

## **To Predict the Prevalence of Influenza**

In order to help health officials predict the number of flu cases in the future, our research focused on two objectives. First, to explore the correlations between the number of flu cases and weather. Second, to make predictive equations for the number of flu cases in Kobe, Himeji and Toyooka using these correlations. To achieve this, we collected data on temperature, humidity, rainfall, wind velocity and the number of infected persons from the aforementioned areas; this was data from 2010 through 2018. Using the statistical software, R, correlation coefficients were made for temperature, humidity, rainfall and wind velocity for each area; also, 3 coefficients were made for the number of flu cases in two consecutive weeks. These coefficients were used in our predictive equations. The predictive equations for the Kobe and Himeji areas were similar, while the one for Toyooka differed. Temperature had the strongest correlation among weather conditions. For all areas, precipitation and wind speed had negligible correlations. We concluded that the similarity of Kobe and Himeji's equations owed to their similar climates. On the other hand, Toyooka experiences colder weather on average. Rainfall was relatively low throughout the years, and the wind is mild because of the mountains, so precipitation and wind speed are considered to have little effect on the number of flu cases. More detailed investigation is needed in the Toyooka area for the correlation coefficients used in this research. In addition, more points in Japan require research for more statistical and predictive accuracy.