Public Perception and Tolerability of Landslide Risk

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Executive Summary

This study is a pilot stage (Phase 1) of the project to investigate the public perception and tolerability of landslide risk in Hong Kong. Five focus groups of a total of 34 respondents were used to collect both quantitative data from worksheets and qualitative data from discussions. The findings of the study are summarized as follows:

The mean riskiness ratings of the 15 hazards in Hong Kong are similar from both perspectives of the respondents themselves and the HK society in general. Landslide ranks the fourth most risky hazard after fire, cancer and motor vehicles. The fact that the perceived riskiness rating of landslide is greater than that of construction accidents suggest that the mere number of death in a hazard may not be a significant factor of risk perception. Risk perception is also determined by some other factors.

Statistical evidence shows that there are significant relationships between some personal characteristics (such as age, sex, religion, insurance and smoking behaviour) and risk perception. Beside relating with personal characteristics, risk perception also correlates with the perceived hazard characteristics. Regression results of perceived hazard riskiness on the 12 qualitative characteristics indicate that exposure factors (both "personal exposure" and "exposure of Hong Kong people") are more important while the "immediacy of effects" and "knowledge of risk" are less important explanatory factors for perceived hazard riskiness.

The high intercorrelations among the 12 hazard characteristics suggest that the hazard characteristics are overlapping with each other and may well be represented by a smaller number of dimensions or factors. This conjecture is supported by the 2-factor solution of factor analysis. Factor 1 - "dread risk" and Factor 2 - "unknown risk" together account about 75% of the variation of the 12 hazard characteristics. Nuclear electrical power and cancer are regarded as the most dreadful and unknown hazards and thus have very distinctive positions in the dread-unknown quadrant in the factor-space. In general, our factor analysis results are similar to many other studies such as Slovic et al. 1985 and Keown 1989.

Results of regression analysis of hazard riskiness on factor scores from factor analysis show that Factor 1 - "dread risk" is a significant determinant of perceived riskiness. Attention must be paid to the fact that "dread risk" is a collective term embracing those hazard characteristics such as catastrophic nature, dreadfulness, risk control and reduction, equity issue, exposure factor, severity of consequence and volunteriness of risk.

On the other hand, the importance of the exposure factor (personal exposure and exposure of Hong Kong people) has been singled out in the regression analysis of hazard riskiness on the 12 hazard characteristics. Statistical tests also reveal that personal characteristics like age, religion and insurance behaviour are related to some perceived hazard characteristics such as common vs. dread and personal exposure.

As far as the tolerability of risk is concerned, the public have greater tolerability of risk from their own perspective than from the societal point of view. The probable reason is their
confidence on themselves. They believe that they are careful enough to avoid hazards happening on them. They regard that the hazards are less risky to themselves and are thus more tolerable to these hazards. However, statistical evidence does not provide much support for this negative relationship between perceived riskiness and risk tolerability. On the other hand, statistical test results indicate some significant association between personal characteristics (such as age, sex and insurance behaviour) and hazard tolerability.

Contingent valuation method has been used to elicit the Willingness to Pay (WTP) for risk reduction. It has been found that the WTP is related to different magnitude of risk reduction. The respondents tended to pay more, though less than proportionately, for greater risk reduction. On the other hand, information on the actual hazard riskiness can only significantly change the WTP for 100% risk reduction. In addition, the format of payment (rental payment or rates payment) and the associated free-rider effect may also be important factors for WTP decision.

The Value of Statistical Life (VOSL) is equal to the quotient of WTP per person over the amount of risk reduced. The original risk level is determined by the potential number of death and the relevant population size under the influence of the hazard. There are three different assumptions of the population under the threat of 3500 substandard slopes in Hong Kong and thus three sets of VOSLs have been produced. The estimates of the mean VOSL lie between HK$47m and HK$266m while the median VOSL estimates are between HK$18m and HK$119m.

The results of the conjoint analysis exhibit that the public pay greater emphasis on the scale effect and the hazard probability in purchasing a risk reduction package. Derived utilities from the findings also show that HK people prefer lower-cost insurance package and tend to insure against traffic accident risk more than against landslide risk.

Beside the above quantitative findings, focus group discussion tapped a lot of public opinion on landslide risk. The respondents regarded that landslide risk was involuntary and caused by both natural and human factors. Most of them thought that both the public and the private sectors should be responsible for slope safety. Moreover, they considered that the government should play a role to set up laws to urge or help the private sector (developers and landlords) in slope maintenance.

In conclusion, the present study has achieved its objective well in experimenting various surveying methods such as psychometric measurements, contingent valuation method, conjoint analysis and group discussion in collecting data on risk perception and WTPs. The experience and findings of this scoping study can contribute greatly to the Phase 2 study of the project.