Assessment of Perceptions Versus Reality: A Comparative Study of Air Quality Levels in Kuwait

Zainab Alsabt and Takeaki Toma
College of Engineering and Technology
Faculty of Industrial Engineering
American University of the Middle East
Egaila, Kuwait
45354@aum.edu.kw, takeaki.toma@aum.edu.kw

Abstract

Kuwait ranks as the second most air-polluted country in the world (Arab Times, 2023). Air pollution contributes to respiratory diseases, including wheezing, coughing, asthma, and heart disease. This study investigates whether there is a significant difference between the perceived air quality and the actual air quality level. We collected perceived air quality from residents of Kuwait (n=144), along with demographic, lifestyle, and health condition information. At the same time, we also measured the actual air quality at the exact locations where the survey was conducted. This allowed us to assess if individuals could accurately perceive the air quality in their environment. The obtained data indicated that people with respiratory problems (such as asthma or frequent coughing) perceived the air as dirtier compared to those without such health issues (ANOVA P-value<0.001). This observation is consistent with previous studies. Interestingly, no significant correlation was found between perceived air quality and actual PM2.5 levels, but a correlation with PM10 levels was evident. This suggests that people generally notice larger particles (PM10) more easily than smaller particles (PM2.5). Furthermore, individuals with respiratory conditions are more sensitive to poor air quality.

Keywords
Air Quality Perception, PM10, PM2.5, Air Quality Sensitivity.

Biographies
Zainab Alsabt was a honor student graduated Industrial Engineering at the American University of the Middle Est. After completing her bachelor degree she works as an academic advisor at American University of the Middle East.

Takeaki Toma is an Assistant Professor in Industrial Engineering at the American University of the Middle East, Kuwait. He earned a BS in Information Engineering from the University of the Ryukyus, Japan, Masters in Industrial and Management Engineering from Montana State University, and a Ph.D. in Industrial Engineering from Oregon State University. He has experience in industry and academia in the United States, Japan, and Kuwait. His research interests include Cognitive Engineering, Safety Engineering, Quality Control, Statistical Data Analysis and Machine Learning. He is a member of IEOM and IISE.