Republic of the Philippines

Doc. Code: SLSU – QF – IN02

Revision: 001

Date: 29 July 2019

**SOUTHERN LEYTE STATE UNIVERSITY**

Main Campus, Sogod, Southern Leyte

**CASE-BASE ANALYSIS**

**(TEMPLATE)**

1. **STATEMENT OF THE PROBLEM**

When the pandemic structed other areas of Cebu the Philippine Government imposed Cebu will be in “ECQ” Enhanced Community Quarantine. The areas of Cebu are being divided in provinces and cities but the council of Cebu is being confused by the transition of other places to be under by ECQ or GCQ. When I heard about the news.

Based in my observation we could use some algorithm to help classify a placed wither it will be under in ECQ or GCQ Quarantine status.

The Naga City of Cebu was near at the boundary of province area and at the city Area of Cebu. The Council was not able to classify the placed. To help with that matter we can use Naïve Bayes algorithm to classify the quarantine Status for Naga City.

**ALGORITHM TO BE USED TO SOLVE THE PROBLEM**

**Naïve Bayes**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **List of Municipality & Cities** | **Society Inhabitants** | **Zone Status** | **Vulnerability** | **Quarantine Status** |
| **Argao** | **Rural** | **Buffer Zone** | **Low Risk** | **GCQ** |
| **Dalaguit** | **Rural** | **Buffer Zone** | **Low Risk** | **ECQ** |
| **Dumanjug** | **Rural** | **Critical Zone** | **High Risk** | **ECQ** |
| **Danao** | **Rural** | **Buffer Zone** | **High Risk** | **GCQ** |
| **Carmen** | **Rural** | **Buffer Zone** | **Low Risk** | **ECQ** |
| **Catmon** | **Rural** | **Critical Zone** | **High Risk** | **ECQ** |
| **Compostela** | **Rural** | **Buffer Zone** | **High Risk** | **ECQ** |
| **Consolasion** | **Urban** | **Critical Zone** | **High Risk** | **ECQ** |
| **Cebu** | **Urban** | **Critical Zone** | **High Risk** | **ECQ** |
| **Lapu-lapu** | **Urban** | **Critical Zone** | **High Risk** | **ECQ** |
| **Talisay** | **Urban** | **Critical Zone** | **High Risk** | **ECQ** |
| **Toledo** | **Urban** | **Critical Zone** | **High Risk** | **GCQ** |
| **Sibunga** | **Rural** | **Buffer Zone** | **High Risk** | **GCQ** |
| **Naga** | **Urban** | **Buffer Zone** | **Low risk** |  |

**P (ECQ) = 7/13 P (GCQ) = 6/13**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Society Inhabitants** | **ECQ** | **GCQ** | **P [ECQ]** | **P [GCQ]** |
| **Rural** | **3** | **5** | **2/7** | **5/6** |
| **Urban** | **4** | **1** | **4/7** | **1/6** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Zone Status** | **ECQ** | **GCQ** | **P [ECQ]** | **P [GCQ]** |
| **Critical Zone** | **6** | **1** | **6/7** | **1/6** |
| **Buffer Zone** | **1** | **5** | **1/7** | **5/6** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Vulnerability** | **ECQ** | **GCQ** | **P [ECQ]** | **P [GCQ]** |
| **High Risk** | **7** | **3** | **7/7** | **3/6** |
| **Low Risk** | **2** | **1** | **2/7** | **1/6** |

**Probability under :**

|  |  |
| --- | --- |
| **P(ECQ)** | **P(GCQ)** |
| **P (Urban/ECQ) = 4/7** | **P (Urban/GCQ) = 1/6** |
| **P (Buffer Zone / ECQ) = 1/7** | **P (Buffer Zone / GCQ) = 5/6** |
| **P (Low Risk / ECQ) = 2/7** | **P (Low Risk / GCQ) = 1/6** |
| **P (ECQ) = 7/13** | **P (GCQ) = 6/13** |
| **0.012559** | **0.010684** |

**Normalization :**

|  |
| --- |
| **P(Society Inhabitants) = 5/13** |
| **P(Zone Status) = 6/13** |
| **P(Vulnerability) = 3/13** |
| **0.040965** |

**Probability that Naga will be Under ECQ or GCQ Status :**

**P(ECQ) :**

**0.012559 / 0.040965 = 0.3066 \* 100 = 30.66 %**

**P(GCQ) :**

**0.010684 / 0.040965 = 0.2608 \* 100 = 26.08 %**

**Since 30.66 % is the greater value Naga will be under ECQ quarantine status.**

**The variables that classify on this problem are based on the actual society inhabitant, Zone Status and Vulnerability of the places that was listed. Society Inhabitant determine the place is urban or rural places. Zone status are based in the movements of the people in the places are listed and also the vulnerability are how prone the are to be infected to the virus.**

1. **WHY USING THAT ALGORITHM SOLVES THE PROBLEM?**

**The Naïve Bayes Classifier is based on data evidence that are being recorded. And how we trust the data. So I’ve come up to solve the problem using the Naïve Bayes. Collecting some information from the television new and doing some analysis form the place that are listed made me think that Naïve Bayes Classifier will solve the problem.**