

2025 CQUICM

Problem F: Selection of rental and purchase plans

With the increase in urbanization rate and the decrease in the number of births, the sales area of housing in many places has dropped significantly. Many people will conduct in-depth comparative analyses among renting a house, government welfare housing (public rental housing, affordable housing), purchasing a commercial housing unit and buying a second-hand house to obtain the most reasonable plan. Please model and analyze the solutions to the following questions based on various actual situations in Chongqing or Shenzhen.

1. If you are an employee who has just started working from another place, under what circumstances would you comprehensively consider your rental and purchase strategies? Please explain the methods and reasons for determining the weights of relevant factors.
2. Suppose you already have your own house in Chongqing or Shenzhen, under what circumstances would you consider changing to a more ideal one? How to replace? Please provide the best solution.
3. Please predict the housing price trend in the next 5 to 10 years based on various statistical data of Chongqing or Shenzhen in recent years.
4. Please make reasonable suggestions to the government or developers based on the above calculation results.

Your PDF solution of no more than 25 total pages should include:

- One-page Summary Sheet.
- Table of Contents.
- Your complete solution.
- References list.
- AI Use Report (If used does not count toward the 25-page limit.)

Note: There is no specific required minimum page length for a complete MCM submission. You may use up to 25 total pages for all your solution work and any additional information you want to include (for example: drawings, diagrams, calculations, tables). Partial solutions are accepted. We permit the careful use of AI such as ChatGPT, although it is not necessary to create a solution to this problem. If you choose to utilize a generative AI, you must follow the COMAP AI use policy. This will result in an additional AI use report that you must add to the end of your PDF solution file and does not count toward the 25 total page limit for your solution.