# ACCIDENT SEVERITY DUE TO EXTERNAL FACTORS

# Data Parameters

The data-set comprises of the following fields which gives us a brief on the entire collision brief for the records captured.

|  |  |
| --- | --- |
| Attribute | Description |
| OBJECTID | ESRI unique identifier |
| SHAPE | ESRI geometry field |
| INCKEY | A unique key for the incident |
| COLDETKEY | Secondary key for the incident |
| ADDRTYPE | Collision address type:   * Alley * Block * Intersection |
| INTKEY | Key that corresponds to the intersection  associated with a collision |
| LOCATION | Description of the general location of the  collision |
| SEVERITYCODE | A code that corresponds to the severity of the collision:   * 3—fatality * 2b—serious injury * 2—injury * 1—prop damage * 0—unknown |
| SEVERITYDESC | A detailed description of the severity of the  collision |
| COLLISIONTYPE | Collision type |
| PERSONCOUNT | The total number of people involved in the  collision |
| PEDCOUNT | The number of pedestrians involved in the  collision. This is entered by the state. |
| PEDCYLCOUNT | The number of bicycles involved in the collision.  This is entered by the state. |
| VEHCOUNT | The number of vehicles involved in the collision.  This is entered by the state. |
| INJURIES | The number of total injuries in the collision. This  is entered by the state. |
| SERIOUSINJURIES | The number of serious injuries in the collision.  This is entered by the state. |
| FATALITIES | The number of fatalities in the collision. This is  entered by the state. |
| INCDATE | The date of the incident. |
| INCDTTM | The date and time of the incident. |
| JUNCTIONTYPE | Category of junction at which collision took  place |
| SDOT\_COLCODE | A code given to the collision by SDOT. |
| SDOT\_COLDESC | A description of the collision corresponding to  the collision code. |
| INATTENTIONIND | Whether or not collision was due to inattention.  (Y/N) |
| UNDERINFL | Whether or not a driver involved was under the  influence of drugs or alcohol. |
| WEATHER | A description of the weather conditions during  the time of the collision. |
| ROADCOND | The condition of the road during the collision. |
| LIGHTCOND | The light conditions during the collision. |
| PEDROWNOTGRNT | Whether or not the pedestrian right of way was  not granted. (Y/N) |
| SDOTCOLNUM | A number given to the collision by SDOT. |
| SPEEDING | Whether or not speeding was a factor in the  collision. (Y/N) |
| ST\_COLCODE | A code provided by the state that describes the collision. For more information about these codes, please see the State Collision Code  Dictionary. |
| ST\_COLDESC | A description that corresponds to the state’s  coding designation. |
| SEGLANEKEY | A key for the lane segment in which the collision  occurred. |
| CROSSWALKKEY | A key for the crosswalk at which the collision  occurred. |
| HITPARKEDCAR | Whether or not the collision involved hitting a  parked car. (Y/N) |

#### Data Wrangling

As stated, we aim to understand the influence of external factors in determining the severity of a collision. Hence, the following information has been considered keeping the above perspective to hold true.

1. Data inputs attributed **status** as “matched” by the Seattle MIS have only been considered and “unmatched” criterias have been removed.
2. The following attributes have been considered-

|  |  |  |
| --- | --- | --- |
| **Attribute** | **Description** | **Reasoning** |
| ADDRTYPE | Collision address type:  Alley  Block  Intersection | Alleys, blocks and intersections are not under the control of the driver |
| SEVERITYCODE | A code that corresponds to the severity of the collision:  3—fatality  2b—serious injury  2—injury  1—prop damage  0—unknown | The attribute which will be finally predicted using our model |
| COLLISIONTYPE | Collision type | External factors not in control of the driver |
| WEATHER | A description of the weather conditions during  the time of the collision. | External factors |
| ROADCOND | The condition of the road during the collision. | External factors |
| LIGHTCOND | The light conditions during the collision. | External factors |
| SPEEDING | Whether or not speeding was a factor in the  collision. (Y/N) | Speeding depends upon the road, environment which is an external factor |

1. Rows with unknown values in severity code, WEATHER, LIGHTCOND, WEATHERCOND, ROADCOND were dropped
2. Rows with null values in severity code, addrtype, collision type, weather, roadcond, lightcond have been removed/dropped.
3. Speeding blank values have been converted to “0” and SPEEDING ‘Y’ values have been converted to 1
4. Severity Code has been converted to the following numeric codes to convert the dataset into int type.

|  |  |
| --- | --- |
| Severity Code | Description |
| 1 | Property damage |
| 2 | Injury |
| 3 | Fatality |
| 4 | Serious Injury |

1. The categorical values of certain parameters have been converted to the following numeric codes-

|  |  |
| --- | --- |
| ADDRTYPE | ADDRTYPE CODE |
| Block | 1 |
| Intersection | 2 |
| Alley | 0 |

|  |  |
| --- | --- |
| WEATHER | WEATHERCODE |
| Clear | 1 |
| Raining | 6 |
| Overcast | 4 |
| Snowing | 9 |
| Other | 3 |
| Fog/Smog/Smoke | 2 |
| Sleet/Hail/Freezing/Rain | 8 |
| Blowing Sand/Dirt | 0 |
| Severe Crosswind | 7 |
| Partly cloudy | 5 |

|  |  |
| --- | --- |
| LIGHTCOND | LIGHTCONDCODE |
| Daylight | 5 |
| Dark-Street Lights On | 2 |
| Dusk | 6 |
| Dawn | 4 |
| Dark-No street lights | 0 |
| Dark-Street lights off | 1 |
| Other | 7 |
| Dark-Unknown Lighting | 3 |

|  |  |
| --- | --- |
| ROADCOND | ROADCONDCODE |
| Dry | 0 |
| Wet | 7 |
| Ice | 1 |
| Snow/Slush | 5 |
| Other | 3 |
| Standing water | 6 |
| Sand/Mud/Dirt | 4 |
| Oil | 2 |