Introduction
Finding off-campus accommodations with reasonable monthly rent price is one of the biggest concerns for non-local students in Hong Kong. Although there exists general information about renting price online, it is important to build a statistical model to better understand this unique market for college students. For instance, most of the online price is for the entire apartment, not suitable for individuals who look for one bedroom or a shared bedroom.

In this project, we focus on the flats in five areas near the City University of Hong Kong and build a multiple linear regression model for the monthly rent per capita, based on the actual price information collected from current tenants by questionnaire and online community.

Data & Model
Our data are collected from the distributed questionnaires and the websites (gangpiaoquan, gter.net, 58.com and renmen site) from September to November, 2016. In our model, we consider the following 4 factors: building type (x1), which is either Tong Lau (x1=0) or new buildings (x1=1); the number of tenants in the room (x2=1, 2); the number of tenants in the flat (x3=2~6); living area (ft²) per person (x4). Dependent variable: monthly rent (HKD) per person (y).

For each district, 30~40 records are collected.

Model assumption:

\[ y = \beta_0 + \sum_{i=1}^{4} \beta_i x_i + \sum_{i=1}^{4} \sum_{j=1}^{4} \beta_{ij} x_i x_j + \sum_{i=2}^{4} \beta_i \log(x_i) \]

Effect of Factors
Common feature: all the models have an increase in price when the area (x4) increases. To investigate other factors, fix \( x_4 = 100 \text{ft}^2 \) (the typical area per capita), then we have:

\[ x_1: 0 \rightarrow 1; x_2: 1 \rightarrow 2; x_3: +1 \]

<table>
<thead>
<tr>
<th></th>
<th>Hung Hom</th>
<th>Sha Tin &amp; Tai Wai</th>
<th>Prince Edward</th>
<th>Sham Shui Po</th>
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</thead>
<tbody>
<tr>
<td>++1951</td>
<td>-54</td>
<td>-379.85+4.3x3</td>
<td>-97</td>
<td>-540.5+59x3</td>
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<tr>
<td>+1060</td>
<td>-300</td>
<td>-661</td>
<td>-208</td>
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- The building type (x1) has a large impact on price. Particularly in Hung Hom, where the price difference of new buildings and Tong Lau is $1951 – it’s nearly twice as large as in other districts.
- By changing number of tenants in the room (x2) from 1 to 2 (the area is unchanged per person), the price in Hung Hom only drops by $54. The drop in Sham Shui Po is the largest, meaning that the cost of “privacy” is the highest.
- Generally, the decrement of price because of adding more flat mates (x3) is not simply linear in Hung Hom and Prince Edward.

Conclusion
- Our model shows that each district has quite different features besides the average prices.
- The building type is a very significant factor, determining nearly 20% of rent in 5 districts. The area is the main factor, and its interactions with other factors are decisive.
- The slopes of x2 and x3 variables could be interpreted as the costs for “exclusive/private” right at different levels, which turns out to be worth several hundred dollars.
- We expect our model may provide a quantitative tool to meet the students’ diversified needs of looking for desired housing in Hong Kong.

Acknowledgment
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