## Month-by-Month Staffing Plan

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

## **Assumptions:**

1. We only hire / send five notices on the 1st of each month.

## **Decision Variables:**

ht : # of agents hired in country C at month &

t XII

te: # of agents fired in country C at month &

US

h12)

Input Parameters:

Aoc: Initial # if agents in wintry c (Jan 2025)

Sc: Annual salary for an agent in wuntry c

TC: Threshold in Country C

Nt: # if hew advertisers in country c at month t

Bi: Projected annual advertising budget for advertiser i

Ui: Expected uplift % based on:

P(0% uplift) = 0.05 P(15% uplift) = 0.25

=) Expated revenue uplift multiplier

 $\mathbb{E}[\mathbf{u}] = 0.05 \times 0 + 0.15 \times 0.05 + 0.25 \times 0.1 + 0.25 \times 0.15 + 0.2 \times 0.2 + 0.1 \times 0.25$  = 0.135

## Dependent Variables:

Bt : Total # of active agents in country c at month t Atc = At-1 + ht-1 - ft-1 \* Agents hired in month t-1 are available in t, agents noticed-to-fire in t-1 leave in t.

\* Gt: Bolvertisers who graduated after 60 days

Gt = = = (E; (-U; ) T 60 days ago

Ot : Total occupied spots at month t Ot = Ot1 + 10 At - Cit

Lt: Dualable Slots for new advertisers Lt = 10/0+ C - Ot

Ut # of unassigned advertisers in wuntry c at the 1st of month t.

> Ut = max (0, Pt + Ut + Ot - 10/8+ ) New in pool total capacity at month t

Et: # of eligible advertisers in wuntry c at month t

Et = \( \signed\) | \( \frac{1}{1600} \) | \(

RE: Incremental Revenue up lift time

Et = (hew in) Pt - Gt

Objective:

Maximire Net Profit

Income	Cost
Revenue Uplif+	Salary: Btc. Sc : Csalary, t
Rt = IE[ uplif+] = \( \text{B}_i \cdot \mu i	Firing Cost: 0.4.5°. Ftc: Cfire, t
= 0.135 · \(\sum_{i}\) Bi	Hiving WSt: ht. Schive, e
(	Idle Agent: (1 - Assisted Advertisers) x (salary, t
	7 alle Ratio : Cidle,

Constraints:

Waiting Limit, 
$$U_{t}^{c} = 0$$
 (bodays)

$$G_{3}^{c} = \sum_{i=1}^{3} (E_{i}^{c} - U_{i}^{c})$$

$$= E_{1}^{c} - U_{1}^{c} + E_{2}^{c} - U_{2}^{c} + E_{3}^{c} - U_{3}^{c}$$

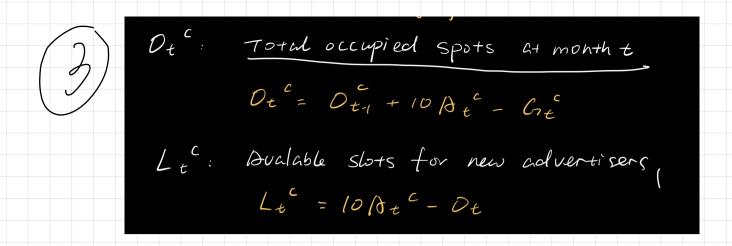
repeated calculation

correct: 
$$G_3 = E_1^c - U_1^c$$

$$G_4^c = E_2^c - U_2^c \rightarrow = A$$

$$G_4^c = E_2^c - U_2^c \rightarrow = A$$

$$G_4^c = E_2^c - U_2^c \rightarrow = A$$



Ot 指的是Assigned advertisers in month 七点。

C 上月被 assigned

Ot = Ot-I + IOAt - Gt

重覆 計算 3

(4) Why Ot / Why Lit?

Et - Ut \( 10 At

