Business need

Part 1: Problem statement

Problem: At present, nearly 85% of the medical resources in my country's cities are concentrated in the secondary and tertiary hospitals[1], and only about 15% of the resources are scattered in the grass-roots community medical institutions [1]. According to investigation, the population of the first-tier-city and second-tier-city only constitutes 25% of the total population. This reveals that the existence of large discrepancies between population distribution and medical resources allocation. It is not difficult to see that China is facing a very serious problem of uneven distribution of medical resources.

Impact: As a developing country, most provinces of China are still underdeveloped. Only a small number of developed cities in the coastal areas occupy almost the country's tertiary hospitals, which makes residents in less developed areas have to travel to developed cities to receive medical services. This problem has been exposed more clearly during the Covid-19 pandemic. Since the outbreak of the new crown epidemic in 2020, the medical system in many cities has been almost paralysed, and the underdeveloped areas with most of China's population cannot provide the medical needs of the local people.

Timeframe, location, and trend: In 2006, China ranked 188th in the ranking of fairness in health financing and distribution among 191 member states of the World Health Organisation[2]. The mismatch between the ratio of population and medical resources has brought huge hidden dangers to the basic medical security of the people. Since 2005, the Chinese government has realised this problem in most undeveloped cities and tried to make some improvement, but the result is not expected.

Goals: The Chinese government hopes to use a variety of mathematical models to calculate the local demand for medical resources based on the existing population distribution data. According to the medical needs, the investment of medical resources in some areas will be strengthened in a targeted manner, so that the residents can meet the medical needs in the living area.

Vision: The Chinese government hopes to make timely policy adjustments based on the difference between the population ratio and the allocation ratio of medical resources. The government clearly proposed to establish and improve a major epidemic treatment system with tiered and tiered triage, build a provincial, municipal, and county-level medical emergency service system, promote the effective connection between the pre-hospital emergency network and in-hospital first aid, and meet the multi-level and diversified medical services for the people's need[3].

Importance: By solving this problem, most rural residents can obtain medical resources in time. Even in the event of a large-scale outbreak of infectious diseases (such as COVID-19), the demand for medical treatment of residents in each area can be guaranteed.

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[1] In Chinese medical system, the highest level of hospital is the tertiary level, which means these hospitals have the best medical resources.

Part 2: Target audience

Ming Xiao

age: **37**
residence: **Beijing, China**
education: **Meng Biomedical Engineering**
occupation: **Consultancy of Chinese Ministry of Health**
marital status: **Married**

"I hope the medical resource can be equally distributed"

Comfort With Technology

INTERNET

SOFTWARE

MOBILE APPS

SOCIAL NETWORK

Criteria For Success:

I need to provide the financial department continuously with the medical needs of different regions, which will affect the medical resources and financial budget received by each region. A clear population distribution will help me build mathematical models and forecasts of medical needs in different regions.

Needs

- Rational policies to improve the allocation of medical resources
- The difference between the proportion of the population and the proportion of medical resources is getting smaller

Wants

- Medical resources can be equally distributed
- Everyone can easily access the best medical resource

Values

- Rigorous and serious work attitude
- Respect to the professional skills
- Frequent and effective communication with other people
- New academic research area

Fears

- Impact of Unknown Population Movement on Data Accuracy
- The instability of application due to overpopulation

Part 3: Questions
1. What is the quantitative standard for equitable distribution of medical resources?
2. Should medical resources be allocated according to the urban-rural ratio or the population ratio?
3. Should the distribution of the population be considered in multiple dimensions, such as the ratio of male to female or the number of households?

Reference

[1] https://zhuanlan.zhihu.com/p/137256526

[2] https://www.who.int/news/item/07-02-2000-world-health-organization-assesses-the-world's-health-systems

[3] http://www.nhc.gov.cn/yzygj/s3594r/202201/2eb872beef164f0f890f0b4519b6139d.shtml