

# Paper 1 Test

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## Abstract

This is my abstract

## Introduction

Insert introduction here (Probably purpose)

## Data

### Source

Submitted to Open Data Toronto by Toronto Paramedic Services, the “paramedic-services-incident-data-2010-2020” dataset contains data on when and where paramedics are dispatched for incidents called in through 911, the number of units that were dispatched, the type of incident (medical, fire etc.) and how high of a priority each incident is.

## Understanding and Acknowledging Bias

The point of contention of course, is what determines priority. The dataset contains a field called “Priority\_Number” with the values [1, 3, 4, 5, 9, 11, 12, 13]. Referencing the accompanying metadata documentation “paramedic-services-incident-data-description,” these priority numbers translate to [Delta, Charlie, Bravo, Alpha, Echo, Alpha1, Alpha2, Alpha3] respectively. These “priority codes” are a product of the Medical Priority Dispatch System (MPDS) and its associated ProQA software from the Priority Dispatch Corporation (Raftis and Pacholok 2013).

Basically what occurs is that when a caller dials 911 to report an emergency, in order to determine the appropriate level of response required, the telecommunicator at the Toronto Paramedic Services’ Dispatch Centre poses a series of scripted questions, and triages the answers into pre-established MPDS codes. These codes are then translated into Toronto Paramedic Services’ own priority numbers, and are given varying associated response measures (Table 1) (“Paramedic Services Incident Data Description,” n.d.).

## Medical Dispatch Priority System Reference Table

Priority Number	Code	Definition
9	Echo	Life Threatening, Cardiac/Respiratory Arrest
1	Delta	Life Threatening, not Cardiac/Respiratory Arrest
3	Charlie	Serious, not Life Threatening
4	Bravo	Non Serious/Non Life Threatening, Treatment Required
5	Alpha	Non Serious/Non Life Threatening, Minimal Intervention
11	Alpha1	Non Serious/Non Life Threatening, Minimal Intervention
12	Alpha2	Non Serious/Non Life Threatening, Minimal Intervention
13	Alpha3	Non Serious/Non Life Threatening, Minimal Intervention

Table 1: See Power 2020 for more information

Despite the efficiency and effectiveness of this system in standardizing responses to 9.1.1 emergency calls, allowing for quick allocation of limited resources, there are some caveats that must be kept in mind when analyzing paramedic incident data from a statistical and data science perspective.

### 1. Accuracy of MDPS

- According to Bohm and Kurland (2018), the current state of MDPS lacks both a consensus on “common standards for reporting” and subsequently any measure of accuracy for the MDPS reporting system. In other words, Bohm and Kurland (2018) have found evidence of over-triage and under-triage of incidents. That is, excessive or insufficient responses for the incident at hand. Of course, this is not a critique of the medical system. The MDPS leans toward over-triage and with good reason, it is afterall better safe than sorry. However, evidence of under-triage is problematic, and even more troublesome is the complete lack of accuracy evaluation. This makes it hard to look at the data figure out which cases were over, under, and accurate triages.

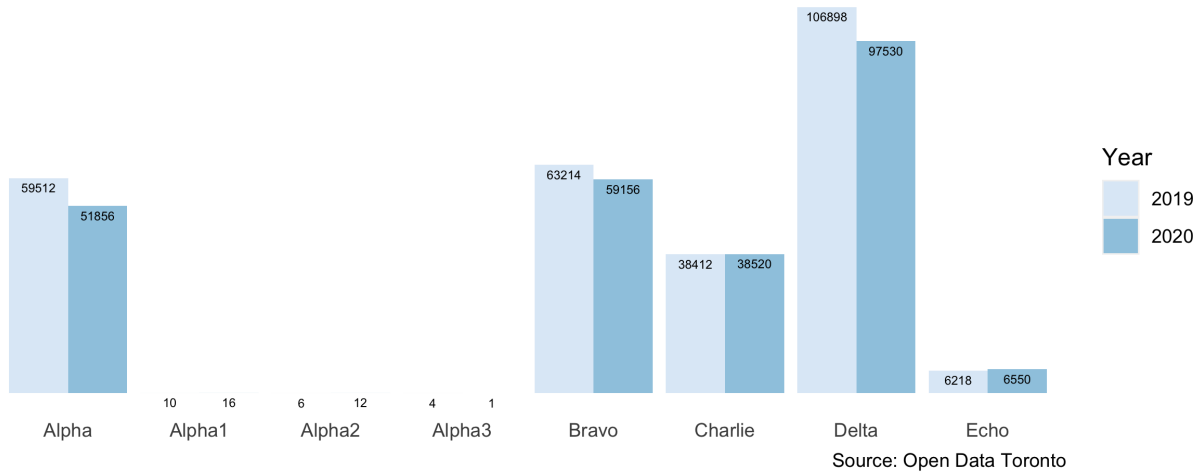
### 2. Codification of Emergencies

- Despite its good intentions, it is important to note that the data presented in the paramedic incidents dataset is first only a subsection of the priority codes, as there are a plethora of subcodes that give further detail to the type of incident (ie. 12-D-2 implies continuous or multiple seizures) (Clawson and Dernocoeur 2001). The priority codes are nothing but the highest level of categorization, and will conflate different types of incidents (various medical, fire, traffic) into the same number code. Ultimately, this limits the extent of insights that can be gleaned from a standalone dataset.

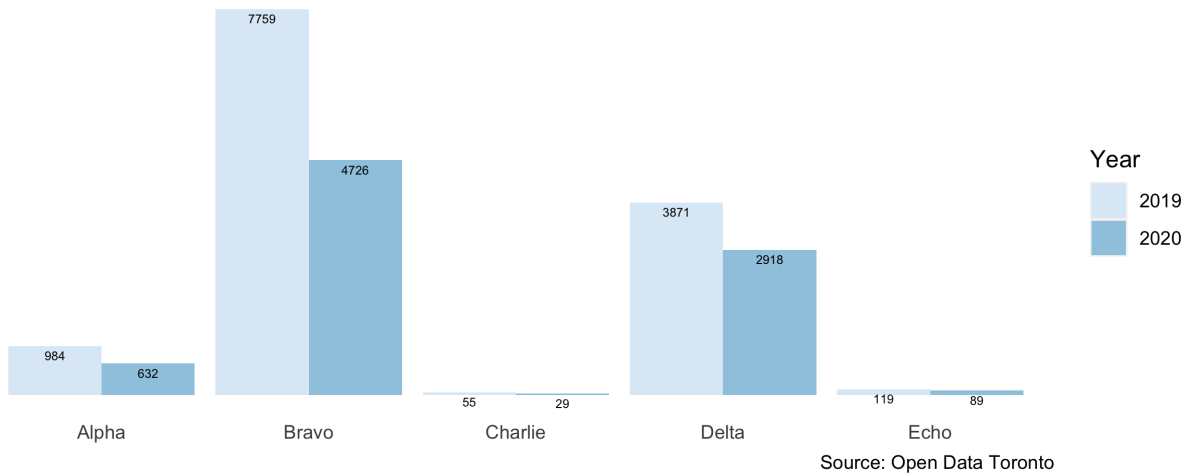
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With the flaws of the dataset in mind, let’s explore the data.

### How were Medical Incidents Classified in 2019 and 2020?



### How were Motor Vehicle Incidents classified in 2019 and 2020?



Hello I am more text explaining the graph

### Insert Title Here

Bohm, K., and L. Kurland. 2018. "The Accuracy of Medical Dispatch - a Systematic Review." *US National Library of Medicine National Institutes of Health* 26 (94). <https://doi.org/10.1186/s13049-018-0528-8>.

Clawson, Jeff J., and Kate Boyd Dernocoeur. 2001. *Determinant Codes Versus Response: Understanding How It Is Done*. Priority Press.

"Paramedic Services Incident Data Description." n.d. Toronto Paramedic Services. [https://ckan0.cf.opendata.inter.prod-toronto.ca/dataset/c21f3bd1-e016-4469-abf5-c58bb8e8b5ce/resource/f7ef5c85-e172-4252-aea7-29720c2975a1/download/tps\\_data\\_description.pdf](https://ckan0.cf.opendata.inter.prod-toronto.ca/dataset/c21f3bd1-e016-4469-abf5-c58bb8e8b5ce/resource/f7ef5c85-e172-4252-aea7-29720c2975a1/download/tps_data_description.pdf).

Raftis, Paul, and Michael Pacholok. 2013. "Provision/Expansion of Proprietary Ems Communication Centre Medical Priority Dispatch System," November. <https://www.toronto.ca/legdocs/mmis/2013/cd/bgrd/backgroundfile-63856.pdf>.