of your final answer. Does 1900 traffic lights sound reasonable ? It amounts to 1.2 traffic lights per sq. km. Looking at your surroundings, does that make sense?

Example 3

Estimate the annual market size for denims in India

1 *Target population set*

- India has a population of 1.2B, India has ~30% population living below the poverty line. It would be fair to assume that a negligible proportion of poor population wears denims
- Of the remaining 0.84B, approximately 50% fall in the age group of 6-35, the core denim wearing population. This amounts to ~0.42B people
- Of these, assuming equal distribution between sexes, there are ~0.21B males and ~0.21B females

2 *Assumptions and valuation*

- Here we assume that 80% of men buy atleast single denim in a year and atleast 50% women buy single denim.
- Let's divide the population further into high income, middle income and low income groups. Assume high income is 10%, middle income is 60% and low income is 30% Assume that the high income group buys 3 denims per person per year;

middle income buys 2 denims per person per year, low income buy 1 denim per person per year.

- Calculating, male denims bought = 0.8*0.21*(0.1*3 + 0.6*2 + 0.3*1) = 0.8*0.21*1.8 = 0.3B; calculating female denims bought = 0.5*0.21*(0.1*3 + 0.6*2 + 0.3*1) = 0.2B. Thus, total = 0.5B
- Assume the average price per denim to be 1000Rs; Thus, market size = Rs. 500B
    - Average price can be justified as: Averaging for branded products in the 1800Rs pus range and non-branded in the ~500Rs. range

Answer: Market size of denims bought in India is ~Rs. 500B

3 *Remarks*

- Market sizing questions are very common. Think of them as two guestimates built into one – you need an estimate of volume and an estimate on price
    - Typically, your volume estimate will be more elaborate, so try and tackle that first
    - After you've worked out volume, you've hopefully already impressed the interviewer and he will accept a simple assumption for price
- Practice a few such questions before your interview. Think of objects around you and try and build an approach as to how you'd obtain a market size for them. The Start Big approach works for most volume estimations for market sizing.

Things to remember - Start Preparing!!!

Essentials you need to know to help you in solving Guesstimates

1. ***Population of India and other demographics***

   Segregation in % terms of
   - ***Rural / Urban population***
   - ***Male / female population***
   - ***Median age of India and age wise segregation***

2. ***Population of Delhi / your hometown and other demographics***

3. ***About Delhi metro : Number of lines, timings, average turnout, etc***

4. ***Area of Delhi / Kamla Nagar / your locality***

5. ***About Delhi University : Number of colleges, students, etc***

6. ***About FMS : dimensions, number of rooms, area, volume, etc***

Most Importantly general knowledge and common sense…