### **DUE 7:00 AM March 1, 2025**

### Background

Millions of businesses advertise on Google, with thousands of new advertisers joining daily worldwide. To ensure excellent support, Google assigns dedicated agents to assist eligible advertisers for 60 days shortly after they sign up.

Agent staffing is managed locally in each country, with agents serving advertisers in their respective regions. Each agent can handle up to 10 advertisers at any time, but the unpredictable daily influx of new accounts makes staffing optimization a challenge. Overstaffing leads to idle capacity and reduced ROI, while understaffing delays advertiser support and reduces incremental revenue.

Your goal is to develop a dynamic month-by-month staffing plan that ensures efficient support while optimizing costs.

### Key Rules & Workflow

Advertiser Eligibility:

* When an advertiser signs up, Google projects its potential annual advertising budget
* If the budget exceeds a country-specific threshold, the advertiser becomes eligible for agent support. Otherwise, it is ineligible and left untreated.

Agent Assignment & Capacity:

* Eligible advertisers are placed in a waiting pool
* If agent capacity is available, an agent is assigned
* If no capacity is available, the advertiser waits up to 60 days in the pool
* If still unassigned after 60 days, the advertiser is removed from the pool

Agent Lifecycle:

* Each agent manages 10 advertisers max at any point
* You can assume that all agents start 2025 with no advertisers already assigned to them
* Advertisers receive support for 60 days before graduating, freeing agent capacity
* New agents require 1 month of ramp-up time before they become available.
* Firing an agent requires 1 month' advance notice and will incur a cost of 40% of the agent’s annual salary

Revenue Impact:

* Agent support drives incremental advertising spend, distributed as follows:
  + 0% uplift (5% probability)
  + 5% uplift (15% probability)
  + 10% uplift (25% probability)
  + 15% uplift (25% probability)
  + 20% uplift (20% probability)
  + 25% uplift (10% probability)

### Challenge: Develop a Month-by-Month Staffing Plan

Your goal is to determine the optimal number of agents per country for each month of 2025, balancing:

* Cost efficiency – Minimizing idle agents while meeting advertiser demand
* Timely advertiser support – Reducing wait times and maximizing revenue uplift
* Scalability – Adjusting for market fluctuations with hiring/firing constraints

Here are the recommended deliverables:

* Dynamic Staffing Model – A structured plan showing how agent headcount changes month by month
* Analysis & Justification – A brief report explaining key decisions, assumptions, and the impact on revenue and costs
* Sensitivity Analysis – How does the plan perform under different sign-up volume scenarios
* Other Considerations – Any other factor you recommend considering in determining agent staffing level

### Data Provided

* [Annual Agent Salary per country in USD](https://docs.google.com/spreadsheets/d/1-Aw3sYQadMugQFMyHy8DjFyEz90H5vhQOzdFFvBS9rs/edit?gid=1398489831#gid=1398489831)
* [Advertiser Eligibility Threshold per country in USD](https://docs.google.com/spreadsheets/d/1-Aw3sYQadMugQFMyHy8DjFyEz90H5vhQOzdFFvBS9rs/edit?gid=1398489831#gid=1398489831)
* [List of all Advertiser Sign-ups per country (2023 & 2024)](https://docs.google.com/spreadsheets/d/1pPH78zFSu7JcNZNhEgFFO2eZSazo0VrX8uJgTSk-_w0/edit?gid=329577333#gid=329577333), with the following
  + Advertiser ID
  + Country
  + Date of sign-up
  + Projected annual advertising budget
* [Existing Agent Staffing Levels as of January 2025](https://docs.google.com/spreadsheets/d/1PGeqnrOHCsOtcrfKRrmickqbdLoR8IMMBsO-zmU_luo/edit?gid=1236986109#gid=1236986109)