

Simulating the Formation of Risk Perception

by

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Abstract

As research in medicine and epidemiology advances, damages of smoking on health has been taken more and more seriously, most relative studies focus on fields in sociology, psychology, public health or economy. Over time, despite many NGOs and NPOs actively involved in anti-smoking campaigns which resulted in a temporary decrease in cigarette consumption, on the whole, consumption in cigarettes in Taiwan has been on the increase after import of foreign cigarettes. Taiwanese cigarette market is the 50th largest in the world, and cigarette productivity is the 32nd, and the market is worth around 2900 millions USD\$. According to the Ministry of Health, more than half of male population are smokers, with number of female smokers on the increase, while the age of smokers are getting younger. Smoke related deaths are around 6 millions NT\$ per year, according to the NHS figure.

The act of smoking itself satisfies the smoker's need for consumption, but at the same time produces negative effect such as smoking related damages. On certain level, the decision of whether to smoke depends on the possibility of smoking related illness actually occurring, and this possibility contains within itself the factor of uncertainty. When making a decision whether to smoke or not or how much to smoke, the decision itself is hugely swayed by the smoker's own perception of risk regarding this matter. Whenever there is uncertainty involved, the decision made regarding whether to carry out the act i.e. smoking or not hugely depends upon the amount of risk perceived by each individual. Sex, age, education, health awareness and other factors affect how a perception is formed, in other words, how a "belief" is formed, and the forming process itself is a complex and intricate learning/evolving process. The active learning/evolving process of belief or risk perception, applied with the concept of complexity, is the emergence of belief.

In this study, an agent-based computational model is employed to look at how a risk perception is formed and how the decision to smoke is made. This system can be used to observe the dynamic between anti-smoking policy and decision makers, and the resulting observation can serve as useful reference when the government is making or executing relative policies.

Keyword: Risk Perception, Smoking, Learning