

San-Francisco Business Inspection: A Use Case of Food inspection

In this report we will explore and analyse a dataset collected about San-Francisco businesses inspections. I have applied most of the stages of the data science methodology that I have studied in this specialization. This project will introduce a business inspection predictive analytics report that can help promote business safety and for example food business as part of the many processes put to prevent food-borne illness. Some of these processes include proper handling of food, proper preparation of food and its storage. Food inspection ensures that all these processes are done in such as a manner as to promote and achieve food safety.

Food inspection involves not only sampling and testing of end products but also assessing food centres to ensure compliance with food safety management systems. This minimizes the occurrence of public health food safety problems. Food inspection dates back to ancient times as part of the history of public health. The Food and Drug Administration (FDA) publishes the Food Code that sets guidelines and procedures to assist in food control jurisdictions. The Food Code provides a scientifically and legally backed basis for regulating the retail and food service industries. These include restaurants, grocery stores and institutional food service providers e.g. nursing homes. In the past, food inspection was done in a reactive manner whereby officers waited for reports of joints with possible non-compliance. However, it has been shown through research that food inspection should be done in a more proactive manner. Currently, some cities in the united states e.g. San Francisco are implementing a technologically driven approach to food

inspection to try and predict food establishments that are more likely to be non-compliant to food safety regulation. This is driven in part by the low Inspector to Food place ratio making it difficult to efficiently inspect all the food places. We will use Foursquare which comes with venue data that contains key descriptors of different venues including the category and popularity. This will show categories such as Nursing homes and food establishments along with attributes like name, address, ratings, and reviews from millions of points of interest. This report would be beneficial to public health specialists and every stakeholder working to alleviate public health concerns through preventive measures. The solution is not to introduce food inspection since these professionals are already carrying out food inspections in the relevant jurisdictions but to make the process more efficient.

In San-Francisco, it is estimated that one business inspector needs to efficiently inspect more than 500 business establishments given that there are only about 4 dozen inspectors to cover all business establishments. It is in waking of this statistic that the city saw an opportunity to make the process of food inspection more efficient by utilizing data analytics. In San-Francisco, through the Department of Public Health, systematically collected food inspection data from close to 100,000 sanitation inspections. Using this data, together with metadata on weather, related complaints e.g. sanitation, business characteristics, the city's advanced analytics team helped predict the food establishments that are more likely to violate food safety regulations. The food inspectors can then have a "Critical first" inspection approach where the places that have been predicted to have critical violations are inspected first.

Some of the factors that tend to predict critical violation include previous critical violations, high temperatures, nearby sanitation complains, nearby burglaries etc

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